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Introducing INGRES/PCLINK

INGRES/PCLINK combines your personal computer and the INGRES database management and application development system to form a single, cohesive system. It provides a simple yet powerful way to use popular PC software packages such as Lotus 1-2-3 with INGRES databases on a Host computer.

The Visual-Query-Language™ allows you to browse the contents of an INGRES database on another system, extract data, transfer the data across a network and store the data in PC files. PC Link automatically reformats the data for processing by popular PC applications such as Lotus 1-2-3, Multiplan, dBase II and III, MultiMate and WordStar.

PC Link also allows you to utilize the information stored in shared files on large, multi-user Host systems, giving you the ability to transfer files back and forth between your PC and the Host system. Finally, PC Link lets you use the processing power of Host computers to execute multi-user applications (such as INGRES data entry, inquiry and report writing applications) directly from your PC screen and keyboard.

By connecting your PC to multi-user computers and to INGRES databases, PC Link opens up many new applications for your PC, including:

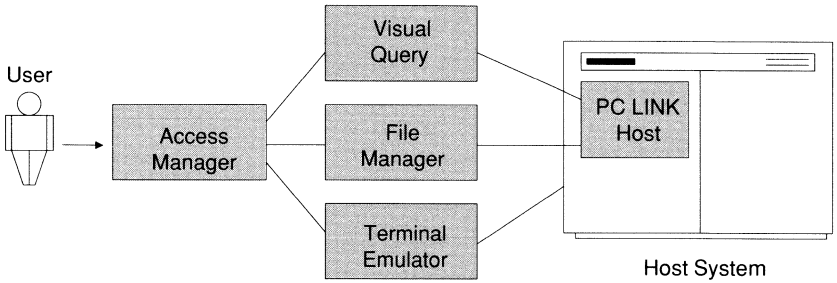
- *Host database access*: PC Link is designed for the PC user. With the Visual-Query-Language, you retrieve and manipulate information from your INGRES databases directly on your PC screen in the form of tables—simple rows and columns of data. PC Link simplifies database access for you by dispensing with the syntactical details of database query languages and by isolating you from the complexities of data communication and file reformatting.
- *Information analysis*: You can extract information from an INGRES database and transfer it into a 1-2-3 worksheet on your PC to spot trends, project future results, analyze performance or highlight exceptions. PC Link supports most popular PC productivity software, so you can calculate, graph, report, and perform statistical analysis on the data you extract, using your favorite PC software packages.

- *Periodic reporting*: PC Link is especially useful for generating periodic reports from the data in an INGRES database. Just transfer the data to your PC using PC Link, and then use your favorite PC software to prepare reports, charts, memos and other documents based on the data.
- *Host file sharing*: PC Link can access shared files on a multi-user Host system and transfer them to the PC for processing or analysis. Reports generated on the Host can be transferred to your PC for printing and editing, for example.
- *Information collection*: Data prepared on the PC can be transferred to the Host system, to be collected and processed by multi-user applications software running there. PC Link can transfer text or binary data files prepared with PC software packages.
- *Multi-user applications*: PC Link provides interactive terminal emulation, so you can use your PC to access multi-user applications running on a Host system. You can use INGRES Query-by-Forms™ and Report-Writer applications, for example, to enter data into a database and prepare reports.
- *PC backup*: You can use PC Link's file transfer capabilities to back up critical data on your PC system, by copying the data to the Host system on a periodic basis.
- *Remote printing*: PC Link can print files transferred from the Host system in an unattended mode, so you can use it to print Host application reports and other documents overnight when communication costs or printer demand are low.

PC Link Software Environment

PC Link is made up of four separate PC software modules and Host server software. Figure 1-1 shows the relationship among the various parts of PC Link.

Figure 1.1.



The top module, the PC Link Access Manager permits you to enter the program and provides the Access Menu. The Access Menu is your gateway to the other PC Link modules, the Visual-Query-Language, the File-Manager and the Terminal-Emulator. The Access Menu also lets you set and change the various configuration options that personalize the operation of PC Link to your Host system, your network and your PC.

The Visual-Query-Language

The PC Link Visual-Query-Language is the link between PC productivity software and INGRES databases. Using the Visual-Query-Language (VQL™), you can browse the contents of databases, select columns and rows for processing, and combine information from multiple tables in a database. You can also execute pre-defined database inquiries to extract needed data from a database with a few keystrokes. VQL also transfers data from the database to your PC and saves it in PC files, ready for processing by the leading PC productivity tools. For a further overview of VQL capabilities, see Chapter 6.

The File-Manager

The PC Link File-Manager links the files on your PC hard disk and floppy diskettes with the shared files on the Host system. You can use the File-Manager to transfer files back and forth between the two systems, to obtain needed data from the Host system or to send data entered on your PC to the Host system for processing. The File-Manager also lets you view the contents of PC or Host files directly on your PC screen. In addition, the File-Manager offers you a flexible tool for copying, printing and managing the files on your PC and on the Host system—a tool that is consistent, regardless of the brand or operating system of the Host computer running INGRES. For a further overview of the File-Manager, see Chapter 7.

The Terminal-Emulator

The PC Link Terminal-Emulator is your connection to multi-user Host applications software. With the Terminal-Emulator, your PC screen and keyboard become an interactive terminal attached to the Host system. You can type Host commands, execute INGRES applications and generally perform all the functions available to the user of a computer terminal that is connected to the Host system. In addition, the Terminal-Emulator allows you to use the PC's disk storage to capture information transmitted by the Host, and send information to the Host. You can also create a printed record of screen contents or your Host system dialogue on the PC printer. For a further overview of the Terminal-Emulator, see Chapter 8.

The PC Link Host Server

The PC Link Host server is the part of PC Link invisible to you. The Host server software executes on the Host system and performs various database and file management operations on request from the PC Link modules executing on your PC. The Visual-Query-Language and File-Manager cooperate closely with the Host server to make the communication between the PC and the Host system smooth, natural and transparent to you.

How to Use the INGRES/PCLINK Manual

The *INGRES/PCLINK Manual* provides an all-in-one source of information about INGRES/PCLINK. As such it includes a tutorial, a user's guide (oriented to a user's tasks) and a reference manual (oriented to the features of the system). This publication is divided into easy-to-find sections, so that you can find any level of help, instruction, or ideas that you need.

Organization

The *INGRES/PCLINK Manual* is divided into the following basic sections:

- *Introduction*: Chapter 1 presents PC Link to the new user. A general description of INGRES/PCLINK and orientation to the manual can be found here.
- *Setting Up*: Chapter 3 describes how to install INGRES/PCLINK on your PC. It is critical that you read Chapter 3 carefully and complete the Configuration Worksheet in Appendix B. Then you will be able to follow the steps in Chapter 3 to successful installation of PC Link. For information on installing INGRES/PCLINK on the Host system, please refer to the *INGRES/PCLINK Host Installation Guide*.
- *Getting Started*: Chapter 4, the "PC Link Tutorial" provides five comprehensive lessons to help you get the "feel" of INGRES/PCLINK. Chapter 5 describes various tools and techniques for using PC Link.
- *Overview*: Chapters 6 though 9 in this section provide a more detailed description of each PC Link module and the configuration options. This section serves as background and preparation for actual work with INGRES/PCLINK.
- *Using INGRES/PCLINK*: Chapters 10 through 29 describe how to use INGRES/PCLINK to combine your INGRES data and applications with your PC into a single, cohesive system. This includes specifying the data you need (Visual-Query-Language), managing the data you send and receive (File-Manager), using your PC as a terminal to the computer from which you extract your data (Terminal-Emulator) and configuring your PC and Host (Access Manager).

- *Command-Reference*: Chapters 30 through 35 provide a more rigorous, definitive description of the commands you use with INGRES/PCLINK. Commands are listed in alphabetical order for each module.
- *Appendices*: Appendix B is the Configuration Worksheet you use to organize technical data about your PC, Host and network. Most of the other appendices, however, are provided as a convenience to more technical users, whose interest may include developing customized applications based upon the capabilities of INGRES/PCLINK. You need not read all the material in these other appendices in order to use PC Link productively.

Recommended Approach

New users should read from Chapter 1 through Chapter 5 before attempting significant operations with INGRES/PCLINK. Reading these sections will include substantial, hands-on experience with PC Link, so that you can begin performing actual work, integrating data from your Host machine with your PC applications. At that point, refer to the rest of the manual, as needed, to sharpen your understanding of how PC Link can work effectively for you.

Conventions

Throughout this publication, certain conventions are used. In general, sections in this manual use the following display techniques:

- Boldface entries indicate an action you should take, a key you should press, or characters you should type. For example, type **pclink** to start the PC Link program.
- *Italics* indicate the introduction of a new term, or emphasize important concepts or precautionary measures to be heeded in using PC Link.
- Screen messages or prompts are indicated by a different typeface, for example:

```
33  row(s)  satisfied  query
```

- Procedures are numbered for easy reference in the text.

Above all, this manual is designed to be easy to use. For this reason, conventions and special designations are few.

Setting Up PC Link

Successful operation of INGRES/PCLINK requires the coordination of a personal computer, a Host computer running INGRES, and a communications network. PC Link is designed to accommodate a wide variety of PCs, Host computers and networks. This chapter describes the PC Link hardware environment and the steps required to set up PC Link. Step-by-step procedures are provided to help you collect and organize the information you will need to set up PC Link.

Setting up PC Link requires:

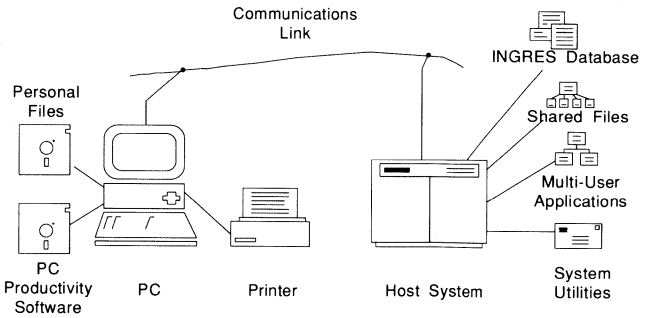
- *Copying* the PC Link software
- *Configuring* PC Link for your PC, your particular communications network and your Host system

and, if you are using PC Link to access a Host computer:

- *Installing* the PC Link Host software (which your Host system administrator will do)
- *Establishing* the communications link

To set up PC Link properly, it is critical that you read this chapter, fill out the worksheet in Appendix B and follow the steps in the section on configuring PC Link near the end of this chapter.

Figure 3.1.



PC Link Hardware Environment

Figure 3.1 shows the computer systems and communications networks that form the PC Link hardware environment.

The PC System

The personal computer (PC) is your main point of contact with PC Link. You control the program's operation through the PC keyboard, and it communicates with you through the PC's display screen. PC Link allows you to transfer files from personal storage on your PC to the shared storage on the Host system. It also allows you to extract data from a Host database (*or* a local database on your PC) for analysis and processing on the PC.

PC Link supports IBM PCs and PC-compatibles; see Appendix A for a list of personal computers supported and system requirements. The software may be installed on either a diskette system—5 1/4 inch or 3 1/2 inch—or on a hard disk system. PC Link also supports an optional printer attached to your PC, for printing information from PC files or from the Host system.

The Host System

The Host system forms the other end of your PC Link PC-to-Host connection. The Host is a larger computer system that runs the INGRES database management and application development system. It is shared among several users and may have one or more INGRES databases stored on its mass storage devices.

The PC Link Host module can be installed on any Host system that runs INGRES. PC Link configuration options are used to adapt PC Link to the various operating systems and communications protocols supported by different Host systems.

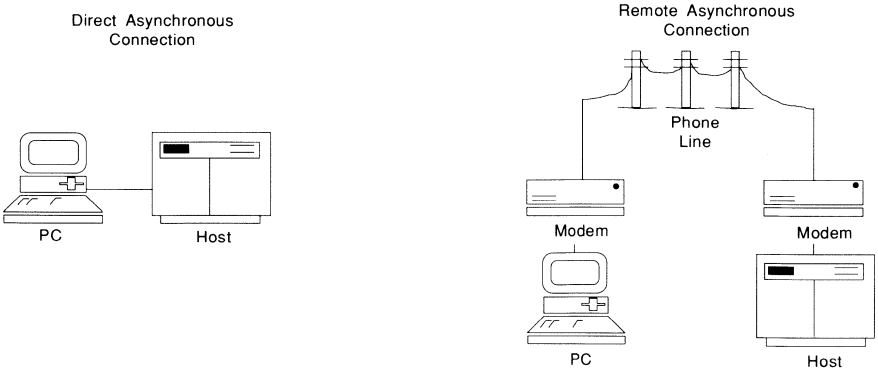
The Communications Network

A communications network links the PC to the Host system, allowing communications between the two computers. (No connection is required to access a local PC database.) Communications speed, cost and the distance over which communication can take place varies between the two types of communications links PC Link supports.

- *Remote asynchronous* connection allows you to connect the PC and the Host system using the public telephone network. A *modem* connects the PC to the telephone line, and another modem connects the Host system to the other end of the line. The limited capacity of phone lines reduces the communication speed to about 100 characters per second on a 1200 baud modem.
- *Direct asynchronous* connection is the simplest form of communications link supported by PC Link. The PC is connected to the Host system in the same way that a local computer terminal would be connected—in fact, you can often unplug a terminal from the Host system and substitute your PC plus the PC Link software.

Figure 3.2 shows two typical communications links.

Figure 3.2.



Installing the PC Link Host Software

Instructions for installing the Host software are contained in the *INGRES/PCLINK Host Installation Instructions* supplied with the PC Link Host software. The instructions and the Host software itself are specific to the computer model and operating system on which they are installed. Make sure the Host software can be accessed from the user identification you use with PC Link.

Establishing the Communications Link

To establish the communications link, determine if your asynchronous connection is remote or direct. In a remote asynchronous connection, your PC connects to a modem supported by PC Link, which in turn connects to a telephone line. The Host system is also connected to the telephone network by one or more modems. In a direct asynchronous connection, a cable runs from the asynchronous communications connector on your PC to a similar connector on the Host system. Follow the instructions in the appropriate section below.

Remote Asynchronous Connection

To use the PC Link remote asynchronous connection capability, you will need:

- An IBM Asynchronous Communications Adapter or equivalent IBM PC card such as the AST SixPakPlus
- An asynchronous modem that uses the "AT" command set, such as the Hayes Smartmodem 1200 or compatible modems
- An RS-232 cable to connect the PC to the modem, if your modem is external
- A modem on the Host system

Install the Asynchronous Communications Adapter in your PC following the manufacturer's instructions. Consult the user's manual for your modem to configure it for use with PC Link. Generally, the modem will have a set of switches that can be set on or off to select various configuration options.

Set the switches in the following manner:

- Turn off Auto-Answer.
- Turn off Command Echo.
- Set the "AT" command set.

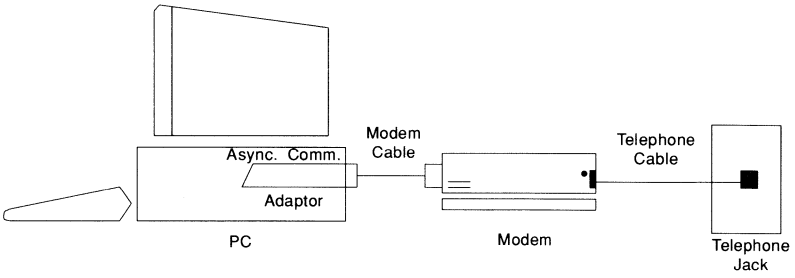
Set command result codes as digits, not words.

In general, these switch settings will be the same ones used by Crosstalk, Smartcom and other popular PC communications software packages. If the modem manual suggests switch settings for use with these communications packages, use those settings for PC Link as well. Appendix C provides further information on setting up a Hayes modem for use with PC Link.

If your modem does not support the "AT" command set, you may still be able to use it with PC Link by setting it up to appear to PC Link as a direct asynchronous connection. The major advantage of using a remote asynchronous connection is PC Link's Auto-Dial feature, which supports the "AT" command set.

Finally, you must connect the modem to the telephone line, following the instructions in the user's manual for your modem. Figure 3.3 summarizes the cable connections for using a modem with PC Link.

Figure 3.3.

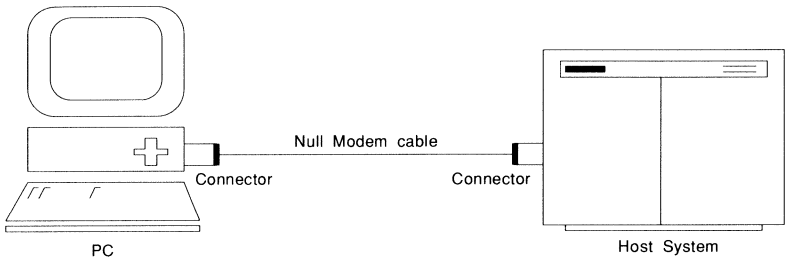


Direct Asynchronous Connection

To use a direct asynchronous connection, your PC must have an IBM Asynchronous Communications Adapter or an equivalent IBM PC card installed. You will also need a cable to connect the PC to the Host system. Often, the cable is identical to the one you would need to connect a typical asynchronous computer terminal, such as a VT100, to the Host system.

Figure 3.4 shows the connection.

Figure 3.4.

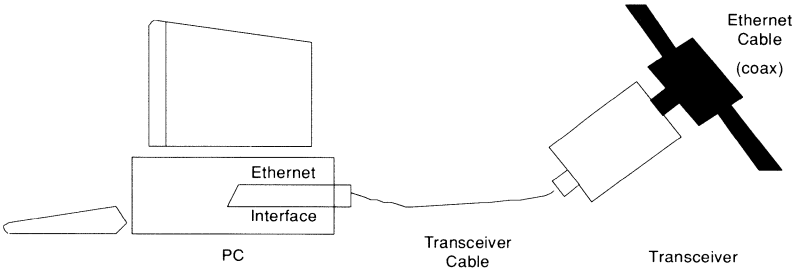


Copying the PC Link Diskettes

The PC Link software for the PC is distributed one or more diskettes, depending on whether they are 5 1/4 inch or 3 1/2 inch diskettes. Before you begin using the PC Link software, you should copy it onto a hard disk or diskettes that will contain your "working copy" of PC Link. Then put the distribution diskettes in a safe place. You can use them to restore the PC Link software in case your working copy of the software is accidentally destroyed.

Carefully follow the instructions below for installing PC Link on a diskette system or a hard disk system. Only after PC Link is installed can you successfully configure PC Link to run on your PC and your Host system.

Figure 3.5.



Installation on a Diskette System

To use PC Link on a diskette system, you must copy the software from the distribution diskette(s) onto working diskette(s). To do this:

1. "Boot" (start) your DOS operating system and format the number of diskettes you will need. (Two diskettes if you're using a 5 1/4 inch diskette system; one for 3 1/2 inch diskette systems.)

2. Insert the diskette labeled "INGRES/PCLINK Program Disk" into floppy disk drive A. Insert one of the newly formatted diskettes into drive B. Type:

   copy a:*.* b:

   Press **Enter**.

   The **copy** command will display the name of each file as it is copied. Check Appendix A for the names of the files if you want to confirm the copying.

3. Remove the diskette from drive A and set it aside. Remove the diskette from drive B and label it "INGRES/PCLINK Program Disk."

   If you are using a 3 1/2 inch diskette system, skip to step 6.

4. Insert the diskette labeled "INGRES/PCLINK Help Disk" into drive A and the other newly formatted diskette into drive B. Type:

   copy a:*.* b:

   Press **Enter**.

5. Remove the diskette from drive A and set it aside. Remove the diskette from drive B and label it "INGRES/PCLINK Help Disk."

6. Store the original PC Link diskettes in a safe place. Never use them to run PC Link. Always use the working copies you have just created.

Installation on a Hard Disk System

To install PC Link on a hard disk system, you must copy the software from the distribution diskettes into a directory on the hard disk. This will be the directory from which you start PC Link.

The install program installs PCLink in a \PCLINK directory on your chosen disk drive. It creates the directory if it does not exist, or overwrites the files in that directory if it does already exist.

If you want to use multiple versions of PCLink, and you already have PCLink 1.0 installed in a \PCLINK directory, you must copy the files from this directory into another directory (for example, \PCLINK10) *before* running the installation program. Otherwise, the old PCLink files will be overwritten by the new files.

To install PCLink on a hard disk system:

1. If you are using a 5 1/4 inch diskette system, insert the PCLink diskette marked "INGRES/PCLINK Help Disk" into drive A.

   If you are using a 3 1/2 inch diskette system, insert the PCLink diskette marked "INGRES/PCLINK Program Disk" into drive A.

   Type:

   a:install

   The install program will display the copyright information and further information about the installation procedure.

2. Press **Enter** after reading the first page.

3. The install program will indicate the default disk drive for installation and will prompt you for your preference.

If the default disk drive displayed is the one you want PCLink installed on, press **Enter**. If you want PCLink installed on a different drive, press the letter of that drive; no **Enter** is needed.

If you are using a 3 1/2 inch diskette system, skip to step 6.

4. The install program will ask you to insert the "INGRES/PCLINK Help Disk." Since this disk is already in drive A, press **Y** to copy the files from the disk.

   After the files are copied from this disk, you will be asked to insert the "INGRES/PCLINK Program Disk."

5. Take the "INGRES/PCLINK Help Disk" out of drive A and insert the "INGRES/PCLINK Program Disk." Press **Y** to copy the files from this disk.

6. If you don't have INGRES for PCs installed on the same machine, you will get warning messages caused by trying to copy files to the (nonexistent) INGRES directory. Ignore these.

   Remove the "INGRES/PCLINK Program Disk" from drive A and store both diskettes in a safe place. The installation program is finished.

After the installation program is finished, you must make sure the PCLINKDIR environment variable is defined to the \PCLINK directory at operation time. You can do this by adding the following line to your AUTOEXEC.BAT file:

set PCLINKDIR=c:\pclink

If you chose to install PCLink on a drive other than C, substitute that drive letter in the above line. It is especially important to set PCLINKDIR if you are using VQL from the INGRES for PCs menu.

You must also change the configuration file to reflect the correct drive. To do this, change to the new \PCLINK directory and type:

setcnf c:pclink.cnf

If you chose to install PCLink on a drive other than C, substitute that drive letter in the above line.

Configuring PC Link for Your PC and Your Host System

You must supply some information to the PC Link program so that it will communicate properly with the Host system. The information requested on the PC Link Configuration Worksheet in Appendix B is essential to make PC Link work effectively for you. Consult with your Host system administrator or a more experienced PC Link user to obtain answers to the questions on the worksheet. If you already know how to access the Host computer that runs INGRES and PC Link, you may be able to supply many of the answers yourself.

With your completed worksheet from Appendix B available, perform the following tasks in sequence to configure PC Link for use on your system. This configuration procedure sets up PC Link so you can work through the tutorial in Chapter 4 and get started using the product for your own applications. For further information on PC Link configuration, see Chapters 28 and 34.

Starting up PC Link

With the INGRES/PCLINK Program Disk in drive A (diskette system), or from the directory called C:\PCLINK (hard disk system):

1. Type **pclink** and press **Enter**.
2. From the PC Link Access Menu, select **C**onfiguration by typing **C**.
3. From the Configuration Menu, select **PC** by typing **P** and **D**isplay by typing **D**.
4. See item A on your Configuration Worksheet. Specify your display adapter by moving the cursor (with the arrow keys on the right of the keyboard) to the appropriate choice and pressing **Enter**.
5. Press **Esc** to return to the Configuration Menu.

Host Configuration

6. From the Configuration Menu, select **H**ost by typing **H** and **W**ork-Dir by typing **W**.
7. See item B on your Configuration Worksheet. Type the name of your Host home directory exactly as written on the worksheet and press **Enter**.
8. See item C on your Configuration Worksheet. Select the **A**uto-Connect option by typing **A**. Set Auto-Connect by moving the cursor to **M**anual or **A**utomatic and pressing **Enter**.

If you responded "No" (MANUAL) to item C, press **Esc** and skip to step 16.

Automatic Login Information

If you type *only* your user identification and password to connect to the Host, use the procedure below to set up automatic connection.

If you type *more than* just a user identification and password, you can still use PC Link's Automatic Login feature. Turn to Chapter 28 and follow the steps in Procedure 28.8, Setting the Host User Identification. Then resume this procedure at step 16.

9. Select **U**ser by typing **U**. See item E on your Configuration Worksheet. Type your user identification and press **Enter**.
10. Select **P**assword by typing **P**. Type your password and press **Enter**.
11. Select **H**ost-Prompts by typing **H**. Select **L**ogin by typing **L**. See item G on your Configuration Worksheet. Type the prompt sequence your Host uses to request your user identification (exactly as shown, including blanks) and press **Enter**.
12. Select **P**assword by typing **P**. See item H on your Configuration Worksheet. Type your Host password prompt sequence exactly as shown and press **Enter**.
13. Select **C**ommand by typing **C**. See item I on your Configuration Worksheet. Type your Host command prompt sequence exactly as shown and press **Enter**.
14. Press **Esc** to return to the Host Menu. Select **L**ogout by typing **L**. See item D on your Configuration Worksheet. Type your Host logout command exactly as shown and press **Enter**.
15. Press **E** to return to the Configuration Menu.

Network Configuration

16. From the Configuration Menu, select **N**etwork by typing **N**. Then select **T**ype by typing **T**. See item K on your Configuration Worksheet. Type **N** for None or **A** for **A**sync-Packet.

    (To use PC Link with an INGRES database resident on your PC, set the network type to "None.")

    If you responded NONE to item K, press **Esc** and skip ahead to step 26.

17. Select **I**/O Port by typing **I**. See item L on your Configuration Worksheet. Indicate the proper port by moving your cursor to the appropriate choice and pressing **Enter**.

18. Select **S**peed by typing **S**. See item M on your Configuration Worksheet. Set the transmission speed by moving your cursor to the appropriate choice and pressing **Enter**.

19. Select **P**arity by typing **P**. See item N on your Configuration Worksheet. Set the parity option by moving the cursor to the appropriate choice and pressing **Enter**.

20. Select **B**its by typing **B**. See item O on your Configuration Worksheet. Set the bits option by moving the cursor to the appropriate choice and pressing **Enter**.

21. Select **F**low-Control by typing **F**. See item P on your Configuration Worksheet. Set the flow control moving the cursor to the appropriate choice and pressing **Enter**.

22. Select **M**odem by typing **M**. Select **T**ype by typing **T**. See item Q on your Configuration Worksheet. Set the modem type by moving the cursor to the appropriate choice and pressing **Enter**.

    If you responded NONE to item Q, press **Esc** twice and skip to step 27.

23. Select **P**hone by typing **P**. See item R on your Configuration Worksheet. Type the phone number exactly as shown and press **Enter**.

24. Select **D**ial-Type by typing **D**. See item S on your Configuration Worksheet. Set the dial type by moving the cursor to the appropriate choice and pressing **Enter**.

25. Press **Esc** twice to return to the Configuration Menu.

Updating Your Configuration Files

26. From the Configuration Menu, select **U**pdate by typing **U**. Select **R**eplace by typing **R**. This will replace the existing PC Link configuration file with the one you just created.

27. Press **E** to return to the PC Link Access Menu.

28. From the PC Link Access Menu, select **E**xit by typing **E**, then **Y**es by typing **Y** to leave PC Link.

INGRES/PCLINK Tutorial

This tutorial contains five lessons that teach you about the important PC Link features you will use most often. In the first lesson, you will learn how to start PC Link and then how to get help.

In Lesson 2, you will learn how to access INGRES database information on a Host computer and then examine it at your personal computer, or use it immediately with personal productivity software such as Lotus 1-2-3. Lesson 3 teaches you how to use the more important File-Manager features, like sending copies of your PC files to the Host computer.

In Lesson 4, you will learn how the PC Link Terminal-Emulator lets you use your PC as a Host computer terminal. Finally, Lesson 5 shows you how to leave PC Link and return to DOS.

If you plan to work through all five of the lessons at one sitting, you should set aside about two hours. Do not start a lesson unless you have time to complete it.

The exercises in this tutorial use an INGRES database which your organization received with its INGRES/PCLINK Host software. This sample database, called "pclink," is a project management database that contains information on the time investments, tasks, staff assignments, and various projects an organization performs. If you have difficulty accessing the "pclink" database, contact your Host system administrator.

Please do not merely read through this tutorial. You will get the most from this chapter if you use your PC while you work through the exercises.

All the instructions in this tutorial assume that you have followed the procedures in Chapter 3 to set up PC Link for use on your system. You should also have the Configuration Worksheet from Appendix B at hand, because you will refer to it frequently.

The lessons also assume that you already know how to use your PC with other PC applications. If you have never used a PC before, you should probably ask a more experienced user to help you work through the lessons.

Lesson 1: Starting Up

Starting Up" is the first of five lessons designed to teach you how to use the data stored in your company's INGRES database. In this first lesson, you will learn how to start PC Link in Exercise 1. Depending upon the type of PC-to-Host connection you use, you will then do Exercise 2 or Exercise 3. In Exercise 4, you'll learn how to use PC Link help.

You should set aside about fifteen minutes to work through the exercises in this lesson. Please do not begin the exercises in this lesson unless you have the time to complete them in one uninterrupted session.

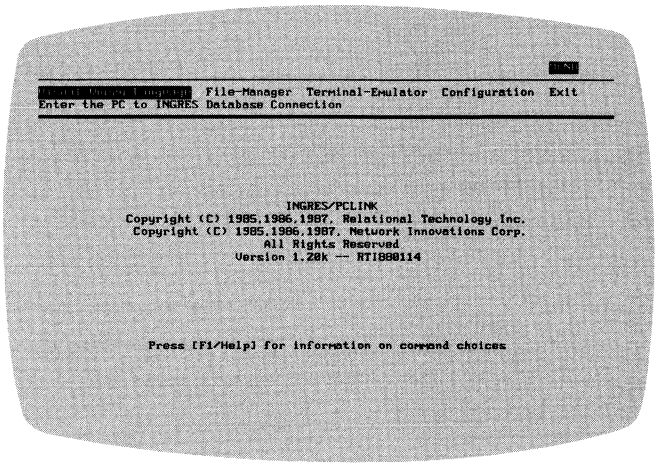
Exercise 1: Starting PC Link

To start PC Link, work through the following steps. If you type an incorrect character, you can usually correct it by using **Backspace** or **Esc**. (If you are using a diskette system or a computer with limited memory—less than 320K—refer to Appendix M before proceeding.)

1. If your PC is a diskette system, insert your DOS disk in drive A.
2. Turn on your PC and, if you are using one, your modem.
3. If your PC is a diskette system, when you see the DOS prompt (A>), remove the DOS disk from drive A. Insert the PC Link Program diskette in drive A and a data disk in drive B.
4. If your PC is a hard disk system, type **cd c:\pclink** and press **Enter** when you see the DOS prompt (C>).

5. Type **pclink** and press **Enter**. PC Link displays the PC Link Access Menu.

Figure 4.1.



6. Consult your Configuration Worksheet from Appendix B. Note, in item C, if your connection to the Host system is automatic or manual. Then follow the steps in Exercise 2 or Exercise 3.

Exercise 2: Automatic Connection to the Host System

If item C on your Configuration Worksheet indicates that your PC-to-Host connection is automatic, perform the following steps:

1. If your terminal is directly connected to the Host through a cable, skip to Exercise 4.
2. If you are using a modem, check item T from the Configuration Worksheet. If you checked Yes, your modem will automatically connect to the Host, and you can skip to Exercise 4. If you checked No, perform the connection sequence as listed in item U to open the communications line.
3. If you are prompted for your user identification and password, type them as listed in items E and F on the Configuration Worksheet.

Exercise 3: Manual Connection to the Host System

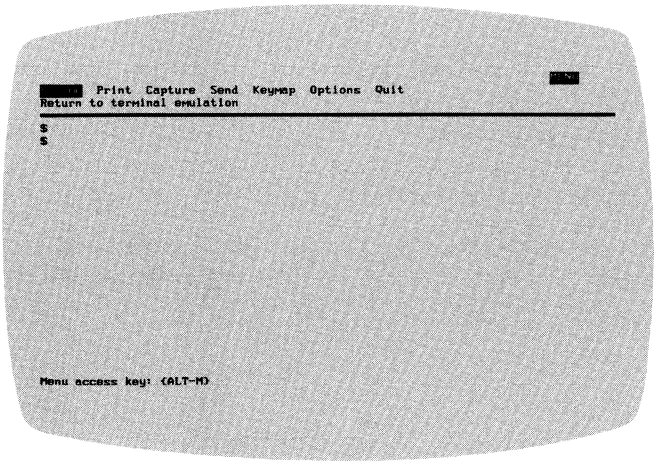
If item C on the Configuration Worksheet indicates that your PC-to-Host connection is manual, follow these steps:

1. If you are using a modem, consult item T on the Configuration Worksheet. If you checked Yes, skip to Step 2. If you checked No, perform the steps in item U to open the communications link.
2. Select **T**erminal-Emulator from the PC Link Access Menu. You should see a blank screen with a message in the bottom left-hand corner that tells you what your Menu Access Key is. It will look like this:

   ```
   Menu Access Key is: {Alt-M}
   ```

   This means hold down **Alt** and press **M**. You will use this key combination in Step 5 to tell PC Link to redisplay the Terminal-Emulator Menu.
3. Press **Enter** several times until you see your Host computer's login prompt.
4. Log in to your Host computer. Item J of your Configuration Worksheet will tell you what prompts you will see and how to respond to them.
5. When you see your Host computer's operating system prompt, press your Menu Access Key. PC Link displays the Terminal-Emulator Menu.

Figure 4.2.



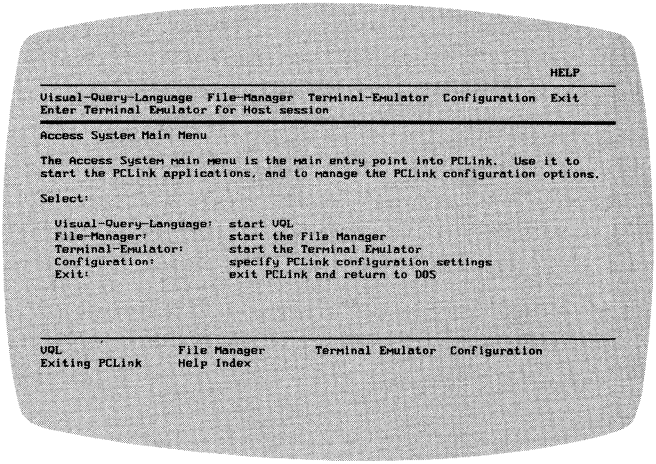
6. Select **Q**uit, and then **Y**es, to verify that you want to quit using the Terminal-Emulator. PC Link displays the PC Link Access Menu. You are ready to work through the next exercise.

Exercise 4: Getting Help

No matter what function you are performing with PC Link, pertinent, easy-to-understand help screens are only a keystroke away. This exercise shows how to display information that will help you understand the options available to you with PC Link. To get help and then return to PC Link exactly where you left off, follow these steps:

1. Press **F1** (Help). If you are using a 5 1/4 inch diskette system, remove the Program disk from drive A and insert the Help disk in its place. Press F1 (Help) again. PC Link displays a help screen. Because you have just started PC Link, your help screen should look like this:

Figure 4.3.



If you were working with the Visual-Query-Language or the File-Manager when you requested help, PC Link would have displayed a help screen containing information pertinent to the appropriate PC Link module.

2. Move the cursor using the arrow keys on the right side of your keyboard to highlight related subjects. Press **Enter** with the cursor over any subject to obtain further information. You can use **F1** (Help) this way to learn about PC Link's many capabilities.

3. To exit Help, if you are using 5 1/4 inch diskettes, remove the Help disk from drive A and insert the Program disk in its place.

   Press **Esc**. PC Link returns you to exactly where you were before you requested help.

Moving Ahead

Now that you have completed this lesson, go to the next lesson. In Lesson 2, you will learn how you can use the Visual-Query-Language to extract just the data you want from your INGRES database.

If you do not want to do any more PC Link lessons right now, please go to Lesson 5, which shows you how to stop using PC Link and return to DOS.

Lesson 2: Using the Visual-Query-Language

In this lesson, you will learn how to use the PC Link Visual-Query-Language (VQL). VQL enables you to access and manipulate INGRES database information on a Host computer and then examine it at your personal computer, or use it immediately with personal productivity software such as Lotus 1-2-3.

The Visual-Query-Language lesson leads you through the process of getting specific information from an INGRES database to your personal computer. This lesson introduces you to the main VQL features, but does not describe them in detail; for more detailed information about VQL, see Chapters 11 through 21.

You will need about one hour to perform the exercises in this lesson. Please do not begin the VQL lesson unless you have the time to complete it in one uninterrupted session.

The Visual-Query-Language and the Sample Database

With the PC Link Visual-Query-Language, you can use your personal computer to examine information in INGRES databases on your company's mainframe computer. Your inquiries do not affect your company's databases in any way, but enable you to select, transfer to your PC and work with exactly the information you need.

The exercise involves a project management database that contains information on the time investments, tasks, staff assignments and various projects an organization performs.

Almost every organization is interested in keeping track of how its staff members spend their time. Even if your company does not manage projects the way the PC Link tutorial database does, this lesson will probably have some similarities to your experience with job tracking or project management.

A database is a group of related items of information. An INGRES database organizes this information into tables, where each table contains rows and columns and shows the relationships between the information items. In the database named "pclink," there are two tables this lesson will use: "tasks" and "staff." The following illustration shows portions of the "tasks" and "staff" tables from the PC Link database.

Figure 4.4.

name	project_id	tasks	hours
Kwong, Albert	AdmRecSys	Debug	7
Kwong, Albert	AdmRecSys	Design	12
Miller, Stephanie	AdmRecSys	Implement	15
Miles, Patricia	AdmRecSys	Proj Mgr	12
Stone, David	AdmRecSys	Test	10
Kwong, Albert	CntrAdmin	Design	17
Donovan, Tim	ProtoSys	Debug	30
Miller, Stephanie	GenLedger	Design	15
Ruggles, Robert	GenLedger	Implement	37
Miller, Stephanie	GenLedger	Test	35
Ruggles, Robert	GenLedger	Test	35

name	title	hourly_rat manager
Brock, Eddie	Programmer	55.00 Donovan, Tim
Donovan, Tim	Sr. Programmer	40.00 Stone, David
Evans, Don	Analysts	22.50 Stone, David
Gallagher, Cathy	Consultant	50.00 Stone, David
Garcia, William	Programmer	30.00 Donovan, Tim
Kwong, Albert	Programmer	24.00 Donovan, Tim
Miles, Patricia	Project Manager	50.00
Miller, Stephanie	Programmer	35.00 Donovan, Tim
Ruggles, Robert	Systems Analyst	35.00 Stone, David
Spector, Dennis	Sr. Programmer	22.00 Stone, David
Stone, David	Project Manager	50.00 Miles, Patricia

In the "tasks" table, each column contains a certain kind of information, such as people's names, project IDs or number of hours worked. Each row in the table is a record of one person's work on a specific task. Thus, in the "tasks" table, a row contains the name of the person performing the task, the ID for the project that task is part of, the task name, and the number of hours that person spent on the task.

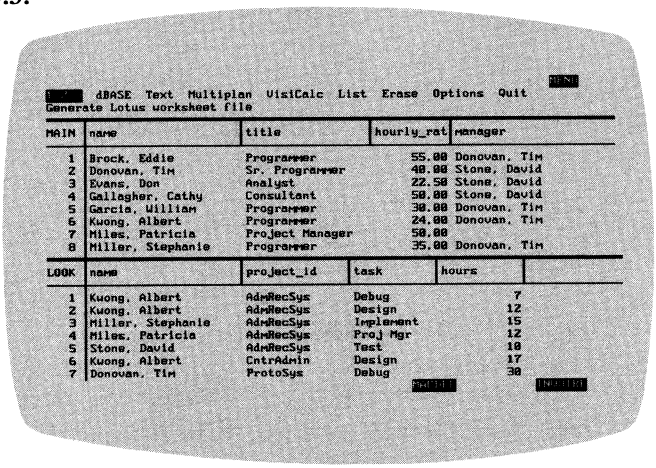
In the "staff" table, there are columns for people's names, their titles, number of hours worked and hourly rates. Thus, in the "staff" table, a row contains the employee's name, his or her title, how much that employee costs the company per hour and the name of his or her manager.

The Main Window and the Lookup Window

In the next illustration, you see the screen divided into two independent sections, each with its own columns and rows. These two sections are called windows; each window enables you to "look into" a database table. The top window is called the Main Window, because you use it for most of your VQL operations. It displays the results of your current inquiry.

The bottom window is called the Lookup Window, because you use it to look up secondary information in another database table. The Lookup Window only appears on your screen when you tell PC Link to display it. With two windows, you can merge information from two tables into one screen display (without affecting the original tables in the Host database).

Figure 4.5.



Retrieving Information from the Host

To get information from an INGRES database table to your personal computer, you perform an inquiry. In an inquiry, you tell PC Link what information you want to examine. The essence of the VQL capability is that you can specify exactly what information you want to see from your company's database, and PC Link brings to your personal computer just the information you need.

To perform an inquiry, you tell your company's Host computer what rows and columns you want to examine from a specified INGRES database. This instruction to PC Link is called a row selection criterion.

While you are performing an inquiry and requesting PC Link to get information from your company's database, your display screen keeps you updated on the inquiry process. Depending on what activity is taking place, the window at the top right-hand corner of your screen displays words such as SENDING, WAITING or RECEIVING. This mode indicator tells you what is going on while PC Link is getting the information you need from the database.

Exercise 1: Starting to Use VQL

You start to use the Visual-Query-Language by telling PC Link what database and table you want to examine. Follow these steps to begin using VQL:

1. The VQL lesson begins with the PC Link Access Menu. If you have not already started PC Link, refer to Lesson 1 and start PC Link before you begin this exercise.
2. On the PC Link Access Menu, select the **V**isual-Query-Language option. Remember that you can select a menu option in one of two ways: by typing the first letter of the option or by moving the cursor to that option and pressing **Enter.**
3. PC Link loads the Visual-Query-Language program and begins to establish communications with the Host computer, using a procedure that depends on the session initiation and communications method defined in your configuration file and executed in Lesson 1. Several messages appear at the bottom left and top right of the screen, so you can monitor the progress of your connection.
4. After PC Link connects successfully to the Host computer, the following VQL menu appears at the top of your screen. If a different menu appears, press **Esc** to see this one:

   ```
   Browse Column Window Inquiry Table Database
   Output Quit
   ```

5. To select a database to examine, choose **D**atabase either by moving the cursor and pressing **Enter** or by typing **D.**

6. The menu for the Database option replaces the VQL menu, like this:

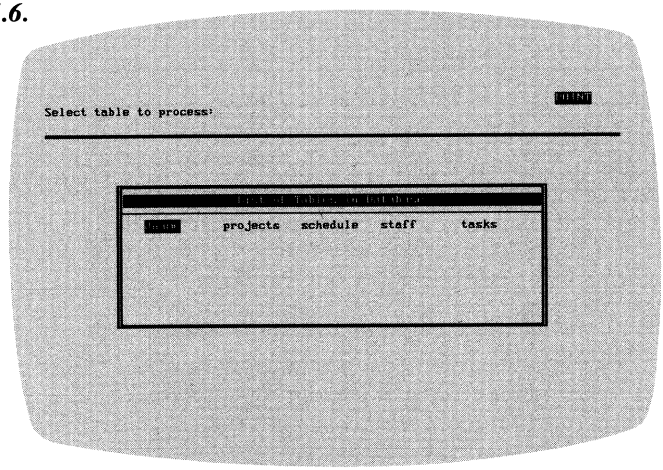
```
Select Name List Host
```

7. Now select **N**ame.

8. PC Link displays the current database. If the database name is "pclink," press **Esc** and go to Step 9. If the database name is not "pclink," type **pclink** over the name displayed and then press **Enter**.

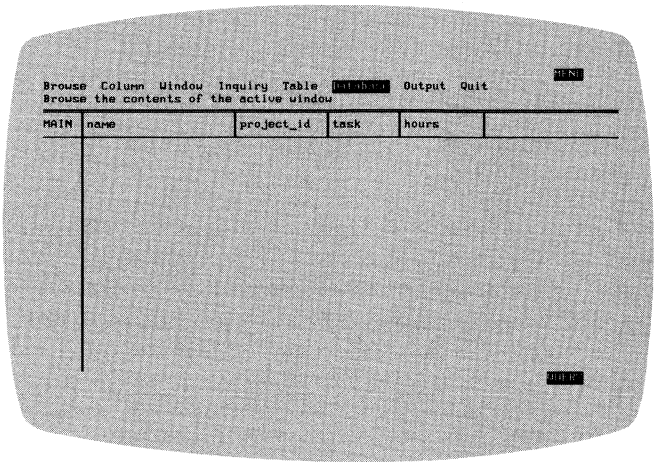
9. After you select the "pclink" database, PC Link displays the names of the tables in that database, as shown in the screen below. Note that your screen may not look exactly like this, because this project management database is a real database that is updated and maintained. However, the tables used in this lesson should be displayed on your screen.

Figure 4.6.



10. PC Link prompts you to select the table you want to examine. Begin by looking at the "tasks" table, so that you can learn about what kinds of activities the project management database monitors. Select "tasks" either by moving the cursor to the "tasks" entry or by typing the table name, **tasks**. Then press **Enter**. PC Link displays the column headings for the table, as shown below.

Figure 4.7.



11. The leftmost column heading, labeled "MAIN," tells you that you are looking at the Main Window. When you selected the "tasks" table, PC Link collected the column headings from INGRES, but not the data itself. Instead, PC Link is waiting to select data from the PC Link database until you have specified exactly what data you want. This way, you do not need to transfer a whole table of data to your personal computer, but only the information you need.

Exercise 2: Performing an Inquiry and Browsing Through the Results

If you perform an inquiry for data immediately after selecting a table, without specifying any restrictions for the inquiry, PC Link will retrieve all the data in the table. But you usually do not want to see all the data in a table (especially a large table).

However, the "tasks" table in the "pclink" database is a small table, with only four columns and a limited number of rows. An inquiry for all the data in the table will not take much time. Later in this lesson, you will learn how to retrieve selected data, using techniques that will be useful when you need data from very large tables)

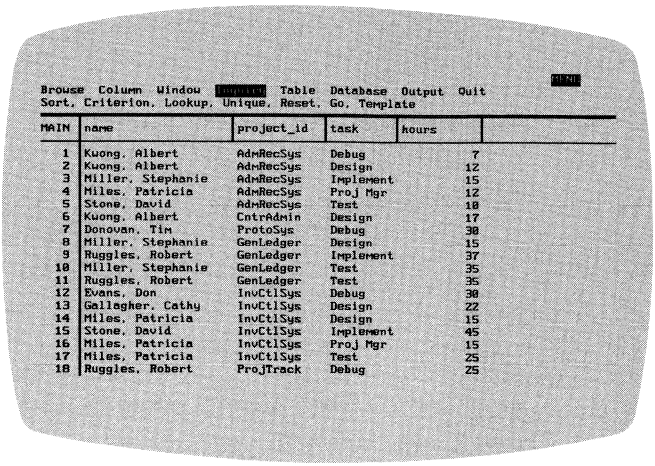
To perform an inquiry, follow these steps:

1. From the menu displayed on the screen, select **I**nquiry. PC Link displays the Inquiry Menu.
2. From this Inquiry Menu, select **G**o. The top right-hand window on your screen shows SENDING when PC Link is sending your request to the Host computer, WAITING while the Host computer locates the requested data and then RECEIVING while PC Link receives the data from the Host computer.
3. The first information displayed is the number of table records satisfying the inquiry specifications, shown in a message at the bottom of the screen:

   ```
   33 row(s) satisfied query
   ```

   In this case, because you did not specify restrictions for the inquiry, the number shown is the total number of rows in the table.
4. PC Link then displays the results of your inquiry. Your screen now displays data from the "tasks" table in the project management database, eighteen rows at a time (see below). At this point, you can browse through this data, just as if you were moving around a spreadsheet. The leftmost column on your screen contains reference numbers to make it easier to browse through the information PC Link has retrieved.

Figure 4.8.



5. To browse through the data on the screen, select **Browse**. The cursor appears in the column heading of the first data column, labeled "name." While you are browsing, a line at the top of the screen tells you where the data came from.

6. Use the ← and → keys to move the cursor from one column heading to another. If the table you are browsing through has more columns than fit on your screen, moving the cursor to the right displays the additional columns. (All the columns in the "tasks" table fit on one screen.) PC Link beeps if you try to move beyond the leftmost or rightmost column.

7. Use the ↑ and ↓ keys to scroll the rows of data in the window. PC Link beeps if you press ↓ to move down past the last row in the table, or ↑ to move up above the first row.

8. You can use other cursor keys to move more quickly through the data. Press **Home** to redisplay the first page of data (the first eighteen rows). Press **PgDn** for the next page of data (the next eighteen rows) and press **PgUp** for the previous page. Other keys help you move easily around tables larger than the "tasks" table. For complete descriptions of these keys, see Chapter 5.

9. To stop browsing and redisplay the previous menu, press **Enter**. Whatever columns and rows were in the window before you pressed **Enter** remain in the window.

Exercise 3: Looking Up Related Data

Each row in the "tasks" table describes one person's work on a task in the project management database. A row contains the task name, the ID for the project that task is part of, the name of the person performing the task, and the number of hours that person spent on the task.

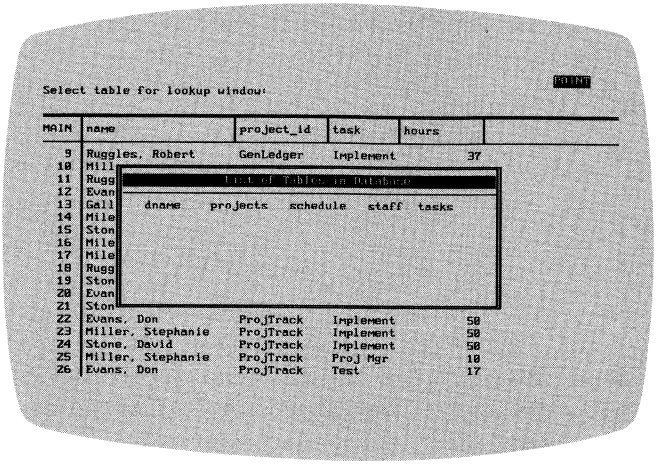
Suppose you want to know how much it cost your company to have someone perform a task. You can see that none of the columns in the "tasks" table refers to costs, so you will have to look at another table.

The PC Link Lookup option lets you get information from another table in the database to supplement the information already on the screen. In this exercise, you will use the Lookup option to add a column from another table that gives hourly rates. You can then examine the number of hours a person spends on a task in relation to the person's hourly rate.

If you want to learn what it costs to have each employee perform his or her job, you first need to find where in the project management database information is stored about the cost of people's time. If you had designed the database, you would know exactly where that information was stored, but in most organizations many people who are not the original designers of the database need database information. A reasonable place to look for information about the cost of people's time is in a table called "staff." Therefore, you would like to look at the "staff" table to see if it has the information you need. Follow these steps:

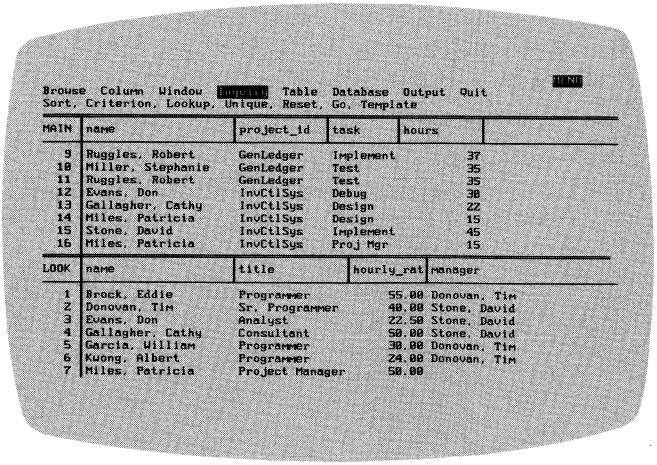
1. From the VQL Menu, select **W**indow. This option enables you to perform operations in the Lookup Window.
2. When the Window Menu appears, select **O**pen to open the Lookup Window. Your screen will look like this:

Figure 4.9.



3. PC Link prompts you to select the table you want to show in the Lookup Window. Select the "staff" table by typing **staff** or by using the cursor keys to move to "staff" in the list of tables. Then press **Enter**.
4. When the VQL Menu reappears, select **I**nquiry.
5. When the Inquiry Menu appears, select **G**o. Your screen will look like this:

Figure 4.10.

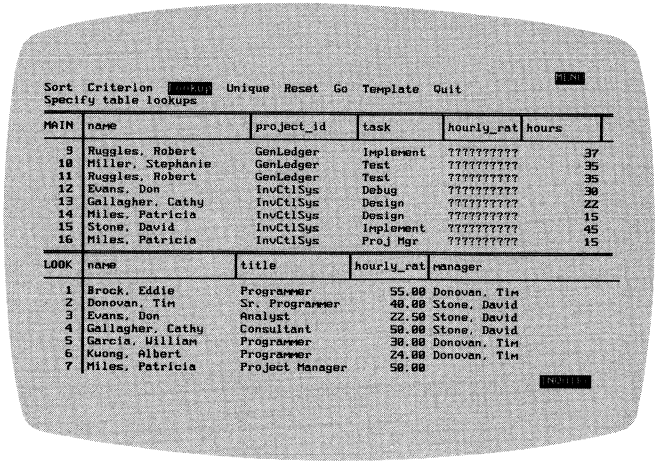


The Lookup Window now shows you what kinds of information are in the "staff" table. The leftmost column heading labeled "LOOK" identifies the Lookup Window.

6. Look at the different kinds of data displayed in the "staff" table. To find out cost information for the people in the "tasks" table, you first need to find these people's names in the "staff" table.
7. From the VQL menu, select **I**nquiry.
8. When the Inquiry Menu appears, select **L**ookup.
9. On the Lookup Menu, select **A**dd. You are going to add a column from the "staff" table in the Lookup Window to the view in the Main Window. When PC Link prompts you to select the column, select the columns from the Main Window and the Lookup Window that label the data you want to match.
10. Use the ← and → keys to move the cursor to the "name" column heading in the Main Window, then press **Enter** to select that column. Note that as you move from column to column, the top line of the screen displays the column name and the table the column is from.
11. Select the matching "name" column in the Lookup Window, using the same procedure.
12. PC Link then asks you to select the columns you want to retrieve from the lookup table (columns to look up). In this exercise, you want the hourly rates. Move the cursor to the "hourly_rate" column and press **Enter**. (When you select more than one column, separate your selections by pressing the **Space Bar**. End your selections by pressing **Enter**.)
13. The cursor moves back to the Main Window, and PC Link prompts you to select the location for the "hourly_rate" column. PC Link will place the new column to the left of the column you select.

14. Move the cursor to the "hours" column and press **Enter**. PC Link inserts the "hourly_rate" column to the left of the "hours" column in the Main Window. Your screen now looks like the one below

Figure 4.11.



Sort Criterion LOOKUP Unique Reset Go Template Quit MENU
Specify table lookups

MAIN	name	project_id	task	hourly_rat	hours
9	Ruggles, Robert	GenLedger	Implement	??????????	37
10	Miller, Stephanie	GenLedger	Test	??????????	35
11	Ruggles, Robert	GenLedger	Test	??????????	35
12	Evans, Don	InvCtlSys	Debug	??????????	30
13	Gallagher, Cathy	InvCtlSys	Design	??????????	22
14	Miles, Patricia	InvCtlSys	Design	??????????	15
15	Stone, David	InvCtlSys	Implement	??????????	45
16	Miles, Patricia	InvCtlSys	Proj Mgr	??????????	15

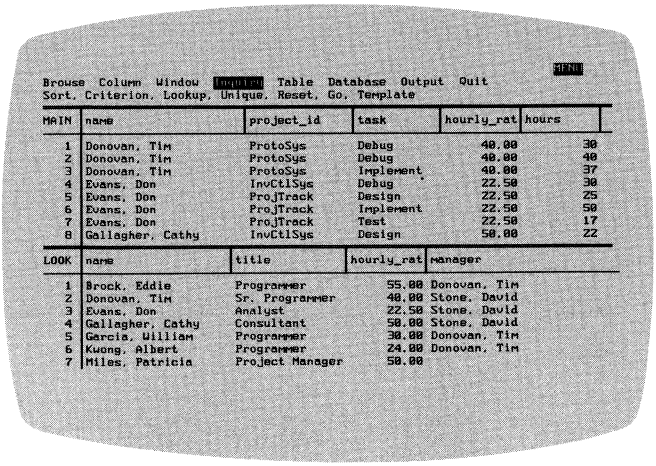
LOOK	name	title	hourly_rat	manager
1	Brock, Eddie	Programmer	55.00	Donovan, Tim
2	Donovan, Tim	Sr. Programmer	40.00	Stone, David
3	Evans, Don	Analyst	22.50	Stone, David
4	Gallagher, Cathy	Consultant	50.00	Stone, David
5	Garcia, William	Programmer	30.00	Donovan, Tim
6	Kuong, Albert	Programmer	24.00	Donovan, Tim
7	Miles, Patricia	Project Manager	50.00	

MORE

The question marks indicate that you have moved the "hourly_rate" column heading to the Main Window, but that PC Link has not yet placed the corresponding data into your view in the Main Window. For PC Link actually to look up the hourly rate information for each job, you must perform a database inquiry.

15. Select **Go**. Now you can see hourly rate figures in the "hourly_rate" column in the Main Window (see next page).

Figure 4.12.

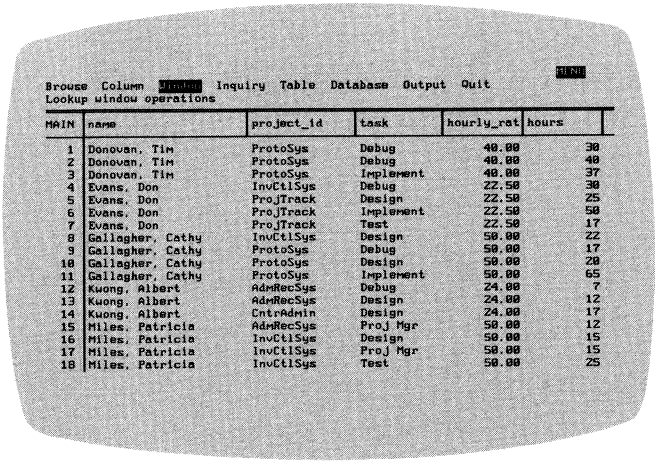


16. To remove the Lookup Window from the screen so you can see more rows in the Main Window, first go back to the VQL Menu by pressing **Esc**.

17. From the VQL Menu, select **W**indow.

18. From the Window Menu, select Close. This option closes the Lookup Window and displays additional rows in the Main Window, as shown in the illustration below.

Figure 4.13.



Exercise 4: Creating a Reusable Template

Most information stored in company databases is information you want to review regularly, not just once. For example, with the project management database, project managers might want to review the weekly time investments of the staff members belonging to their project teams. Financial managers might need to see costs expended since the previous time they reviewed the database. Department managers might want to review regularly the activities completed by members of their department.

Exercises 5 through 8 in this lesson describe many different ways of performing inquiries and looking at information in the project management database. As you develop these inquiry specifications, you will want a simple way to repeat the steps you take to perform an inquiry.

PC Link lets you save an inquiry and reissue it some other time, avoiding the work of reentering all the instructions and inquiry specifications. A saved inquiry specification is called a template. You save the template in a disk file on your personal computer, and can easily retrieve it whenever you need it.

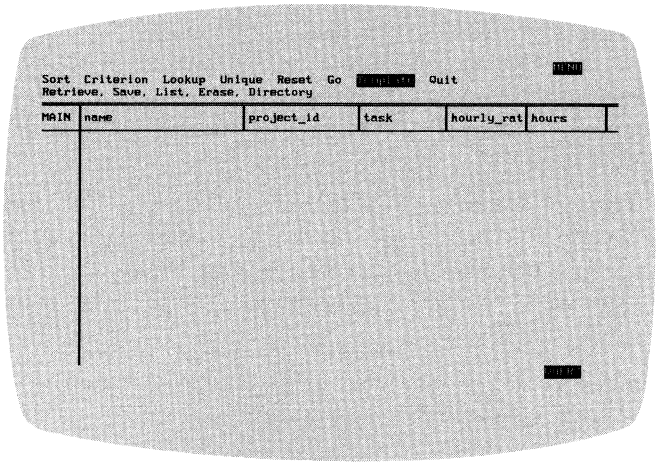
In this exercise, you will learn how to make a template of the inquiry results from Exercise 3, before you learn how to perform more complex inquiries. This way, if you have any problems while doing Exercises 5 through 8, you can simply retrieve the template instead of repeating Exercises 1, 2 and 3.

To make a template of the inquiry specification you created in Exercises 1, 2, and 3, follow this procedure:

1. From the VQL Menu, select **I**nquiry.
2. From the Inquiry Menu, select **T**emplate.
3. From the Template Menu, select **S**ave. You want to save the inquiry specification in a template file.
4. For this lesson, name the file WEEKREP. Type **weekrep** and press **Enter**. You will use this file in later lessons. PC Link automatically appends the file name extension .TPL (for "template") to the file name you specify before storing it on disk. If someone has done the tutorial on your PC, you will be prompted either to replace the WEEKREP template or to cancel your request. Select **R**eplace.

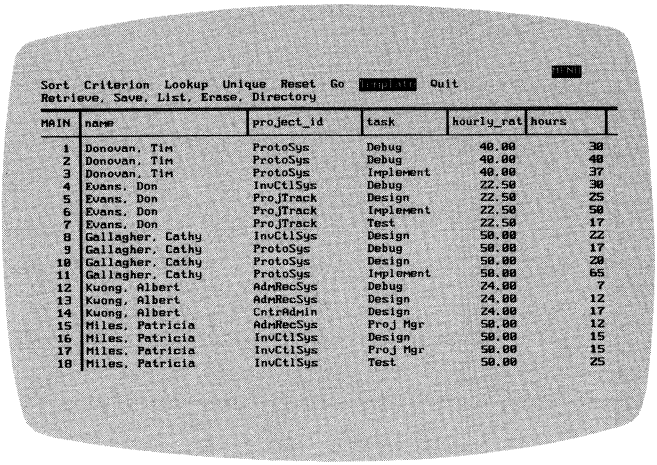
5. Press **Esc** to reach the VQL Menu.
6. From the VQL Menu, select **I**nquiry.
7. From the Inquiry Menu, select **T**emplate.
8. From the Template Menu, select **R**etrieve.
9. From the Retrieve Menu, use the cursor keys to move to WEEKREP in the list of template file names, or type **weekrep** and press **Enter**.
10. Type **Y** to confirm that you want to retrieve the template. After you confirm the retrieval, PC Link replaces any existing inquiry specifications with the one in the template. You will see the template column headings on your display screen.

Figure 4.14.



11. Perform another inquiry by selecting Go from the Inquiry Menu. You will now see the same information your screen displayed before you saved the template.

Figure 4.15.



Sort Criterion Lookup Unique Reset Go Template Quit
Retrieve, Save, List, Erase, Directory

MAIN	name	project_id	task	hourly_rat	hours
1	Donovan, Tim	ProtoSys	Debug	40.00	30
2	Donovan, Tim	ProtoSys	Debug	40.00	40
3	Donovan, Tim	ProtoSys	Implement	40.00	37
4	Evans, Don	InvCtlSys	Debug	22.50	30
5	Evans, Don	ProjTrack	Design	22.50	25
6	Evans, Don	ProjTrack	Implement	22.50	50
7	Evans, Don	ProjTrack	Test	22.50	17
8	Gallagher, Cathy	InvCtlSys	Design	50.00	22
9	Gallagher, Cathy	ProtoSys	Debug	50.00	17
10	Gallagher, Cathy	ProtoSys	Design	50.00	20
11	Gallagher, Cathy	ProtoSys	Implement	50.00	65
12	Kuong, Albert	AdmRecSys	Debug	24.00	7
13	Kuong, Albert	AdmRecSys	Design	24.00	12
14	Kuong, Albert	CntrAdmin	Design	24.00	17
15	Miles, Patricia	AdmRecSys	Proj Mgr	50.00	12
16	Miles, Patricia	InvCtlSys	Design	50.00	15
17	Miles, Patricia	InvCtlSys	Proj Mgr	50.00	15
18	Miles, Patricia	InvCtlSys	Test	50.00	25

Exercise 5: Selecting Database Rows

The inquiries you performed so far in this lesson retrieved all the rows in the "task" and "staff" tables in the PC Link project management database. This approach worked, because the database is small.

In most databases that real organizations maintain, an entire table is usually much more information than you need. One of the major benefits of PC Link is that it allows you to select just the information you need from your organization's databases. You do not have to deal with unwieldy masses of unnecessary data.

In this exercise, you will learn how to obtain the specific information you want by retrieving rows selectively from the PC Link database. For example, suppose you want to look at only those data rows where a staff member performed his or her task for more than thirty-five hours.

1. First, review the information you now have from the project management database, either by selecting **I**nquiry from the VQL Menu and **G**o from the Inquiry Menu, or by the simple method of pressing **F9** (Inquire). You can use **F9** (Inquire) any time you want to perform an inquiry while using the Visual-Query-L (If you just retrieved your template in Exercise 4, your screen display will not change).

2. To select specific rows from a database, you include row selection criteria as part of your inquiry.

3. From the VQL Menu, select **I**nquiry.

4. From the Inquiry Menu, select **C**riterion.

5. From the Criterion Menu, select **A**dd. You want to add a row selection criterion to the inquiry specification.

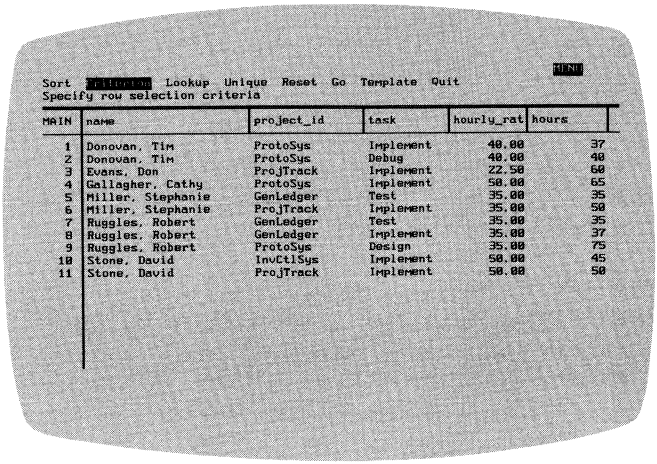
6. At this point, PC Link prompts you to select a criterion column where you want to specify values to retrieve. Use the cursor keys to move the cursor to the "hours" column and press **Enter**.

7. PC Link then displays a menu of comparison operators at the top of the screen. From this menu, select >= (called "is GREATER THAN or EQUAL to" on the menu). Move the cursor to >= and press **Enter**.

8. Now tell PC Link what the value in a retrieved row should be. Type **35** in response to the prompt "Compare the column to what:" and press **Enter**.

9. Press **F9** (Inquire) to perform the inquiry. Your screen displays all the rows which have an hours value greater than or equal to thirty-five, as shown below.

Figure 4.16.



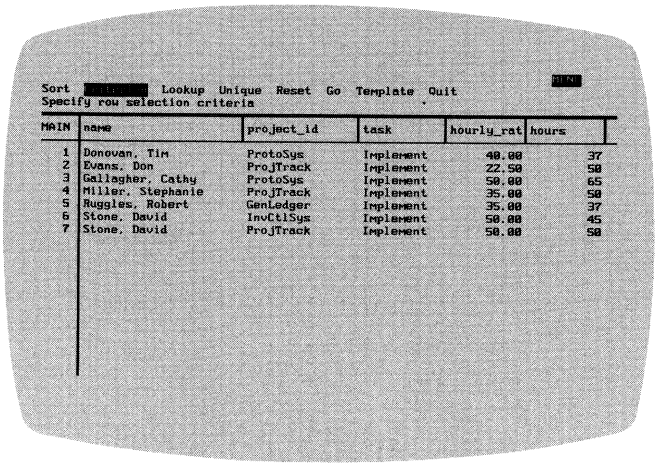
MAIN	name	project_id	task	hourly_rat	hours
1	Donovan, Tim	ProtoSys	Implement	40.00	37
2	Donovan, Tim	ProtoSys	Debug	40.00	40
3	Evans, Don	ProjTrack	Implement	22.50	60
4	Gallagher, Cathy	ProtoSys	Implement	50.00	65
5	Miller, Stephanie	GenLedger	Test	35.00	35
6	Miller, Stephanie	ProjTrack	Implement	35.00	50
7	Ruggles, Robert	GenLedger	Test	35.00	35
8	Ruggles, Robert	GenLedger	Implement	35.00	37
9	Ruggles, Robert	ProtoSys	Design	35.00	75
10	Stone, David	InvCtlSys	Implement	50.00	45
11	Stone, David	ProjTrack	Implement	50.00	50

Suppose that from the data rows you have selected, you now only want to review the time investments the staff made on implementation activities. Perhaps you have certain staff members who can implement already-designed projects, but cannot design or debug them, and you want to check how much time the junior staff members invested.

1. From the Inquiry Menu displayed, select **C**riterion.
2. From the Criterion Menu, select **A**dd. PC Link begins prompting you for row selection criteria.
3. Select the "task" column by moving the cursor to the "task" column and pressing **Enter**.
4. From the menu at the top of the screen, select = (called "is EQUAL to" on the menu line).
5. Now tell PC Link what to compare the column value to. That is, specify what the value in a retrieved row should be. Type **Implement** in response to the prompt "Compare the column to what:" and press **Enter**. The Criterion Menu returns to the screen.

6. Press **F9** (Inquire) and see what rows meet this criterion. Your screen display should look like the one below.

Figure 4.17.

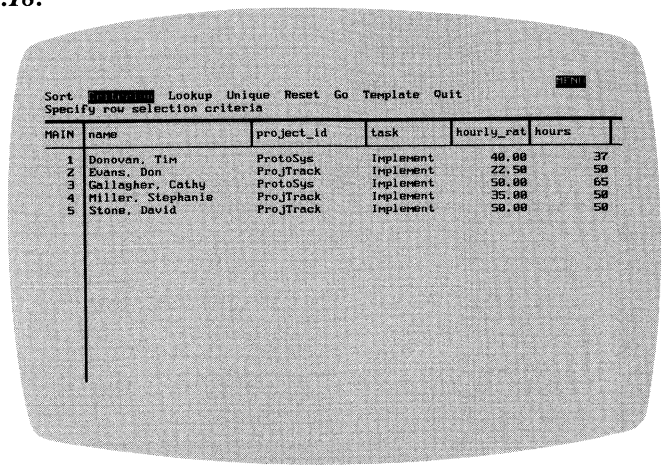


Suppose you are only interested in the staff members and the time investments made for two specific projects: "ProtoSys" and "ProjTrack." Because both of these project names begin with "P," there is an easy way of selecting this information.

1. From the Inquiry Menu, select **C**riterion.
2. From the Criterion Menu, select **A**dd.
3. PC Link prompts you to select a column where you want to specify values to retrieve. Use the cursor keys to move the cursor to the "project_id" column, and press **Enter**.
4. From the menu at the top of the screen, select =.
5. In response to the prompt "Compare the column to what:," type **P*** and press **Enter**. The asterisk tells PC Link to select all values (project names) beginning with a "P."

6. Press **F9** (Inquire) to display the rows that meet the inquiry specification. Your screen should look like this:

Figure 4.18.

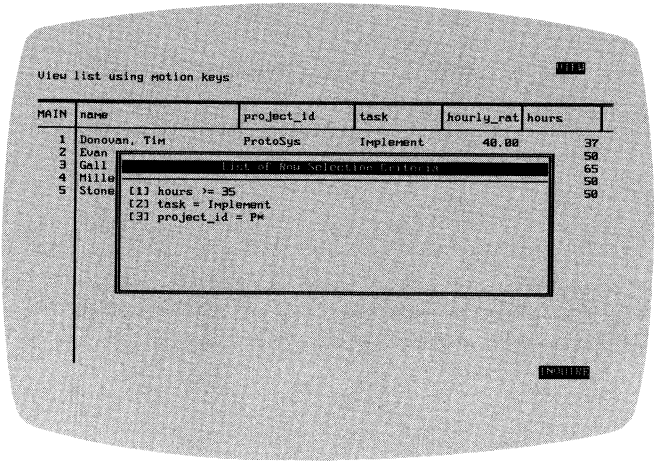


To review the specifications you made to select the results now displayed, look at the list of criteria in effect, using the following procedures:

1. From the Inquiry Menu displayed, select Criterion.

2. From the Criterion Menu, select **L**ist. Your screen displays the criteria you used, as shown below.

Figure 4.19.



3. Note that the rows PC Link retrieved from the project management database meet all of these criteria. That is, these row-selection criteria are all implicitly *and*-ed together. For PC Link to select and display a row, that row had to meet all three criteria shown.

4. Press **Esc** twice to return to the Inquiry Menu.

Suppose you are also interested in which people on your staff spent time performing debugging and how much time they spent. Therefore, you would like to add the rows containing debugging tasks to the rows selected from the database.

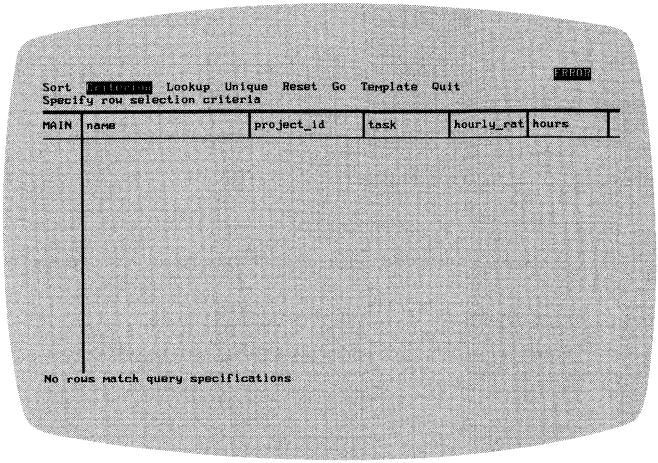
1. From the Inquiry Menu displayed, select **C**riterion.

2. From the Criterion Menu, select **A**dd.

3. Using the same procedure as described above, select the "task" column, = and then type **Debug**.

4. Press **F9** (Inquire) to retrieve the selected rows from the project management database. Your screen displays the message "No rows match query specifications" and "ERROR" appears in the mode indicator.

Figure 4.20.



No rows are displayed, because earlier in the row-selection process you told PC Link to select only those rows whose task was "Implement." Therefore, there are no rows with the task equal to "Debug," because you already selected them out. To find out about debugging, you do not want to add a criterion. Instead you want to tell PC Link to choose rows which satisfy either one criterion or another.

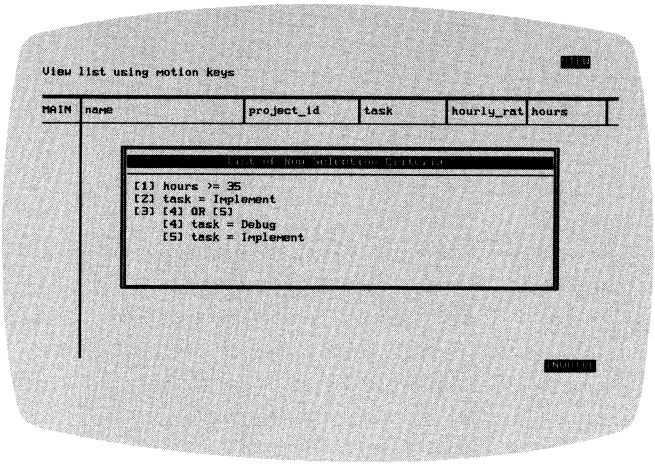
5. Press **Enter** to remove the message saying there are no rows selected.
6. From the Inquiry Menu displayed, select **C**riterion.
7. From the Criterion Menu, select **C**ombine.
8. From the Combine Menu, select the **OR** option. PC Link displays a list of the row selection criteria you have added in this exercise. Use this list to specify which criteria you want to combine.
9. Use the ↓ key to move the cursor to the item containing "task = Debug." To select this criterion, press **Space Bar** (not **Enter**). The bottom-right corner of the screen displays a SELECTED message.

10. Move up to the item containing "task = Implement" and press the space bar again. You have now specified both criteria you want to combine. Press **Enter** to complete your selection.

11. Now you want to look at the list of row selection criteria to see how your specification has changed. From the Inquiry Menu displayed, select **C**riterion.

12. From the Criterion menu, select **L**ist. Your screen should look like this:

Figure 4.21.

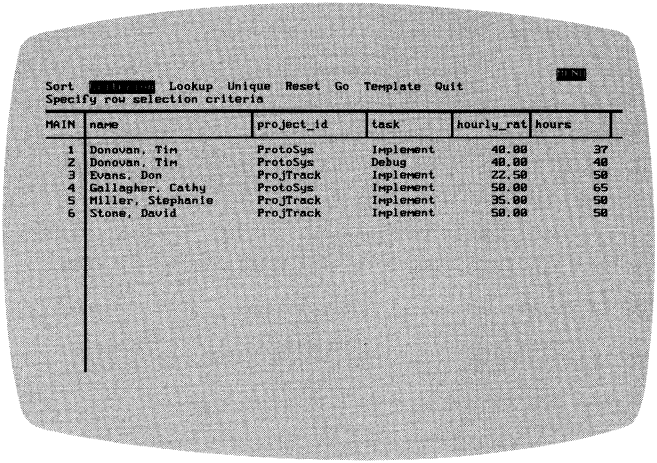


Note that the criteria list now gives you a new display of the criteria, where one of them shows an "or" relationship.

13. Press **Enter** to return to the previous display.

14. Press **F9** (Inquire) to retrieve the rows specified in the criteria list. Your screen should look like the one below.

Figure 4.22.



Other Row Selection Criteria

PC Link allows you to be very flexible in creating row selection criteria for your inquiry specifications. In addition to adding and combining criteria, you can drop one or more criteria from the specification, or reset the specification to retrieve all rows from the database table.

A special criterion option, Negate, enables you to reverse the meaning of a criterion. For example, if you negate "project_id = ProtoSys," PC Link changes the criterion to "project_id NOT = ProtoSys," and retrieves all rows where the "project_id" column does not contain "ProtoSys." Another, Unique, allows you to eliminate duplicate rows.

These and other inquiry specifications are described in Chapter 12.

Exercise 6: Reformatting Your Data

The designer of an INGRES database organizes the rows and columns of that database to suit specific information management needs. You may prefer to see the information you select in a different organization or format.

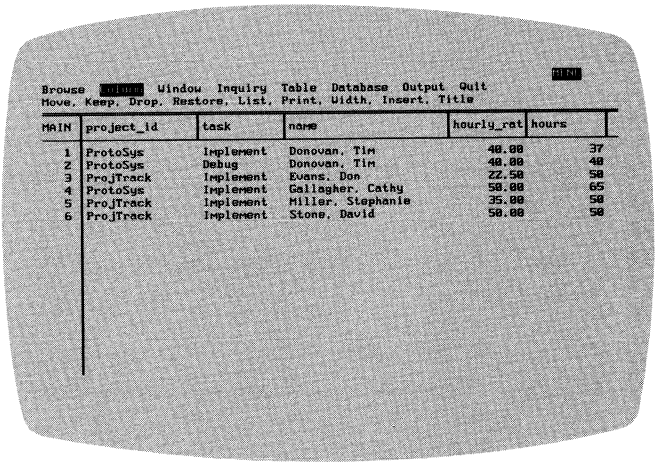
For example, in the project management database used in this lesson, suppose that for each row of data, you would like to see the project name first, then the name of the staff member, and then the hours spent. You can tell PC Link to retrieve only the columns you want to see, in whatever order you want. Selecting columns is especially useful when you are working with a large table with many columns and you only need the information in a few of these columns.

To reformat your data:

1. Press **Esc** to return to the Visual-Query-Language Menu.
2. From the VQL Menu, select **C**olumn.
3. From the Column Menu, select **M**ove.
4. Use the ← and → keys to move the cursor to the "project_id" column. Press the **Space Bar.**
5. Use the ← and → keys to move the cursor to the "task" column, then press the **Space Bar**.
6. Press **Enter** to tell PC Link that you have finished selecting columns to move.

7. PC Link asks where to insert the moved columns. Move the cursor to the "Name" column and press **Enter.** The columns you selected for moving appear to the left of the column you just specified, as shown below:

Figure 4.23.

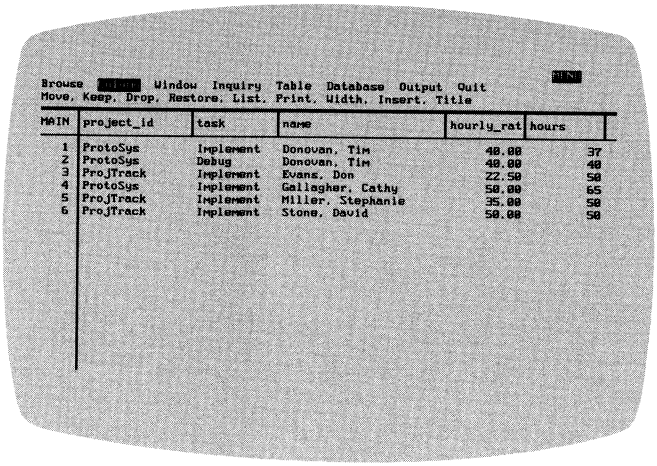


You can also change column widths to display your data more usefully. For example, the "hourly_rate" column is not wide enough to display its entire title. To change the width of this column, you must first make it the active column, because PC Link changes the width of whatever column is active at the time. PC Link indicates the active column by displaying the column heading in highlighted letters on the screen.

1. To make the "hourly_rate" column the active column, first press **F4** (Browse). This key lets you browse through the screen without going back to select **B**rowse from a menu.
2. After the cursor appears in the column headings, use the cursor keys to move to the "hourly_rate" column, and then press **Enter** to stop browsing.
3. When the VQL Menu reappears, select **C**olumn.
4. From the Column Menu, select **W**idth.
5. From the Width Menu, select **S**et to set a new column width.

6. PC Link displays the current width of the "hourly_rate" column, 10, and blinks the cursor at its first digit. Change the width by pressing → once and then pressing **Enter**.
7. The "hourly_rate" column is now eleven characters wide; note that you have made it wide enough to contain the column heading, as shown below.

Figure 4.24.

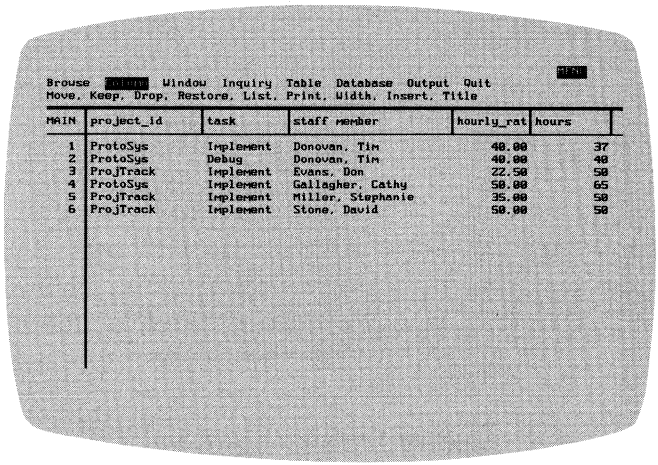


You may want to give some of the information in the project management database a more descriptive title. PC Link lets you change the column headings on information you retrieve from an INGRES database. For example, in the project management database, suppose you want to change the heading of the "name" column to read "staff member." Follow this procedure:

1. Press **Esc** to return to the VQL Menu.
2. From the VQL Menu, select **C**olumn.
3. From the Column Menu, select **T**itle.
4. PC Link displays a Set/Reset Menu, with the cursor on "Set." Press **F4** (Browse) to browse through the columns in the Main Window.
5. Use the cursor keys to move to the "name" column, and then press **Enter** to stop browsing.
6. Select **S**et.

7. PC Link prompts you to enter a new title for the column. The existing column title is displayed with the blinking cursor on its first letter. Type **staff member** and press **Enter**.
8. PC Link displays the new title over the appropriate column and returns to the VQL menu.

Figure 4.25.



Exercise 7: Sorting Inquiry Results

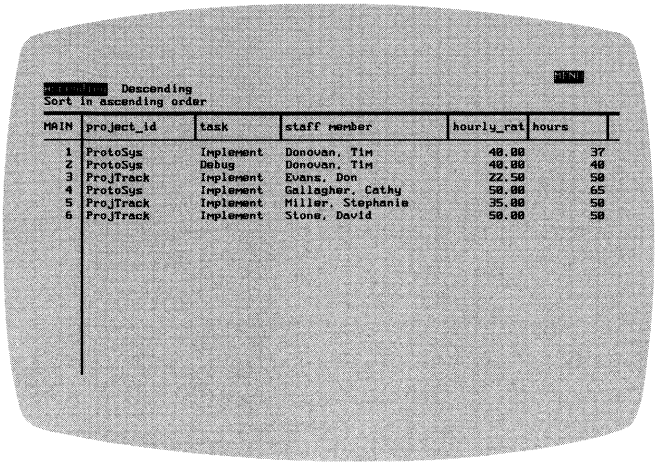
PC Link displayed the rows of inquiry results you retrieved during this lesson in the order they exist in the "tasks" table. You can rearrange these rows so they are easier to read and interpret, by sorting them either alphabetically or numerically.

In this exercise, you will first sort the rows in the "tasks" table in alphabetical order by project ID, and then in numerical order according to the hourly cost of the people engaged in the activity. To sort the rows you retrieve from the project management database, follow these steps:

1. From the VQL Menu, select **I**nquiry.
2. From the Inquiry Menu, select **S**ort.
3. From the Sort Menu, select **A**dd, because you want to add a sort instruction to your inquiry specification.

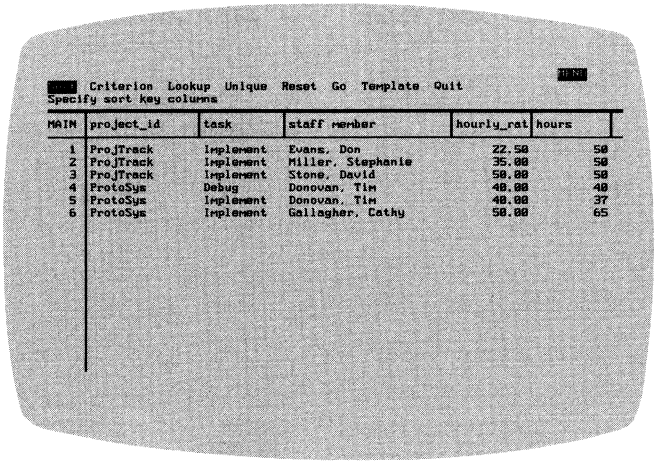
4. Using the ← and → keys, move the cursor to the "project_id" column, and press **Enter**. PC Link displays a Sort Menu, as shown below:

Figure 4.26.



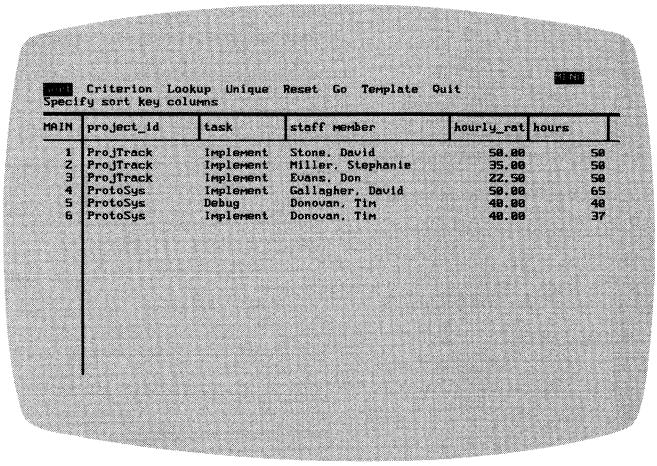
5. Because you also want to sort this information in alphabetical order, select **A**scending.
6. Press **F9** (Inquire) to see the sorted results, as shown below:

Figure 4.27.



7. Now you are ready to add the numerical sort. From the Inquiry Menu, select **S**ort.
8. From the Sort Menu, select **A**dd to add a second sort instruction to the inquiry specification.
9. Move the cursor to the "hourly_rate" column and press **Enter**.
10. PC Link prompts you to select a sorting order. Because you want the highest hourly rate to appear at the top, select **D**escending.
11. Press **F9** (Inquire) to update the inquiry result. The retrieved rows appear in sorted order, as shown below:

Figure 4.28.

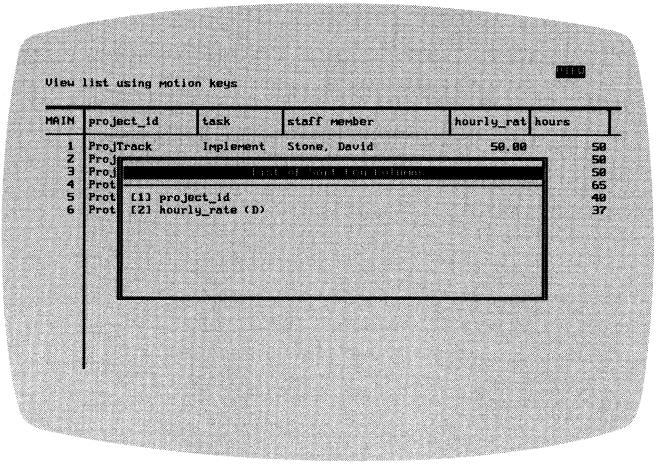


Within the project "ProjTrack" (the first project in alphabetical order), you see hourly rates "50.00," "35.00" and "22.50" in numerical order. Then, under project "ProtoSys," the highest hourly rate for that project is again listed first. To check the sorting order:

1. From the Inquiry Menu, select **S**ort.

2. From the **S**ort Menu, select **L**ist. PC Link displays your sort specification, as shown below:

Figure 4.29.



3. Return to the VQL menu by pressing **Esc** three times.

Exercise 8: Using Inquiry Results with Other Software

One of the most important benefits of PC Link is that you can use information from INGRES databases with personal productivity software such as Lotus 1-2-3. In this exercise, you will learn how to convert the table on a PC Link screen into a form Lotus 1-2-3 can read. PC Link also produces files for several other formats; see Chapter 14 for further information.

PC Link can create a file to be used by another personal computer program and put INGRES database information you have retrieved into the "native" form suitable for your PC productivity software. PC Link will put your data into the correct format for the specified productivity software, but it is your responsibility to load and use this formatted file with other software. To learn how to load files produced by PC Link into other software programs, see the user's manual for the appropriate software package, or consult a knowledgeable user of that software package.

To create an output file containing the information you retrieved from the project management database for use with Lotus 1-2-3, follow this procedure:

1. From the VQL Menu, select **O**utput.
2. From the Output Menu, select **1**-2-3.
3. In response to the "Enter output file name:" prompt, type **weekrep** and press **Enter**. PC Link creates a file called WEEKREP.WKS and then places the current inquiry result into the file, converting it to Lotus worksheet (WKS) format. This file will be on your PC disk as WEEKREP.WKS.

   (Note that if you had not updated your screen after adding your last sort, PC Link would display the INQUIRE message and issue an inquiry to the Host database automatically before placing the results in the output file on disk.)

   If a file called WEEKREP.WKS exists, you will be prompted to replace or cancel your request. Select **R**eplace.
4. After PC Link completes the file transfer, it asks you whether you wish to load your software program automatically. Select **N**o to continue using PC Link. PC Link returns to the VQL Menu.
5. To check that you actually created an output file for 1-2-3, select **O**utput from the VQL Menu.
6. From the Output Menu, select **L**ist.
7. From the List Menu, select **1**-2-3. Your display screen shows a list of your Lotus worksheet (WKS) files, and you can check that WEEKREP.WKS is on this list.
8. Press **Esc** three times to return to the VQL Menu.

Exercise 9: Leaving the Visual-Query-Language

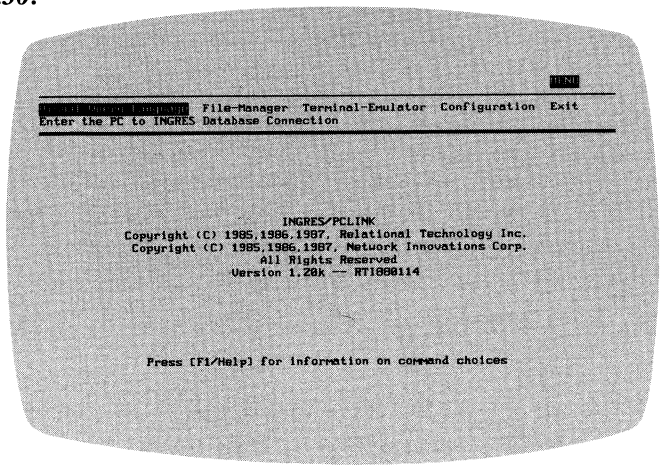
After you are finished reviewing information from the project management database, you can leave the Visual-Query-Language and return to the PC Link Access Menu. Note that you have learned two ways of saving your work before leaving VQL. You can save inquiry specifications using PC Link templates (as described in Exercise 4), and you can save the inquiry results for use with other productivity software (as described in Exercise 8).

To leave the Visual-Query-Language, follow these steps:

1. From the VQL Menu, select **Q**uit.
2. Confirm that you have saved your work and want to leave VQL by selecting **Y**es.

3. PC Link displays the Access Menu, as shown below:

Figure 4.30.



Moving Ahead

Now that you have completed the VQL lesson, you can move on to the next lesson. Lesson 3 shows you how to use the PC Link File-Manager.

If you would rather leave PC Link, go directly to Lesson 5, which shows you how to stop using PC Link and return to DOS.

Lesson 3: Using the File-Manager

This lesson shows how the INGRES/PCLINK File-Manager helps you transfer files between your PC and your company's Host computer. You will also see how to manage both your PC files and Host computer files from your personal computer, without ever having to use a Host computer terminal.

There are five exercises in the File-Manager lesson. The first exercise teaches you how to start the File-Manager, how to browse through one of your PC directories, and then how to view and copy a file. In Exercise 2, you will learn the procedures for sending a copy of the file you created in Lesson 2 to the Host computer.

Exercise 3 shows how to access DOS from the File-Manager, and then how to return to the File-Manager, and in Exercise 4 you will learn how to enter DOS or to access the PC Link Terminal-Emulator from the File-Manager. In Exercise 5, you will leave the File-Manager and return to the PC Link Access Menu.

You should set aside about twenty-five minutes to work through this lesson. Please do not start this lesson unless you have the time to complete it in one uninterrupted session.

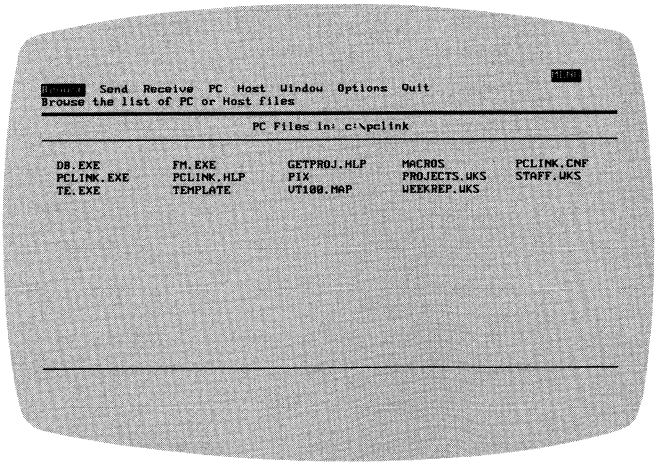
Exercise 1: Performing File Management Tasks

This exercise shows you how to start the File-Manager, how to browse through the files in one of your PC directories, and then how to view and copy one of your files.

If you took a break after Lesson 2, refer to Lesson 1 before you begin this exercise. You will have to turn on your PC and may need to reestablish your link to the Host if you connect manually.

1. Select File-Manager from the PC Link Access Menu.
2. PC Link displays the File-Manager Menu and a listing of your PC files in your working directory. The screen below shows an example; yours are probably different.

Figure 4.31.



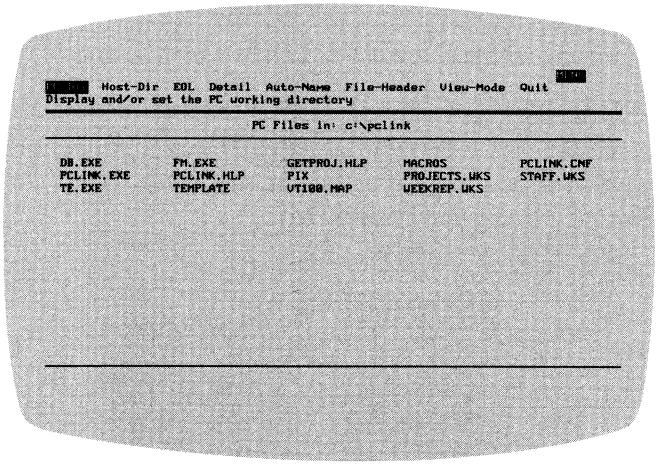
Changing Directories and Browsing Through a Directory

When you start the File-Manager, PC Link automatically displays the list of files in your PC working directory. PC Link displays this directory because it is listed in your current configuration as the default directory. You see this working directory each time you start the File-Manager.

This lesson shows you how to change your working directory to the directory that contains the template file you created in Lesson 2. To change directories and then browse through the file names in the new directory, follow these steps:

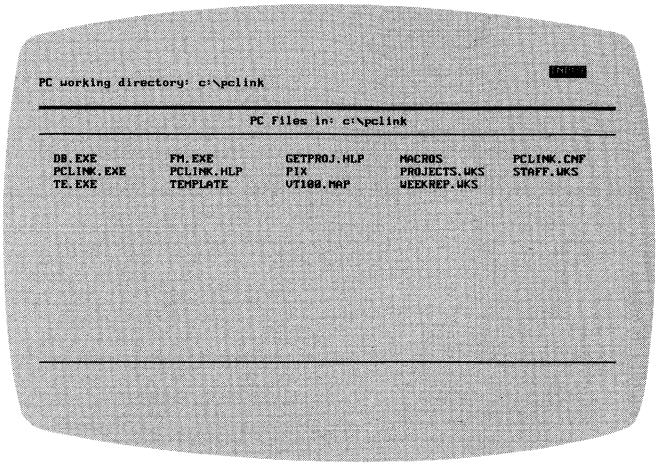
1. Select **O**ptions from the File-Manager Menu. PC Link displays the Options Menu:

Figure 4.32.



2. From the Options Menu, select **PC-Dir**. PC Link displays your working directory at the top of your screen, like this:

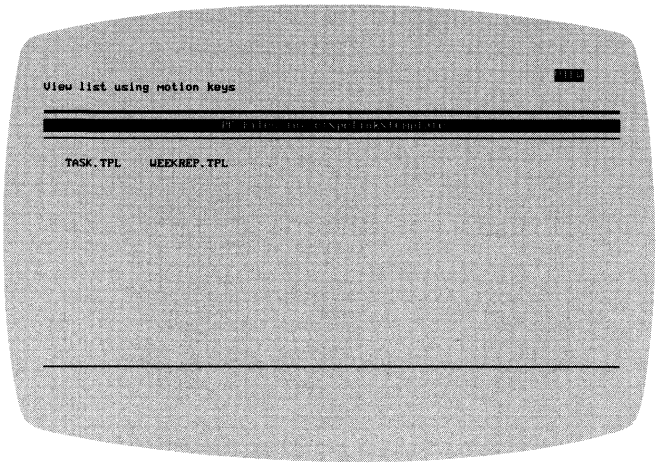
Figure 4.33.



3. To change this directory, press **F2** (Edit). When you press **F2** (Edit), notice that the box in the upper right-hand corner of your screen changes from INPUT to EDIT. Pressing **F2** (Edit) lets you type the name of the directory you want PC Link to display.
4. Press **Backspace** until you have erased the current directory name.
5. When PC Link was set up, you or the installer created a special directory for your PC Link templates. The default directory is **b:** on a dual-floppy diskette system and **c:\pclink\template** on a hard disk system. Type the name of this directory preceded by the correct drive designation next to the "PC working directory:" prompt and press **Enter**.
6. Press **Esc** to return to the File-Manager Menu.

7. To browse through the files listed in this directory, select **B**rowse or press **F4** (Browse). PC Link removes the File-Manager Menu and places your cursor in the column heading of the PC window. For example, your screen might look like this:

Figure 4.34.



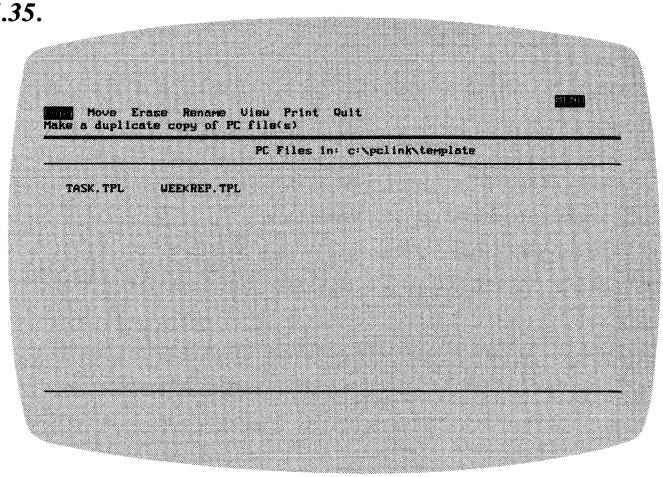
8. To browse through this PC directory, use the same cursor keys you used in Lesson 2 to browse through your inquiry results. (Note that if your directory has very few files, PC Link will beep when you try to browse through them. You can only browse through files if there are more files than will fit on one screen.) When you have finished browsing through the listing of PC file names, press **Esc** to return to the File-Manager Menu.

Viewing a File

To view the contents of the file you created in Lesson 2, WEEKREP.TPL, follow these steps:

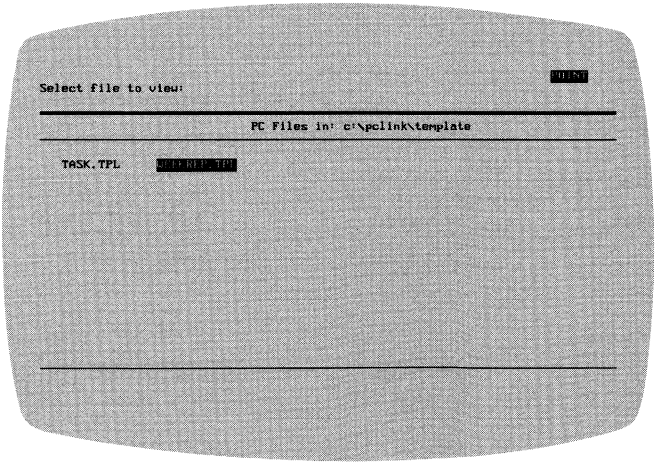
1. From the File-Manager Menu, select **PC**. PC Link displays the File-Manager PC Menu.

Figure 4.35.



2. Select **V**iew. PC Link places your cursor in the PC window so that you can specify which file you want to view, like this:

Figure 4.36.



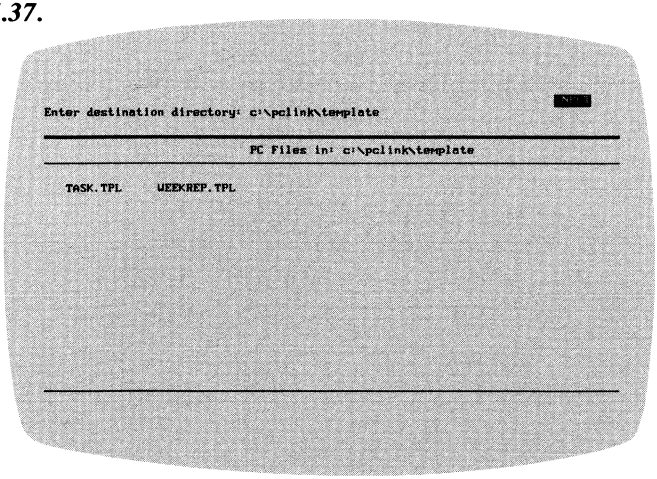
3. Use the cursor keys to highlight WEEKREP.TPL and then press **Enter**. After you press **Enter**, PC Link displays the file on your screen.
4. Use the cursor keys to scroll through the file.
5. To stop viewing the file, press **Enter**. PC Link displays the File-Manager PC Menu.

Copying a File

Follow these steps to make a copy of the file, WEEKREP.TPL.

1. From the File-Manager PC Menu, select **C**opy.
2. Move the cursor over the name of the file you want to copy, WEEKREP.TPL, and press the **Space Bar** to select the file for copying. (Note that you can also tell PC Link which file you want to copy by typing its name next to the "Select file(s) to copy:" prompt).
3. Press **Enter** to tell PC Link that you have finished selecting files to copy. PC Link displays the "Enter destination directory:" prompt along with your current PC working directory name.

Figure 4.37.



4. To have PC Link keep this file in your working directory, press **Enter**. PC Link then displays the "Enter destination file name:" prompt.

5. Now you are going to give this copy of the file a different name so that you can tell the two files apart. Press **F2** (Edit) to go into edit mode.
6. Use **Backspace** to erase the last three letters of the file name, **tpl**.
7. Type **bkp** for backup and press **Enter**. PC Link places this backup file in the current directory. If a file named WEEKREP.BKP exists, you will be prompted with a confirmation menu. Select **R**eplace. Look at the screen to make sure a file named WEEKREP.BKP is there.
8. Select **Q**uit to return to the File-Manager Menu so that you are ready to work through Exercise 2, which shows you how to send a file to the Host computer.

Other File Management Tasks

There are a number of other file management tasks you can perform, such as moving, erasing and renaming. All of these file management functions work the same way as the two tasks you just learned, copying and viewing. In addition, the same file management activities—copying, viewing, moving, erasing and renaming—can be performed on Host files. See Chapters 22 and 32 for more information covering the management of files on your PC and Host.

Exercise 2: Sending a File to the Host Computer

In this exercise, you will learn the step-by-step procedures for transferring a copy of one of your PC files to the Host computer. The file you will send is the backup file you just made in Exercise 1.

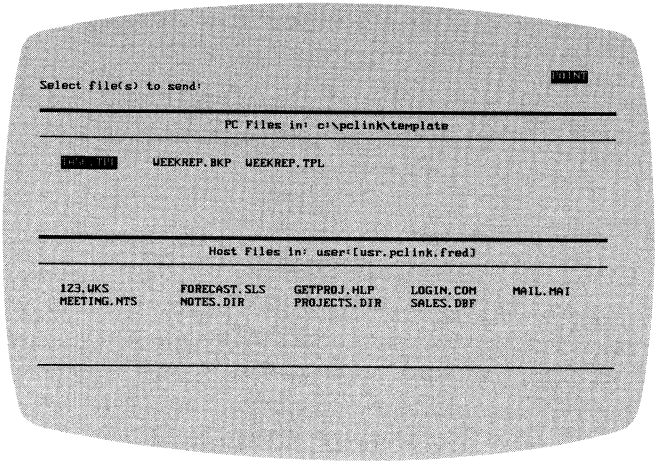
Sending the File to the Host

To send WEEKREP.BKP to the Host computer, follow these steps:

1. Select **S**end from the File-Manager Menu. If your PC is not already connected to the PC Link Host File-Manager, PC Link begins to make the Host connection. You will see various messages flash in the message line on your display screen. These messages tell you how the connection is proceeding. Remember to complete Lesson 1 if you have not proceeded directly from Lesson 2.

2. After PC Link has connected your PC to the Host computer, the cursor appears inside the top window, which displays your PC files, so that you can specify which file to send to the Host. In addition, PC Link displays your Host working directory inside the bottom window of your screen. Your screen will look something like this:

Figure 4.38.



3. Using your cursor keys, move through the listing of file names until WEEKREP.BKP is highlighted.

4. Press the **Space Bar** to tell PC Link that you are selecting this file to send to the Host computer. If desired, you could select additional files by moving the cursor and pressing **Space Bar**.

5. Press **Enter** to tell PC Link that you do not want to select any other files. After you press **Enter**, PC Link sends the file to the Host computer and then returns to the File-Manager Menu. If a file by the same name exists in your Host working directory, you will be prompted with a confirmation menu. Select **R**eplace.

Browsing Through the PC and Host Directories

To verify that PC Link sent the file to the Host computer, you can browse through your Host working directory, which is where the file should be.

Select **B**rowse from the File-Manager Menu or press **F4** (Browse). Then use **F6** (Window) to switch from the PC window temporarily to the Host window, so that you can browse through your current Host directory.

If you press **F6** (Window) a second time, PC Link goes back to the PC window. Go ahead and try using **F6** to see how PC Link "jumps" between the two windows, so you can browse through either listing. To get back to the File-Manager Menu, press **Enter**.

Receiving Files from the Host

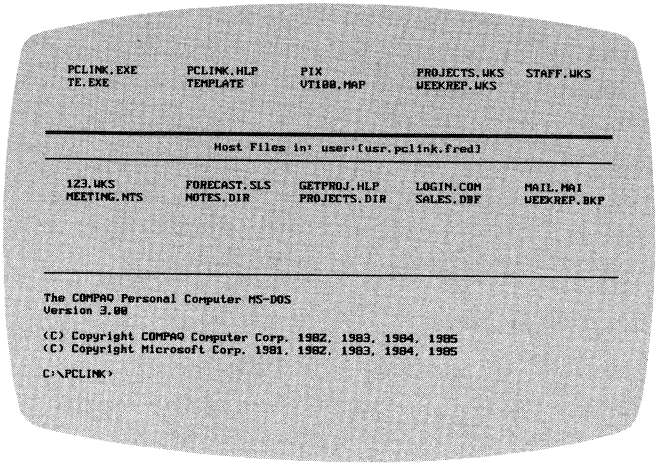
Although this lesson does not show you how to transfer a file from the Host system to your PC, this procedure is almost the same as transferring files from the PC to the Host computer. The only difference is that, to transfer files from the Host computer to the PC, you select Receive from the File-Manager Menu instead of Send. For more information on sending and receiving files, see Chapter 21.

Exercise 3: Accessing DOS from the File-Manager

You can access DOS from the File-Manager or from any other menu in PC Link. This exercise shows you how to access DOS, issue a DOS command, and then return to the File-Manager exactly where you left off. To access DOS from the File-Manager, follow these steps:

1. Press **F10** (DOS). PC Link exits from the File-Manager and boots DOS. In a few seconds, you should see the DOS copyright information and the DOS prompt, as shown below.

Figure 4.39.



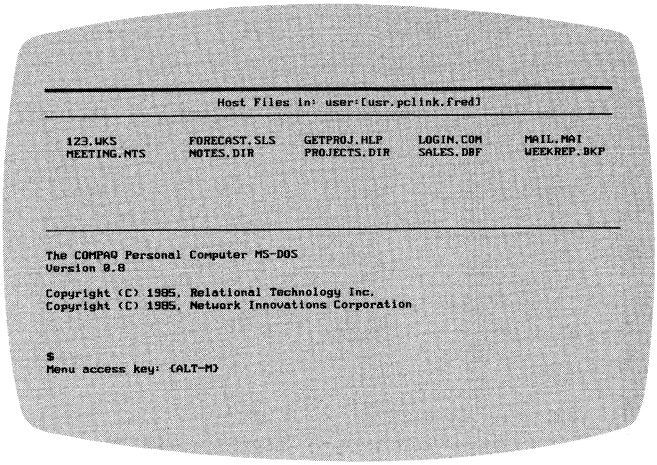
2. You can now enter DOS commands. For example, type **dir** and press **Enter**. DOS lists the files in your current PC directory and then redisplays the DOS prompt.
3. To leave DOS, type **exit**. PC Link returns you to the File-Manager.

Exercise 4: Accessing the Terminal-Emulator from the File-Manager

If you want to use your PC as a Host computer terminal, you can access the Terminal-Emulator while working with the File-Manager (or Visual-Query-Language). For more information on using your PC as a Host computer terminal, see the next lesson, "Using the Terminal-Emulator."

1. Press **F8** (Host). PC Link leaves the File-Manager and enters the Terminal-Emulator module. The screen appears like this:

Figure 4.40.



2. Now you can use any Host computer commands you wish. For example, try typing your Host computer's command to display the file names in your current directory. The file names will appear on your PC screen. If you are not an experienced user of your company's Host computer, move on to Step 3 now. Otherwise, just use your PC as you would normally use your Host computer terminal.
3. Terminate your Host computer session by typing the appropriate command. If you do not know the Host system's logout command, consult item D on your Configuration Worksheet.
4. After you issue your Host computer's logout command, PC Link returns to the File-Manager exactly where you left off when you pressed **F8** (Host).

Exercise 5: Leaving the File-Manager

After you have finished performing file management tasks, you can leave the File-Manager and return to the PC Link Access Menu.

To leave the File-Manager, follow these steps:

1. From the File-Manager Menu, select **Q**uit.
2. Confirm that you want to end your File-Manager session by selecting **Y**es.
3. PC Link displays the Access Menu.

Moving Ahead

Now that you have completed this lesson, you can move on to Lesson 4, which teaches you more about the PC Link Terminal-Emulator.

If you do not want to do any more PC Link lessons right now, please go to Lesson 5, which shows you how to stop using PC Link and return to DOS.

Lesson 4: Using the Terminal-Emulator

The INGRES/PCLINK Terminal-Emulator enables you to use your personal computer as a terminal to connect to the Host computer system that holds your organization's INGRES databases. This way, you do not have to use a separate terminal to take advantage of your Host computer's operating system and software.

This lesson contains four exercises. In Exercise 1, you will learn how to start the Terminal-Emulator from the PC Link Access Menu. Exercises 2 and 3 explain how to begin and end file capturing. Finally, you will learn how to leave the Terminal-Emulator in Exercise 4.

You should work through this lesson only if you know how to work with your company's Host computer.

Set aside about twenty minutes to work through this lesson. Please do not start this lesson unless you have the time to complete it in one uninterrupted session.

Understanding the Terminal-Emulator

The Terminal-Emulator enables you to use your PC as a terminal with your company's Host computers. Once the PC Link Terminal-Emulator is connected to your Host computer, you can use all the software and features that are normally available to users of the Host computer, including INGRES. You are in direct communication with the Host computer's operating system and its other software, and you can use all the functions and commands you use when you communicate with the Host through a terminal.

While you use the Terminal-Emulator, PC Link is "invisible." Each keystroke you type is sent directly to the Host computer, and each character the Host computer sends back is displayed on your PC computer screen or printer.

Understanding Key Mapping

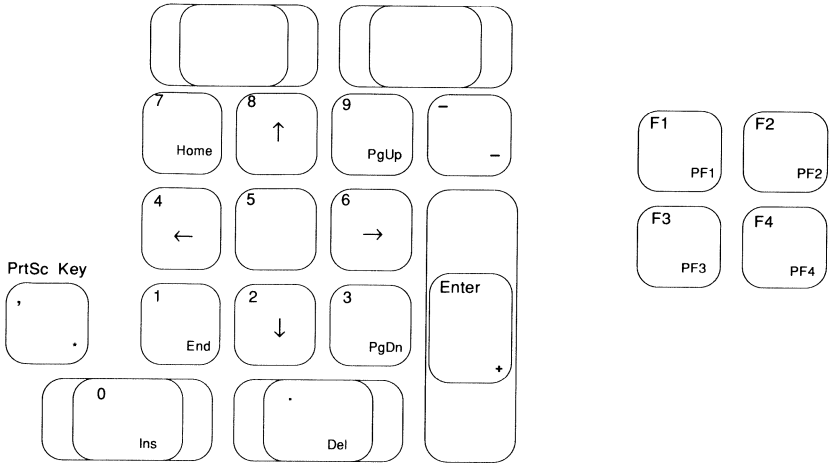
You might have noticed that your PC keyboard is different from the keyboards on most terminals used with your company's mainframe computer. The keys on your PC are arranged differently, and the labels and locations of special keys are different. One important function of the PC Link Terminal-Emulator is to simulate the key functions of the Host computer terminal keyboard.

To simulate a Host computer terminal keyboard, the PC Link Terminal-Emulator uses a keyboard map, or *keymap*. When you press PC keys that have been mapped to Host computer terminal keyboard functions, PC Link sends the same key functions to the Host computer that a Host computer terminal would send. Thus you can use your PC keys as substitutes for terminal keyboard keys.

Your Host computer terminal keyboard has many more special keys than your PC keyboard. Therefore, to map some terminal keys on your PC, you press **Ctrl** along with the appropriate PC key.

When you start the Terminal-Emulator, PC Link automatically uses a keymap to communicate with the Host computer. The default keymap defines special functions like this:

Figure 4.41.



Notice that these PC keys represent the Host terminal keypad. PC Link comes with a plastic template for your PC keyboard to help you remember this default keymap.

You can change the key definitions in the PC Link default keymap; you can even create your own keymaps. For example, if you use a series of keystrokes to accomplish a frequently used Host computer activity, you can save time by keymapping one PC keystroke to simulate all of the keystrokes you are used to typing. To learn how to do your own keymapping, see Chapter 27.

Exercise 1: Entering the Terminal-Emulator

This exercise explains how to start the Terminal-Emulator, how to display the Terminal-Emulator Menu, and then how you can save all or part of a Terminal-Emulator computer session in a file for later review. If you have not already started PC Link, refer to Lesson 1 and start PC Link before you begin this lesson.

1. Select the **T**erminal-Emulator option from the PC Link Access Menu. After a few moments, PC Link establishes a connection to the Host computer, and then begins terminal emulation.
2. Press **Enter** several times until you see the Host computer's login prompt.
3. Log in to the Host computer as if you were using an ordinary computer terminal. Most Host computers ask you to enter your user identification and password.
4. Now that you are logged in, you can use your PC to perform any Host system function that you would perform from a Host computer terminal.

Exercise 2: Beginning File Capturing

Sometimes you may want to keep a record of your interactive Host session. One of the ways to keep a record of your Host sessions is called File Capture. When you use the PC Link File Capture feature, everything the Host computer sends to your PC and everything you send to the Host is written in a file.

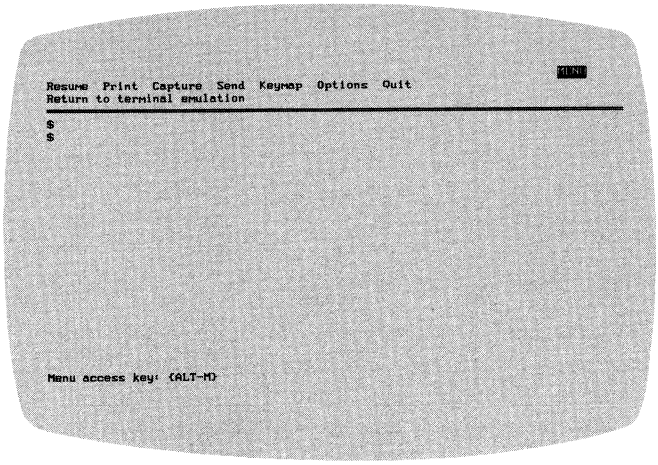
If you are dealing with text, you will be able to read what is stored in this file. This can be useful if you want to keep a record of your Host session. If you are producing formatted output such as screens and graphics like those presented by INGRES' Visual Programming tools, the Host sends non-alphabetic characters called "escape sequences" to your file on the PC; this information can be useful to a programmer who needs to debug the Host computer escape sequences.

You can also print your Host session directly on the printer attached to your PC. This feature is called printer logging. To learn how to use this PC Link feature, refer to Chapter 24.

To use PC Link to capture files, follow these steps:

1. Display the Terminal-Emulator Menu. To display this menu, use your Menu Access Key, which is usually **Alt-M**. (This key may have been changed when PC Link was configured for your system. To make sure that **Alt-M** is your Menu Access Key, look at the bottom of your screen. PC Link lists your Menu Access Key there.)
2. PC Link temporarily suspends your interactive Host session and displays the Terminal-Emulator Menu.

Figure 4.42.



3. Select **C**apture from the Terminal-Emulator Menu. PC Link displays the Capture Menu.
4. From the Capture Menu, select **B**egin. PC Link then prompts you for the name of the file in which you want to store the Host session.
5. For this exercise, use SESSION.LOG for the name of the file. Type **session.log** and press **Enter**. PC Link creates the file and displays the Terminal-Emulator Menu.

6. From the Terminal-Emulator Menu, select **R**esume. PC Link returns you to terminal emulation. From now until you end file capturing, PC Link stores your entire Host session in the file named SESSION.LOG. The CAPTURE flag in the lower right corner of the screen indicates your session is being recorded into a file.

7. To store some text in your file capture file, you should issue Host computer commands that you are familiar with.

Exercise 3: Ending File Capturing

To stop using the file capture feature, follow these steps:

1. Press the Menu Access Key (listed at the bottom of your PC screen) to display the Terminal-Emulator Menu.

2. From the Terminal-Emulator Menu, select **C**apture.

3. From the Capture Menu, select **E**nd. PC Link turns the file capture feature off and closes the file, saving its contents.

4. To return to your Host session, select **R**esume from the Terminal-Emulator Menu displayed.

Exercise 4: Leaving the Terminal-Emulator

After you have finished performing terminal emulation tasks and are ready to terminate your Host session, you can do so by following these steps:

1. Log out from the Host computer as you normally would.

2. Press the Menu Access Key to display the Terminal-Emulator Menu.

3. Select **Q**uit, then **D**isconnect to disconnect from the Host system and return to the Access Menu.

4. From the PC Link Access Menu, select **E**xit.

5. Select **Y**es to confirm that you want to leave PC Link. You should now see the DOS prompt.

Moving Ahead

You have completed Lesson 4 and, indeed, the entire tutorial. Lesson 5 shows you how to exit PC Link when you have been using the Visual-Query-Language or File-Manager. Refer to Lesson 5 as needed. Continue reading the *INGRES/PCLINK Manual* and enjoy using PC Link.

Lesson 5: Finishing Up

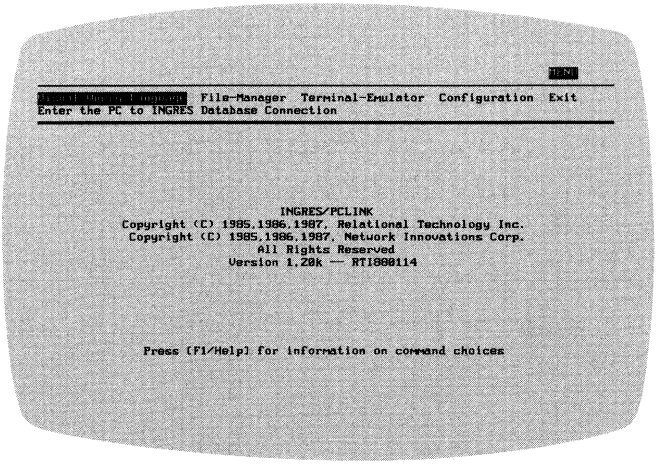
This lesson shows you how to finish your work with the Visual-Query-Language or File-Manager and return to the DOS prompt on your personal computer. You will need just a few minutes to complete this lesson.

Exercise 1: Leaving PC Link Automatically

If PC Link is set up to start and stop automatically, you can leave the PC Link Visual-Query-Language or File-Manager by performing the following steps. If you are not sure how PC Link is set up, check item C of your Configuration Worksheet.

1. If you are not at the PC Link Access Menu, press **Esc** until you see it displayed on your screen, as shown below:

Figure 4.43.



2. From the PC Link Access Menu, select **Exit**.

3. Select **Yes** to confirm that you want to leave PC Link. You should now see the DOS prompt. PC Link has automatically severed your connection with the Host.

Exercise 2: Leaving PC Link Manually

If PC Link is set up to exit the Visual-Query-Language or File-Manager manually, work through the following steps.

1. If you are not at the PC Link Access Menu, press **Esc** until you see it displayed on your screen.
2. From the PC Link Access Menu, select **T**erminal-Emulator. PC Link enters terminal emulation. You should see a blank screen with your Menu Access Key at the bottom.
3. Log out from your Host computer. If you do not know what command to use, see item D your Configuration Worksheet.
4. Press your Menu Access Key. PC Link displays your Menu Access Key in the bottom left-hand corner of your screen. PC Link then displays the Terminal-Emulator Menu.
5. From the Terminal-Emulator Menu, select **Q**uit and then **D**isconnect. You should see the PC Link Access Menu.
6. From the PC Link Access Menu, select **E**xit.
7. Enter **Y**es to confirm that you want to leave PC Link. You should now see the DOS prompt.

Tools and Techniques

INGRES/PCLINK is designed to be natural and easy to use, especially for users of other popular PC software packages. The PC Link user interface is modeled closely after 1-2-3, in several important aspects:

- *Ring menus* control PC Link operation and operate exactly like the menus in 1-2-3.
- The *PC screen* is organized as in 1-2-3, with menu indicators, prompts and error messages all appearing in the corresponding positions.
- A *row/column* format is used to present data from a Host database, as well as lists of other information.
- The *PC cursor keys* function exactly as in 1-2-3 to move and point on the screen, for example, in menus and database data.
- The *PC function keys* parallel their 1-2-3 counterparts in name and function, wherever possible.

Even if you are unfamiliar with 1-2-3, many of the concepts that may be familiar to you from other PC spreadsheets or database software will carry over into your use of INGRES/PCLINK.

If you are already familiar with Lotus 1-2-3, read the sections in this chapter that describe lists and multiple-choice selection anyway, since they describe capabilities in PC Link that have no parallel in 1-2-3.

Throughout all of the PC Link modules, the screen is divided into several distinct areas, showing you what PC Link is doing, what choices it is presenting to you, whether an error has occurred, and similar information.

The major areas of the PC Link screen are identified in Figures 5.1 through 5.3:

- The *menu line* displays a choice of commands for your selection.
- The *menu prompt* gives a more complete description of the highlighted menu item.
- The *mode indicator* tells you what PC Link is doing or expecting, such as sending data to the Host system.

- *Other indicators* display other information about PC Link status, such as whether a database inquiry is needed.
- *Error messages* describe errors that occur during PC Link processing.
- *Windows* constitute the main body of the screen and display database and file contents, lists of files for processing and similar information.

Figure 5.1.

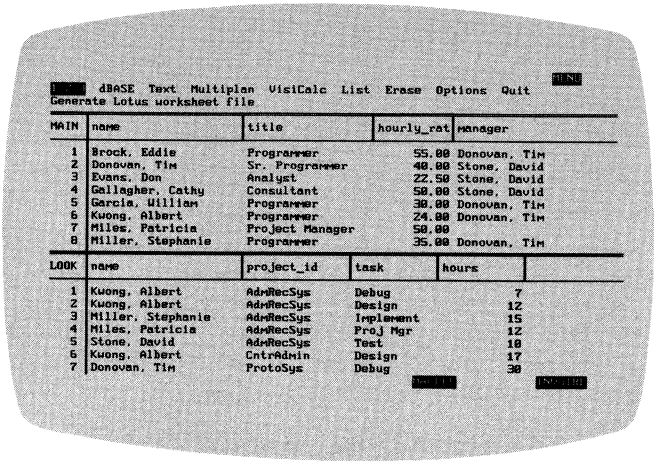


Figure 5.1 above shows the Visual-Query-Language Display. Below, Figure 5.2 shows the File Manager Display.

Figure 5.2.

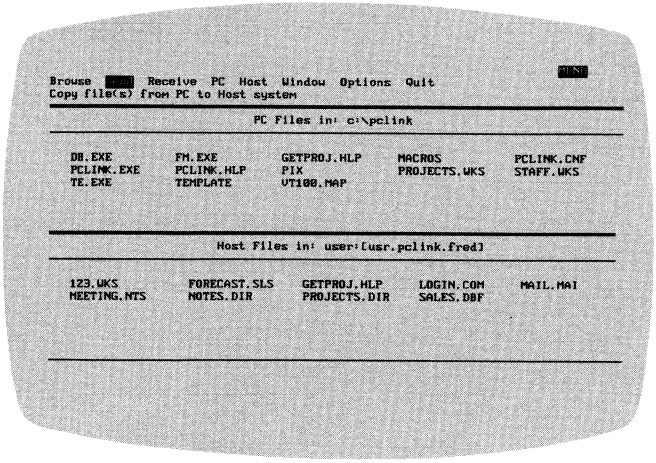
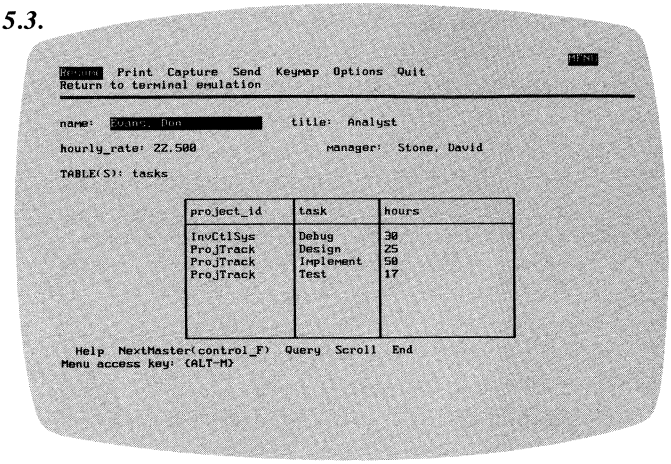


Figure 5.3 below shows the Terminal-Emulator Display.

Figure 5.3.



The Menu Line

PC Link is controlled by a collection of *menus*. A menu is simply a list of commands displayed by PC Link for your selection. When you select one of the commands, PC Link performs the corresponding action. Often, selecting an item from one menu will lead you to a *submenu*, offering further choices. When PC Link displays a menu, it appears on the *menu line* of the screen.

The Menu Prompt

The *cursor* appears as a reverse video block. The cursor is used to select an item from the menu, and can be moved back and forth through the menu items using the left and right arrow keys on the PC keyboard. As the cursor moves from item to item, the *menu prompt* changes to match the highlighted item. The prompt provides a more complete explanation of the highlighted menu item.

The Mode Indicator

The *mode indicator* always appears as a reverse video or blinking reverse video block at the upper-right corner of the screen. PC Link uses the mode indicator to display its current status and to inform you when it is waiting for a selection or other input from you. For example, when PC Link is waiting for a menu selection from you, the mode indicator displays MENU. When PC Link is sending data to the Host, it displays a blinking SENDING mode indicator, and when it is receiving data from the Host system, the mode indicator changes to a blinking RECEIVING.

Other Indicators

PC Link uses other indicators at the bottom of the screen to provide additional information about its current status or about special conditions. For example, the PC Link Visual-Query-Language displays the INQUIRE indicator whenever a database inquiry is needed to make the data displayed in the screen consistent with your specifications. The PC Link Terminal-Emulator displays the CAPTURE indicator when it is capturing data received from the Host system into a PC file. All the PC Link modules display a MACEXE indicator while a PC Link macro is executing.

Windows

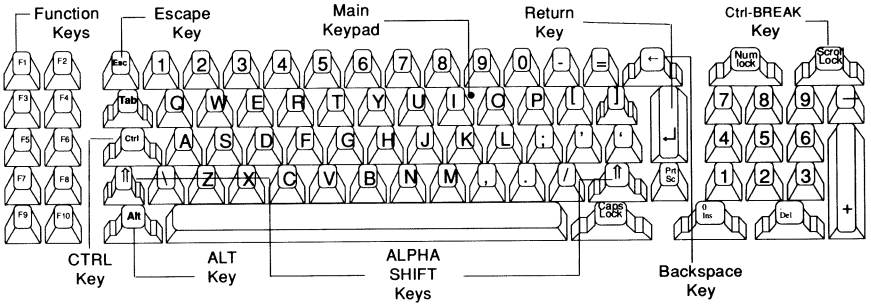
PC Link uses the main body of the screen to display information specific to a particular PC Link module. For example, the Visual-Query-Language displays the contents of a database and the results of Host database inquiries in the main body of the screen. The File-Manager displays a list of the files on the PC or Host system to allow you to easily select files to be transferred.

PC Link organizes the main body of the screen as one or more *windows*, each one displaying a particular type of information. Each window has a *window header* that describes the contents of the window and a *window body* that displays the data for the window. A double line appears above the window header, to separate the window from the rest of the display. A single line separates the window header from the window body.

When two windows are displayed in the screen, the *active window* is that in which the cursor can be moved and operations can be performed. PC Link provides a function key to allow you to switch from one active window to another.

Generally, you can browse the data displayed in a PC Link window by selecting one of the PC Link function keys. While the data in a window is being browsed, the cursor moves into the window header, and keys on the PC keyboard move the data up, down, left and right through the window, so that you can view the data in its entirety. PC Link also moves the cursor into the window body when it asks you to select one or more items from a list displayed in the window. Keys on the PC keyboard are used to move through the list of displayed items and to select items from the list for processing.

Figure 5.4.



The PC Link Keyboard

PC Link uses almost all of the keys on the IBM PC keyboard, shown in Figure 5.4 above. The character keys, the function keys and other special keys control the operation of PC Link. The keyboard also is used by the PC Link Terminal-Emulator to simulate the features of a terminal keyboard.

The Main Keypad

The main group of keys consists of the letter and number keys in the center of the keyboard. This key group is used to enter information when it is requested by PC Link, such as the name of a file you want to view or the width of a column you want to set. Several keys at the extreme edges of the main keypad have special meaning to PC Link: **Enter**, **Esc**, **Ctrl**, and **Alt**. Their positions are shown in Figure 5.4.

The Enter Key

The **Enter** key usually signals PC Link to go ahead or proceed when it has paused for input. For example, you will use the **Enter** key:

- To tell PC Link "that is all," after you respond to a question from PC Link
- To select a choice from a menu
- To clear errors and continue processing after an error message is displayed
- To proceed to the next step in a multi-step operation

The Esc Key

The **Esc** key allows you to "back out" when you want to exit a submenu or when you discover that you have made an error. For example, pressing **Esc** will cause PC Link to back up through levels of menu choices, step-by-step, until it returns to the original menu selection you made. Similarly, if you begin typing and discover that you have made an error, pressing **Esc** erases all the characters you have typed and lets you start over.

The Shift Key

The main role of the alpha shift keys is to shift between lower-case and upper-case characters. They can also be used to shift the PC function keys, to produce a "shifted function key" keystroke. For example, pressing **Shift F1** is a different keystroke than pressing **F1** alone.

The Ctrl and Alt Keys

Ctrl and **Alt** are keys you use to change the meaning of another key.

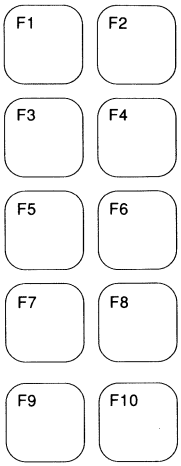
When you hold down **Ctrl** and press one of the main keypad keys, a special *control code* is generated. These control codes generally have special meaning to the Host system software. **Ctrl** may also be used to alter the meaning of the PC function keys, as in **Ctrl F1**.

When you hold down **Alt** and press one of the main keypad keys, a special *mode code* is generated, which PC Link uses to provide access to its advanced features.

Function Keys

The PC's ten function keys are used to streamline and simplify PC Link operations (shown in Fig. 5.5 below).

Figure 5.5.



Each of the function keys has a single, consistent function throughout all of the PC Link modules. Table 5.1 below briefly describes the purpose of each.

Generally, you can press a function key whenever PC Link is waiting for a menu selection from you. In addition, **F1** (Help) is always available during PC Link operation. The function keys are noted in this manual by giving the key number and its label.

Table 5.1 : PC Link Function Keys

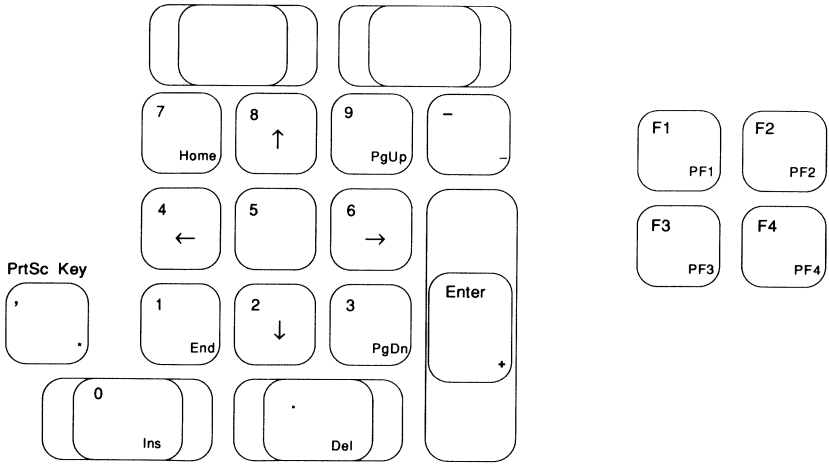
Key	Label	Purpose
F1	Help	Displays a PC Link Help screen
F2	Edit	Allows you to edit the text that you type
F3	Macro	Begins execution of a PC Link macro; also used for macro definition and management
F4	Browse	Allows browsing of displayed information such as a list of files or data from a Host database

F5	GoTo	Moves the cursor to a particular column or row during viewing
F6	Window	Switches PC Link between multiple windows
F7	Preview	Previews results of a VQL database inquiries
F8	Host	Starts the Integrated Terminal-Emulator for direct interaction with the Host system
F9	Inquire	Performs a database inquiry (VQL only)
F10	DOS	Starts DOS for direct interaction on the PC

The Applications Keypad

When you use the PC Link Terminal-Emulator, the PC function keys provide the same functions available on a VT100 terminal. With PC Link's default VT100 key map, the combination of **Ctrl** and the keys on the PC numeric keypad, and the **F1** through **F4** keys on the PC keyboard, substitutes for the eighteen keys in the applications keypad on the right side of a VT100 keyboard. Figure 5.6 illustrates the applications keypad emulation.

Figure 5.6.



When you use the Terminal-Emulator, pressing **Ctrl** and a numeric key on the keypad substitutes for pressing that numeric key on the VT100 applications keypad. Thus, pressing **Ctrl-0** in the Terminal-Emulator has the effect of pressing **0** in the VT100 applications keypad. Pressing **Ctrl-6** is equivalent to pressing **6** in the VT100 applications keypad, and so forth.

Pressing **Ctrl**-+ in the Terminal-Emulator is equivalent to pressing **Enter** in the VT100 applications keypad, **Ctrl**-– is equivalent to –, **Ctrl-Del** is equivalent to ., and **Ctrl-PrtSc** is equivalent to ,. Pressing **F1** through **F4** in the Terminal-Emulator is equivalent to pressing **PF1** through **PF4**, respectively, in the VT100 applications keypad.

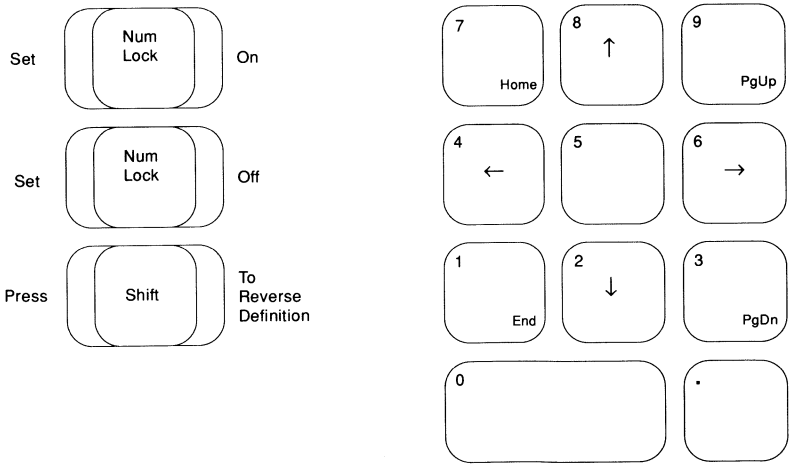
Default Keys in the Terminal-Emulator

Other key combinations on the PC keyboard assume different functions when you use the Terminal-Emulator. **Alt C** is the default Capture Key, **Alt P** is the default Printer Logging Key and **Alt M** is the default Menu Access Key. These default assignments can be changed. See Chapter 27 for further information on mapping the keyboard in the Terminal-Emulator.

The Cursor Keypad

In PC Link you use the keys on the cursor keypad for viewing data and making selections. Figure 5.7 illustrates the cursor keypad.

Figure 5.7.



Here are some examples of functions performed with the cursor keypad:

- *Menu selection*: The cursor keys move the cursor through a menu, allowing you to select the menu choice you want.
- *List selection*: When PC Link presents a row/column list of items for your selection, the cursor keys move the cursor through the rows and columns of the list to select the items you want.
- *Browsing data*: When PC Link presents data from a database or file for viewing, the cursor keys move the cursor back and forth through the data, allowing you to view the file or database in its entirety.

The **Num Lock** key toggles the cursor keypad between two modes of operation. In numeric mode, the keys generate numbers and a decimal point, as indicated on each key. In cursor mode, the keys move the cursor left, right, up and down, and implement the **PgUp**, **PgDn**, **Home** and **End** keys, used heavily in PC Link.

Cursor Keys in the Terminal Emulator

If the **Num Lock** key is unshifted, the arrow keys in the cursor keypad on your PC function as the directional arrow keys at the top of a VT100 keyboard when you use the Terminal-Emulator. If **Num Lock** is shifted, pressing these keys sends the numbers indicated on the key to the computer in your interactive Terminal-Emulator session. By holding down **Shift** while pressing a key on the cursor keypad, its effect is reversed.

The Ctrl Break Key

The **Ctrl Break** key combination interrupts PC Link while it is in the midst of a long operation, such as transferring a file from the PC to the Host system. During these operations, PC Link is not available to accept keyboard input from you. If you discover that you started an operation in error, or you want to interrupt it for any other reason, you can press **Ctrl Break**. PC Link interrupts the current operation as soon as possible and is again available to accept keyboard input from you.

Error Recovery

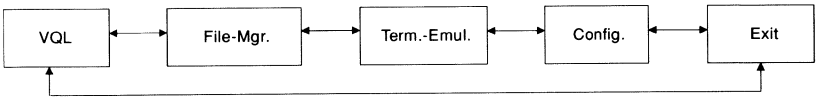
When an error occurs, PC Link sounds the PC bell, displays an error message in the lower-left corner of the PC screen and changes the mode indicator to ERROR. To clear the error message, press **Enter**. PC Link will cancel the activity that caused the error and return you to the current PC Link menu for a menu selection.

You can also press **Esc** to clear most error messages. Pressing **Esc** will cause PC Link to back up, if possible, to the step that caused the error, allowing you to correct the error and retry the operation.

Using PC Link Ring Menus

When PC Link displays a menu, it arranges the items in the menu in a ring, as shown in Figure 5.8:

Figure 5.8.



You can use the cursor keys to move from menu item to menu item, as listed in Table 5.2:

Table 5.2 : Cursor Keys for Menu Selection

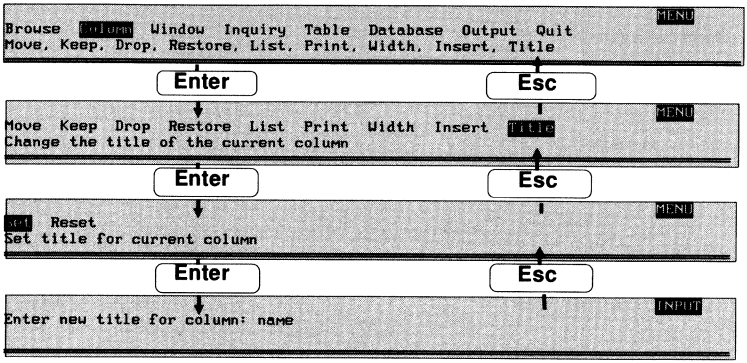
Key	Action
←	Moves the cursor one item to the left; if the cursor is already on the first item in the menu, it moves to the last item.
→	Moves the cursor one item to the right; if the cursor is already on the last item in the menu, it moves to the first item.
Home	Moves the cursor to the first menu item
End	Moves the cursor to the last menu item
Enter	Selects the menu item where the cursor appears
Esc	Cancels menu selection, and backs up to the previous menu

To select the menu item currently highlighted by the cursor, press **Enter**. PC Link begins processing your menu choice. Often, PC Link will display a submenu, offering a further choice of actions that it can perform.

If you do not want to select an item from the menu, press the **Esc** key. PC Link cancels the menu selection and backs up a step. Because the previous step is often a menu selection, the **Esc** key provides an effective way to back up through the menu hierarchy until the top-level menu is reached.

Figure 5.9 illustrates this use of the **Esc** key.

Figure 5.9.



The Menu Hierarchy

Although the operation of PC Link can be thought of as a sequence of menu choices, it is often more convenient to think of the menu hierarchy as a collection of *commands* or *options* that control PC Link operation. Each command consists of the names of the menu choices that must be made to execute the command. For example, to drop a column from the display in the Visual-Query-Language module, you would first choose the Column menu item from the VQL menu, and then choose the Drop menu item from the Column Operations Menu. Alternatively, you can think of the combinations of these menu selections as the Column Drop command. Chapters 30 through 35 document alphabetical lists of commands of each module, for easy reference.

There is another reason why you may find it convenient to think of the PC Link menu hierarchy as a set of commands. In addition to selecting from a menu by moving the cursor and pressing **Enter**, PC Link provides a shortcut method for selecting a menu item. You can simply type the first letter of the menu item you wish to select, and PC Link will automatically move the cursor to that menu item and select it. For example, instead of selecting Column and Drop from the PC Link menus above, you could simply type the letters **C D** to accomplish the same menu selections.

PC Link Input

Usually, when PC Link requires information from you, it presents a menu that displays a list of items for your selection. However, PC Link occasionally requires information from you that you must enter as text from the PC keyboard. When it needs input from you, PC Link:

- Displays a *prompt message* on the menu line, telling you what kind of information is required
- Changes the *cursor* to a blinking underscore character immediately following the prompt message
- Changes the *mode indicator* to INPUT, indicating that PC Link expects you to type input text in response to its prompt

Figure 5.10.

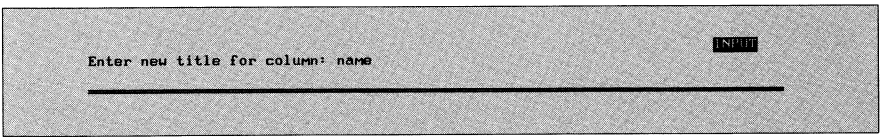


Figure 5.10 shows the upper part of a PC Link Visual-Query-Language screen where PC Link is asking for the title of a column. To respond to a PC Link input prompt, type your reply. PC Link displays each character as you type it at the cursor position and moves the cursor to the right to accept a new character. When your reply is complete, press **Enter** to end your response.

If you make a typing error during input, you can correct it by pressing **Backspace**, whose label is similar to ←. **Backspace** works just like it does on a typewriter.

Editing Input Text

Use edit mode to make changes to long input strings. Edit mode allows you to edit, character-by-character, the input text that you have typed or PC Link has displayed. Edit mode offers more editing flexibility than the simple backspace-and-retype capability offered by input mode. With edit mode, you can insert and delete characters in the middle of your input text.

You can enter edit mode at any time when the INPUT mode indicator is displayed. To enter edit mode, press **F2** (Edit). The mode indicator changes to EDIT, and PC Link activates the cursor keys for editing.

While in edit mode, you can move the cursor to any position in the input text and insert and delete characters. In addition, the character editing functions listed in Table 5.3 are available through the cursor keys.

Table 5.3 : Edit Mode Keys

Key	Action
←	Moves the cursor one character to the left; the input text is not changed. Do not confuse this key with **Backspace**.
→	Moves the cursor one character to the right; the input text is not changed.
Backspace	Erases the character preceding the cursor; the cursor moves back a space and the input text shifts left to replace the erased character. Do not confuse this with the ← cursor key. This key sits above the **Enter** key.
Del	Erases the character at the cursor; the cursor remains in place, and the input text shifts left to replace the erased character.
Tab	Moves the cursor to the next tab stop; the input text is not changed.

Shift-Tab	Moves the cursor to the previous tab stop; the input text is not changed.
Enter	Terminates input and causes PC Link to begin processing the input text you have typed.
Esc	Erases the input text and places the cursor back in its starting position. Pressing **Esc** again will cancel the input operation.

Input with Default Values

When PC Link prompts for input, it can often anticipate your likely answer, which is displayed as a *default input value* immediately following the input prompt. The cursor appears just to the right of the default input value, and the INPUT mode indicator is displayed, just as for normal input.

When PC Link displays a default input value, you can:

- Accept the default value, by pressing **Enter**. This saves you keystrokes.
- Ignore the default value, and type a different input reply. With the first character you type, PC Link erases the default input value and begins to display your new input value.
- Edit the default value, by pressing **F2** (Edit). PC Link goes into edit mode, allowing you to edit the default input value.

Input and Esc

In general, **Esc** is used to back up to previous steps of a PC Link command. **Esc** also can be used to back up through the various steps of an input operation. When you press **Esc** during input mode or edit mode, PC Link backs up according to the following rules:

- If you press **Esc** after you have typed input characters, PC Link erases the characters and positions the cursor immediately after the input prompt, ready to accept new input text from you.
- If you press **Esc** when the cursor is positioned immediately after the input prompt (i.e., there are no typed characters), PC Link re-displays the default input value, and positions the cursor immediately following the default value.

- If you press **Esc** when the cursor is positioned immediately after the default input value (or following the input prompt if there is no default input value), PC Link cancels the input operation and backs up to the step before the input.

PC Link Lists

PC Link often presents information in the form of a *list* of items on the PC screen. These lists can take several different forms. Figure 5.11, for example, shows a simple alphabetical list of the files on your PC, arranged into multiple columns.

Figure 5.11.

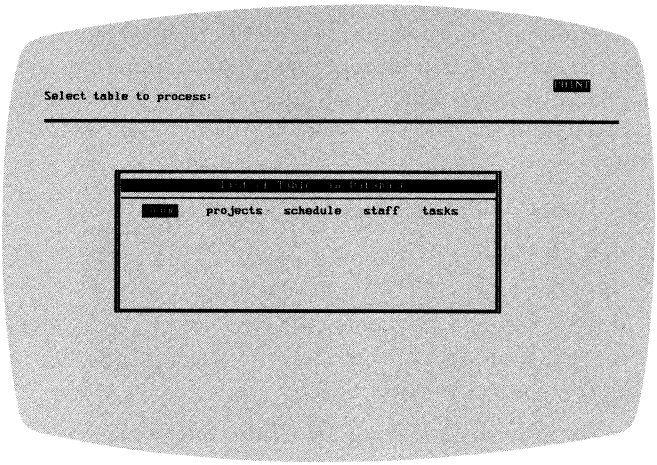


Figure 5.12 shows a different type of list, in this case a list of database inquiry specifications arranged in a single column.

Figure 5.12.

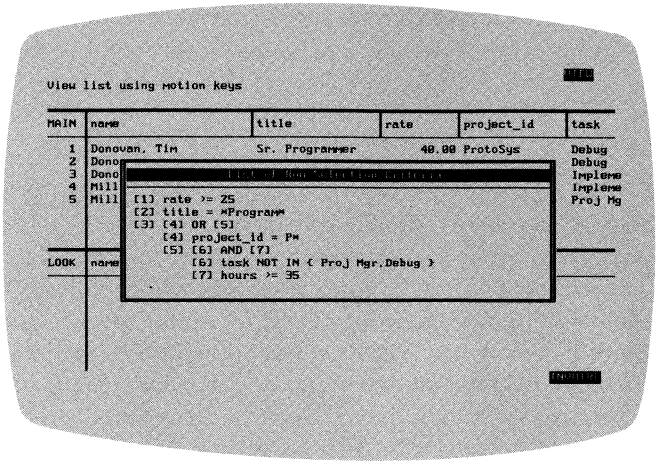
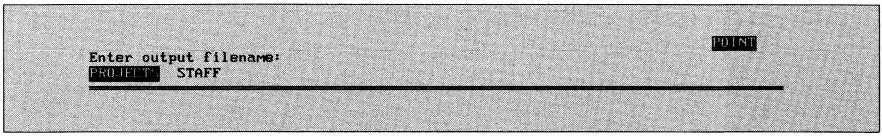


Figure 5.13 shows yet another kind of list, in this case a list of the worksheets created with PC Link, arranged in a single row at the top of the PC screen.

Figure 5.13.



PC Link displays a list for one of three reasons:

- For *viewing*: PC Link lets you browse the list for information. For example, you can ask PC Link to list the worksheets on your PC disk to check the worksheet names.
- For *single-choice selection*: PC Link asks you to choose one item from a displayed list. For example, if you ask the PC Link File-Manager to view the contents of a file, PC Link presents a list of available files and asks you to choose the one you wish to view.
- For *multiple-choice selection*: PC Link asks you to choose one or more of the items from a list for processing. For example, the PC Link File-Manager allows you to erase one, two or many files at once by selecting multiple files from a list.

If the list of items to be displayed is large, or the area of the screen where the list is displayed is small, PC Link may not be able to display the entire list at one time. In this case, PC Link displays part of the list. The cursor keys move the list up and down through the display area.

Viewing a List

Several PC Link commands request PC Link to display a list of items on the screen. For example, you can display a list of the tables in an INGRES database, a list of the files on the Host system and a list of the columns on which database inquiry results are to be sorted. PC Link presents the requested information in a box called a *pop-up list* in the center of the screen. The list temporarily obscures part of the normal PC Link display, so the mode indicator changes to VIEW to indicate that you are viewing a list. When you have finished viewing the list, press the **Enter** key. PC Link will restore the screen to its normal appearance and return to menu mode.

If the list is too large to fit in the box, PC Link displays the beginning of the list, and activates the cursor keys for list viewing. You may use the cursor keys to move the list up and down through the box. Table 5.4 summarizes the cursor keys used for viewing a list and selecting items from a list (described below).

Table 5.4 : List-Viewing and List Selection Keys

Key	Action
↑	Moves the cursor up one line in the list
↓	Moves the cursor down one line in the list
←	Moves the cursor left one column in the list; if the cursor is in the first column, it moves to the last column of the preceding row.
→	Moves the cursor right one column in the list; if the cursor is in the last column, it moves to the first column of the following row.
Home	Moves the cursor to the first column of the first row of the list
PgUp	Displays the preceding page of the list
PgDn	Displays the following page of the list

End	Moves the cursor to the last item in the list
Enter	Selects the item highlighted by the cursor and ends list selection
Esc	Cancels list selection or viewing and returns to the previous PC Link operation

Single Choice Selection

PC Link often requests a selection from you by displaying a list of alternatives, and asking you to choose one item. For example, when you use the Table Select command, PC Link displays a list of the tables in the database and asks you to select a table for processing. PC Link uses lists to make these selections simpler and to save typing.

When PC Link presents a list for your selection, the mode indicator changes to POINT, and PC Link displays a prompt message on the menu line of the display. The cursor moves into the list and appears as a reverse video block surrounding one of the list items. You can move the cursor through the list with the cursor keys described in Table 5.4. To select an item from the list, you simply move the cursor to that item and then press **Enter**. PC Link accepts your selection, removes the list from the screen and continues processing.

Multiple Choice Selection

Multiple-choice selection operates just like single choice list selection, with one important difference—you select items by pressing the **Space Bar** rather than by pressing **Enter**. You press **Enter** only after you have selected all the items from the list, to indicate the end of list selection.

When you select an item from a multiple-choice list, PC Link displays the SELECTED indicator to tell you that the item is selected. As you move the cursor through the list, the SELECTED indicator will turn on and off, always indicating whether the item highlighted by the cursor is selected or not. In addition, the selected items in the list are highlighted on the screen, allowing you to see easily which items have been selected.

If you find that you have selected an item in error, simply move the cursor back to the item, and press the **Space Bar** again. This "de-selects" the item. You may use the **Space Bar** repeatedly to select and ignore items in the list, until you have selected exactly the set of items you want.

When you have completed list selection, press **Enter**. In many commands, PC Link will process the items in the order that you selected them, so you may want to be careful about the order of selection.

As with single choice selection, pressing **Esc** cancels your selection and returns to the previous step in the PC Link command.

To select a single item from a multiple-choice selection, use the **Enter** key. If no items have been selected with the **Space Bar**, pressing **Enter** on a multiple-choice list selection automatically selects the item where the cursor appears and ends the list selection.

List Selection with Input

PC Link uses two different methods to obtain information from you to complete its commands—prompting for input and asking for list selection. Sometimes, PC Link combines these two methods, offering you a choice of selecting from a list or typing input text.

When prompting for either input or list selection, PCLINK displays a prompt in the menu prompt line followed by an underline cursor just as it would for input mode. PC Link also displays a block cursor in the list and displays a POINT mode indicator. PC Link allows you either to type input text or to select items from the list, but not both. The first key you press determines whether you are using text input or list selection:

- Typing a character automatically switches you to input mode. The cursor keys are disabled, and you can no longer select items from the list in response to the prompt. Pressing **Esc** clears the typed characters and leaves you in input mode. Pressing **Esc** again returns you to point mode.
- Selecting an item with the **Space Bar** leaves you in point mode and disables input. The underline cursor disappears from the prompt line, and you can no longer type input text. **Esc** clears any list selections you have made and leaves you in point mode, allowing you to either begin list selection again or type input text.

- Using the cursor keys to move through the list does not affect the mode, because you have neither typed characters nor selected items from the list.

Lists and Esc

Esc can be used during list selection to back up to the step before list selection was begun, or to back up through the various steps of list selection itself. The following rules govern the operation of the **Esc** key during list selection:

- In multiple-choice selections, pressing **Esc** when one or more selections have been made clears all the current selections and begins multiple-choice selection over again.
- In single choice selections or in multiple-choice selections where no items are currently selected, pressing **Esc** cancels list selection and causes PC Link to back up to the previous step in the command.
- If list selection with input is being used and input characters have been typed, pressing **Esc** clears the input characters and re-enables list selection or text input.

The Visual-Query-Language

The INGRES/PCLINK Visual-Query-Language is a simple yet powerful toolfor using information from an INGRES database on your PC. In order to make productive use of the Visual-Query-Language, you should first understand a few simple concepts about an INGRES database and how PC Link makes its data available to you.

Key Capabilities of the Visual-Query-Language

The following list summarizes INGRES/PCLINK's VQL capabilities:

- *Database browsing*: You can browse the contents of a tableor the results of a database inquiry by viewing the data in the familiar row/column format on the PC screen.
- *Column manipulation*: VQL provides a complete set of operations for selecting columns for processing, changing the order of columns in a table and editing column widths and titles (relational projection).
- *Table lookup*: VQL allows you to combine information from several different tables through an intuitive "table lookup" concept (relational join).
- *Row selection*: VQL provides a complete facility for selecting only those rows from a table that meet specific criteria for processing. Row selection criteria can be logically combined to form arbitrarily complex criteria (relational select).
- *Query templates*: Inquiry specifications can be saved in a PC disk file by name and recalled later to re-execute even complex queries with a few keystrokes.
- *Keystroke macros*: Keystroke macros allow you to save a sequence of VQL commands and menu choices in a PC file, and later execute the same sequence with a few keystrokes. Macros allow effective automation of repetitive VQL queries, from start to finish.
- *Auto-exec macro*: A special auto-exec command macro, if defined, is automatically executed when VQL begins operation, providing for complete automation of a VQL session.
- *Output file formats*: VQL can generate database inquiry results in five different output file formats on the PC. The formats allow direct processing of INGRES data by Lotus 1-2-3, Symphony, dBase, WordStar, MultiMate, Multiplan, VisiCalc, and all the leading PC productivity packages.

- *Context-sensitive help*: PC Link provides context-sensitive help at the press of a single key to guide you through data manipulation and extraction operations.

Database Concepts

If you are already an experienced INGRES user, or if you have used a relational database management system on your PC, you will already be familiar with the database concepts of *databases*, *tables* and *columns*. This section explains these fundamental concepts, which underlie the operation of VQL.

Tables

The most important database concept used by VQL is the *table*, a collection of data, arranged into rows and columns. Figure 6.1 shows a typical table, containing data about the various staff members working on projects.

The row/column arrangement of the information in the table is similar to the spreadsheets you may have used on your PC system. However, tables in a database typically have a more rigid structure than the cells of a spreadsheet.

Each *row* of the table typically stores information about a single object or person. In Figure 6.1, for example, each row stores information about one and only one staff member. In a table with data about projects, each row might store data about one particular project.

Within each row of a table, each *column* holds a different piece of information about the object described by the row. In Figure 6.1, the various columns hold data about the staff member's name, his title, hourly rate, and manager's name. In each column, the same kind of information appears in all the rows of the table. That is, title always appears in the second column of Figure 6.1, never in the first, fourth or any other column.

Columns and Rows

The rigid column structure of a database table allows you to manipulate the data in a table very easily. For example, to find all the staff members who are programmers, you can scan down a single column of the table in Figure 6.1. Similarly, if you wanted to compute the average hourly rate for programmers, you could calculate the average hourly rate from the "hourly rate" column, including only those rows where the word "programmer" appeared in the "title" column. If you were doing many paper-and-pencil calculations with the table, you might even copy the data onto another sheet of paper, leaving out the columns that were not needed for your calculations. VQL offers you a way to perform each of these "table manipulations" electronically, without using a paper and pencil, and it can manipulate tables with hundreds of columns and thousands of rows in seconds.

To make it easy for you to manipulate the columns of a table, each column is assigned a *column name*. When an INGRES table is first created, the person who creates the table assigns a name to each of the columns in the table. When VQL displays the table on the PC screen, the column titles appear at the top of the table, just as they do in Figure 6.1.

Figure 6.1.

Staff

name	title	hourly_rat	manager
Brock, Eddie	Programmer	55.00	Donovan, Tim
Donovan, Tim	Sr. Programmer	40.00	Stone, David
Evans, Don	Analysts	22.50	Stone, David
Gallagher, Cathy	Consultant	50.00	Stone, David
Garcia, William	Programmer	30.00	Donovan, Tim
Kuong, Albert	Programmer	24.00	Donovan, Tim
Miles, Patricia	Project Manager	50.00	
Miller, Stephanie	Programmer	35.00	Donovan, Tim
Ruggles, Robert	Systems Analyst	35.00	Stone, David
Spector, Dennis	Sr. Programmer	22.00	Stone, David
Stone, David	Project Manager	50.00	Miles, Patricia

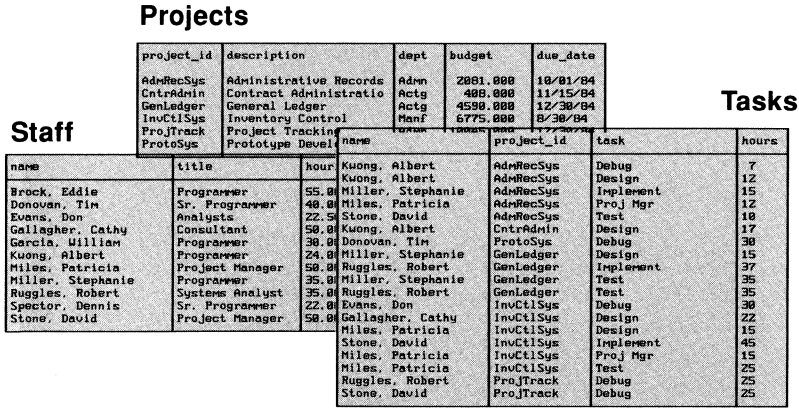
Views

In INGRES, *views* are tables of data not directly represented in storage. Views can simplify INGRES queries. If you are accustomed to using INGRES views, you should know that VQL operates on views in exactly the same way that it operates on tables.

Database Organization

For most applications, a database must store information about more than one kind of person, place or thing. For example, in a project management application, you might want to keep track of projects, staff members and assignments. Typically, you would organize this data into different tables, as shown in Figure 6.2. To help you keep track of the various tables, each table is assigned a *name*. In Figure 6.2, the tables are assigned the descriptive names "projects," "staff" and "assignments."

Figure 6.2.



The tables in Figure 6.2 form a small but complete database. The database is organized as a set of tables, with each table storing information about one kind of object. The tables are further comprised of rows and columns. Each row stores data for a single person, place or thing. Finally, each column in the row stores a single item of data.

Database Inquiry

One of the main functions of Visual-Query-Language is to perform an *inquiry* into a Host database to obtain information. When you ask VQL to perform an inquiry, it searches through the INGRES database to find all the information you requested, and then presents the *results* of the inquiry, in the familiar row/column form of a database table. Figure 6.3 on the next page illustrates the database inquiry process.

The simplest form of inquiry retrieves all of the rows of a single table in the database. For example, you could ask VQL to "List the name, title, department and salary for all of the staff members." This inquiry retrieves all of the rows, but only some of the columns in the table; the rest are not needed.

You can perform slightly more complicated queries by selecting only certain rows from the table. For example, you could ask VQL to "List the name, title, department and salary for all of the staff members earning more than $30.00 per hour." In this case, the inquiry retrieves only some of the columns and only some of the rows in the table. The phrase "more than $30.00 per hour" is called a *row selection criterion*, because it selects only the rows that meet the criterion to appear in the inquiry results. Row selection criteria are an important part of the VQL inquiry capabilities.

Another way to specify a more complicated inquiry is by requesting that the inquiry results be sorted into a particular order. For example, you could ask VQL to "List the staff members' names and hourly rates, sorted in descending order by rate." With the results of this inquiry, the staff members with the highest hourly rates would appear nearest the top of the resulting table.

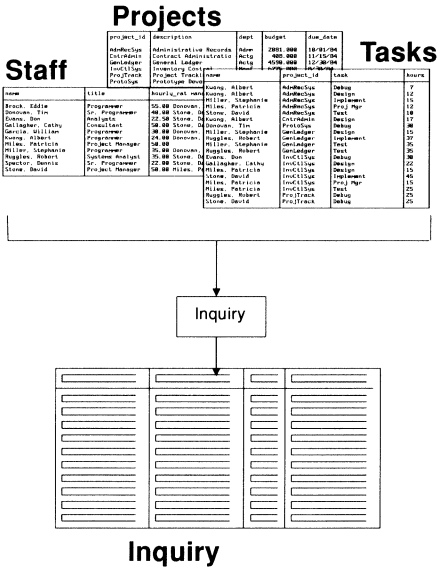
While many useful queries can be performed on a single table, often the information you want to retrieve from a database will be spread over two or more different tables. VQL allows you to combine information from two or more tables in a database with a *table lookup*. The idea behind a table lookup is simple. For example, suppose you wanted a list of staff members that included each person's name, title and project on which that person is currently working. The name and title are in the "staff" table, but the project identification is stored in the "tasks" table.

To get the information you need, you must use the "name" column in the "staff" table and *look up* the corresponding project in the "tasks" table. The actual lookup operation is simple—for each row in the

"staff" table, you use the value in the "name" column in the "tasks" table until you find a match. Then you use the name and project identification from that row and combine it with the title information from the "staff" table to generate the inquiry results.

When you ask VQL to perform a table lookup as part of a database inquiry, VQL simply repeats the paper-and-pencil steps just described. As you can see, a single database inquiry can become quite complex if it includes several table lookups, row selection criteria, and sort specifications. But VQL can easily keep track of these various *inquiry specifications*, and obtain the data that you request.

Figure 6.3.



The File-Manager

The PC Link File-Manager provides a powerful file transfer and file management tool for a PC/Host system connection. The File-Manager supports reliable bidirectional transfer of files between the two systems, regardless of the type of data stored in the file. File management functions such as copying, renaming and erasing files are also provided. An identical user interface for both the PC and the Host system offers simple, menu-driven operation, yet allows complex, multi-file operations to be specified with a few keystrokes.

Key Capabilities of the File-Manager

The PC Link File-Manager goes beyond conventional PC file transfer software to provide you with a comprehensive tool for managing files on your PC and one or more Host systems. The features of the PC Link File-Manager include:

- *Bidirectional file transfer*: PC Link supports transfer of files from PC to Host system and from Host system to PC.
- *Host system file management*: PC Link offers facilities for copying, moving, deleting, renaming and printing Host system files from the PC, without the need to understand Host system commands.
- *PC file management*: PC Link offers the same file management functions for managing PC files as it does for Host files, simplifying both functions.
- *Remote file printing*: PC Link can print PC or Host files on printers attached to the PC or to the Host system. Host system spooling is also supported.
- *File viewing*: PC Link can display the contents of a Host or PC on the screen for viewing, allowing you to directly browse left, right, up and down through the file with the PC cursor keys.
- *Lotus-style user interface*: PC Link offers a menu-driven user interface closely modeled after Lotus 1-2-3. 1-2-3 users will find the File-Manager familiar and easy to learn.
- *Error detection and correction*: The communications protocols used by PC Link use 16-bit CRC or equivalent error detection techniques to insure error-free transfer between PC and Host systems.

- *Host independence*: PC Link eliminates the need to understand Host system commands by offering the same set of commands and menus for file management and transfer, independent of the Host or Host operating system being used.
- *Multi-file transfer*: PC Link lets you select several files for transfer, and processes them in a "batch," without further user intervention.
- *Wild card matching*: Files can be selected for processing using wild card characters, allowing you to select an entire group of related files with a few keystrokes.
- *Unattended operation*: Lengthy file transfers of multiple files, once initiated, can proceed to conclusion without further user involvement.
- *Hexadecimal file viewing*: PC Link can display files for viewing in hexadecimal dump format, for application debugging and problem-solving.
- *Keystroke macro*: File transfer and file management functions can be automated with macros that allow unsophisticated users to perform complex tasks.
- *Auto-exec macro*: A special auto-exec command macro, if defined, is automatically executed when the File-Manager begins operation, providing for complete automation of a File-Manager session.
- *Context-sensitive help*: PC Link provides context-sensitive help at the press of a single key, to guide you through file transfer and file management operations and options.

File-Manager Concepts

Effective use of the PC Link File-Manager requires an understanding of a few key concepts concerning files and the way they are organized on the PC and Host systems. These concepts are discussed in this section.

Files and Directories

The fundamental unit of data storage is a *file*. A file is a collection of related information, which is stored under a *file name*. The file name is used to identify the contents of the file. Files can contain many different kinds of information, ranging from documents to accounting records to computer programs. PC Link usually is not concerned with the contents of a file, because it operates on the file as a whole. There are several exceptions to this, however, where certain PC Link features are designed to operate only on files which contain, for example, text information.

A typical PC diskette may contain several dozen files, a PC hard disk several hundred files and a Host system several thousand files. To organize the files, the PC and the Host systems supported by PC Link group the files into *directories*. A *directory* is simply a collection of file names, which are typically related to one another and are used together. Directories can be set up in many different ways. For example, it is not unusual to have a separate directory on a Host system for each user, or to group files together by application into directories.

On the PC and on most Host systems supported by PC Link, directories themselves may be organized into higher-level directories, creating a hierarchical structure of directories, with individual files at the bottom of the hierarchy. Figure 7.1 shows a typical directory hierarchy. On both the PC and the Host system, any directory and any file in the hierarchy can be identified by name.

The Working Directories

Typically, when you are working with either a PC or a Host system, the files you are working with are concentrated in a single directory, or in a small set of directories. PC Link uses this fact to simplify its operation. When PC Link is operating, it identifies a single directory on the Host system as the Host working directory. Similarly, a single directory on the PC system is identified as the PC working directory. You may change either working directory over time to use the files in any directory on the PC or the Host system, but at any given time, there is only one working directory on each system.

All File-Manager activity takes place within the PC working directory and the Host working directory. When you transfer files to and from the Host system, they move from one working directory to the other. Also, the PC Link file management functions are available for files within the working directory only. For more information about files and working directories, refer to Chapter 10.

Text Files and Binary Files

For most file management and file transfer operations, the File-Manager is not concerned with the contents of the files. However, certain operations such as printing a file, or viewing its contents on the PC screen, require some caution concerning file contents. Typically, you can think of files as being of two types:

- *Text* files, which contain printable information, such as reports or other documents
- *Binary* files, which contain information that is not intended for printing, such as executable computer programs or data files that contain binary numbers or dates

In this manual, commands and menu choices that are more appropriate for either text or binary files are identified. However, PC Link provides full support for file transfer and file management of both types of files.

The Terminal-Emulator

The PC Link Terminal-Emulator gives you a direct connection between your PC's keyboard and display and the computing power of a Host computer system. With the Terminal-Emulator, you can use your PC as a terminal to access any application on your Host System, from a word processor, to INGRES Visual Programming Tools to an INGRES application. You can also issue commands to the Host system and receive back Host output on the PC screen and printer.

The Terminal-Emulator provides VT100-compatible terminal emulation for an IBM PC or PC-compatible system. You can use the Terminal-Emulator with a Host system on which the PC Link software is installed or with Host systems that do not support PC Link. For example, you can use the Terminal-Emulator to access public information services and computerized bulletin board systems. While under the control of the PC Link Terminal-Emulator, you are in direct communication with the Host computer's operating system and other software and can execute all the functions and commands that they provide.

Key Capabilities of the Terminal-Emulator

The PC Link Terminal-Emulator uses the computing power and disk storage of the PC to provide capabilities that go beyond those available in conventional computer terminals. The major features of the PC Link Terminal-Emulator include:

- *ANSI compatibility*: PC Link supports the most popular control commands defined in the ANSI standard X3.64 for computer terminals. Host software that uses the full-screen display capabilities provided by the ANSI standard (such as Host word processor and forms data entry programs) can be used directly through PC Link.
- *VT100 compatibility*: PC Link also supports the major control commands of the popular Digital Equipment Corporation VT100 series of computer terminals. Most Host software written for use with VT100 compatible terminals can be used through PC Link without modification.
- *Printer logging*: PC Link can print out a running record of your dialogue with the Host system, providing a printed log of your interactive Host session.

- *File capture*: PC Link can capture your dialogue with the Host system in a PC file, for later processing.
- *File send*: PC Link can send the contents of a PC file to the Host system as a sequence of commands or as data to be stored in a Host file.
- *Mapping PC keys to Host terminal functions*: PC Link allows you to establish alternate meanings for keys on the PC keyboard, to create a customized emulation of terminal keyboard features.
- *Keystroke typing aid*: The keymap facility can also be used to create single-keystroke abbreviations of commonly typed commands, words and phrases.
- *Integrated Terminal-Emulator*: The PC Link Terminal-Emulator is available with a single keystroke from within the PC Link Visual-Query-Language and the PC Link File-Manager. There is no need to exit the other PC Link modules to use Terminal-Emulator facilities.
- *"Foreign" Host support*: The PC Link Terminal-Emulator can be effectively used with Host systems on which the PC Link Host software has not been installed, such as public data services and computer bulletin boards.
- *Communications flexibility*: PC Link supports a full range of options for communicating with Host systems, including port selection, communications speed and parity settings, flow control, full or half duplex communications.
- *Keystroke macros*: The PC Link macro facility is available within the Terminal-Emulator menus, and an auto-exec macro can be automatically invoked when the Terminal-Emulator begins operation.
- *Modem support*: PC Link supports the popular "AT" protocol used by Hayes and compatible modems, including auto-dial support.
- *Context-sensitive help*: PC Link provides context-sensitive help at the press of a single key from the Terminal-Emulator Menu to guide you through operations and options.
- *Access to DOS*: PC Link allows you switch easily from a Host working session to DOS operation, simply by pressing **F10** (DOS). The Host connection remains intact while you execute any DOS command or run a program. Pressing **F10** (DOS) again puts you back in the Host working session.

Terminal-Emulator Concepts

To make effective use of the PC Link Terminal-Emulator, you should understand some key concepts. These concepts are *keymaps*, the *Menu Access Key*, *local processing* and *host processing*.

Keymaps

An important part of the Terminal-Emulator's job is to simulate the functions performed by the keyboard of a computer terminal. The keys on your PC keyboard are arranged differently than on most computer terminals and some special keys typically found on ANSI-compatible terminals do not have PC keyboard equivalents.

To simulate a terminal keyboard, PC Link uses a keyboard map, or keymap. The keymap identifies some of the keys on the PC keyboard as having special functions and causes PC Link to send special control codes to the Host system when these keys are pressed. These control codes are identical to the codes sent by the special keys on the terminal keyboard. As a result, you can use the PC keys identified in the keymap as substitutes for their terminal keyboard equivalents.

PC Link is supplied with a default keymap that matches several PC keys to the special keys on a VT100 terminal. This default keymap is automatically loaded from disk when the Terminal-Emulator begins operation.

You can change the key definitions in the default keymap and even create alternate keymaps with your own key definitions. See the Appendices F and G and Chapter 27.

The Menu Access Key

F8 (Host) is normally designated the Menu Access Key in the Terminal-Emulator. This special key brings the PC Link Access Menu to the screen. Normally this menu is hidden from view when you are in Host session mode. For more information about using the Menu Access Key, please refer to Chapter 10.

Local Processing

You may think of local processing as work done by the PC. When you select a command that causes the PC to do work with its own resources, that is, without the services of the Host system, you are performing local processing. An example of local processing is copying a file on the PC using the **copy** command in DOS.

Host Processing

You may think of Host processing as work done by the Host system. When you select a command that causes the Host system to do work with its own resources, without requiring services of the PC, you are performing Host processing. An example of Host processing is running an application unavailable on your PC on the Host system while using your PC as a terminal.

The Integrated Terminal-Emulator

In addition to using the Terminal-Emulator as a standalone program, you can use the Terminal-Emulator from within the other PC Link modules. This Integrated Terminal-Emulator is available from most PC Link menus, simply by pressing **F8** (Host). There are a few differences between the operation of the Integrated Terminal-Emulator and the standalone Terminal-Emulator:

- The Integrated Terminal-Emulator is started differently (by pressing **F8** (Host) instead of selecting a choice from the PC Link Access Menu).
- The Integrated Terminal-Emulator automatically logs in to the Host system interactive session.
- Your Host system dialogue is with a *subshell* on the Host system, launched by the PC Link Host software. Normally, this has no effect on your interaction with the Host system, and the full features of the Host are available to you as if you had just logged in.
- You must specifically log out from the Host system. When you do this, PC Link automatically returns you to the PC Link module from which the Terminal-Emulator was started; you do not have to exit the Terminal-Emulator through the Terminal-Emulator Menu.
- The Quit command on the Terminal-Emulator Menu is disabled; you must exit the Integrated Terminal-Emulator by logging out from the Host system's subshell.

INGRES/PCLINK Configuration

PC Link is a flexible software package that offers you many different features, functions and options. For example, it can work with several different types of communications networks, adapting to the transmission speeds, communications protocols, and error-detection schemes used by each. These and other configuration options are collectively referred to as the PC Link configuration.

Each configuration option controls one specific aspect of PC Link behavior. Some options have simple yes/no or on/off settings. For example, the Auto-Load option controls whether the PC Link Visual-Query-Language will automatically load a PC software package after it generates an output file. Other options have multiple settings. For example, the Network Speed option can be set to communications speeds ranging from 110 bits/second to 19200 bits/second to match the speed of the asynchronous communication link that you are using.

There are seven major categories of configuration options:

- *PC configuration*
- *Host configuration*
- *Network configuration*
- *VQL configuration*
- *File-Manager configuration*
- *Terminal-Emulator configuration*
- *Auto-Load configuration*

Some configuration options must be set for product operation; others simply customize the environment. See Chapters 3 and 28 for more information.

The Current Configuration

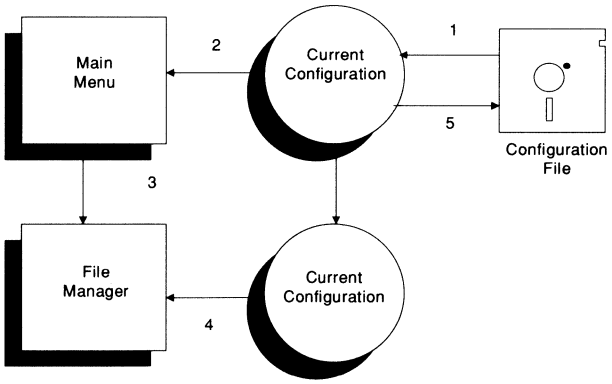
The Configuration command on the PC Link Access Menu evokes a submenu that includes commands for changing configuration settings temporarily or permanently. Chapter 34 describes each of the commands that you can execute from the Configuration Menu.

When PC Link first begins operation, each configuration option is set to a *default* setting. The default settings are stored in the PC Link *configuration file* called PCLINK.CNF, which is stored with your PC Link programs. These default settings are listed in Appendix D.

Figure 9.1 shows how the current configuration is set at PC Link startup and how it can be changed during a PC Link session:

- When the PC Link Access Menu first appears, each configuration option is set based upon values in a configuration file.
- You can use commands in the PC Link Access Menu to change the settings. The new settings control the behavior of your current PC Link session, but they do not change the default values stored on disk unless specifically requested.
- When you start one of the PC Link modules (such as the File-Manager), PC Link passes to the module a copy of the current configuration settings. The module begins operation with these settings.

Figure 9.1.



- During a session, you may also change some of the configuration settings. These changes are made in the module's own copy of the current configuration. They do not affect PC Link's current configuration. As soon as you leave a module, the settings revert to the values they had before you entered the module.
- Finally, you can change the default values in the configuration file by replacing them with the current settings so that PC Link automatically begins operation with the settings that you prefer.

You can create any number of configuration files to use with PC Link. This is particularly useful if you plan to use PC Link on a variety of Host systems. See Chapter 28 for further information on the use of alternate configuration files.

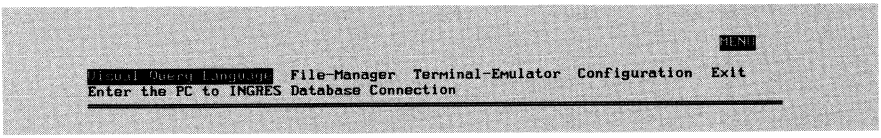
The PC Link Access Manager

The PC Link Access Manager is the gateway into the PC Link modules that are installed on your PC system. The Access Manager has two main functions:

- It provides easy access to the other PC Link modules—the Visual-Query-Language, the File-Manager and the Terminal-Emulator.
- It manages the PC Link configuration options that control the operation of the various PC Link modules, allowing you to set and reset each option.

Figure 10.1 illustrates the Access Menu.

Figure 10.1.



Starting a PC Link Module from the Access Menu

Normally, you will use all of the PC Link modules through the Access Manager. To start the Access Manager, you must first change the active drive and directory to the drive and directory where your PC Link software is installed. For example, if you installed PC Link on the C drive (a hard disk), in the directory C:\PCLINK, you would type the following commands:

```
A> c:
C> cd \pclink
```

If you are using a dual-floppy system, it is customary to insert the diskettes containing the PC Link software into the A drive and use the B drive for data files. Often you will already be in the correct directory with the A drive as the current drive, eliminating the need to type any commands to change drives or directories.

Procedure 10.1 shows how to start any of the PC Link modules:

Procedure 10.1 : Starting PC Link Modules

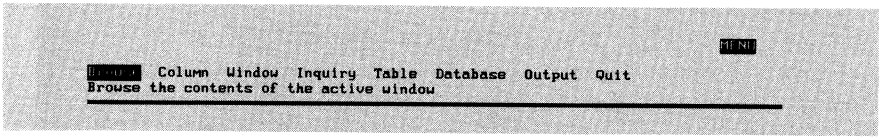
1. From the DOS prompt, insert the PC Link Program diskette into drive A. (Skip this step if PC Link is installed on a hard disk.)
2. Change the current drive and directory to those in which PC Link is installed.
3. If you are using the PCLINK.CNF configuration file, type **pclink**. Otherwise type **pclink /c:***xxxxxxxx*, where *xxxxxxxx*.CNF is an alternate configuration file. PC Link displays the Access Menu and copyright notices.
4. Select **V**isual-Query-Language, **F**ile-Manager or **T**erminal-Emulator. The PC Link module displays its copyright notice and menu.

You can also start any of the PC Link modules directly from DOS, as described later in this chapter. (For further information on alternate configuration files, see Chapter 28.)

The VQL Menu

Figure 10.2 shows the Visual-Query-Language Menu.

Figure 10.2.

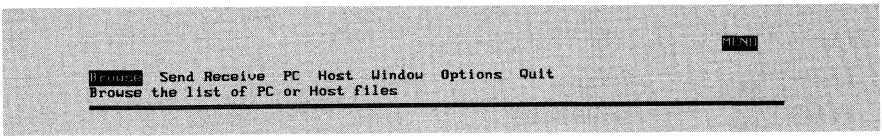


The various choices on this menu provide access to all the features and functions of VQL. For example, the Column choice leads to the Column Operations Menu, for manipulating columns of displayed data. The Browse choice allows you to browse the results of database inquiries in the Main and Lookup Windows. The Output choice causes VQL to generate an output file containing the results of a database inquiry. Chapters 11 through 20 describe how to use the various VQL functions, and Chapter 31 lists and explains each VQL command.

The File-Manager Menu

When you start the File-Manager, you see a menu and a list of files in the PC working directory. You can browse the list with the arrow keys. The File-Manager Menu commands are described in Chapter 32, and Chapters 21 and 22 explain File-Manager operations. These include operations for managing both Host and PC files as well as for setting special options. Figure 10.3 illustrates the File-Manager Menu.

Figure 10.3.

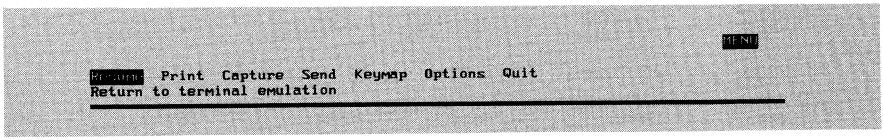


The Terminal-Emulator Menu

The Terminal-Emulator also displays a menu when started. The Terminal-Emulator Menu enables you to begin operations to capture Host System dialogue into a PC file, map keys and print files, to name a few. Terminal-Emulator commands are described in Chapter 33, and operations are explained in Chapters 23 through 27.

Figure 10.4 displays the Terminal-Emulator Menu.

Figure 10.4.



Starting a PC Link Module from DOS

Any of the PC Link modules can be started directly from DOS. This shortcut method for starting a PC Link module is appropriate when you do not need to change any settings in the configuration file, and when you will not be using any other PC Link modules. In addition, this method also saves memory space.

Refer to Appendix M for further information on operating PC Link on a system with limited memory.

To start a PC Link module from DOS, follow the steps in Procedure 10.2:

Procedure 10.2 : Starting a PC Link Module from DOS

1. From the DOS Prompt, insert the PC Link Program diskette into drive A. (Skip this step if PC Link is installed on a hard disk.)
2. Change the current drive and directory to those in which PC Link is installed.
3. Type one of the following commands to use a module with the default configuration file (PCLINK.CNF):

   db (to start Visual-Query-Language)
   fm (to start File-Manager)
   te (to start Terminal-Emulator)

   To use a module with an alternate configuration file (*xxxxxxxx*.CNF), type one of the following commands:

   db /c:*xxxxxxxx*
   fm /c:*xxxxxxxx*
   te /c:*xxxxxxxx*

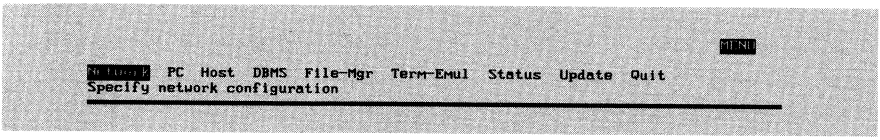
   In a few seconds the copyright notice and module menu will appear.

Note that if you start a PC Link module directly from DOS, you will return to DOS and not the Access Menu when you exit that module.

Accessing the PC Link Configuration Menu

PC Link's configuration functions are available through the Configuration Menu, illustrated in Figure 10.5.

Figure 10.5.



To access the Configuration Menu, use Procedure 10.3:

Procedure 10.3 : Accessing the Configuration Menu

1. From the DOS prompt, insert the Program diskette into the A drive. (Skip this step if PC Link is installed on a hard disk.)
2. Change the active drive and directory to those in which PC Link is installed.
3. If you are using the PCLINK.CNF configuration file, type **pclink**. Otherwise type **pclink /c:***xxxxxxxx*, where *xxxxxxxx*.CNF is an alternate configuration file. PC Link displays the Access Menu and copyright notices.
4. Select Configuration. PC Link displays the Configuration Menu.

Invoking the Integrated Terminal-Emulator

The Terminal-Emulator runs not only as a standalone module but also from within the other PC Link modules. This Integrated Terminal-Emulator is available from most PC Link menus, simply by pressing **F8** (Host). There are a few differences between the operation of the Integrated Terminal-Emulator and the standalone Terminal-Emulator, and these are described in Chapter 8.

To invoke the Integrated Terminal-Emulator from within another PC Link module, follow the steps in Procedure 10.4:

Procedure 10.4 : Using the Integrated Terminal-Emulator

1. From a PC Link module menu, press **F8** (Host). The display scrolls up to reveal a PC Link Terminal-Emulator copyright message.
2. PC Link displays a cursor and starts an interactive Host session.
3. Use the Integrated Terminal-Emulator just as you would use the standalone Terminal-Emulator until your Host session is complete.
4. Use the appropriate command to log out from the Host system.
5. PC Link automatically returns to the PC Link module from which you started the Integrated Terminal-Emulator and restores the screen to its original appearance.

Invoking DOS from PC Link

You can access the DOS prompt on your PC to run other software programs or utilities without even exiting from PC Link. This can be done from within any PC Link operation except for interactive Host sessions using the Terminal-Emulator and operations that require your input to proceed, such as typing a database name in response to a prompt in VQL.

To invoke DOS from PC Link, follow Procedure 10.5:

Procedure 10.5 : Invoking DOS from PC Link

1. From any PC Link Menu not prompting for your input, press F10 (DOS). The DOS prompt will appear.
2. Run PC software programs or utilities.
3. Type **exit** and press **Enter**. PC Link returns to the original menu.

Use of other programs and utilities through the **F10** (DOS) command is limited by available PC memory. Exercise caution in using memory-resident applications from within PC Link.

Accessing Help Screens in PC Link

PC Link includes comprehensive and context-sensitive help messages. This means that from wherever you are in the program, pressing **F1** (Help) will provide information on the particular menu, command or operation you are accessing. In addition, each help screen offers a list of other related topics that you can access directly and an index of further help screens. Follow the steps in Procedure 10.6 to use the PC Link Help facility:

Procedure 10.6 : Using the PC Link Help Screens

1. From any PC Link menu, press **F1** (Help).

   If you are using a 5 1/4 inch diskette system, remove the Program disk from drive A and insert the Help disk in its place. Now press **F1** (Help) again.

   PC Link displays a screen of information describing the menu, command or operation you have selected and a list of related help topics. PC Link moves the cursor from the menu choices at the top of the screen to a list of related topics at the bottom.

2. There may be topics listed that are not displayed on the screen. Use the cursor keys to browse the entire list of related topics.
3. To select a related topic, move the cursor to it and press **Enter**. PC Link will display a new help screen.
4. To access an index of help topics, use the procedure described in Step 3. You may then select a topic from the index with single choice selection.
5. To leave a help screen or index, press **Esc**. (If you are using a 5 1/4 inch diskette system, remove the Help disk from drive A: and insert the Program disk in its place before you press **Esc**.) PC Link displays the original screen from which you requested help.

Interrupting the File-Manager

Some File-Manager operations can take minutes or even hours to complete. For example, transferring a 200,000 character file to a Host system across a 300 baud telephone line can take in excess of two hours. You can, however, interrupt the File-Manager operation.

To interrupt an ongoing File-Manager operation such as transferring, copying or printing a file, use Procedure 10.7:

Procedure 10.7 : Interrupting the File-Manager

1. During an interruptible File-Manager operation, press **Ctrl Break**.
2. PC Link halts the operation in progress as soon as possible.
3. PC Link displays an error message at the bottom of the screen informing you that the operation was interrupted prematurely. Press **Enter** to clear the error message and return to the menu from which the interrupted operation was started.

When you interrupt a File-Manager operation, the operation stops as soon as possible. "As soon as possible" means:

- *Immediately,* for local PC operations such as copying, printing or renaming a file
- *Immediately,* for file transfer operations such as sending a file to the Host system, receiving a file from the Host, and printing PC files on the Host system and vice versa

- *As soon as processing for the current file is complete,* for Host file copying or printing. If processing of multiple Host files is requested, subsequent files will not be processed.

Ctrl Break is not used when the File-Manager is waiting for a menu selection or input from you. Use the **Esc** key instead to back up or abandon the menu selection.

Connecting to the Host System

Each of the PC Link modules can connect and disconnect you to the Host system. How that happens is a function of the configuration settings and the operation of the particular module. Read the sections that follow to understand Host system connections.

Initiating a Session on the Host System

Within PC Link you can initiate a VQL or File-Manager session on the Host system automatically or manually. You set the Auto-Connect option in the Configuration Menu to specify which kind of connection you want to make. See Chapter 28 for further information on setting the Auto-Connect option.

If Auto-Connect is set to automatic, PC Link initiates a login dialogue and attempts to log in automatically to the Host system. PCLINK uses the settings for user identification and password from the current configuration file, or if they are not specified, prompts for them. Upon exiting VQL or the File-Manager, PC Link automatically logs out from the Host computer using the Logout command in the current configuration file.

If Auto-Connect is set to manual, PC Link assumes that you will log in and out through the Terminal-Emulator.

To use manual Auto-Connect, follow the steps in Procedure 10.8:

Procedure 10.8 : Manual Auto-Connect

1. From the PC Link Access Menu, select **T**erminal-Emulator. If the modem is supported by PC Link, a phone number is present in the current configuration file, and PC Link does not detect a carrier on the line, PC Link automatically dials the Host system.
2. After establishing a connection to the Host system, PC Link presents a screen that is blank except for a message identifying the Menu Access Key in the lower left.

3. Press **Enter** repeatedly until a prompt appears. Using the information from item J of the configuration worksheet in Appendix B, conduct a dialogue to initiate a user session on the Host system.

4. When you encounter a command prompt from which you can invoke INGRES, press the Menu Access Key (by default this is **Alt M**) and select **Q**uit.

5. PC Link presents a confirmation menu. Select **Y**es to exit the Terminal-Emulator while leaving the Host connection intact.

6. PC Link returns to the Access Menu. From here you can enter and exit VQL, the File-Manager and Terminal-Emulator at will. When exiting the Terminal-Emulator, be sure to leave the Host connection intact.

7. When you are done using PC Link, start up the Terminal-Emulator and enter commands necessary to terminate a session on the Host. After logging out from the Host system, press **Alt M** and select **Q**uit.

8. PC Link presents a confirmation menu. Select **D**isconnect to terminate your connection with the Host system.

9. Select **Q**uit, then **Y**es to leave PC Link and return to DOS.

Connecting to the Host VQL Module

Immediately after the Visual-Query-Language begins its operation, it attempts to connect to the Host Visual-Query-Language module. Messages at the bottom of the PC Link screen inform you of the progress as a connection to the Host module is made. If Auto-Connect is set to automatic, it may establish a phone connection, and if a login value is not present in the current configuration file, you will be prompted for user identification and a password. If Auto-Connect is set to manual, you must establish a connection to the Host system with Procedure 10.8.

When Auto-Connect is set to manual, leaving VQL terminates operation of the Visual-Query-Language Host module. However, the Host session remains active, and the communications link remains intact until these are terminated manually, as described in Procedure 10.9.

Connecting to the Host File-Manager Module

Some of the File-Manager's functions do not require an active connection to the Host File-Manager module. For example, you might use the File-Manager for overnight printing of several hundred pages of information from a dozen local PC files. The printing takes place entirely on the PC and does not require a connection to the Host system. However, most File-Manager functions, such as transferring files or printing files on the Host printer, do require an active Host connection.

When you first start the File-Manager, it is not connected to the Host File-Manager module. The File-Manager automatically connects to the Host system if you:

- Request a file transfer with the Send or Receive commands.
- Request a Host file management operation with any of the Host commands.
- Request printing of a PC file on the Host printer.
- Request a connection with the Window Open command.

Once the PC File-Manager module has connected to the Host File-Manager module, the connection remains active, because the File-Manager assumes you will be continuing to use File-Manager features that require the connection.

However, there may be times when you will be working exclusively with PC files and may want to close down the Host connection to save billing charges for Host system connect time. PC Link allows you to shut down the Host system connection manually, using the steps in Procedure 10.9.

Procedure 10.9 : Closing the Host Window

1. From the File-Manager Menu, select **W**indow **C**lose.
2. PC Link shuts down the Host File-Manager, removes the Host window from the screen and returns to the File-Manager Menu.
3. If Auto-Connect is manual, use Procedure 10.8 to terminate the Host session.

After you have closed the connection to the Host File-Manager module, it remains inactive unless you reactivate your connection. The connection to the Host File-Manager module is automatically shut down when you exit the File-Manager.

The process of connecting to the Host File-Manager module involves several steps and may take several moments, depending on your Auto-Connect setting and the type of communications network you are using.

For example, if you are using a dial-up modem and an automatic connection, PC Link will dial the Host system's telephone number, wait for it to answer, and log in to the system. If you have not provided a default user name and password for access to the Host system, PC Link will also request this information from you in the course of making the connection. Finally, PC Link verifies that the default Host working directory specified in the configuration file exists and receives information on the files in that directory from the Host system.

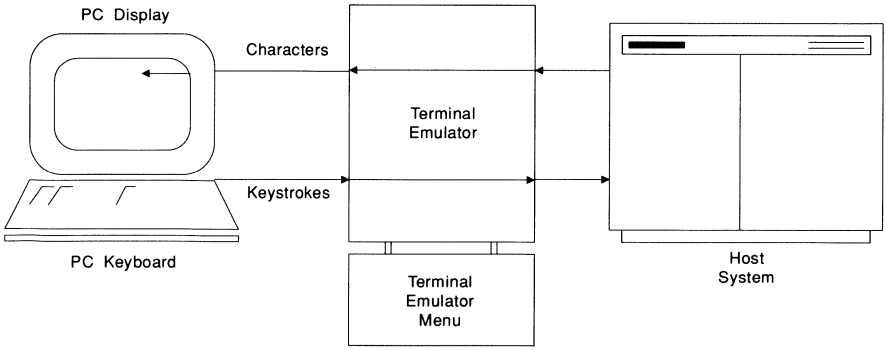
When Auto-Connect is set to manual, leaving the File-Manager terminates operation of the File-Manager Host module. However, the Host session remains active, and the communications link remains intact until these are terminated manually by leaving the File-Manager, as described in Procedure 10.9.

Connecting to the Host in the Terminal-Emulator

When you start the Terminal-Emulator, PC Link establishes a communications link to the Host system and then places you immediately into an interactive Host session. During an interactive Host session, PC Link places you in direct communication with the Host system. Each character you type on the PC keyboard is sent to the Host system, and each character received from the Host system is displayed on the PC screen. The PC Link menus are not active while you are in a Host session, and PC Link does not process the characters you type as menu selections or commands.

Figure 10.6 illustrates Terminal-Emulator operation in Host session mode.

Figure 10.6.



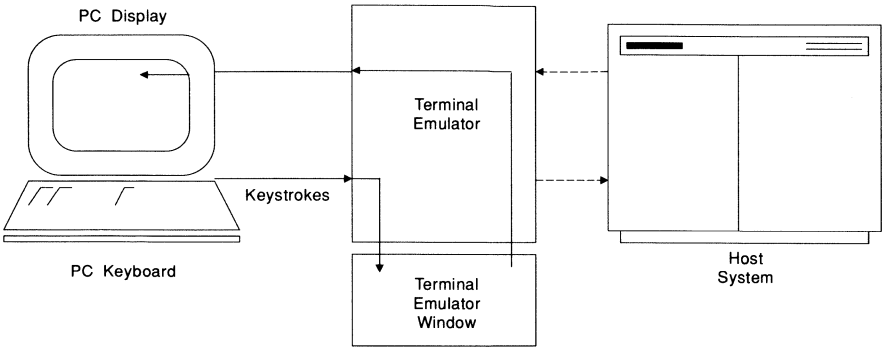
Your first step upon entering the Terminal-Emulator will probably be to initiate a session with the Host system. Once you have logged in, you can type Host system commands and use Host system applications software. PC Link never initiates or terminates a session on the Host automatically through the Terminal Emulator. You must log in and log out manually.

The Terminal-Emulator Menu Access Key

The PC Link menus are hidden from view while you are in Host session mode. However, you will occasionally use the PC Link menus to control PC Link operation and access its advanced features. To bring the PC Link menus onto the screen, you must press a special key called the *Menu Access Key*. Normally, the Menu Access Key is the **Alt M** key combination. The current value of the Menu Access Key is displayed on the bottom of the screen during an interactive Host session.

When you press the Menu Access Key, the Terminal-Emulator temporarily suspends your interactive Host session and presents the Terminal-Emulator Menu at the top of the screen. While the menu is displayed, PC Link accepts menu selections and commands from you and gives you control over PC Link features and options. The characters you type in menu mode are not sent to the Host system. Figure 10.7 illustrates the Terminal-Emulator in menu mode.

Figure 10.7.



To resume your interactive Host session, select Resume from the Terminal-Emulator Menu. The screen returns to exactly its appearance when you pressed the Menu Access Key, and you may continue your interactive Host session as if it had never been interrupted.

Exiting a PC Link Module

When you have finished with the PC Link Visual-Query-Language or File-Manager, you can exit the module with the steps in Procedure 10.10. PC Link automatically terminates operation of the Host module when you exit. If the Auto-Connect option is set to automatic, your Host session and network connection shut down automatically when you exit VQL or the File-Manager. However, if the Auto-Connect option is set to manual, you must use the Terminal-Emulator to log out manually in order to terminate your Host session and network connection.

Procedure 10.10 : Exiting a PC Link Module

1. From a PC Link module menu, select **Q**uit.
2. Select **Y**es to confirm your choice.
3. PC Link shuts down the connection to the Host module, if it is active, and returns to the PC Link Access Menu or DOS.

Exiting the Access Menu

When you have finished your PC Link session, you can exit the Access Menu. Use Procedure 10.11 to exit the program.

Procedure 10.11 : Exiting PC Link

1. From the Access Menu, select **E**xit.
2. PC Link displays a confirmation menu:

   Select **N**o if you do not want to exit the Access Menu. PC Link will return you to the Access Menu.

   Select **Y**es if you do want to exit the Access Menu.
3. Your PC displays the DOS prompt.

Selecting Databases and Tables with VQL

The Database option on the Visual-Query-Language Menu is used to select an INGRES database for processing by PC Link. After you have selected a database, the Table command is used to select tables from the database for viewing. In both cases, PC Link can display a list of the available databases or tables for your selection. Alternatively, you may decide to select by name or through your configuration file each time you start PC Link. For more information on the configuration option for database name, see Chapter 28.

Selecting Databases

If there is a database name specified in the current configuration file when PC Link starts up, VQL will attempt to open that database. If not, your first action when you start VQL will be to select a database. Three commands assist you in this. The Database Name command tells you the name of the current database, if any, and allows you to enter the name of a new database. Database List lists the names of all the available databases, and Database Select allows you to choose a database from that list.

To find out the name of the current database or to select a new one, use Procedure 11.1:

Procedure 11.1 : Identifying and Changing the Current Database

1. From the VQL Menu, select **D**atabase **N**ame.
2. PC Link displays the name of the current database if there is one. To retain the current database, press **Esc**. To change the database, type the new database name right over the current name and press **Enter**.
3. PC Link returns to the VQL Menu.

To find out what databases are available on the Host system, use Procedure 11.2:

Procedure 11.2 : Listing Available Databases

1. From the VQL Menu, select **D**atabase **L**ist.
2. PC Link displays a pop-up list of the names of the available INGRES databases. Use the cursor keys to view the list, and then press **Enter**.

3. PC Link returns to the VQL Menu.

To select a database from the list of those available, use Procedure 11.3:

Procedure 11.3 : Selecting a Database

1. From the VQL Menu, select **D**atabase **S**elect.
2. PC Link presents a pop-up list of the available databases on the Host system and prompts for your selection. Use single-choice selection to choose from the list or type the name of the database.
3. If you have previously selected a database, PC Link displays a confirmation menu:
   - Select **N**o to cancel the procedure and continue processing.
   - Select **Y**es to erase your work and select the new database.
4. PC Link erases your work, and establishes access to the newly selected database on the Host system before returning to the VQL Menu.

Selecting a Database on a Different Host System

If your PC is connected to an Ethernet local area network with more than one Host system, you can select a database on a different Host system than the one you are currently using. You must first select the new Host system using Procedure 11.4 and then select the database. If you are connected to your Host system through an asynchronous connection, you cannot select a new Host system using the Database Host command.

Procedure 11.4 : Selecting a Different Host System

1. From the VQL Menu, select **D**atabase **H**ost.
2. PC Link prompts for the name of the new Host system you wish to use. Type the name and press **Enter**.
3. PC Link presents a confirmation menu for your selection:
   - Select **N**o to cancel the command and keep the current Host system connection.
   - Select **Y**es to proceed with the command and erase your current work.

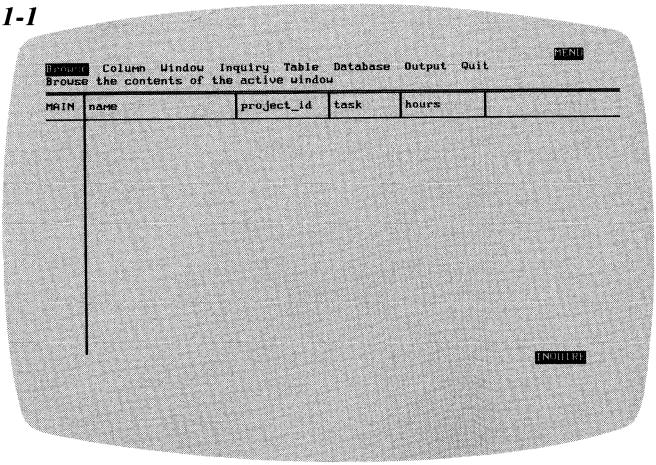
4. PC Link erases your current work, closes down the connection with the current Host system, and attempts connection to the new system.
5. PC Link returns to the VQL Menu, with a successful connection to the new Host system.

Selecting a Table for Processing

To view the data in a table, you must first select the table. You may select a table for viewing in either the Main Window or the Lookup Window. The table you select will be displayed in whichever window is the active window at the time you make the selection. You can use the **F6** (Window) key to switch the active window to the one that you want to use.

When you select a table for processing, the contents of the active window are erased, and the columns of the newly selected table are displayed. Note that the entire context of the active window is erased, including its displayed and non-displayed columns and any associated inquiry specifications. Because accidental selection of a table for the Main Window could erase a large amount of work, PC Link always prompts for confirmation when a new table is selected in the Main Window. Confirmation is not requested when a new table is selected for the Lookup Window, because you will tend to select new Lookup Window tables frequently. Figure 11.1 provides an example of how the screen appears immediately after table selection.

Figure 11-1



To find out the name of the current table and to change it, use Procedure 11.5:

Procedure 11.5 : Identifying and Changing the Current Table

1. From the VQL Menu, select **T**able **N**ame.
2. PC Link displays the name of the current table if there is one. To retain the current table, press **Esc**. To change the table, type the new table name right over the current name and press **Enter**.
3. If the active window is the Main Window, PC Link presents a No/Yes menu for your selection:
   - Select **N**o to cancel the command and retain the current contents of the Main Window.
   - Select **Y**es to proceed with the command and to erase the current contents of the Main Window.
4. PC Link returns to the VQL Menu.

To list the available tables in the database, follow the steps in Procedure 11.6:

Procedure 11.6 : Listing Available Tables

1. From the VQL Menu, select **T**able **L**ist.
2. PC Link displays a list. Use the cursor keys to view the list, and then press **Enter**.
3. PC Link returns to the VQL Menu.

To select a new table from a list of those available for the active window, follow the steps in Procedure 11.7:

Procedure 11.7 : Selecting a Table for Processing

1. From the VQL Menu, select **T**able **S**elect.
2. PC Link displays a list of the available tables in the current database, and prompts for your selection. You may:

   Select from the list using single-choice selection.

   Type the name of a table.
3. If the active window is the Main Window, PC Link presents a No/Yes menu:

   Select **N**o to cancel the command and preserve the current contents of the Main Window.

- Select **Y**es to erase the entire contents of the Main Window and display the new table in it.

4. PC Link erases the contents of the active window and displays the names of the columns of the selected table in the active window header. The active window body remains blank.
5. PC Link returns to the VQL Menu.

You can also print a list of the table names on the PC printer by following the steps in Procedure 11.8:

Procedure 11.8 : Printing a List of Tables

1. From the VQL Menu, select **T**able **P**rint.
2. PC Link prints a list and then returns to the VQL Menu.

Making Database Inquiries with VQL

The main function of the Visual-Query-Language is *database inquiry*. You extract the information you need from an INGRES database and see it on the screen or copy it into a PC file. You do not have to learn a query language or type a statement to specify what you want to retrieve. Instead, you build an inquiry step-by-step by manipulating the tables, rows and columns displayed on your PC screen.

PC Link does not actually obtain data from the Host INGRES database each time you move a column or select a new table for processing. To save time, PC Link follows one simple rule about obtaining data from the Host database: PC Link performs a database inquiry only when you specifically request it.

This chapter describes the various kinds of database inquiry that PC Link can perform, and how you request each kind of inquiry.

Inquiry Specifications

As you use the various PC Link menus and commands, PC Link carefully maintains a record of your activities. For example, it notes the tables you have selected for each window, the table lookups you have performed, the row selection criteria you have specified and the column operations you have performed. These *inquiry specifications* describe the information you want to obtain from the database. The inquiry specifications for each window include:

- The columns displayed in the window and the order of their appearance.
- The row selection criteria.
- The sort specifications.
- The table lookups.
- The setting of unique rows.

When PC Link performs a database inquiry, it gathers together all of the inquiry specifications for the active window, and uses them to obtain the data. When the database inquiry is processed, the results of the inquiry are presented, in tabular form, in the body of the active window.

The INQUIRE Indicator

Because PC Link only obtains data from the Host database when you specifically request it, the data displayed in a window may not accurately reflect the current inquiry specifications for that window. For example, if you select a new table for the active window, perform a database inquiry and then add a row selection criterion, the window will still display all the rows of the table, while the inquiry specifications may select only some of the rows. When the inquiry specifications and the window contents may not agree, VQL displays the INQUIRE indicator at the bottom of the screen.

The INQUIRE indicator serves to remind you that you should be careful about the displayed contents of the window. If you want to see the data that matches the current inquiry specifications, you need to request a database inquiry. When you do so, the window contents and the inquiry specifications are once again matched, and the INQUIRE indicator disappears.

Full Database Inquiry

The normal way that PC Link performs a database inquiry is to use the inquiry specifications in the active window and locate all the data in the current database that match the inquiry specifications. The inquiry results are stored on the Host system, and a screenful of rows of the results are sent to the PC for display in the active window. This type of inquiry is termed a *full inquiry*, because PC Link obtains a full set of inquiry results. You can examine the inquiry results by browsing the contents of the active window, as described in the next chapter.

To request a full database inquiry, follow the steps in Procedure 12.1:

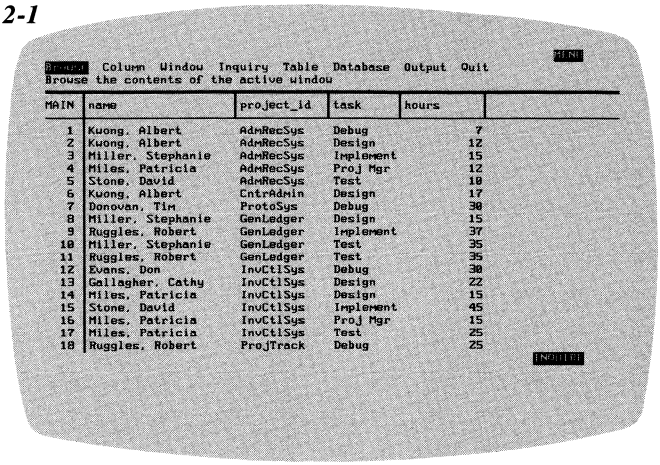
Procedure 12.1 : Requesting a Full Inquiry

1. From the VQL Menu, set the active window with **F6** (Window), if necessary.
2. Select **I**nquiry **G**o or press **F9** (Inquire).
3. The mode indicator changes to SENDING as PC Link sends the inquiry specifications to the Host system, then to WAITING as INGRES executes the inquiry, and finally to RECEIVING as PC Link receives the inquiry results back from the Host system.
4. PC Link displays the inquiry results in the active window, and returns to the Inquiry Menu.

5. Select **Quit** to return to the VQL Menu.

Figure 12.1 provides an example of the screen after full database inquiry.

Figure 12-1



Preview Inquiry

Full inquiries can take a long time to complete. Often, you will just want to see a sample of the data that results from an inquiry. To get a quick look at the results of an inquiry, PC Link supports *preview inquiry*.

When you request a preview inquiry, PC Link begins to execute a database inquiry using all of the current inquiry specifications, just as it would for a full inquiry. But when enough data has been retrieved to fill a screen, (about eighteen rows), PC Link abandons the inquiry. PC Link displays the preview inquiry results in the active window, just as it would for a full inquiry. However, you cannot scroll the contents of the window. After a preview inquiry, the INQUIRE mode indicator remains displayed.

To request a preview inquiry for the active window, press **F7** (Preview). You can request a preview inquiry at any time that you can request a full inquiry.

Browsing an INGRES Database with VQL

PC Link lets you browse the contents of a Host database directly on the PC screen by simply moving the cursor through the rows and columns of a table.

Even more important than the ability to browse the raw data in a database is the ability to browse the results of a database inquiry using PC Link. You can "ask questions" of the database through an inquiry, examine the results through browsing, and then refine your inquiry to get different or more detailed information from the database.

Browsing Window Contents

VQL allows you to browse the contents of either the Main Window or the Lookup Window. Use Procedure 13.1:

Procedure 13.1 : Browsing a Window from the VQL Menu

1. From the VQL Menu, select **B**rowse.
2. PC Link places the cursor into the header of the active window. Use the cursor keys to move the data up, down, left and right through the window. (See Table 13.1 for a list of the browsing cursor keys.)
3. When you have finished viewing the data, press **Enter** or **Esc**. PC Link returns to the VQL Menu.

The F4 (Browse) Key

You can also browse window contents from any Visual-Query-Language menu with **F4** (Browse). PC Link places the cursor into the active window and allows you to browse just as if you had used the Browse command. When you have finished viewing the window contents, press **F4** (Browse), **Enter** or **Esc**. PC Link returns to the menu from which you pressed **F4** (Browse) initially.

F4 (Browse) is an important tool when you are specifying complex row selection criteria or using the PC Link column operations. It allows you to examine the contents of the windows from anywhere in the Visual-Query-Language module.

Using Cursor Keys to Browse Data

While you are browsing, the cursor keys move the data through the window, as described in Table 13.1.

Table 13.1 : Browsing Cursor Keys

Keystroke(s)	Motion
←	Moves cursor left a column
→	Moves cursor right a column
Ctrl ←	Moves the cursor a full "page" to the left, bringing columns that were to the left of the screen into view
Ctrl →	Moves the cursor a full "page" to the right
↑	Moves the window up one row, bringing into view the row that was just above the screen
↓	Moves the window down one row
PgUp	Moves the window up a full page, bringing into view rows that were above the screen
PgDn	Moves the window down a full page
Home	Moves the window to display the top rows and the leftmost columns of the data
End ←	Moves the window to display the leftmost columns of the currently displayed rows
End →	Moves the window to display the rightmost columns of the currently displayed rows
End ↑	Moves the window to display the top rows and the same columns as are currently displayed
End ↓	Moves the window to display the bottom rows and the same columns as are currently displayed
F4 (Browse)	Stops browsing and returns to the menu
Enter	Stops browsing and returns to the menu
Esc	Stops browsing and returns to the menu

F5 (GoTo)	Moves to a specific row or column
F6 (Window)	Switches to the "other" window for browsing

Switching Windows

If both the Main and Lookup Windows are displayed, you can switch windows and browse the contents of the other window, without returning to the menu. Press **F6** (Window), and PC Link moves the cursor from one window to another.

Moving to a Particular Row or Column

It is easy to move through a table quickly using cursor keys. The **Home** and **End** keys are useful for moving to the edges of the table, and **PgUp**, **PgDn**, **Ctrl** → and **Ctrl** ← are useful for moving rapidly up, down, left and right.

You can also move to a specific row or column of the table with F5 (GoTo). Procedure 13.2 shows you how.

Procedure 13.2 : Moving to a Specific Row or Column

1. While browsing a window, press **F5** (GoTo).
2. Select **R**ow or **C**olumn.
3. PC Link prompts for the number of the row or the title of the column you want to view. Type the row number or column title, and press **Enter**.
4. PC Link moves the window so that the requested row or column is visible and returns to normal browsing.

Generating Output Files with VQL

A major objective of your Visual-Query-Language sessions will be to generate output files on the PC for use with other PC productivity software, such as spreadsheets, word processors, database managers and graphics programs. You can generate output files in five different formats, which satisfies the requirements of all the leading PC software packages. In addition, VQL can print inquiry results directly on a PC printer.

Often, you will want to use a particular PC package immediately after generating an output file. PC Link can automatically load the software package when it has finished generating the file. This Auto-Load feature allows you to work with the PC package, and then return to PC Link.

This chapter describes how to generate PC output files and how to use Auto-Load. It also describes the VQL options that control the appearance of data in output files.

Output File Formats

PC Link allows you to generate output files in six different formats. Each output file format supports a specific collection of popular PC software packages. The six formats are:

- *INGRES for PCs table format (0PC)*: PC Link supports the INGRES for PCs table output file format (0PC).
- *Worksheet format (WKS)*: The worksheet (WKS) file format was defined by Lotus Development Corporation and is used by 1-2-3 Release 1 and 1A. Also supported are the 1-2-3 Release 2 (WK1), Symphony Release 1 (WRK), and Release 1.1 (WR1) worksheet file formats.
- *Database format (DBF)*: The database (DBF) file format was defined by Ashton-Tate's dBASE II product and is also supported by dBASE III, Framework, and by many accounting and other application packages that are based upon dBASE II.

- *Text format (TXT)*: The standard row/fixed-column ASCII text (TXT) file format is accepted by WordStar, MultiMate, and most PC word processing packages, and can be used as input to user programs such as those written in BASIC, Pascal or FORTRAN. In addition, text format files can be printed directly on a printer. The comma-separated variable-column ASCII text (CSV) file format is also supported.
- *Symbolic link format (SYL)*: The symbolic link (SYL) file format was defined by Microsoft Corporation and is supported by Multiplan and the other Microsoft PC packages.
- *Data interchange format (DIF)*: The data interchange (DIF) format was developed by VisiCorp and is supported by VisiCalc, most PC graphics packages and many spreadsheet and database packages.

Generating Output Files

To generate an output file, follow the steps in Procedure 14.1:

Procedure 14.1 : Generating an Output File

1. From the VQL Menu, select **O**utput, and then on the subsequent menu select any of the following options: **1**-2-3, **dB**ASE, **T**ext, **S**YLK, **I**nterchange, or **I**ngres/PC.
2. PC Link prompts for the name of the file to generate and presents a list of the files in the current PC working directory with the appropriate file extension. You may:
   - Select one of the existing files from the list.
   - Type the name of a new file.
3. If you specify an existing file, PC Link presents a menu to confirm your intention to overwrite the file:
   - Select **C**ancel to cancel the command and leave the current file intact.
   - Select **R**eplace to overwrite the existing file.
4. If the INQUIRE indicator is displayed, PC Link performs a full database inquiry on the Host database.
5. PC Link transfers the inquiry results, row-by-row, from the Host system to the PC and stores them in an output file. The records of the file are counted at the bottom of the screen as the file is created.

6. If the Auto-Load option is set off, PC Link returns to the Output Menu when the output file is complete.
7. If Auto-Load is set on, PC Link presents a menu to confirm your intention to load another PC application. If a particular diskette has to be in the A: drive to load a PC application, insert it while this menu is displayed. Then respond to the menu:
   - Select **Y**es to load the target PC application.
   - Select **N**o to return immediately to the Output Menu.
8. PC Link loads the target application and begins its execution.
9. When the target application exits, PC Link returns to the Access Menu.

Generating Printed Output

To generate a printed listing of the inquiry results, follow the steps in Procedure 14.2:

Procedure 14.2 : Printing Inquiry Results

1. From the VQL Menu, select **O**utput **T**ext **P**rinter.
2. If the INQUIRE indicator is displayed, PC Link performs a full database inquiry on the Host database.
3. PC Link transfers the inquiry results, row-by-row, from the Host system to the PC and prints each row as a single line on the printer. The lines are counted at the bottom of the screen as the results are printed.
4. When printing is complete, PC Link returns to the Output Menu.

The Auto-Load Option

PC Link gives you the option of automatically loading a specified PC application after it finishes generating an output file. You can specify a different program to be auto-loaded for each of the file formats. This operation is controlled by the Auto-Load option. Procedure 14.3 shows how to set the Auto-Load option from within Visual-Query-Language to modify PC Link operation during the current session. See Chapter 28 for more information on setting Auto-Load and on defining which PC application corresponds to each file format.

Procedure 14.3 : Setting Auto-Load On/Off

1. From the VQL Menu, select **O**utput **O**ptions **A**uto-Load.
2. PC Link presents a No/Yes menu for your selection:
   - Select **N**o to turn Auto-Load off.
   - Select **Y**es to turn Auto-Load on.
3. PC Link sets the option and returns to the Output Menu.

If the Auto-Load option is set on, PC Link performs the following sequence of steps when generation of an output file is complete:

1. Link checks to see if an auto-load program is specified for the file format of the file just generated. If no program is specified, PC Link returns immediately to the Output Menu, and no auto-load is attempted.
2. Link presents a menu to confirm your intention to auto-load another application. The menu serves two purposes:
   - It gives you a chance to cancel the auto-load process and remain within VQL for further database inquiry.
   - It creates a pause during which you can change floppy diskettes on a dual-floppy system, for example, to insert a "key" diskette
3. Link changes the DOS current drive and the current working directory to the drive/directory specified in the current configuration for the particular file format. This step accommodates programs (such as 1-2-3) which require that a particular drive/directory be current when they are started.
4. Link reduces its memory usage to a minimum and loads the program specified in the current configuration for the particular file format. (PC Link uses a "load and stay resident" DOS call so that it can regain control when the auto-loaded application exits.)
5. The target application program takes control of the PC, and you are free to use its features and functions.

Listing Output Files

For each of its five supported file formats, PC Link can display a list of the files in the current PC working directory that have the appropriate file extension for that format. Procedure 14.4 shows how to list the names of output files.

Procedure 14.4 : Listing Output Files

1. From the VQL Menu, select **O**utput **L**ist.
2. PC Link presents a menu of file formats for your selection. Choose a format.
3. PC Link lists the files in a pop-up list on the screen. View the list using the cursor keys and press **Enter** when you are finished.
4. PC Link removes the list from the display and returns to the Output Menu.
5. Select **Q**uit to return to the VQL Menu.

The lists produced by Procedure 14.4 include all files with the file extension specified in the current PC working directory, regardless of whether they were created through PC Link.

Erasing Output Files

You can erase files previously created in any of the five file formats by following the steps in Procedure 14.5:

Procedure 14.5 : Erasing Output Files

1. From the VQL Menu, select **O**utput **E**rase.
2. PC Link presents a menu of file formats for selection. Choose the format that corresponds to the type of files you want to erase.
3. PC Link lists the files in a pop-up list on the screen for selection. Choose the files you want to erase through multiple-choice selection.
4. PC Link erases the selected files, removes the list from the display and returns to the Output Menu.
5. Select **Q**uit to return to the VQL Menu.

Exercise caution when you use Procedure 14.5; don't accidentally erase a file created with a PC application.

Column Title and Delimiter Options

When PC Link generates an output file in database (DBF) format, the column titles in the active window automatically become the names of the corresponding fields in the database file. For the other file formats, you may optionally include column titles as the first row of the file, or you can omit the column titles. Use Procedure 14.6 to change the Column Title option from the value in your current configuration:

Procedure 14.6 : Set Column Titles On/Off

1. From the VQL Menu, select **O**utput **O**ptions **T**itles.
2. PC Link presents a No/Yes menu for your selection:
   - Select **N**o to turn Column Titles off.
   - Select **Y**es to turn Column Titles on.
3. PC Link sets the option and returns to the Output Options Menu.

For text format files and printed inquiry results, you can also choose the character that appears between the columns of the inquiry results. Normally, a space is the preferred character. However, you might also specify a **Tab** character to create more space between columns or a comma to separate numeric output for input to a program.

Use Procedure 14.7 to set the column delimiter character:

Procedure 14.7 : Set Column Delimiter Character

1. From the VQL Menu, select **O**utput **O**ptions **D**elimiter.
2. PC Link prompts for your choice of a delimiter character. Type the character and then press **Enter**.
3. PC Link sets the character and returns to the Output Options Menu.

Using the Lookup Window in VQL

Most of the activity in using VQL centers on the Main Window. For example, the contents of the Main Window are used to generate the output files that you will use in conjunction with other PC software products. However, there will often be times when you need to look up information in a table different from the one displayed in the Main Window. For example, you may be viewing historical cost information in the Main Window and want to glance at a table of current prices at the same time. Or, you may even want to look at two different parts of the same table at once, to compare different rows.

The Lookup Window plays two important roles in VQL:

- It lets you look up pieces of information without disturbing the contents of the Main Window.
- It plays a key role in the VQL Table Lookup capability, which allows you to combine information from two or more tables into a single view.

This chapter explains the first role of the Lookup Window. Its role in specifying table lookups is described in Chapter 19.

Opening the Lookup Window

Unlike the Main Window, the Lookup Window is not always displayed on the screen during your VQL session. To open the Lookup Window, use Procedure 15.1:

Procedure 15.1 : Opening the Lookup Window

1. From the VQL Menu, select **W**indow **O**pen.
2. PC Link presents a list of the tables in the database and prompts for the table to be displayed in the Lookup Window. You may:
   - Select a single table from the list.
   - Type the name of a table.
3. PC Link displays the Lookup Window in the bottom half of the screen, makes it the active window, and returns to the VQL Menu.

Getting Data into the Lookup Window

When you open the Lookup Window, PC Link fills in the column headings for the table you select. However, no data appears in the window body. If you want to see data for the Lookup Window, you must request a database inquiry for it. Any inquiry operations you request automatically apply to the active window. To get data into the Lookup Window, use **F6** (Window), if necessary, to make it the active window. Then select Inquiry Go from the VQL Menu, or press **F9** (Inquire), or press **F7** (Preview).

Browsing Lookup Window Contents

Browse the contents of the Lookup Window in the same way you browse the contents of the Main Window. When you select the Browse menu item or press **F4** (Browse), the cursor automatically moves to the active window for browsing. To switch the active window, press **F6** (Window).

Moving the Lookup Window Border

When you open the Lookup Window, VQL divides the screen evenly between the Main Window and the Lookup Window. If you want the relative sizes of the two windows to change, you can move the border between the windows using Procedure 15.2:

Procedure 15.2 : Moving the Window Border

1. From the VQL Menu, select **W**indow **M**ove.
2. Use the ↑ and ↓ key to move the window border up and down until it is in the desired position. Then press **Enter**.
3. PC Link returns to the VQL Menu.

Either window can be shrunk in size until there is space to display only a single row of the screen.

Closing the Lookup Window

When you no longer need the information displayed in the Lookup Window, you can close the window. This allows you to see more rows of the Main Window. Use Procedure 15.3 to close the Lookup Window:

Procedure 15.3 : Close the Lookup Window

1. From the VQL Menu, select **W**indow **C**lose.
2. PC Link removes the Lookup Window from the screen, expands the Main Window to fill the vacated rows and returns to the VQL Menu.

Using Column Operations in VQL

When you first select a table for one of the VQL windows, PC Link displays all of the columns of the table. The left-to-right order of the columns and the width of each column and title are based on information from the Host database. The VQL commands described in this chapter allow you to:

- Remove columns from the display
- Reorder columns
- Retitle columns
- Change column widths

These column operations affect the appearance of the PC display only. They have no effect on the actual data residing in the Host INGRES database. Moreover, menu selections are available to restore column appearance to the default values based on information from the Host database.

Moving Columns on the Display

If you want to view columns in a different left-to-right sequence, use Procedure 16.1 to change the column sequence:

Procedure 16.1 : Moving Columns to a New Position

1. From the VQL Menu, select **C**olumn **M**ove.
2. PC Link places the cursor into the header of the active window and prompts for your selection of columns to move. Select the column(s) to move by multiple-choice selection.
3. PC Link prompts for the new location for the column(s). Move the cursor to that position and press **Enter**.
4. PC Link inserts the columns at the new position before returning to the Column Operations Menu.
5. Select **Q**uit to return to the VQL Menu.

You can move as many columns as you wish in one operation, but all the moved columns will be inserted at a single place in the display. To move columns to several different positions on the display, use the Column Move command repeatedly. When multiple columns are moved in a single operation, PC Link inserts the columns left-to-right, in the order they were selected. Columns are always inserted to the left of the column that you designate as the insertion point. To move a column to the last position in the display sequence, move the current rightmost column to its left.

Removing Columns from the Display

Often you will not want to include all the columns of a table in the output files you generate with VQL. PC Link offers you two different ways of specifying which you want to include:

- You can drop unwanted columns from the display.
- You can keep the columns you want, removing all the others.

Selecting Columns to Remove

If you will be keeping most of the columns on the display and removing only a few, you will probably want to use Procedure 16.2 to remove columns from the active window.

Procedure 16.2 : Dropping Columns

1. From the VQL Menu, select **C**olumn **D**rop.
2. PC Link places the cursor into the header of the active window and prompts for your selection of column(s) to remove. Use multiple-choice selection.
3. PC Link removes the selected column(s) from the window and returns to the Column Operations Menu.
4. Select **Q**uit to return to the VQL Menu.

Selecting Columns to Keep

If you will be removing most of the columns in a window, it is easier to select the columns that you want to keep. Use Procedure 16.3 to keep some columns in the active window:

Procedure 16.3 : Keeping Columns

1. From the VQL Menu, select Column **K**eep.
2. PC Link places the cursor into the header of the active window and prompts for your selection of column(s) to keep. Use multiple-choice selection.
3. PC Link removes all the column(s) except for those selected from the window and returns to the Column Operations Menu.
4. Select **Q**uit to return to the VQL Menu.

Restoring Previously Removed Columns to the Display

If you remove a column in error, you can easily bring it back to the active window. Use Procedure 16.4 to restore a removed column:

Procedure 16.4 : Restoring Dropped Columns

1. From the VQL Menu, select Column **R**estore.
2. PC Link displays a pop-up list of columns previously removed from the active window and prompts for your choice of columns to restore to the display. Use multiple-choice selection.
3. PC Link places the cursor into the header of the active window and prompts for the position where the columns are to be inserted. Move the cursor to the insertion point and press **Enter**.
4. PC Link inserts the selected columns in the display and returns to the Column Operations Menu.
5. Select **Q**uit to return to the VQL Menu.

The restored columns are inserted into the active window in left-to-right order as they were selected. The data for the restored columns will appear in the body of the active window after they are restored if PC Link still has the data stored in PC memory (i.e., if you have not performed any Host database inquiries since dropping the columns). If not, PC Link displays question marks in the data fields for the restored columns to indicate that it cannot determine the data without performing a Host database inquiry. Replace the question marks with the appropriate data with **F7** (Preview), **F9** (Inquire) or the Inquiry Go command.

Adjusting the Width of a Column

The width of each column on the display is based on information from the Host database. You can make a column wider or narrower than the original width. PC Link generates output files based on the widths of the columns in the Main Window. Controlling the display width of a column gives you effective control over its format in the output file.

PC Link justifies information in columns based on the type of data they contain. Text and date data are left-justified in a column PC Link truncates text and date data if the column is too narrow to show the entire text. Numeric data are right-justified in the column. If the column is too narrow to display the numeric data correctly, the cell is filled with asterisks to indicate the data value could not be shown.

Procedure 16.5 shows how to adjust the width of a column:

Procedure 16.5 : Setting Column Width

1. From the VQL Menu, select **C**olumn **W**idth.
2. Select **B**rowse to move the cursor to the appropriate column and then press **Enter**.
3. PC Link presents a menu:
   - Select **S**et to set a new width for the column.
   - Select **R**eset to set the width of the column back to its original value from the database. If this choice is selected, PC Link resets the column width to its default value and returns to the Column Operations Menu immediately, skipping step 4.
4. PC Link prompts for the new width of the column, and activates the ← and → keys. You may:
   - Type a number to set the width of the column to a specific numeric value.
   - Press the ← and → keys to narrow and widen the column.
5. Press **Enter** to return to the Column Operations Menu.
6. Select **Q**uit to return to the VQL Menu.

Adjusting the Title of a Column

PC Link initially assigns a title to each column based on information in the Host database. These columns may not always be suitable for use in reports, spreadsheets and other output files. You can change the title of a column with the steps in Procedure 16.6:

Procedure 16.6 : Changing a Column Title

1. From the VQL Menu, select **C**olumn **T**itle.
2. Select **B**rowse and move the cursor to the column whose title you wish to change, then press **Enter**.
3. PC Link displays a menu offering a choice of a new title or restoring the initial from the database:
   - Select **S**et to give the column a new title.
   - Select **R**eset to change the title of the column back to its initial value. If you select this choice, PC Link skips step 4.
4. PC Link prompts for the new title of the column, and displays the current title of the column after the prompt. You may:
   - Type a new title for the column.
   - Press **Enter** to keep the current title.
5. PC Link changes the title of the column and returns to the Column Operations Menu.
6. Select **Q**uit to return to the VQL Menu.

Listing Column Titles

If you are working with a large table, it may become difficult to remember the titles of all the columns in the table. PC Link offers you two ways to list the column titles for reference.

Displaying Column Titles

To display the titles of the columns in the active window, use Procedure 16.7:

Procedure 16.7 : Displaying Column Title

1. From the VQL Menu, select **C**olumn **L**ist.
2. PC Link displays the titles of the columns in the active window in a pop-up list and activates the cursor keys for viewing the list. When you have finished viewing, press **Enter**.
3. PC Link returns to the Column Operations Menu.
4. Select **Q**uit to return to the VQL Menu.

Printing Column Titles

To print the titles of the columns in the active window on the PC printer, use Procedure 16.8:

Procedure 16.8 : Printing Column Titles

1. From the VQL Menu, select **C**olumn **P**rint.
2. PC Link prints a list of column titles on the printer and returns to the Column Operations Menu.
3. Select **Q**uit to return to the VQL Menu.

Sorting Inquiry Results in VQL

When Visual-Query-Language presents the results of a Host database inquiry on the PC screen, the rows of the displayed table appear in an arbitrary order. For some applications, this unsorted order is satisfactory. In other applications, however, it is important that the rows of inquiry results be ordered in a particular manner. The VQL capabilities described in this chapter allow you to reorder the results of a database inquiry, based on the data in any column.

Sorting on a Single Column

The simplest way to order the results of a database inquiry is to sort based on the contents of a single column. You can sort either the Main Window or the Lookup Window based on any displayed column in either ascending or descending order. Use Procedure 17.1 to specify a sort on a single column:

Procedure 17.1 : Sorting Inquiry Results

1. From the VQL Menu, select **I**nquiry **S**ort **A**dd.
2. VQL prompts for selection of the column on which the data is to be sorted. Use single-choice selection from the window header.
3. VQL presents a menu for selecting sort order:
   - Select **A**scending for a normal sort sequence (a...z, 0...9).
   - Select **D**escending for a reverse sort sequence (z...a, 9...0).
4. VQL adds the sort specification for the window and returns to the Inquiry Operations Menu.
5. Select **Q**uit to return to the VQL Menu.

Sorting on Multiple Columns

VQL supports multi-level sorts by allowing you to specify multiple sort key columns. The sort key columns are specified in order, from the most important (or most *major*) sort key to the least important (or most *minor*) sort key. For example, if you want to sort sales results by region, and within each region by salesperson, the region is the major sort key and the salesperson is the minor sort key. The inquiry results are sorted based on the major sort key. When two rows have the same data value in the major sort key column, the more minor sort key columns are compared to determine the proper order for the rows.

To specify a multi-level sort to VQL, repeat the steps in Procedure 17.1 once for each sort key column, from the most major to the most minor. Each sort key column will be added, in sequence, to the inquiry specifications for the active window.

Listing Sort Key Columns

If you forget which columns have been selected as sort key columns, follow the steps in Procedure 17.2:

Procedure 17.2 : Listing Sort Key Columns

1. From the VQL Menu, select **I**nquiry **S**ort **L**ist.
2. PC Link presents a list of the current sort key columns for viewing. Use the cursor keys and press **Enter** or **Esc** when you have finished viewing the list.
3. Select **Q**uit to return to the VQL Menu.

Dropping Sort Key Columns

If you discover that you have specified a sort key column in error, you can drop it using Procedure 17.3:

Procedure 17.3 : Dropping a Sort Key Column

1. From the VQL Menu, select **I**nquiry **S**ort **D**rop.
2. PC Link presents a list of the current sort key columns. Use multiple-choice selection.
3. PC Link drops the selected columns and returns to the Inquiry Operations Menu.
4. Select **Q**uit to return to the VQL Menu.

Instead of dropping individual sort key columns, you can drop all the sort key columns for a particular window using Procedure 17.4:

Procedure 17.4 : Resetting the Sort Key Columns

1. From the VQL Menu, select **I**nquiry **S**ort **R**eset.
2. PC Link drops all the sort key columns for the active window and returns to the Inquiry Operations Menu.
3. Select **Q**uit to return to the VQL Menu.

Selecting Rows in VQL

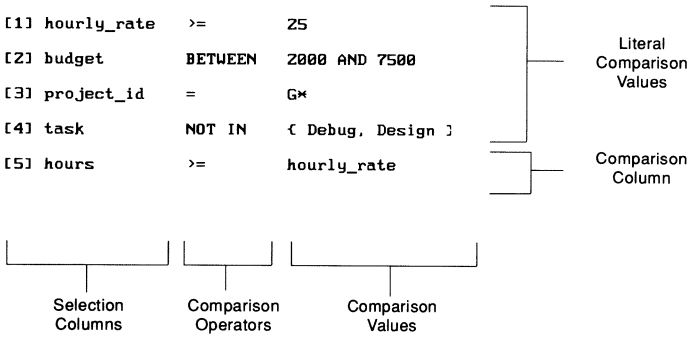
When you select a table for processing with PC Link and request a database inquiry, PC Link retrieves all of the rows of the table. Often, you will want to work with only some of the rows in the table. For example, in a table of inventory data, you might want to select only the rows that describe inventory in a specific warehouse for analysis. Or, you might want to select only the rows for items that cost more than $10.00. In each of these examples, you have selected specific rows from the table for processing, based on the contents of each row.

PC Link lets you select specific rows for processing through its row selection criteria. A row selection criterion is simply a rule that determines which rows will be selected for processing and which rows will not. Rows that follow the rule are selected; rows that do not follow the rule are not selected.

Components of a Row Selection Criterion

Figure 18.1 shows several typical PC Link row selection criterion and identifies their component parts:

Figure 18.1.



- The *selection column* is the column whose contents are tested to determine whether a row meets the criterion. Each row selection criterion specifies one and only one criterion column. The same column is tested in each row of the table.
- The *comparison operator* tells how the contents of the column will be tested. PC Link offers a wide variety of comparison operators that are described in the next section.
- The *comparison value* is the value against which the contents of the selection column are tested to determine whether a row meets the criterion. The comparison value can be a constant (such as $10.00 or 10/20/54), or it can be the contents of another column in the table.

Row Selection Comparison Operators

PC Link gives you a choice of eight different comparison operators for use in row selection criteria. See Table 18.1.

Table 18.1 : Comparison Operators

Row selection criterion is met if the contents of the selection column are:	
=	Equal to the comparison value
!=	Not equal to the comparison value
<	Strictly less than the comparison value
<=	Either less than or equal to the comparison value
>	Strictly greater than the comparison value comparison operator
>=	Greater than or equal to the comparison value
BETWEEN	Greater than or equal to the first comparison value and less than or equal to the second comparison value
IN	Equal to one of a sequence of comparison values

Most comparison operators use just one comparison value. The BETWEEN operator uses two comparison values and tests whether the value of the selection column is between them. You might use it to check whether an employee's hourly rate falls within a particular range, for example:

```
HOURLY_RATE  BETWEEN  35.00  AND  50.00
```

Only the rows with an hourly rate greater than or equal to $35.00 and less than or equal to $50.00 would be selected.

The IN operator tests whether the value of the selection columns matches a set of one or more comparison values. The comparison values are separated by commas when the row selection criterion is written. You might use the IN operator to check whether a company's address is in one of the western coastal states by matching its two-letter state abbreviation against a list of four, for example:

```
STATE  IN  CA,OR,WA,HI
```

Only customers located in California, Oregon, Washington or Hawaii would be selected.

Adding a Row Selection Criterion

You can add a row selection criterion to the Main Window at any time through the VQL Inquiry Menu. The active window must be the Main Window when you add the criterion; you cannot use row selection criteria in the Lookup Window. To add a row selection criterion, follow the steps in Procedure 18.1:

Procedure 18.1 : Adding a Row Selection Criterion

1. From the VQL Menu, if the Main Window is not the active window, press **F6** (Window).
2. Select **I**nquiry **C**riterion **A**dd.
3. PC Link places the cursor into the Main Window header and prompts for a selection column. Move the cursor using the cursor keys and press **Enter** to select the appropriate column.
4. PC Link presents a menu of comparison operators. Move the cursor to the one you wish to use and press **Enter**.
5. PC Link places a cursor in the Main Window header and prompts for your choice of a comparison value. You may do one of the following:

- Type a comparison value if you want to compare the selection column to a literal value.
- Move the cursor in the window header, select a comparison column, and press **Enter**.

6. PC Link adds the new row selection criterion to the set of criteria for the Main Window and returns to the Inquiry Menu.
7. Select **Q**uit to return to the VQL Menu.

Each row selection criterion you specify with Procedure 18.1 is added to the set of current row selection criteria for the Main Window. If there is more than one criterion, a row must meet each of the criteria in order to be included in the inquiry results. To combine criteria so that rows satisfying one of a set of criteria are included in the inquiry results, see the section on "Combining Row Selection Criteria," which follows.

Listing Row Selection Criteria

If you forget what the current row selection criteria are, you can list them using Procedure 18.2:

Procedure 18.2 : Listing Row Selection Criteria

1. From the VQL Menu, if the Main Window is not the active window, press **F6** (Window).
2. Select **I**nquiry **C**riterion **L**ist.
3. PC Link displays the current row selection criteria in a pop-up list. Use the cursor keys to view the criteria and then press **Enter**. PC Link removes the list from the screen and returns to the Inquiry Menu.
4. Select **Q**uit to return to the VQL Menu.

In some cases, the row selection criteria exceed the width of the pop-up window. This could happen when an entry is lengthy, or when criteria have been combined and therefore indented. In these cases, the text is truncated, but the entire entry is still considered by PC Link when selecting rows.

Dropping Row Selection Criteria

To drop one or more row selection criteria, use Procedure 18.3:

Procedure 18.3 : Dropping Row Selection Criteria

1. From the VQL Menu, if the Main Window is not the active window, press **F6** (Window)
2. Select **I**nquiry **C**riterion **D**rop.
3. PC Link displays the current row selection criteria in a pop-up list and prompts for your selection of the criteria to drop. Use multiple-choice selection.
4. PC Link drops the selected criteria and returns to the Inquiry Menu. Only the remaining row selection criteria (if any) will be used in future database inquiries.
5. Select **Q**uit to return to the VQL Menu.

If you want to drop all row selection criteria, Procedure 18.4 offers a more efficient alternative:

Procedure 18.4 : Dropping All Row Selection Criteria

1. From the VQL Menu, if the Main Window is not the active window, press **F6** (Window).
2. Select **I**nquiry **C**riterion **R**eset.
3. PC Link drops all the current row selection criteria and returns to the Inquiry Menu.
4. Select **Q**uit to return to the VQL Menu.

Negating Row Selection Criteria

You can reverse the meaning of an existing row selection criterion by negating the criterion. This can be useful when you want to look alternately at the rows that do meet a certain criterion and at those that do not meet the criterion. For example, you might use a row selection criterion to find all the people who met or exceeded quota from a table of salespeople. By negating the criterion and performing another database inquiry, you could quickly find all the people who did not meet their quota. Procedure 18.5 shows how to negate one or more row selection criteria:

Procedure 18.5 : Negating Row Selection Criteria

1. From the VQL Menu, if the Main Window is not the active window, press **F6** (Window).
2. Select **I**nquiry **C**riterion **N**egate.
3. PC Link displays the current row selection criteria in a pop-up list and prompts for your selection. Use multiple-choice selection.
4. PC Link negates the selected criteria and returns to the Inquiry Menu.
5. Select **Q**uit to return to the VQL Menu.

Combining Row Selection Criteria

When you add more than one row selection criterion, PC Link combines the criteria by requiring that a row meet all of the criteria to be included in the inquiry results. That is, the row must meet the first criterion and the second and the third, and so forth. PC Link allows you to combine criteria in other ways as well. PC Link combines row selection criteria using one of two *logical operators*—AND and OR. The result of combining two or more criteria with either of these two operators is a single, combined criterion. For example, the row selection criterion:

```
DEPARTMENT = SALES OR SALARY > $30000
```

is a combination of two simple criteria using the OR logical operator.

The combined criterion operates as a single, complex criterion for selecting rows. When criteria are combined with the OR operator, a row meets the combined criterion if it meets any one of the individual criteria. When criteria are combined with the AND operator, a row meets the combined criterion only if it meets all of the individual criteria.

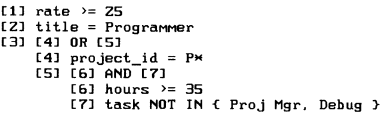
With PC Link, you build a combination criteria by combining criteria that have already been specified. Thus, you build from the bottom up. First, add the individual criteria, and then use Procedure 18.6 to combine them, possibly several times.

Procedure 18.6 : Combining Row Selection Criteria

1. From the VQL Menu, if the Main Window is not the active window, press **F6** (Window).
2. Select **I**nquiry **C**riterion **C**ombine.
3. PC Link presents a menu offering a choice of an AND or OR combination. Select the type of combination you want to use.
4. PC Link displays the current row selection criteria in a pop-up list and prompts for your selection of the criteria to combine. Use multiple-choice selection to choose the criteria.
5. PC Link combines the selected criteria, to form a new, combined criterion. The combined criterion is added to the list of current criteria.
6. PC Link returns to the Inquiry Menu.
7. Select **Q**uit to return to the VQL Menu.

The criteria combined by AND and OR operators can themselves be combined criteria, as in Figure 18.2.

Figure 18.2.



In Figure 18.2, the criteria testing the task and hours are first combined with the AND operator. The resulting combined criterion is then combined again, this time by an OR with a criterion that tests to determine if the value of the project name begins with the letter "P." Finally, this complex criterion is combined with two others testing the hourly rate and job title. PC Link allows you to combine criteria up to one hundred levels deep.

Duplicate Row Processing

Inquiry results can include rows that are exact duplicates of one another, especially when you delete many columns from a table. For example, suppose you wanted to generate a list of all the cities where your customers were located. You could start with a table of customer information and delete all the columns except for the city and state. If several of your customers were located in the same city, those rows in the inquiry results would be identical to one another.

You can eliminate duplicate rows in inquiry results by specifying that *unique rows only* are to be retrieved. This inquiry specification can be specified only for the Main Window and can be set on and off using Procedure 18.7 on the next page.

Procedure 18.7 : Modify the Unique Rows Only Specification

1. From the VQL Menu, if the active window is not the Main Window, press **F6** (Window).
2. Select **I**nquiry **U**nique.
3. To specify unique rows only, select **S**et. To permit duplicate rows in inquiry results, select **R**eset.
4. PC Link modifies the inquiry specification and returns to the Inquiry Menu.
5. Select **Q**uit to return to the VQL Menu.

You can check the current status of the unique rows only specification with Procedure 18.8:

Procedure 18.8 : Displaying the Unique Rows Only Specification

1. From the VQL Menu, if the active window is not the Main Window, press **F6** (Window).
2. Select **I**nquiry **U**nique **D**isplay.
3. PC Link displays the current setting of the unique rows only specification. Press **Enter** to continue.
4. PC Link returns to the Inquiry Menu. Select **Q**uit to return to the VQL Menu.

Performing Table Lookups in VQL

PC Link allows you to combine information from different tables in a single screen display or output file. This chapter tells you how to generate inquiry results that combine data from several different tables.

Table Lookup Concepts

You use PC Link table lookups just as you look up information in a printed table, such as an address book. To find someone's telephone number, for example, you note the person's name and search the names in the address book until you find a match. Then, you look up the associated phone number. Consider the pair of tables in Figure 19.1.

name	project_id	tasks	hours
Kuong, Albert	AdmRecSys	Debug	7
Kuong, Albert	AdmRecSys	Design	12
Miller, Stephanie	AdmRecSys	Implement	15
Miles, Patricia	AdmRecSys	Proj Mgr	12
Stone, David	AdmRecSys	Test	10
Kuong, Albert	CntrAdmin	Design	17
Donovan, Tim	ProtoSys	Debug	30
Miller, Stephanie	GenLedger	Design	15
Ruggles, Robert	GenLedger	Implement	37
Miller, Stephanie	GenLedger	Test	35
Ruggles, Robert	GenLedger	Test	35

name	project_id	tasks	hours
Kuong, Albert	AdmRecSys	Debug	7
Kuong, Albert	AdmRecSys	Design	12
Miller, Stephanie	AdmRecSys	Implement	15
Miles, Patricia	AdmRecSys	Proj Mgr	12
Stone, David	AdmRecSys	Test	10
Kuong, Albert	CntrAdmin	Design	17
Donovan, Tim	ProtoSys	Debug	30
Miller, Stephanie	GenLedger	Design	15
Ruggles, Robert	GenLedger	Implement	37
Miller, Stephanie	GenLedger	Test	35
Ruggles, Robert	GenLedger	Test	35

The "staff" table contains information about people working on a project—their names, titles, hourly rates and managers. The "tasks" table includes names, a project identification, the given task and the hours spent on that task.

Suppose you wanted to know how many hours the programmers were spending on various projects. Because the job titles are in one table and the hours in another, you would have to look up the information. Because the name is a common field, you would search names of programmers in the "staff" table and then look up that person's hours in the "tasks" table. With PC Link you can perform these lookups automatically.

Adding a Table Lookup

Table lookups are a part of the inquiry specifications associated with the Main Window. The inquiry specifications can include several table lookups. When you specify a new table lookup, it is added to the set of inquiry specifications.

The Main Window always serves as the target for the table lookup. One or more of its columns are selected as matching columns. These columns are matched to one or more corresponding columns in a table displayed in the Lookup Window. The data to be looked up are contained in one or more lookup columns in the Lookup Window. The result of a table lookup is that the data from these lookup columns is added to the Main Window, expanding the display of columns.

Procedure 19.1 describes the process of specifying a table lookup:

Procedure 19.1 : Adding a Table Lookup

1. From the VQL Menu, select **I**nquiry **L**ookup **A**dd.
2. If the Lookup Window is already open, PC Link assumes that you are using the table displayed there as the lookup table. If it is not, PC Link displays a pop-up list of the available tables in the database and prompts for your selection. Use single choice selection. PC Link opens the Lookup Window and displays the columns of the selected table in its header.
3. PC Link places the cursor in the Main Window header and prompts for your selection of the matching columns. Use multiple-choice selection in the window header to select the matching column(s).
4. PC Link places the cursor in the header of the Lookup Window and asks you to select the matching columns from the lookup table. Select the columns using multiple-choice selection. You must choose the columns in the same order that you chose the corresponding matching columns from the Main Window in Step 3.
5. PC Link next prompts for the columns to be looked up from the Lookup Window. Select them using multiple-choice selection.

6. Finally, PC Link places the cursor into the Main Window header again and asks you where the information from the lookup columns should be inserted in the Main Window. Move the cursor to the point where the data is to be inserted and press **Enter**.
7. PC Link adds the lookup columns to the Main Window header at the position you selected, fills the body of the window with question marks for those columns and displays the INQUIRE indicator.
8. PC Link returns to the Inquiry Menu.
9. Select **Q**uit to return to the VQL Menu.

The most common table lookups are those in which a single column from the Main Window and a single column from the Lookup Window are selected as a matching pair. If multiple pairs of matching columns are selected, the data in all the pairs of columns must match in order for a lookup to take place.

For example, if the tables in the Main Window and Lookup Window each contained a City column and a State column, you might specify both the City column pair and the State column pair as matching columns. In this case, you want to make sure that both the City and the State columns match when data is looked up. Otherwise, you might find a row for "Middletown, Ohio" in the Lookup Window matched to a row for "Middletown, New York" in the Main Window.

You can add as many table lookups as you like to the Main Window. However, each time you add a table lookup, the lookup table must be different from those already specified.

You can look up information from many different tables, but you must specify all of the columns to be looked up in any one of the tables at one time. If you discover that you have missed some lookup columns in a previously specified table lookup, PC Link allows you to delete the lookup and re-add it with the additional columns (see "Dropping Table Lookups," below). PC Link does not allow you to specify a table lookup involving the same table in both windows.

When you add a table lookup to the Main Window, PC Link fills the new columns with question marks, because it cannot know what kind of data they contain until a database inquiry is performed. When you request a database inquiry, the question marks are replaced with data.

Listing Table Lookups

To list the current table lookups, use Procedure 19.2:

Procedure 19.2 : Listing Table Lookups

1. From the VQL Menu, if the active window is not the Main Window, press **F6** (Window).
2. Select **I**nquiry **L**ookup **L**ist.
3. PC Link displays a pop-up list of the current table lookups, with each pair of matching columns from each table lookup occupying one row of the list. Use the cursor keys to view the list and press **Enter** when you are finished.
4. PC Link removes the list from the screen and returns to the Inquiry Menu.
5. To return to the VQL Menu, select **Q**uit.

Dropping Table Lookups

PC Link allows you to drop table lookups. You can even drop individual pairs of matching columns from a table lookup, leaving the other pairs of matching columns intact. Use Procedure 19.3:

Procedure 19.3 : Dropping a Table Lookup

1. From the VQL Menu, if the active window is not the Main Window, press **F6** (Window).
2. Select **I**nquiry **L**ookup **D**rop.
3. PC Link displays a pop-up list of the current table lookups, with:
   - each pair of matching columns from each table lookup occupying one row of the list, and
   - prompts for table lookups to drop.

   Select the matching column pairs to be dropped using multiple-choice selection.
4. PC Link removes each pair of matching columns that you select from the inquiry specifications.
   - If you have selected all of the pairs of matching columns for a particular table lookup, the entire lookup is dropped, and the lookup columns associated with that table lookup disappear from the Main Window.

- If only some of the matching column pairs for a particular table lookup are dropped, the lookup remains.

5. PC Link returns to the Inquiry Menu.
6. To return to the VQL Menu, select **Q**uit.

Note that if you drop one or more pairs of matching columns for a particular table lookup and leave others intact, the table lookup remains a part of the inquiry specifications. However, the matching performed by the lookup (and therefore the data it retrieves from the lookup table) will probably be quite different because of the different matching column specification.

Using Query Templates in VQL

Many applications of PC Link involve repetitive or periodic database inquiry. The Visual-Query-Language lets you automate repetitive processing through its *query template* capability. With query templates, you can set up a database inquiry once and then save it on a disk for future use. Later, the inquiry can be recalled and reused with just a few keystrokes.

Query templates have several important applications. For example, you can:

- Save frequently used inquiry specifications
- Save a basic set of inquiry specifications and then vary the specifications or add new ones to analyze the data in a database in several different ways
- Set up a query template that allows even inexperienced users to produce reports and graphs from a database with a few keystrokes

Advanced Query Template Processing

Query templates form the foundation for several types of advanced PC Link processing. Using them, you can:

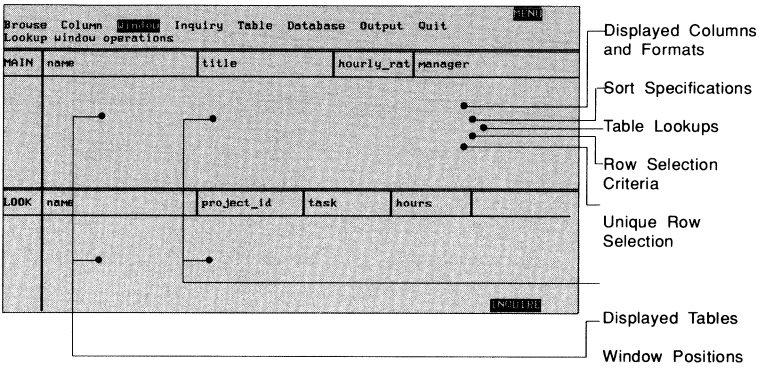
- Set up periodic inquiries that can be carried out by personnel unfamiliar with PC Link or the database being used
- Establish separate collections of templates for several different PC Link users, or for use with several different databases
- Create inquiry specifications using one of the PC editors or generate inquiries for execution by PC Link with another software program

Query Template Description

A query template is a set of instructions that tells VQL how to perform a database inquiry. It stores the specifications that describe the inquiry—such as which columns to retrieve and how to sort the data. The template does not itself contain any data. Instead, it contains information about how to obtain the data and what data to obtain.

Figure 20.1 on the next page shows the information stored in a query template. You can think of the template as a "snapshot" of a PC Link session at a particular moment. Information in a query template includes the tables and columns to display, sort specifications to use, table lookups and the row selection criteria.

Figure 20.1.



Creating a new query template is a simple process. First, set up your VQL session so that its current inquiry specifications are the ones you want to save. You use the normal PC Link commands to build up the inquiry specifications, step-by-step. You should arrange the Main Window and Lookup Window as you want them on the screen and be certain that the tables and columns that are being displayed in each window are correct. If you want to include sort specifications, row selection criteria or table lookups in the template, you should add those specifications in the usual way.

While you are building up the inquiry specifications, you may want to retrieve data from the Host database to be certain that the specifications you have entered are correct. These inquiries have no effect on the specifications themselves, and the data retrieved from the database will not be stored in the template. When your PC Link session exactly matches the inquiry specification that you want to save, you simply record the current specifications and store them in the template. You must assign the template a name by which it can be identified and later retrieved. This name can be from one to eight characters long and must begin with a letter.

To create a new query template, follow the steps in Procedure 20.1:

Procedure 20.1 : Creating a Query Template

1. From the VQL Menu, select **I**nquiry **T**emplate **S**ave.
2. PC Link prompts for a name for the template and provides a list of currently available templates. You may:
   - Type the name you want to give to the new template.
   - Select a single template from the list.
3. If you select a template name that is already in use, PC Link will confirm that you want to replace the template before overwriting it with the new specifications.
4. PC Link saves the current inquiry specifications in the query template and returns to the Inquiry Menu.
5. Select **Q**uit to return to the VQL Menu.

Using a Query Template

You can use a query template at any time by retrieving the template from the disk. This will automatically set your current PC Link session to match the specifications saved in the template. The windows on the screen will be arranged as specified in the template and will display the tables and columns specified. The sort specifications, row selection criteria and table lookups saved in the template will also become the current inquiry specifications for your PC Link session. After the template has been retrieved, the PC screen will not display any data. To execute the inquiry saved in the template, press **F9** (Inquire).

Recalling a query template erases all current work in your PC Link session, including specifications and displayed data. Be sure to save your current work before retrieving a template. PC Link always requests confirmation before retrieving a template to prevent accidental overwriting of your current work.

To retrieve a query template from the disk, use Procedure 20.2:

Procedure 20.2 : Retrieving a Query Template

1. From the VQL Menu, be sure to save your current work if you do not want to lose it.
2. Make sure that the disk containing the template is in the appropriate disk drive.
3. Select **I**nquiry **T**emplate **R**etrieve.
4. PC Link prompts for the name of the template to retrieve and displays a list of available templates. You may:

   Type the name of the template to retrieve.

   Select a single template from the list.
5. PC Link confirms your intention to erase your current work and retrieve the template:

   Select **Y**es to proceed.

   Select **N**o to abandon template retrieval and preserve your work.
6. PC Link retrieves the template, sets the inquiry specifications of the current session to match those saved in the template, and returns to the Inquiry Menu.
7. Select **Q**uit to return to the VQL Menu.

When a query template is retrieved, PC Link automatically verifies the compatibility of the inquiry specifications saved in the template with the current database. If the template is not compatible with the database (e.g., the template requests a table or column that is not found in the database), an error message is displayed, and PC Link abandons template retrieval.

Query templates automatically adapt to minor changes in the structure of a database between the time a template is saved and retrieved. Changes to column sizes and data types, the addition of new columns and tables, for example, are handled automatically. New columns will be included in the list of non-displayed columns and may be included in the inquiry using the Column Restore command. Query templates cannot adapt to changes in database structure that directly affect the saved inquiry specifications, such as changes in the names of columns or tables.

Modifying a Query Template

You can modify an existing query template by retrieving it, modifying the inquiry specifications, and then saving the query template again with the same name. Changes will be saved in the modified template. PC Link will confirm that you want to overwrite the existing template before saving the modified template in its place.

Erasing a Query Template

If you find that you no longer need a particular template, you may erase it from the system. Follow the steps in Procedure 20.3:

Procedure 20.3 : Erasing a Query Template

1. From the VQL Menu, choose **I**nquiry **T**emplate **E**rase.
2. PC Link asks for the name of the template to erase and displays a list of the currently-available templates. You may:
   - Select a template from the list.
   - Type the name of the template.
3. After requesting confirmation, PC Link removes the template from the disk and returns to the Inquiry Menu.
4. Select **Q**uit to return to the VQL Menu.

Listing Query Templates

You can display a list of the currently available query templates on the PC screen with the Inquiry Template List command. To do so, follow the steps in Procedure 20.4:

Procedure 20.4 : Listing Query Template Names

1. From the VQL Menu, choose **I**nquiry **T**emplate **L**ist.
2. A pop-up list of query template names appears in a box on the screen. Use the cursor keys to view the list and then press **Enter**.
3. PC Link removes the list from the screen and returns to the Inquiry Menu.
4. Select **Q**uit to return to the VQL Menu.

Changing the Query Template Directory

PC Link has a current template directory where it saves new query templates and from which it retrieves existing query templates. You can change this directory in two ways:

- The default template directory is specified in the PC Link configuration file. You can change this default directory to the one that you will normally use. See Chapter 28 for information about changing the default settings in the configuration file.
- The current template directory can be changed with the Inquiry Template Directory command. PC Link will use the new directory until the end of the current session; the default template directory remains unchanged. To change the current template directory during a PC Link session, use the steps in Procedure 20.5:

Procedure 20.5 : Changing the Template Directory

1. From the VQL Menu, select **I**nquiry **T**emplate **D**irectory.
2. PC Link prompts for the name of the directory you want to use and displays the name of the current template directory. To retain the current directory, press **Enter**. Otherwise, type the name of the new directory.
3. PC Link checks that the directory you have requested exists, and displays an error message if it does not.
4. The new directory becomes the current template directory, and PC Link returns to the Inquiry Menu.
5. Select **Q**uit to return to the VQL Menu.

Combining Query Templates and Keystroke Macros

Query templates are especially powerful when combined with the PC Link keystroke macro option. A macro that includes an Inquiry Template Retrieve command can automatically retrieve a complex set of inquiry specifications stored in a template, and then perform the inquiry to obtain data from the Host database. Including a query template retrieval in the AUTODB.MAC macro can automate the database inquiry process when PC Link begins operation. See Chapter 29 for further information on combining query templates and keystroke macros.

Transferring Files with the File-Manager

One of the main purposes of the PC Link File-Manager is to transfer files between your PC and a Host system. You can transfer files containing many different types of information, for example, text documents, reports to be printed, data files, worksheet files and even computer programs. The File-Manager works with the communications software on the PC and Host systems to ensure that no errors occur while transferring the file. As a result, the contents of the original file and the copy of the file on the destination system are identical.

The File-Manager can transfer any file from the PC to the Host and vice versa. However, you may or may not be able to process the contents of the file with applications software on the destination system. Generally, you can process the transferred file only if it contains printable text, or if the data in the file is stored in a format acceptable to the applications software on both the PC and the Host system. Figure 21.1 illustrates the file transfer process, and some of the options available during file transfer. The term *source system* is used to indicate the system from which a file is being transferred, and the term *destination system* to indicate the system to which the file is being transferred.

Working Directories

PC Link always transfers files between the PC working directory and the Host working directory. If you want to transfer files to or from another directory, you must first change the working directory using the File-Manager commands. When changed in this way, the new working directories are used for the current File-Manager session only.

Changing the PC Working Directory

To process files located in a different directory or on a different drive on your PC, use the steps in Procedure 21.1:

Procedure 21.1 : Changing the PC Working Directory

1. From the File-Manager Menu, select **O**ptions **P**C-Dir.
2. PC Link prompts for the name of the new directory and displays the name of the current directory. Type the name of the directory you wish to use and press **Enter**.

3. PC Link changes the directory and displays the Options Menu with a list of the current working directory's files.
4. Select **Q**uit to return to the File-Manager Menu.

Changing the Host Working Directory

You can also set the Host working directory to process files in a different directory on the Host system. Use Procedure 21.2:

Procedure 21.2 : Changing the Host Working Directory

1. From the File-Manager Menu, select **O**ptions **H**ost-Dir.
2. PC Link prompts for the name of the new directory and displays the name of the current directory. Type the name of the directory you wish to use and press **Enter**.
3. PC Link changes the directory and displays the Options Menu with a list of the current working directory's files.
4. Select **Q**uit to return to the File-Manager Menu.

Browsing the File Lists

Before you can transfer files, you must be able to select them. PC Link's File-Manager provides tools for browsing files in the PC and Host working directories. The PC window and Host window display a list of the names of the files in the PC working directory and the Host working directory, respectively. If there are a small number of files in the directories, you can see the entire list of file names at one time. If there are many files, however, the list may not completely fit in the window.

through the window, to view it in its entirety. To browse the file lists, follow the steps in Procedure 21.3:

Procedure 21.3 : Browsing the PC or Host Window File List

1. From the File-Manager Menu, select **B**rowse.
2. If both the PC window and Host window are displayed, PC Link presents a menu for your selection of which window to browse. Select **H**ost or **P**C to browse the corresponding window. (If only the PC window is displayed, this step is skipped.)

3. PC Link highlights the header of the window being browsed, and activates the cursor keys for browsing the file list. In addition, **F6** (Window) allows you to switch browsing from the PC window to the Host window and back again.

4. When you have finished browsing the list of files, press **Enter**. PC Link returns to the File-Manager Menu.

The keys that can be used for browsing the list include **Home**, **End**, **PgUp**, **PgDn**, ↑ and ↓. For complete information on browsing a list using these keys, see Chapter 5.

Changing Window Sizes

When PC Link first displays the Host window and PC window together on the screen, it adjusts the window border so that the two windows are roughly the same size. If either your PC or Host working directory have many more files than the other working directory, it may be more convenient to have the two windows be of unequal size.

You can use Procedure 21.4 to move the border between the PC window and the Host window up and down and adjust the relative size of the two windows. You can shrink the size of either window until the body displays only one row of file information.

Procedure 21.4 : Changing the Relative Window Size

1. From the File-Manager Menu, select **W**indow **M**ove.

2. Use the ↑ and ↓ keys to move the border up or down to the desired position, then press Enter. PC Link returns to the File-Manager Menu.

Detailed File Information

PC Link can display the file information in the PC and Host windows in two different formats, offering two different levels of detail. The short list gives only the name of each file and arranges the file names in several columns across the screen. Typically, you can view as many as fifty file names at once in this way.

The long list format displays information about each file on a separate row of the screen. As a result, you can view information for only a few files at a time using this format, but the information presented on the screen for each file is more detailed. Figure 21.2 shows a window using the long list format.

The information displayed includes, from left to right:

- The name of the file
- The size of the file, in characters (or bytes)
- The date when the file was last modified
- The time when the file was last modified
- The name of the user who owns the file
- Access permissions for the file

For PC files, the file owner information is always blank, because this information is not maintained by DOS. The access permissions are displayed as a sequence of characters, with the following meanings:

- r indicates read access to the file is permitted
- w indicates write access to the file is permitted
- x identifies an executable (program or batch)

Up to three sets of three permission characters are displayed, giving in left-to-right order:

- The file access permissions of the file's owner
- The file access permissions of other users in the same user group as the owner
- The file access permissions of all other users

The permissions information varies between the PC and the Host system, and even from Host to Host, depending on the file protection scheme used by the system where the files reside.

The default level of detail of the file information displayed by PC Link is specified in the current configuration. You can change this default setting through the PC Link Configuration Menu. You can also change the level of detail using a File-Manager command, as shown in Procedure 21.5. This change remains in effect only during the current File-Manager session.

Procedure 21.5 : Changing the Level of Display Detail

1. From the File-Manager Main Menu, select **O**ptions **D**etail.
2. PC Link displays a No/Yes menu:
   - Select **N**o to display only file names in the list (short format).
   - Select **Y**es to display detailed information in the list (long format).

3. Select **Q**uit to return to the File-Manager Menu.

Sending Files to the Host System

Any of the files in the PC working directory can be transferred to the Host working directory using the File-Manager Send command. You can send a single file or batch together many files for a single transfer. You can also set up the file transfer so that it runs completely unattended. See Procedure 21.6:

Procedure 21.6 : Sending Files to the Host System

1. From the File-Manager Menu, select **S**end.
2. PC Link initiates a Host system connection if one is not already active.
3. PC Link places the cursor into the PC window and prompts for your selection. You may:
   - Select the files with multiple-choice selection from the list.
   - Type the name of a single file.
   - Type a file name with wild card characters to send multiple files.
4. PC Link sends the files, one by one, to the Host working directory. If the Auto-Name option is on, PC Link automatically uses the name of the source file as the destination file name; otherwise, PC Link prompts you for the name of the destination file to use before each file is sent.
5. If the destination file name is one file that already exists in the Host working directory, PC Link presents a menu to confirm your intention to replace the contents of the file. You can:
   - Select **C**ancel to leave the current file intact and stop sending files.
   - Select **R**eplace to overwrite the existing file with the new data being sent.
   - Select **S**kip to leave the current file intact, skip this file, and continue sending with the next selected file.
   - Select **A**ll to overwrite the existing file and request that all subsequent files with conflicting names be automatically overwritten also.
6. When file transfer is complete, PC Link returns to the File-Manager Main Menu.

PC Link displays a list of the files in the Host working directory and the PC working directory when you are selecting files to be sent. This allows you to see the destination directory for context, making sure that you are not accidentally overwriting an existing file or transferring the files into the wrong Host directory.

While the files are being sent, PC Link displays a blinking SENDING indicator. A message indicating the name of the file and a count of the number of characters transferred thus far appears at the bottom of the screen. When all the files have been transferred, PC Link adds the new file name(s) to the display in the Host window.

The total count of characters transferred for each file will normally be equal to the size of the file as it is displayed in the PC window. However, if the End-of-Line Conversion option is turned on, the count of characters transferred will be slightly less than the size of the PC file. The End-of-Line Conversion option is explained later in this chapter.

You can interrupt a file transfer by pressing the **Ctrl Break** key combination. PC Link interrupts the transfer immediately and returns you to the File-Manager Menu after you confirm the interruption with **Enter**. An interrupted transfer will usually leave a partially complete file on the Host system. You may want to delete this file using the Host Erase command.

Receiving Files from the Host System

Files in the Host working directory can be transferred to the PC working directory using the File-Manager Receive command. As with the Send command, you can batch together many files in a single, unattended transfer. Procedure 21.7 shows how to transfer files from the Host system.

Procedure 21.7 : Receiving Files from the Host System

1. From the File-Manager Menu, select **R**eceive.
2. PC Link initiates a Host system connection if one is not already active.
3. PC Link places the cursor into the Host window and prompts for your selection. You may:
   - Select the files with multiple-choice selection from the list.
   - Type the name of a single file.

- Type a file name with wild card characters to send multiple files.

4. PC Link transfers the files, one by one, into the PC working directory. If the Auto-Name option is on, PC Link automatically uses the name of the source file as the destination file name; otherwise, PC Link prompts you before each file is received for the name of the destination file to use.

5. If the destination file name is one that already exists in the PC working directory, PC Link presents a menu to confirm your intention to replace the contents of the file. You can:
   - Select **C**ancel to leave the current file intact and stop receiving files.
   - Select **R**eplace to overwrite the existing file with the new data being sent.
   - Select **S**kip to leave the current file intact, skip this file, and continue sending with the next selected file.
   - Select **A**ll to overwrite the existing file and request that all subsequent files with conflicting names be automatically overwritten also.

6. When file transfer is complete, PC Link returns to the File-Manager Menu.

ress of the transfer are displayed at the bottom of the screen. When all the files have been received, PC Link adds the new file name(s) to the display in the PC window.

You can interrupt a file transfer in progress by pressing **Ctrl Break**. PC Link interrupts the transfer immediately and returns you to the File-Manager after you confirm the interruption with the **Enter** key. An interrupted transfer will usually leave a partially complete file on the PC system. You may want to delete this file using the PC Erase command.

End-of-Line Conversion Option

The PC and Host systems often have very different formats for storing their data in files. These differences can make it difficult or impossible to use applications software on the destination system with transferred files. For transfers of files containing text only (such as reports or documents), however, PC Link offers a file conversion option.

The PC stores lines of text in a file by placing two characters—a carriage return (CR) and a line feed (LF)—at the end of each line. Most Host systems store lines of text with only a single character—a Line Feed—at the end of each line. The PC Link End-of-Line Conversion option automatically converts the end-of-line character(s) in a transferred text file. On transfers to the Host, if End-of-Line Conversion is active, the CR/LF character pair is converted to a single LF character as the file is transferred. On transfers from the Host, all LF characters received are translated into a CR/LF pair of characters in the destination file.

The default setting of the End-of-Line Conversion option is specified in the current configuration. You can change the default setting through commands in the Configuration Menu. See Chapters 10 and 28 for more information on configuring PC Link.

Except in unusual cases, you should always turn End-of-Line Conversion on when transferring text files, using Procedure 21.8. The End-of-Line Conversion option when changed in this manner remains in effect for the current File-Manager session only.

Procedure 21.8 : Turning End-of-Line Conversion On/Off

1. From the File-Manager Menu: Select **O**ptions **E**OL.
2. PC Link presents a No/Yes menu for selection:
   - Select **N**o not to convert end-of-line characters.
   - Select **Y**es to convert end-of-line characters. PC Link returns to the File-Manager Options Menu.
3. Select **Q**uit to return to the File-Manager Menu.

When transferring a file containing binary data (such as accounting records or program files), it is critical that the file be copied exactly, character-for-character, as it appears on the source system. End-of-line conversion is inappropriate for transfer of binary files, and should always be turned off when sending or receiving them from the Host system.

Naming Transferred Files

When you transfer a file from a source system to a destination system, a new file is usually created on the destination system. PC Link will automatically name the new file on the destination system with the name of the original file, if you request it. Alternatively, PC Link will prompt you for the name of the destination file and use the name that you supply. The Auto-Name option controls whether PC Link automatically generates destination file names or requests them from you.

There are also important differences between the file names used by the PC and those used by most Host systems. Sometimes these differences can cause problems when PC Link tries to generate destination file names. Specifically:

- *File name length*: The PC uses eight-character file names, with an optional three-character file name extension. Most Host systems permit longer file names. Long Host file names may be truncated when transferring from a Host system to the PC.
- *Legal characters*: The characters that can appear in PC file names are restricted to alphanumeric and a few punctuation characters. Some Host systems allow almost any character, including embedded spaces, to be used in a file name. Host files whose names contain characters that are illegal in PC file names cannot be transferred with the Auto-Name option on.
- *Case*: PC file names contain upper-case characters only. Some Host systems allow upper or lower-case characters in file names and distinguish between them. For Host-to-PC transfers, PC Link automatically converts the Host file name to upper-case when creating the destination PC file. For PC-to-Host transfers, the Auto-Name option permits automatic conversion of the PC file name to an upper-case or lower-case name when creating the destination Host file.

The Auto-Name Option

The Auto-Name option controls PC Link's automatic file-naming capabilities. If Auto-Name is set to upper-case, files sent to or created on the Host are given upper-case file names automatically. If Auto-Name is set to lower-case, files sent to or created on the Host are given lower-case file names automatically. If Auto-Name is set to either upper-case or lower-case, automatic naming occurs for files received by or created on the PC. If Auto-Name is turned off, unattended transfer of multiple files is not possible.

The default setting of the Auto-Name option is specified in the current configuration. You can change the default setting by using commands in the Configuration Menu. See Chapters 10 and 28 for further information on configuring PC Link.

You can also change the setting using File-Manager commands, as shown in Procedure 21.9. In this case, the changed option setting remains in effect for the current File-Manager session only.

Procedure 21.9 : Setting the Auto-Name Option

1. From the File-Manager Menu, select **O**ptions **A**uto-Name.
2. PC Link presents a menu for setting Auto-Name:
   - Select **O**ff to specify that PC Link should always prompt for file name.
   - Select **U**pper-Case to specify that the Auto-Name option should create Host file names with all uppercase characters.
   - Select **L**ower-Case to specify that the Auto-Name option should create Host file names with all lowercase characters.

   Either Upper-case or Lower-case turns Auto-Name on for PC file management operations. PC Link returns to the File-Manager Options Menu.
3. Select **Q**uit to return to the File-Manager Menu.

Chapter 22

Managing Host System and PC Files with the File-Manager

The PC Link File-Manager provides a comprehensive set of file management functions for files on the Host system and on the PC. You can:

- Copy a file to another file or another directory
- Move a file to another directory
- Rename a file
- Erase a file
- Print a file on the Host printer or on the PC printer
- View the contents of a file on the screen

PC Link offers exactly the same set of file management capabilities for Host files and PC files, using a parallel set of commands and menus for each. This allows you to use PC Link for Host and PC file management interchangeably. Because PC Link handles all file management functions through its menus and lists, there is no need to learn Host or PC file management syntax. Moreover, the file management menus and lists are identical across the various operating systems where INGRES is available.

This chapter describes the PC Link Host and PC file management capabilities, which all work on files in the current Host or PC working directory. To work with files in a different directory, you must first change the working directory to that directory.

Making a Copy of a Host or PC File

You can place a duplicate copy of any file in the Host or PC working directory or in some other directory on the Host or PC system, respectively. Procedure 22.1 creates a duplicate copy of one or more files:

Procedure 22.1 : Copying a Host or PC File

1. From the File-Manager Menu, select **H**ost Copy or **P**C Copy.
2. PC Link connects to the Host system, if necessary.

3. PC Link expands the Host or PC window to fill the screen and prompts for your selection of files to copy. You can:
   - Select files from the list using multiple-choice selection.
   - Type the name of a file.
   - Type a file name including wild card characters to select multiple files.
4. PC Link prompts for the name of the directory into which the files are to be copied and displays the working directory after the prompt. You can:
   - Type the name of a destination directory.
   - Press **Enter** to select the working directory as the destination directory.
5. PC Link copies the files from the working directory to the destination directory. If the Auto-Name option is turned off, or if the destination directory is the same as the working directory, PC Link prompts for the name of the destination file before copying each file. Type the name you wish to use in response to the prompt.
6. If the destination file name (assigned by PC Link or typed by you) is a file that already exists in the destination directory, PC Link presents a menu to confirm your intention to replace the contents of the file. You can:
   - Select **C**ancel to leave the current file intact and stop copying.
   - Select **R**eplace to overwrite the existing file with the new data.
   - Select **S**kip to leave the current file intact, skip this file, and continue copying with the next selected file.
   - Select **A**ll to overwrite the existing file, and request that all subsequent files with conflicting names be automatically overwritten also.
7. When file copying is complete, PC Link returns to the Host or PC Menu.

When copying a file within the directory, PC Link will always prompt you for the name of the destination file. When copying to a different directory, the Auto-Name option determines whether PC Link will automatically give the destination file the same name as the source file, or whether it will prompt you.

If you select multiple files to be copied, the files are copied in the same sequence as they are selected. Wild card characters may also be used to select groups of files for copying.

If the file to be copied is large, the copy operation may take some time on the Host system. PC Link informs you of the progress of multi-file copies through messages at the bottom of the screen. The WAIT mode indicator flashes while file copying is in process. When copying is complete, the appropriate window is updated.

You can interrupt a multi-file copy operation by pressing **Ctrl Break**. When copying Host files, PC Link cannot interrupt the copying of the file in process, but with PC files, PC Link stops copying immediately and typically leaves a partially copied file in the destination directory. You may want to remove this and any other files copied in error with the PC Erase command.

Moving a File to Another Directory

PC Link allows you to move a file from one working directory to another. Use Procedure 22.2:

Procedure 22.2 : Moving Host or PC Files

1. From the File-Manager Menu, select **H**ost **M**ove or **P**C **M**ove.
2. PC Link connects to the Host system, if necessary.
3. PC Link expands the Host or PC window to fill the screen and prompts for your selection of files to move. You can:
   - Select files from the list using multiple-choice selection.
   - Type the name of a file.
   - Type a file name including wild card characters to select multiple files.
4. PC Link prompts for the name of the directory into which the files are to be moved. Type the destination directory name and press **Enter**.
5. PC Link moves the files from the working directory to the destination directory. If the Auto-Name option is turned off, PC Link prompts for the name of each file. Type the name you wish.

6. If the destination file name is a file that already exists in the destination directory, PC Link presents a menu to confirm your intention to replace the contents of the file. You can:
   - Select **C**ancel to leave the current file intact and stop moving files.
   - Select **R**eplace to overwrite the existing file with the new data.
   - Select **S**kip to leave the current file intact, skip this file, and continue moving files with the next selected file.
   - Select **A**ll to overwrite the existing file and request that all subsequent files with conflicting names be automatically overwritten also.
7. When file copying is complete, PC Link returns to the Host or PC Menu.

All files moved in a single command must be moved to the same directory. The setting of the Auto-Name option determines how the file name(s) are set.

Messages inform you of the progress of the move operation, but on most Host systems this operation is quite fast, so messages will flash by quickly. Multi-file moves can be interrupted with **Ctrl Break**. As with file copies, the current file is moved in its entirety on the Host, but PC Link halts the move operation before the next file is moved. Again, partially copied files are left in the PC destination directory. You may want to remove them with the PC Erase command.

Files are always moved in the same order in which they were selected. Wild cards can be used to select multiple files. The appropriate window is updated when the last file has been moved and will show that the original files are no longer in the working directory.

Changing the Name of a File

You can move a file within a given directory by changing its name. Procedure 22.3 is used:

Procedure 22.3 : Renaming a Host or PC File

1. From the File-Manager Menu, select **H**ost **R**ename or **PC R**ename.
2. PC Link connects to the Host system, if necessary.

3. PC Link expands the Host or PC window to fill the screen and prompts for your selection of files to rename. You can:
   - Select files from the list using multiple-choice selection.
   - Type the name of a file.
   - Type a file name including wild card characters to select multiple files.
4. PC Link prompts for a new name for each selected file, one by one. Type the new name and press **Enter**.
5. If you type the name of a file that already exists, PC Link presents a No/Yes menu to confirm your intention to replace the file:
   - Select **N**o to leave the current file untouched and cause PC Link to prompt again for a new file name.
   - Select **Y**es to replace the file.
6. When all files have been renamed, PC Link returns to the Host or PC Menu.

PC Link prompts you for a new name for each file selected, in turn, and changes the name of the file. **Ctrl Break** is inoperative for the Host Rename and PC Rename options, because PC Link pauses for user input before each file is renamed. Use **Esc** in response to the prompt to abandon a multi-file rename operation.

Erasing a Host or PC File

You can erase one or more files from the working directory by following the steps in Procedure 22.4:

Procedure 22.4 : Erasing a Host or PC File

1. From the File-Manager Menu, select **H**ost **E**rase or **P**C **E**rase.
2. PC Link connects to the Host system, if necessary.
3. PC Link expands the Host or PC window to fill the screen and prompts for your selection of files to erase. You can:
   - Select files from the list using multiple-choice selection.
   - Type the name of a file.
   - Type a file name including wild card characters to select multiple files.
4. PC Link erases the files, one-by-one, and returns to the Host or PC Menu.

Caution should be used when selecting multiple files for erasure, because the files are erased very quickly. Multi-file erasures can alsc be specified with wild card characters, but this requires even more care. PC Link informs you with a message at the bottom of the scree1 as it erases each file selected. You can interrupt multi-file erasures with **Ctrl Break**.

Viewing the Contents of a Host or PC File

PC Link allows you to browse the contents of a Host or PC file directly on the PC screen, using the PC's cursor keys. The PC screen displays about twenty lines and eighty columns of a file's contents at time.

Procedure 22.5 : Viewing a Host or PC File

1. From the File-Manager Menu, select **H**ost **V**iew or **PC V**iew.
2. PC Link connects to the Host system, if necessary.
3. PC Link expands the Host or PC window to fill the screen and prompts for your selection of a files to view. You can:
   - Select a single file from the list.
   - Type the name of a file.
4. PC Link displays the beginning of the file on the screen and activates the cursor keys on the PC keyboard. You can use the cursor keys to move through the entire file.
5. When you have finished viewing the file, press **Enter**. PC Link restores the Host and PC windows to the screen and returns to the Host or PC Menu.

PC Link supports two different formats for viewing file contents:

- *Text format* is appropriate for browsing files containing text information, such as documents, reports, and files to be printed.
- *Hexdump format* is appropriate for files that contain binary data, such as programs or accounting data and is designed for use by programmers and other computer professionals.

The default viewing format is specified in the PC Link configuration file. You can change the default setting through commands in the Configuration Menu. You can also set the viewing format with a File-Manager command, using Procedure 22.6. The viewing format set in this way remains in effect for the rest of your current File-Manager session.

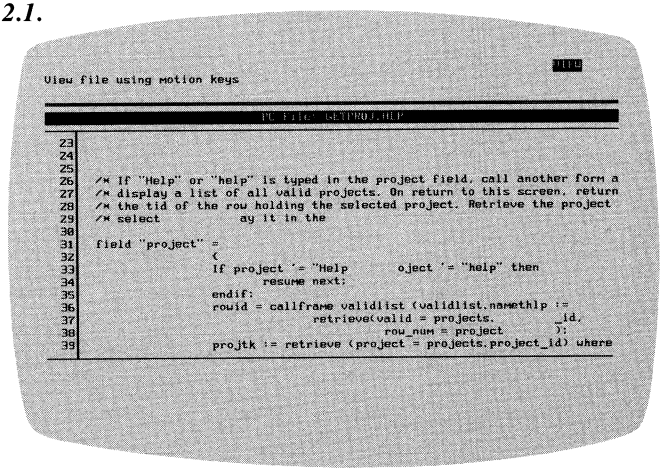
Procedure 22.6 : Setting the File Viewing Format

1. From the File-Manager Menu, select **O**ptions **V**iew-Mode.
2. PC Link presents a menu for selection of the viewing format:
   - Select **T**ext to view files in text format.
   - Select **H**ex-Dump to view files in hexadecimal dump format.
3. PC Link sets the Viewing Format option and returns to the Options Menu.
4. Select **Q**uit to return to the File-Manager Menu.

Viewing Text Files

Text files can be viewed with either file viewing format. Figure 22.1 shows a file being viewed in text mode. The lines of text appear on the PC screen, one line per row, with a number for each line at the side of the screen.

Figure 22.1.



Vertical motion through the file takes place a line or a page at a time. You can use **F5** (GoTo) to move to a specific line in the file. Horizontal motion is also permitted, if the file contains lines that are too long to fit in the viewing area on the screen. Lines up to two thousand characters long can be viewed by scrolling the file horizontally. Lines longer than two thousand characters are truncated.

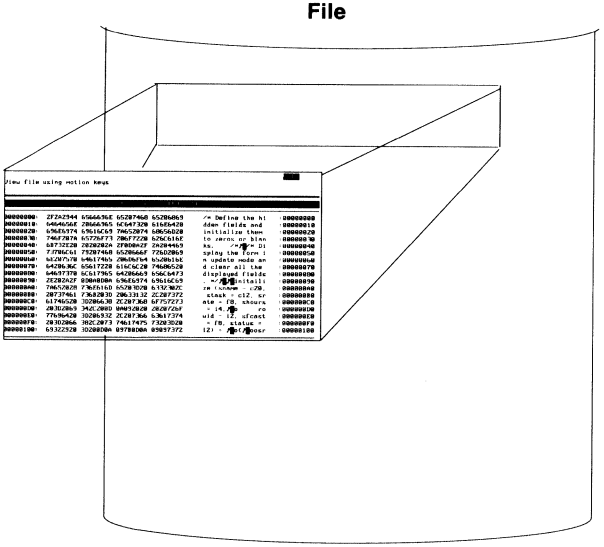
Viewing Host files in text format is a convenient way to examine their contents before printing or processing them. Certain viewing operations, however, can generate a significant amount of processing overhead, if used on very large files. In particular, moving to the end of a file with the **End** ↓ key sequence can take several minutes on a very large file. In addition, each vertical movement for viewing a file causes network communications with the Host system to transfer the required line(s) of the file to the PC. This can take several seconds or even minutes. File viewing should therefore be used carefully on large Host files.

Viewing Binary Files

PC Link gives technical computer users an excellent tool for examining and analyzing binary files on the Host system. In hexdump format, the contents of a file are displayed in fixed, sixteen-byte records, with each record occupying one line of the PC screen. Each line displays the offset of the data within the file, the data expressed as a sequence of hexadecimal digits, and the PC ASCII character equivalents of the data.

Figure 22.2 shows the same file as Figure 22.1, but displayed in hexdump format

Figure 22.2.



When hexdump format is selected, the vertical cursor keys move through the file in sixteen-byte "records." **F5** (GoTo) can also be used to move to a specific byte offset in the file. No horizontal motion is permitted in hexdump format, because the entire contents of each record are displayed within the screen viewing area.

Printing the Contents of a Host or PC File

PC Link can print the contents of a Host file on the Host system's printer, or the file can be transferred across the network to the PC for printing on the PC printer. Conversely, PC Link can print the contents of a PC file on the PC printer or transfer it across the network for printing on the Host printer. Follow the steps in Procedure 22.7.

Procedure 22.7 : Printing a Host or PC File

1. From the File-Manager Menu, select **H**ost **P**rint or **PC P**rint.
2. PC Link connects to the Host system, if necessary. The Host or PC window expands to fill the screen.
3. PC Link presents a menu:
   - Select **PC** to print the files on the PC printer.
   - Select **H**ost to print the files on the Host system printer.
4. PC Link prompts for your selection of files to print. You can:
   - Select a file from the list using multiple-choice selection.
   - Type the name of a file.
   - Type a file name with wild card characters to select multiple files for printing.
5. If you selected the PC printer, PC Link sends the files to the PC printer. If you selected the Host printer, PC Link sends the files to the Host printer.
6. PC Link returns to the Host or PC Menu.

If the files are being printed on the Host printer, PC Link stops requesting spooling of the files; however one or more files will probably still be printed. You should notify your Host system operator or use the Terminal-Emulator to give the Host system commands to cancel the printing request if the files are very large. If the files are being printed on the PC printer, PC Link interrupts file printing immediately.

If you print the files on the PC printer, you have the option of printing a *header page* before each file. The header page shows the name of the file and several rows of asterisks, to make it easy to spot the beginning and ending of each file when several files are printed at once. Use Procedure 22.8 to set the Print Header option on or off. The printing of header pages on the Host system is under the control of the Host operating system and is not a PC Link option.

Procedure 22.8 : Setting the Print Header Option

1. From the File-Manager Menu, select **O**ptions **H**eader.
2. PC Link presents a No/Yes menu for selection:
   - Select **N**o to request that header pages not be printed.
   - Select **Y**es to request printing of header pages.
3. PC Link sets the Print Header Pages option and returns to the File-Manager Menu.

Chapter 23

Using the PC as a Terminal

The PC Link Terminal-Emulator offers you several options that control its operation and allow you to adapt it to different Host systems. For example, you can set the Terminal-Emulator to communicate with systems using either half-duplex or full-duplex communications. The current configuration contains a default for each Terminal-Emulator configuration option

You can also change the value of some of the Terminal-Emulator options while you are using the module. This chapter describes how to make these changes. Changes made while you are using the Terminal-Emulator remain in effect only during the current working session.

Changing the PC Working Directory

The Terminal-Emulator file capture and file send capabilities both use files in the current PC working directory. To use files in a different PC directory, use Procedure 23.1.

Procedure 23.1 : Changing the Working Directory

1. From a Host session, press the Menu Access Key to use the Terminal-Emulator Menu.
2. Select **O**ptions **W**ork-Dir.
3. PC Link prompts for the name of the new PC working directory, and displays the name of the current directory. Type the name of the directory you wish to use and press **Enter**.
4. PC Link changes the PC working directory and returns to the Terminal-Emulator Menu.
5. Select **Q**uit to return to the Host session.

Changing the Menu Access Key

Usually, the **Alt M** key combination is the Menu Access Key, which lets you use the Terminal-Emulator menus while in a Host session. If this use of **Alt M** conflicts with its use by Host system software, you can change the assignment. Procedure 23.2 on the next page shows how to assign a different Menu Access Key for the current Terminal-Emulator session. You can also change the default Menu Access Key specified in the current configuration to alter your assignment of the key permanently. See Chapter 28 for further information on making permanent configuration changes.

Procedure 23.2 : Assigning a Different Menu Access Key

1. From a Host session, press the Menu Access Key to use the Terminal-Emulator Menu.
2. Select **O**ptions **M**enu-Key.
3. PC Link prompts for the key to be assigned as the new Menu Access Key. Press the key and then press **Enter**.
4. PC Link changes the key definition and returns to the Terminal-Emulator Menu.
5. Select **Q**uit to return to the Host session.

Automatic Line-Wrap

Many terminals have an automatic line wrapping feature that automatically displays lines of text from the Host system which are longer than eighty characters. Long lines are wrapped onto two or more consecutive lines of the terminal screen.

PC Link emulates this terminal feature through the Line-Wrap option. If Line-Wrap is turned on, PC Link automatically begins to display characters on the next line if a line of text is too long. If Line-Wrap is turned off, the cursor remains at the right edge of the screen, and characters beyond the eightieth character in the line "pile up" on top of one another in that position, until a carriage return character is received.

The proper setting of the Line-Wrap option depends upon the terminal behavior which is expected by the Host software that you are using. For most applications, Line-Wrap should be set off. Procedure 23.3 shows how to change the Line-Wrap option setting for the current Terminal-Emulator session.

Procedure 23.3 : Setting the Line-Wrap Option

1. From a Host session, press the Menu Access Key to use the Terminal-Emulator Menu.
2. Select **O**ptions **L**ine-Wrap.
3. PC Link presents a No/Yes menu for your selection:
   - Select **N**o to turn Line Wrap off.
   - Select **Y**es to turn Line Wrap on. PC Link sets the option and returns to the Options Menu.
4. Select **Q**uit **R**esume to return to the Host session.

Setting the Local Echo Option

Most Host systems run in *full-duplex* communications mode in which the Host system receives characters that you type and immediately "echoes" them by sending them back to you. PC Link displays the characters on the PC screen when it receives the echo from the Host system. In this way, you can be certain that every character that appears on the screen was actually received by the Host.

Some Host systems do not support full-duplex communications and do not echo received characters. For communication with these systems, the PC Link Local Echo option allows you to request a *local echo* of the characters sent to the Host. Turning the Local Echo option on causes PC Link to display characters as they are sent to the Host system. Turning the Local Echo option off causes PC Link to display echoed characters only. Procedure 23.4 shows how to switch the Local Echo option on and off for the current session:

Procedure 23.4 : Setting the Local Echo Option

1. From a Host session, press the Menu Access Key to use the Terminal-Emulator Menu.
2. Select **O**ptions **E**cho.
3. PC Link presents a No/Yes menu for selection:
   - Select **N**o to turn off Local Echo.
   - Select **Y**es to turn on Local Echo. PC Link sets the option, and returns to the Options Menu.
4. Select **Q**uit **R**esume to return to the Host session.

Using the Terminal-Emulator Printer Logging Capability

The PC Link printer logging capability lets you to produce a printed record of your dialogue with a Host system. When printer logging is active, every character displayed on the PC screen during a Host session is also printed on the PC printer.

Printer logging is switched on and off through the Terminal-Emulator Menu. You can also define a special Printer Logging Key on the PC keyboard, to toggle printer logging on and off from within a Host session. Finally, PC Link allows you to print an image of the screen at any time during a Host session with a special keystroke combination. These capabilities are all described in this chapter.

Starting Printer Logging

Printer logging is switched on and off through the Terminal-Emulator Menu. To turn on printer logging, follow the steps in Procedure 24.1:

Procedure 24.1 : Starting Printer Logging

1. From a Host session, press the Menu Access Key to use the Terminal-Emulator Menu.
2. Select **P**rint **B**egin.
3. PC Link turns on printer logging and returns to the Terminal-Emulator Menu.
4. Select **R**esume to return to the Host session.

When printer logging is turned on, PC Link displays the PRINT indicator in the lower right corner of the screen. Exactly when the characters you type are printed depends upon the particular printer you are using. Some printers print character-by-character as data is received from the PC. Others print a complete line at a time. In any case, the printer should begin to print after you have entered a Host command and/or received a line of data from the Host system.

If your printer does not begin to print or if the characters you type are no longer displaying on the screen, check the printer assignment in the current configuration, the connection between the PC and the printer, and the printer itself for any possible malfunction.

Ending Printer Logging

To turn printer logging off when it is active, use Procedure 24.2:

Procedure 24.2 : Ending Printer Logging

1. From a Host session, press the Menu Access Key to use the Terminal-Emulator Menu.
2. Select **P**rint **E**nd.
3. PC Link turns off printer logging and returns to the Terminal-Emulator Menu.
4. Select **R**esume to return to the Host session.

The Printer Logging Key

If you are switching printer logging on and off repeatedly during a Host session, using the PC Link menus can become tedious. As a convenience, PC Link allows you to switch printer logging on and off from within a Host session by using a special key. When you press the Printer Logging Key during a Host session, PC Link turns printer logging on and off.

The Printer Logging Key is usually **Alt P**, which is typed by holding down the **Alt** key and pressing the **P** key.

Changing the Printer Logging Key

You can change the default Printer Logging Key specified in the current configuration using commands in the Configuration Menu. If you change the default setting, the key you select will automatically become the Printer Logging Key each time you start the Terminal-Emulator. You can also change the Printer Logging Key for the current Terminal-Emulator session only through the Terminal-Emulator menus. Follow the steps in Procedure 24.3:

Procedure 24.3 : Setting the Printer Logging Key

1. From a Host session, press the Menu Access Key to use the Terminal-Emulator Menu.
2. Select **O**ptions **P**rint-Key.

3. PC Link prompts for the new Printer Logging Key. Press the key and then press **Enter**. PC Link sets the key and returns to the Options Menu.
4. Select **Q**uit **R**esume to return to the Host session.

Printing a Screen Image

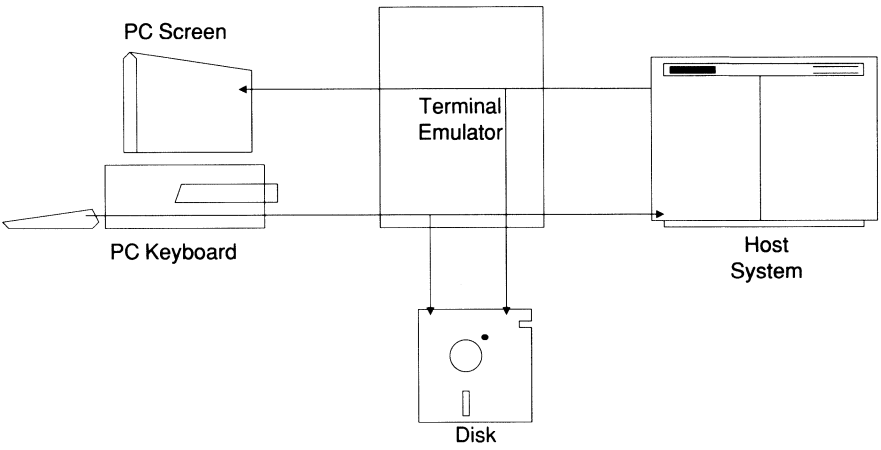
Occasionally, during a Host session, you may find it useful to print a copy of the information on your PC screen. To print a screen image, press **Shift PrtSc**. The printer will print twenty-five lines of eighty characters each. Your Host session then continues.

The appearance of a printed screen image may differ slightly from the actual appearance of the screen, depending upon your specific printer. For example, characters displayed in reverse video or in boldface on the screen will print in a normal font on most printers. Graphics characters or special symbols displayed on the screen may print as ordinary letters or as other symbols.

Capturing Host Dialogue in a PC File with the Terminal-Emulator

The PC Link file capture capability allows you to capture your dialogue with a Host system in a file on the PC. When file capture is active, every character displayed on your PC screen during a Host session is placed into the *capture file*. The capture file becomes a running log of your interaction with the Host system. Later, you can print it, edit its contents, or use it as data for another PC application. Figure 25.1 illustrates file capture operation.

Figure 25.1.



With file capture, you can:

- Capture a complicated sequence of Host commands in a file and then print out the file as instructions for another user.
- Ask the Host system to print out a report on your screen, and capture the report in a disk file. Later, you can edit and print the report using PC word processing software.
- Print out a Host file on your display and capture it in a disk file. This technique provides a limited file transfer capability for Host systems that do not have the PC Link File-Manager installed.

Starting File Capture

You can turn on file capture at any time during a Host session by following the steps in Procedure 25.1:

Procedure 25.1 : Starting File Capture

1. From a Host session, press the Menu Access Key to use the Terminal-Emulator Menu.
2. Select **C**apture **B**egin.
3. PC Link prompts for the name of the capture file; type the name of the file you want to use and press **Enter**.
4. PC Link creates the capture file if it does not already exist, begins file capture, and returns to the Terminal-Emulator Menu.
5. Select **R**esume to return to the Host session.

PC Link displays the CAPTURE indicator in the lower right corner of the screen while file capture is active.

Each time you begin to capture a file, any previous contents of the capture file are lost. To accumulate information in the capture file while switching file capture on and off, see "Suspending File Capture" which follows.

Ending File Capture

You can turn file capture off at any time by following Procedure 25.2:

Procedure 25.2 : Ending File Capture

1. From a Host session, press the Menu Access Key to use the Terminal-Emulator Menu.
2. Select **C**apture **E**nd.
3. PC Link turns off file capture, closes the capture file, and returns to the Terminal-Emulator Menu.
4. Select **R**esume to return to the Host session.

Suspending File Capture

While capturing data into a file, you may want to skip over a part of your Host session, omitting it from the capture file, and then resume capturing again. PC Link allows you to suspend file capture temporarily and then resume.

While file capture is suspended, characters received from the Host system are displayed on the PC screen, but they are not added to the capture file. When you resume capturing, characters are added to the end of the file.

Procedure 25.3 shows how to suspend file capture temporarily:

Procedure 25.3 : Suspending File Capture

1. From a Host session, press the Menu Access Key to use the Terminal-Emulator Menu.
2. Select **C**apture **S**uspend.
3. PC Link suspends file capture, leaves the capture file open and returns to the Terminal-Emulator Menu.
4. Select **R**esume to return to the Host session.

While file capture is suspended, PC Link displays a CAPSUSP indicator in place of the CAPTURE indicator. When you resume file capture, the indicator changes back to CAPTURE again.
Procedure 25.4 shows how to resume file capture when it has been suspended:

Procedure 25.4 : Resuming File Capture

1. From a Host session, press the Menu Access Key to use the Terminal-Emulator Menu.
2. Select **C**apture **R**esume.
3. PC Link turns file capture back on, and returns to the Terminal-Emulator Menu.
4. Select **R**esume to return to the Host session.

The Capture Key

If you suspend and resume file capture frequently, the keystrokes required can become tedious. As a convenience, PC Link allows you to suspend and resume file capture from within a Host session using a special Capture Key. Pressing the Capture Key suspends and resumes file capture. Note that you must still begin and end file capture with the Terminal-Emulator Menu. The Capture Key only toggles file capture back and forth between an active and suspended state.

The default Capture Key is **Alt C**, typed by holding down the **Alt** key and pressing the **C** key.

Changing the Capture Key

The default Capture Key is specified in the current configuration. You can change it with commands in the Configuration Menu. If you change the default setting, the key you select will automatically become the Capture Key each time you start the Terminal-Emulator.

You can also change the Capture Key for the current Terminal-Emulator session only through the Terminal-Emulator menus. Follow Procedure 25.5 to designate a different Capture Key.

Procedure 25.5 : Changing the Capture Key

1. From a Host session, press the **Menu Access Key** to use the Terminal-Emulator Menu.
2. Select **O**ptions **C**apture-Key.
3. PC Link prompts for the key that you want to use. Press the key(s) and then press **Enter**. PC Link returns to the Terminal-Emulator Menu.
4. Select **Resume** to return to the Host session.

File Transfer with the File Capture Capability

File capture offers a simple file transfer capability for copying a file from a Host system to your PC. However, you should normally use the PC Link File-Manager for these types of file transfers, because it offers these important advantages:

- *Error checking*: The File-Manager checks the transferred file for data communications errors and immediately corrects them. The contents of the PC file are guaranteed to be the same as the Host file.
- *Transparent binary transfer*: The File-Manager automatically codes unprintable and control characters while transferring a file to avoid any data communications problems.
- *Multi-file transfer*: PC Link makes it easy for you to transfer many files in an unattended, single step operation; file capture forces you to capture files one at a time.

However, if the Host system does not have the PC Link File-Manager software installed, you can use file capture for simple file transfer. To transfer the file, you will need to find out how to use a Host system utility program that prints out the contents of a file, line-by-line, on a terminal screen. All Host systems have this type of program, which may be an editor, a report printing program or a file copying program.

While the specific commands required to use this utility program will vary from Host to Host, Procedure 25.6 outlines the general steps:

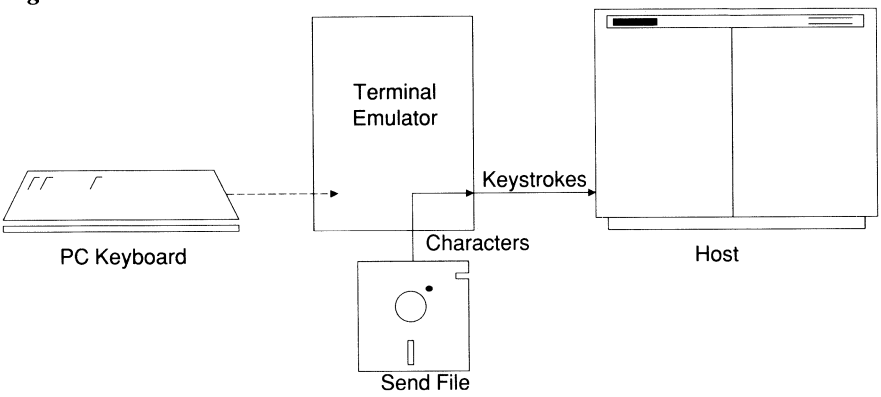
Procedure 25.6 : Transferring a File using File Capture

1. From a Host session, use Procedure 25.1 to begin file capture.
2. Type the Host command to start the Host utility program that will print a file's contents on a terminal screen.
3. When the Host utility program starts, enter commands to start printing the Host file that you want to transfer. The contents of the Host file should begin to appear on the PC display.
4. When the file display is complete, use Procedure 25.2 to end File Capture.
5. Edit the capture file to eliminate the unwanted commands or prompts that precede and/or follow the actual contents of the file.

Sending Files from the PC to the Host System with the Terminal-Emulator

PC Link includes a file send capability. This capability allows you to send the contents of a PC file to the Host system during a Host session. When file sending is active, PC Link sends the file, character-by-character, to the Host, as if you had typed each character directly from the PC keyboard. The Host receives the contents of the file as input; what the Host system does with the input depends on the Host software operating at the time you send the file. The Host system might, for example, accept the contents of the file send as a sequence of commands, or it might treat them as data to be stored in a file on the Host system. Figure 26-1 illustrates the file send capability.

Figure 26.1.



The file send capability is designed for casual use when it is convenient to send the contents of a file to the Host system, rather than typing characters from the keyboard. Depending on the file contents, you can use it for applications such as:

- Executing a series of Host commands: While you are using the Host system's command processor, you can send a PC file containing Host commands to cause the Host to execute them automatically.
- Transferring a short file: You can use a Host editor or file copy program to accept the contents of the send file and save them in a Host file for processing.

Sending a File

When you ask PC Link to begin sending a file, it stops accepting keystrokes from the PC keyboard and instead reads characters from the *send file*. PC Link continues sending characters from the file until it reaches the end of the file. Then, it closes the file and once again accepts keystrokes from the keyboard. To begin sending a file, follow Procedure 26.1:

Procedure 26.1 : Start File Send Capability

1. From a Host session, press the Menu Access Key to use the Terminal-Emulator Menu.
2. Select **S**end **B**egin.
3. PC Link prompts for the name of the file to send. Type the file name and press **Enter**. PC Link opens the file and returns to the Terminal-Emulator Menu.
4. Select **R**esume to return to the Host session.
5. PC Link immediately begins to send characters from the file instead of accepting keystrokes from the keyboard. Sending continues until the end of the file is reached.
6. At the end of the file, PC Link automatically closes the send file and once again accepts keystrokes from the keyboard.

While file sending is active, PC Link displays the SEND indicator in the lower right corner of the screen.

File sending in the Terminal-Emulator is not intended as a general-purpose file transfer capability for transferring large files to Host systems that do not have the PC Link Host File-Manager module installed. Use the File-Manager Send command to transfer files to a Host running PC Link.

Note that PC Link does not actually begin sending the file until you return to the Host session. However, once it begins sending characters from the file, they are sent very quickly. The PC Link Terminal-Emulator file send capability specifically does not wait for Host system prompts or acknowledgements before sending subsequent lines of the file.

Stopping a File Send Operation

When you begin sending a file, PC Link will normally send the entire contents of the file and then automatically stop sending the file and return to normal operation. While the file is being sent, characters typed on the PC keyboard are ignored.

You can interrupt a file send operation by pressing **Ctrl Break**. PC Link will immediately stop sending the file, remove the SEND indicator, and once again accept characters typed on the PC keyboard. PC Link remains in Host session mode.

Interrupting a File Send Operation

You can interrupt a file send operation to use the Terminal-Emulator menus simply by pressing the Menu Access Key. PC Link temporarily suspends your Host session, stops sending characters from the send file, and displays the Terminal-Emulator Menu. When you return to the Host session, PC Link will resume sending characters from the send file.

You can turn off the file send capability from the Terminal-Emulator Menu with the Send End command. When you give this command, PC Link closes the send file, and removes the SEND indicator. When you return to your Host session, PC Link accepts characters directly from your keyboard.

File Transfer with the File Send Capability

Just as file capture can be used to transfer a text file from a Host system to your PC, file sending can be used to transfer a text file in the other direction. Again, the PC Link File-Manager is a better alternative for transferring files, because of the error checking, data communications transparency, and unattended operation that it provides.

To transfer a file to the Host system with the file send capability, you need to locate a Host utility program that can accept input text from a terminal, line by line, and place the input text into a file. On some Host systems, this may be a file copying utility (such as the UNIX utility named **cp**). On other systems, it may be a text editor. For some systems, there may not be any utilities that can accept input quickly enough to allow transfer of large files with the file send capability.

Because of the differences between Host systems and the utilities used for file transfer, detailed instructions for transferring a file to a Host system cannot be given. However, Procedure 26.2 on the next page outlines the general steps you should follow to transfer a PC file to the Host system.

Procedure 26.2 : Transferring a File using the File Send Capability

1. From a Host session, type the commands required to start the Host utility program that will accept lines of text from a terminal and store them in a file.
2. When the Host utility program starts, enter commands to open the file and begin accepting text from the terminal.
3. Use Procedure 26.1 to turn on the file send capability. PC Link begins sending the contents of the PC file to the Host system.
4. When the end of the PC file is reached, type the commands needed to end the Host utility program and close the Host file.
5. Edit the new Host file using a Host word processor or editor to eliminate the unwanted commands or prompts that precede and/or follow the actual contents of the file.

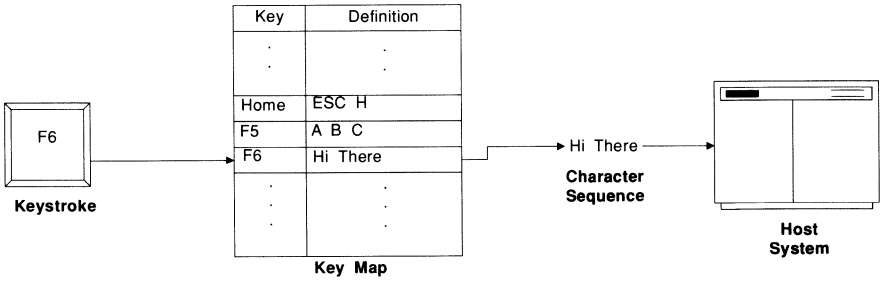
Mapping the Keyboard

PC Link key mapping allows you to customize your PC keyboard to simulate the special functions and keys that are available on some computer terminal keyboards. You can assign these special functions to almost any key on the PC keyboard. In addition, you can use key mapping to reduce repetitive typing.

Operation of this capability is straightforward. Key mapping selects some of the keys on the PC keyboard as mapped keys. When one of them is pressed, PC Link sends a sequence of characters. Often this sequence will include control characters that tell the Host to perform a special function. For example, the **Home** key might send a sequence of control characters that tells the Host to move the cursor to the upper left corner of the screen.

PC Link uses a description of the special keys called a keymap to decide what sequence of characters to send to the Host system when each of the mapped keys is pressed. Figure 27.1 illustrates the operation of key mapping.

Figure 27.1.



What Keys Can Be Mapped

PC Link allows you to designate almost any key or key combination on the PC keyboard as a mapped key. You could, for example, map the **A** key so that it sends an "I" to the Host system. But usually you will want to map the keys that are already special in some way, such as the PC function keys, the cursor keys, or key combinations that include the **Ctrl** or **Alt** keys. Table 27.1 lists the PC keys that can be mapped using the Key Mapping capability.

Table 27.1 : PC Keys That Can Be Mapped

Key(s)	Unshifted	Shift-Mode	Ctrl-Mode	Alt-Mode
A—Z	Yes	Yes	Yes	Yes
0—9	Yes	Yes	No	Yes
Tab	Yes	Yes	No	No
Esc	Yes	No	No	No
Punctuation*	Yes	Yes	No	No
F1 - F10	Yes	Yes	Yes	Yes
Other Motion**	Yes	No	Yes	No
Ins	Yes	No	No	No
Del	Yes	No	No	No

* Punctuation keys include the hyphen, equal sign, left bracket, right bracket, semicolon, single quote, back quote, comma, period, slash and backslash keys.

** Other motion keys include ←, →, **Home**, **End**, **PgUp** and **PgDn**.

Note that for most but not all of the PC keys, the key can be used in one of four ways:

- By itself ("lower case")
- In shift mode, by holding down the **Shift** key ("upper case")
- In control mode, by holding down the **Ctrl** key
- In alternate mode, by holding down the **Alt** key

Each of these four ways of using a key is distinct. For example, you could assign **F6** to start the Host editor, **Shift F6** to start the Host word processor, **Alt F6** to start a data entry program, and **Ctrl F6** to send a Host logout command.

The sequence of characters that is sent by a mapped key is called the *definition* or *mapping* for that key. PC Link permits key definitions up to two hundred fifty-five characters long. A key definition may include any eight-bit ASCII character, including control characters.

The Default Keymap

PC Link automatically uses a keymap each time you start the PC Link Terminal-Emulator. Appendix F identifies the keys used by the default PC Link keymap and how they relate to the VT100 applications keypad. The default keymap that is supplied with PC Link defines about a dozen mapped keys to simulate features of the VT100 terminal. It is stored in the file VT100.MAP with your PC Link programs.

You can modify the contents of this default keymap. You can also save the modified keymap, so that it will be used each time you start the Terminal-Emulator. Additionally, you can request that PC Link use a different keymap as its default, by changing the keymap name specified in the current configuration file.

Modifying the Keymap

During a PC Link Host session, the mapping of each key on the PC keyboard is defined by the Terminal-Emulator's current keymap. You can change the contents of the current keymap through the Terminal-Emulator Menu. For example, you might want to specify a new mapped key as a typing aid for a particular Host session. Or, you might want to change the control character sequences sent by the cursor keys while you are using a different Host application program. Procedure 27.1 shows how to add a new mapped key to the current keymap:

Procedure 27.1 : Adding a Mapped Key to the Keymap

1. From a Host session, press the Menu Access Key to use the Terminal-Emulator Menu.
2. Select **O**ptions **K**eymap **M**odify.
3. PC Link prompts for the key to be mapped. Press the key and then press **Enter**.
4. PC Link prompts for the definition of the key. Enter the definition and press **Enter**. PC Link adds the mapping to the keymap and returns to the Keymap Menu.
5. Press **Esc** twice, then select **R**esume to return to the Host session.

The definition for a mapped key can include any sequence of ASCII characters, including special control characters. For example, the left arrow key on a VT100 terminal sends a three-character sequence comprised of the ESCAPE character, a left brace and the capital letter A. To add this definition to your current map, you would press the ← key in response to the first PC Link prompt, and press the **Esc**, {, and **A** keys, in sequence, in response to the second prompt. When you press a control key as part of a definition, PC Link displays the name of the control key inside a pair of brackets (e.g., {ESCAPE}).

Dropping a Key Mapping

If the current keymap contains a key mapping that is no longer needed, you can delete it using Procedure 27.2:

Procedure 27.2 : Dropping a Key Mapping

1. From a Host session, press the Menu Access Key to use the Terminal-Emulator Menu.
2. Select **O**ptions **K**eymap **D**rop.
3. PC Link prompts for the mapped key to drop. Press the key, and then press **Enter**.
4. PC Link drops the definition from the current keymap and returns to the Keymap Menu.
5. Press **Esc** twice then select **R**esume to return to the Host session.

If you want to eliminate all the key mappings from the current keymap, use Procedure 27.3:

Procedure 27.3 : Clearing the Keymap

1. From a Host session, press the Menu Access Key to use the Terminal-Emulator Menu.
2. Select **O**ptions **K**eymap **C**lear.
3. PC Link displays a No/Yes menu:
   - Select **N**o to return to the Terminal-Emulator Menu without clearing the keymap.
   - Select **Y**es to clear the keymap.
4. PC Link drops all definitions from the current keymap and returns to the Keymap Menu.
5. Press **Esc** twice, then select **R**esume to return to the Host session.

Displaying the Current Keymap

PC Link can display the current keymap on the screen, showing you the current mapped keys and their definitions. To display the current keymap, follow the steps in Procedure 27.4:

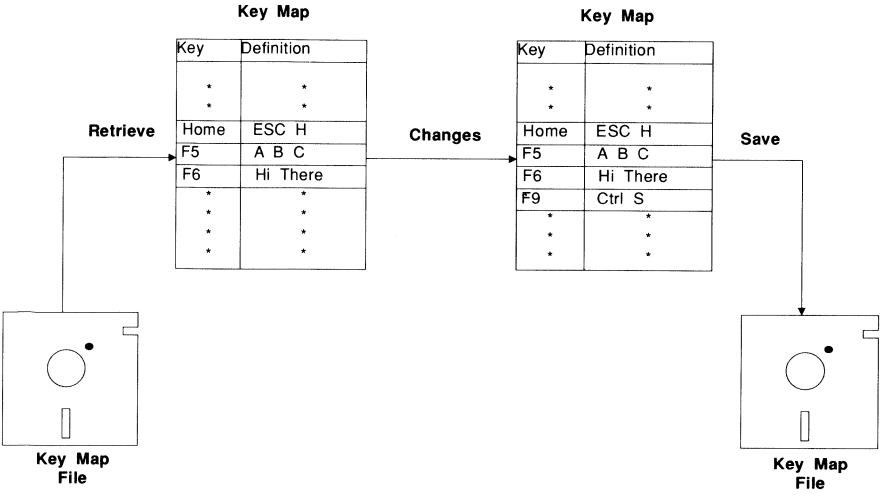
Procedure 27.4 : Displaying the Current Keymap

1. From a Host session, press the Menu Access Key to use the Terminal-Emulator Menu.
2. Select **O**ptions **K**eymap **L**ist.
3. PC Link displays a screenful of definitions from the current keymap and prompts you to press the **Enter** key. You may:
   - Press **Enter** to see more definitions from the keymap.
   - Press **Esc** to stop viewing the keymap and return to the Keymap Menu immediately.
4. When PC Link has displayed all the definitions from the map, pressing either **Enter** or **Esc** returns PC Link to the Keymap Menu.
5. Press **Esc** twice and then select **R**esume to return to the Host session.

Keymap Files

If you modify the current keymap, the changes you make will remain in effect throughout the remainder of your Terminal-Emulator session. However, when you exit the Terminal-Emulator, your changes will be lost. PC Link allows you to preserve a keymap by saving it on a disk. During subsequent Terminal-Emulator sessions, you can retrieve the keymap from the disk and use it once again. Figure 27.2 illustrates saving and retrieving keymaps.

Figure 27.2.



Keymap files allow you to define several different keymaps and switch between them at your convenience. This can be especially useful if you are working with several different Host systems or if you are using several Host application programs.

PC Link keymap files always reside in the same directory with the PC Link software. The special file name suffix MAP identifies a keymap file.

Saving a Keymap

PC Link creates a keymap file by copying the contents of the current keymap into the file. The same procedure is used to replace the contents of an existing keymap file. To save the current keymap, follow Procedure 27.5:

Procedure 27.5 : Saving a Keymap

1. From a Host session, press the Menu Access Key to use the Terminal-Emulator Menu.
2. Select **O**ptions **K**eymap **S**ave.

3. PC Link prompts for the name of the file in which you want to save the current keymap. Type the name and press **Enter**. If a file of the same name already exists, PC Link displays a confirmation menu to verify your intention to replace the file. Otherwise, PC Link creates a new keymap file with the name you supply.
4. PC Link stores the current keymap in the file and returns to the Keymap Menu.
5. Press **Esc** twice and then select **R**esume to return to the Host session.

Retrieving a Keymap

You can retrieve a previously saved keymap by following the steps in Procedure 27.6. PC Link first removes the current keymap and then reloads the new keymap from the keymap file. The new keymap remains in effect for the remainder of your Host session.

Procedure 27.6 : Retrieving a Keymap

1. From a Host session, press the Menu Access Key to use the Terminal-Emulator Menu.
2. Select **K**eymap **R**etrieve.
3. PC Link presents a list of available keymap files. Move the cursor to the name of an alternate keymap file and press **Enter**. Select **Esc** to leave without loading a different keymap.
4. PC Link loads the key definitions from the selected file and returns to the Terminal-Emulator Menu.
5. Select **R**esume to continue your Terminal-Emulator session.

Editing a Keymap File

The easiest way to modify a keymap file is to retrieve it into PC Link, add and drop key definitions as desired, and then save it again. You can use the Keymap List command periodically to inspect the key definitions.

Advanced users may wish to edit the contents of a keymap file directly, for example, to place the carriage return character and other PC graphics characters into a key definition. However, caution should be used when editing a keymap file because the keymap may become irretrievable if you disturb its format. Appendix G describes the internal format of a keymap file.

Documenting a Keymap File

You may wish to document a keymap file by including comments. To include commentary or other text in a keymap file, simply input the text to the right of a semicolon character.

Configuring PC Link

The Configuration option in the PC Link Access Menu allows you to change the settings that affect how PC Link operates with your PC, your Host system and your communications network. Configuration settings also affect the operation of each of the PC Link modules.

There are three levels at which configuration settings can be changed. Some settings, which are specific to a particular PC Link module, can be changed temporarily within a working session with the module. For example, you may temporarily change the Host working directory when you use the File-Manager to receive a file transferred from the Host system. When you leave the File-Manager, the Host working directory will revert to its original status.

Other settings can be changed from the Configuration Menu and used with any or all of the modules during a PC Link session. Configuration values remain in their original state when you exit PC Link unless the changed settings are saved on disk with the Update command.

Finally, settings can be changed permanently through use of the Configuration Update menu choice and stored on disk in a file so that they may be used in future sessions.

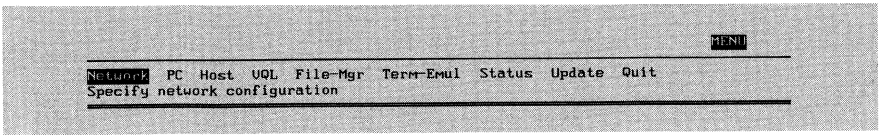
The Configuration File

When you install PC Link on either a floppy diskette or hard disk system, you create a default configuration file called PCLINK.CNF, which contains default configuration values. Those values are in effect for every PC Link session unless you either update the configuration file or create and use another configuration file. PC Link allows you to create multiple configuration files for use on various Host systems and communications networks.

The Configuration Menu

PC Link's configuration management functions are available through the Configuration Menu, shown in Figure 28.1.

Figure 28.1.



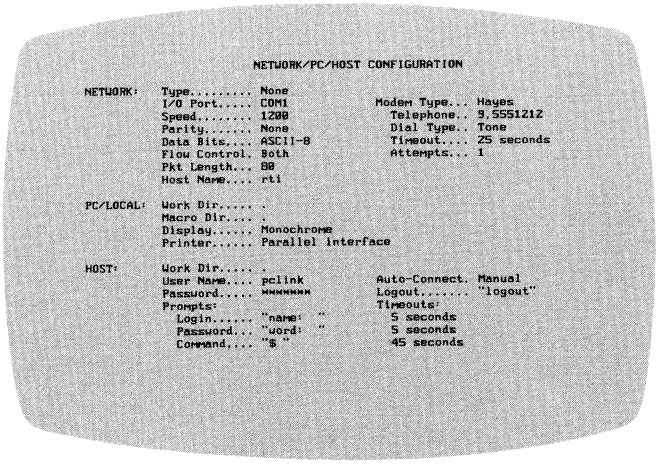
To use the Configuration Menu, select Configuration from the PC Link Access Menu. When you have finished using the Configuration Menu, select Quit to return to the PC Link Access Menu. The other choices on the Configuration Menu allow you to set the various options in the current configuration, display the current settings, and modify the configuration fil.

Displaying the Current Configuration Settings

You can display the current setting of each configuration option by selecting Status from the Configuration Menu. The settings are displayed in a series of three screens.

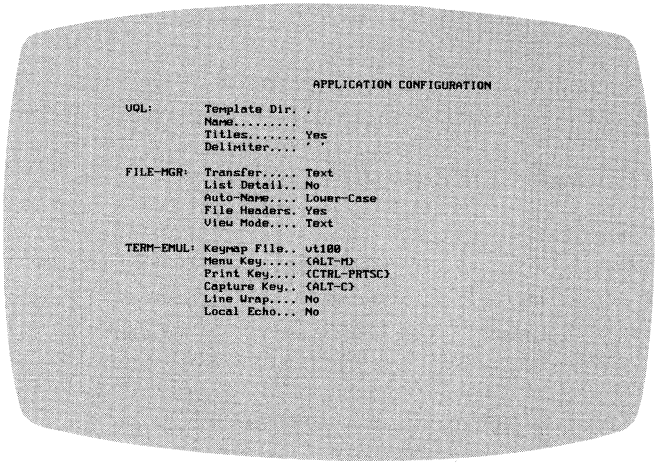
The first screen, shown in Figure 28.2, displays the PC, Host and Network configuration options.

Figure 28.2.



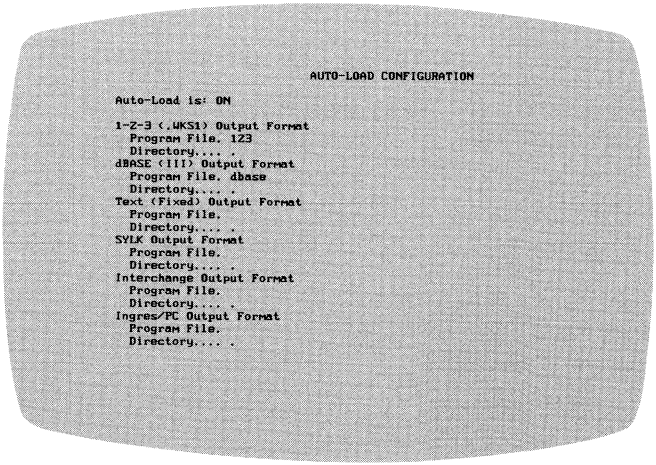
The second screen, shown in Figure 28.3, displays the VQL, File-Manager and Terminal-Emulator configuration options.

Figure 28.4.



The third screen, shown in Figure 28.4, displays the Auto-Load configuration options.

Figure 28.3.



In each display of configuration status, PC Link truncates entries that are too long to fit. The settings are intact; only the display is truncated. To see the current setting, use the configuration command that sets the parameter. PC Link displays the current setting as the default. After viewing the setting, to keep the current value and return to the menu press **Esc**.

You press **Enter** to display each screen and return to the Configuration Menu. Press **Esc** at any screen to redisplay the Configuration Menu.

Changing the Default Configuration Settings

You can change the default configuration settings in a PC Link configuration file from the Configuration Menu. When you select Update, PC Link copies the current setting of each option into the configuration file, thus making it the new default setting. The next time PC Link is started, these new default settings will be used.

Creating and Using Multiple Configuration Files

You can create any number of configuration files in addition to the default file, PCLINK.CNF, which is created when you install PC Link. This is useful if you plan to use PC Link on a variety of Host machines and networks that require various login procedures and network communications parameters. Using the DOS **copy** command, you copy PCLINK.CNF with a new file name, followed by the CNF extension. Then you use that file name, without the extension, when you start PC Link, as in Procedure 28.1

Procedure 28.1 : Creating and Using an Alternate Configuration File

1. From the DOS prompt, type: **copy pclink.cnf central.cnf** (where CENTRAL.CNF is the name of your alternate configuration file).
2. To start up PC Link with the new configuration file, from the DOS prompt, type: **pclink /c:central** and press **Enter**.
3. Select **C**onfiguration from the Access Menu. Make any necessary changes in order to use PC Link under an alternate set of Host system and network conditions.
4. When you have finished specifying the new configuration settings, save these on disk to make the changes permanent. Select **U**pdate from the Configuration Menu.

5. PC Link displays a confirmation menu. Select **R**eplace to save the modified settings as CENTRAL.CNF. These settings can be accessed in future sessions using Step 2 of this procedure.

PC Configuration Options

The PC configuration options describe the hardware characteristics of your PC and the working directory that you are using on the PC system. They are changed through the PC command on the Configuration Menu.

PC Working Directory

The PC working directory is the active directory that PC Link uses for all of its PC file input and output. For example, the File-Manager transfers files to and from the Host system using the PC working directory. Use Procedure 28.2 to set the PC working directory:

Procedure 28.2 : Setting the PC Working Directory

1. From the Configuration Menu, select **PC W**ork-Dir.
2. PC Link displays the name of the current directory and prompts for the name of the new working directory. Type the name of the new directory you want to use and press **Enter**.
3. PC Link verifies the directory exists before changing the configuration setting. If the directory does not exist, you will see an error message and the setting will not be changed.
4. Press **Esc** to return to the Configuration Menu.

Macro Directory

PC Link stores and executes its macros from a PC directory designated as the macro directory. Macros located in other directories are not accessible to PC Link. You can change the macro directory to any directory on your PC by using Procedure 28.3:

Procedure 28.3 : Setting the Macro Directory

1. From the Configuration Menu, select **PC M**acro-Dir.
2. PC Link prompts for the name of the new macro directory and displays the name of the current directory. Type the name of the new directory you want to use and press **Enter**.

3. PC Link verifies that the directory exists before changing the configuration setting. If it does not exist, you will see an error message and the configuration setting will not be changed.
4. Press **Esc** to return to the Configuration Menu.

Display Adapter Type

PC Link can work with all of the popular display types that are compatible with the IBM PC. It automatically senses whether you have a monochrome-compatible or color-compatible display and adjusts its operation accordingly. The Display Adapter Type option provides additional information about the type of display you are using, so that PC Link can take advantage of its special features. To specify the Display Adapter Type, use Procedure 28.4:

Procedure 28.4 : Setting the Display Adapter Type

1. From the Configuration Menu, select **PC D**isplay.
2. PC Link displays a menu of adapter types.
   - Select **M**onochrome if you have an IBM PC Monochrome Display Adapter or equivalent.
   - Select **IBM/C**olor if you have an IBM PC Color/Graphics Display Adapter or equivalent.
   - Select **C**ompaq if you have a Compaq PC or a display adapter with similar characteristics.
3. Press **Esc** to return to the Configuration Menu.

Printer Adapter

PC Link allows a variety of connections between your PC and your PC printer. The Printer option specifies four types of connections—two parallel printer interfaces, and two serial connections to the PC's asynchronous communications ports (COM1 and COM2). Follow the steps in Procedure 28.5:

Procedure 28.5 : Setting the PC Printer Adapter

1. From the Configuration Menu, select **PC P**rinter.
2. PC Link displays a menu:
   - Select **1** to specify a parallel printer.
   - Select **2** to specify a serial printer attached to the COM1 port.
   - Select **3** to specify a second parallel printer.

- Select **4** to specify a serial printer connected to the COM2 port.

3. Press **Esc** to return to the Configuration Menu.

Host Configuration Options

The Host configuration options give PC Link the information it needs to connect successfully to the Host system and use the files and databases stored there. PC Link can automatically establish access to the Host system, if you request it.

The Host configuration options are set through the Host choice of the Configuration Menu.

Host Working Directory

The Host working directory is the active directory on the Host system, which PC Link uses for file input and output, file transfer and file management operations. The Host working directory plays a similar role to the PC working directory—the PC Link file transfer and file management operations use it as a source and destination directory for files. To set the Host working directory, use Procedure 28.6:

Procedure 28.6 : Setting the Host Working Directory

1. From the Configuration Menu, select **H**ost **W**ork-Dir.
2. PC Link prompts for the name of the new working directory and displays the name of the current directory. Type the name of the new directory you want to use and press **Enter**.
3. PC Link verifies the directory exists before changing the configuration setting. If the directory does not exist, you will see an error message and the configuration setting will not be changed.
4. Press **Esc** to return to the Configuration Menu.

User Identification, Password and Auto-Connect

Most Host systems keep track of their users by assigning each user a unique *user identification* and an associated *password*. The Host system maintains its security by requiring that a prospective user supply a correct user identification and password before access to the Host is permitted. Further, most Host systems restrict access to files and databases based on the user identification and password.

The Auto-Connect option controls how the Host receives the information to initiate and terminate a session on the Host. If Auto-Connect is set to automatic, information from the current configuration (on Host-prompts, login, password, command prompts, logout strings and timeout) is used to initiate and terminate Host sessions.

To set the Auto-Connect option, use Procedure 28.7:

Procedure 28.7 : Setting the Auto-Connect Option

1. From the Configuration Menu, select **H**ost **A**uto-Connect.
2. PC Link presents a menu of choices.
   - Select **M**anual to conduct an interactive dialogue through the Terminal-Emulator in order to initiate a session on the Host.
   - Select **A**utomatic if you want PC Link to conduct a dialogue with the Host based on values in the configuration file in order to initiate a session on the Host.
3. Press **Esc** to return to the Configuration Menu.

Host Prompts and Logout Command

When you connect to a Host system via an asynchronous communications line, the Host system usually requires a login request and password to initiate a session. If Auto-Connect is set to automatic, PC Link enters into a dialogue with the Host system to gain access, supplying the user identification and password required, without active user intervention. At the end of a PC Link session, PC Link must also end its dialogue with the Host system, by sending the Host command to log out or exit the Host system.

Each Host system has a slightly different dialogue that is used for asynchronous communications access. The Host Prompts, Host Timeouts and Logout Command options describe the characteristics of the Host dialogue to PC Link, so that it can gain access to the Host system successfully. PC Link disregards the login, password, command and logout strings if the Auto-Connect option is set to manual.

Simple Logins

If you normally login directly by typing a user identification and password, refer to items D through I on the Configuration Worksheet in Appendix B. First use Procedure 28.8 to provide the Host user identification, password, and logout strings you usually type. Then use Procedure 28.9 to provide the prompts the Host uses to ask for your input.

Multiple-step Logins

If you login through a data switch or need to type more than just a user identification and password, use Procedure 28.8 to set only the user identification. Do not use Procedure 28.9. Using control codes along with the Host prompts and your responses, you will set the user identification so that PC Link can carry out the entire connection sequence. Refer to item J of the configuration worksheet in Appendix B, and then use the control codes in Table 28.1 below when you perform step 2 of Procedure 28.8.

Table 28.1 : Control Codes for Multiple-step Automatic Login

\s*text*	send this text to the Host system
\r	send a carriage return (CR) character to the Host system
\n	send a line feed (LF) character to the Host system
\m*text*	receive characters from Host until they match this text
\w*time*	wait this number of seconds
\b and \B	send a break to the Host system

For example, if the connection sequence looks like this:

bridge>c mfg1

Connecting...

Username: PEARL

Password: TWINKIE

******Welcome to the Manufacturing VAX System******

$__

and you always experience a slight delay while connecting, then you would set this string in step 2 of Procedure 28.8:

\r\mbridge> \sc mfg1\r\w2\mname: \sPEARL\r\mword: \sTWINKIE\r\m$

Experiment with the wait times after carriage returns, especially if you know there is usually a wait.

Procedure 28.8 : Setting the Host User Identification (or Password or Logout)

1. From the Configuration Menu, select **H**ost **U**ser (or **P**assword or **L**ogout).
2. PC Link prompts for the selection and displays the current value after the prompt. Type the new value (maximum 64 characters) and press **Enter**.
3. When you are setting the password, PC Link prompts for the Host password again to confirm your entry.
4. Press **E** to return to the Configuration Menu.

If the value for Host login is blank, PC Link prompts for user identification and password before initiating a Host session even when the Auto-Connect option is set to automatic. However, if the value for the Host password is blank, PC Link assumes that the user's Host account lacks a password.

The Host login prompt, password prompt and command prompt are, respectively, the sequences of characters that the Host system sends to request user identification, password and to indicate its readiness to accept commands from the asynchronous line. If the Auto-Connect option is set to automatic, values from the current configuration are

used by PC Link to conduct a dialogue with the Host when attempting to initiate a session. The exact sequence of characters, including embedded and trailing blanks, as well as case and control characters, must be specified. Use Procedure 28.9:

Procedure 28.9 : Setting the Host Prompts for Login (or Password or Command)

1. From the Configuration Menu, select **H**ost **H**ost-Prompts **L**ogin (or **P**assword or **C**ommand).
2. PC Link displays the name of the current value. Type the new value and press **Enter**.
3. Press **Esc** twice to return to the Configuration Menu.

When it first tries to establish a connection, PC Link sends a carriage return and then waits a specified number of seconds for the Host to send the login prompt. If it takes longer than the timeout specified to receive a prompt, PC Link makes two more attempts at Host connection before displaying an error message. After sending the Host user value, PC Link waits a specified number of seconds for the Host's password prompt string. If the *timeout* for the password prompt is exceeded, PC Link cancels the attempted Host connection with an error message. A similar sequence is followed after the Host password is sent as PC Link waits for the Host's command prompt. Use Procedure 28.10 to set the Host timeout values for login, password and command prompts:

Procedure 28.10 : Setting the Host Timeouts for Login (or Password or Command)

1. From the Configuration Menu, select **H**ost **T**imeouts **L**ogin (or **P**assword or **C**ommand).
2. PC Link displays the current number of seconds for the login timeout. Type the new number and press **Enter**.
3. Press **Esc** twice to return to the Configuration Menu.

Network Configuration Options

The PC Link Network configuration options specify the type of network connection you are using between the PC and the Host system, and the characteristics of the network connection, such as its speed and the error-checking techniques used. The options are set using the Network choice of the Configuration Menu.

Network Type

PC Link supports asynchronous network connections (either direct or via telephone) only. To specify the network type, use Procedure 28.11:

Procedure 28.11 : Setting the Network Type

1. From the Configuration Menu, select **N**etwork **T**ype.
2. PC Link displays a menu:
   - Select **A**sync-Packet to specify an asynchronous connection.
   - Select **N**one to specify a local database on the PC.
3. Press **E**to return to the Configuration Menu.

Asynchronous I/O Port

PC Link can use either of the PC's I/O adapters for asynchronous communications with the Host system. The Asynchronous I/O-Port option tells PC Link which adapter to use. To set the Asynchronous I/O Port, use Procedure 28.12:

Procedure 28.12 : Setting the Network I/O Port

1. From the Configuration Menu, select **N**etwork **I**/O-Port.
2. PC Link displays a menu of two choices:
   - Select **COM1** to specify the first port on the PC.
   - Select **COM2** to specify the second port on the PC.
3. Press **Esc** to return to the Configuration Menu.

Asynchronous Line Speed

PC Link supports asynchronous communications at speeds from 110 baud to 19200 baud. For correct operation, the Asynchronous Line Speed option must be set to agree with the speed that is used by the Host system. If you do not know the correct speed, consult your Host system administrator. To set the Asynchronous Line Speed, use Procedure 28.13:

Procedure 28.13 : Setting the Network Speed

1. From the Configuration Menu, select **N**etwork **S**peed.
2. PC Link displays a menu of choices of various baud rates. Select the appropriate number.
3. Press **Esc** to return to the Configuration Menu.

Asynchronous Character Parity

Some Host systems use a scheme called a *parity bit* to provide limited detection of communications line errors. When a parity bit is used, the sending system adds an extra bit onto each character it sends, with the value of the bit calculated based on the other bits of the character. When the other system receives the character, it repeats the calculation and compares the received parity bit to the calculated value. If the two values disagree, an error has occurred.

For most Host systems, no parity bit is needed. The communication protocols used by PC Link include their own error correction techniques which are far more effective than the parity techniques. If you are unsure whether your Host system requires parity or not, consult your Host system administrator.

To set the parity, use Procedure 28.14:

Procedure 28.14 : Setting the Parity

1. From the Configuration Menu, select **N**etwork **P**arity.
2. PC Link presents a menu of three choices:
   - Select **N**one if no parity bit is being used.
   - Select **E**ven if your Host system requires even parity communications.
   - Select **O**dd if your Host system requires odd parity communications.

   Press **E** to return to the Configuration Menu.

Asynchronous Data Bits

PC Link supports communication with Host systems that transmit and receive asynchronous characters using either seven data bits or eight data bits. The Asynchronous Data Bits option should be set to match the characteristics of the characters sent and expected by your Host system. If you are unsure how your Host system supports data bits, consult your Host system administrator.

To set the number of data bits, use Procedure 28.15:

Procedure 28.15 : Setting the Network Bits

1. From the Configuration Menu, select **N**etwork **B**its.
2. PC Link presents a menu of three choices:

- Select **7**-bits if your Host system uses 7-bit characters.
- Select **A**SCII-8 if your Host system sends and receives 8-bit characters, but supports only a 7-bit ASCII character set.
- Select **I**NTL-8 if your Host system sends and receives true 8-bit characters.

3. Press **E** to return to the Configuration Menu.

Asynchronous Flow Control

Some Host systems use a technique called *flow control* to manage the flow of asynchronous characters received by and sent from the Host system. The use of flow control prevents one system from sending so many characters so quickly that the other system cannot keep up. When the receiving system starts to fall behind, or begins to run out of space to store the received characters, it transmits a special *XOFF* character to the sending system, asking the sender to temporarily stop sending characters. When the receiving system is once again prepared to accept characters, it transmits a special *XON* character to notify the sender that it may once again send characters.

If flow control is not used, it is possible to lose characters in transmission. The PC Link protocols detect this condition and provide error recovery by re-transmitting the data. However, the use of flow control can prevent the error from occurring at all.

You should set the Asynchronous Flow Control option if your Host system uses flow control to regulate the characters it receives or, if it responds to flow control, to regulate the characters that it sends. Consult your Host system administrator to find out if your Host system uses flow control.

To set the Flow Control option, use Procedure 28.16:

Procedure 28.16 : Setting the Flow Control

1. From the Configuration Menu, select **N**etwork **F**low-Control.
2. PC Link displays a menu of four choices:
   - Select **N**one if no flow control is being used.
   - Select **B**oth if your Host system both sends flow control characters and responds to them when it receives them.
   - Select **H**ost if the Host system uses flow control to regulate incoming character flow, but does not respond to flow control characters sent from the PC.

- Select **PC** if the Host system responds to flow control characters sent by the PC, but does not send flow control characters to regulate its incoming character flow.

3. Press **Esc** to return to the Configuration Menu.

Asynchronous Packet Length

PC Link uses a proprietary Asynchronous Packet Protocol for communication between the PC Link modules running on the PC and the PC Link Host software. Information is sent from PC to Host and back again in *packets*, which provide automatic error detection and correction. When an error is detected in a received packet, the sending system re-transmits it.

The Asynchronous Packet Length option specifies the maximum length of a packet that is sent. The packet length presents a tradeoff between efficient communication and efficient error recovery. Longer packets reduce the overhead of communication, but they are more prone to errors and require a longer time to retransmit when errors do occur.

In general, you should use relatively short packets (e.g., 128 characters) on noisy, error-prone communications lines. Relatively long packets (e.g., 512 or 1024 characters) provide better efficiency for low-error environments, such as a direct PC-to-Host connection. In any case, your setting for the packet length must be less than the size of your I/O buffer on the Host system. Consult your Host system administrator for further information on the size of your Host system I/O buffer for standard input/output operations.

To set the maximum asynchronous packet length, use Procedure 28.17:

Procedure 28.17 : Setting the Packet Length

1. From the Configuration Menu, select **N**etwork **L**ength.
2. PC Link displays a prompt with the current maximum packet length. Type the new number and press **Enter**.
3. Press **Esc** to return to the Configuration Menu.

Modem Type

PC Link supports remote asynchronous connections via a modem and telephone lines. The Asynchronous Modem option tells PC Link whether you are using a modem that it supports and, if so, what type. PC Link uses this information to send the appropriate control commands to manage a remote connection on the Host system.

Currently, PC Link supports only modems that use the "AT" command sequences, such as the Hayes Smartmodem 1200. For other modem types, you must manage the communications connection manually and allow PC Link to treat it as a direct connection.

To specify the modem type, use Procedure 28.18:

Procedure 28.18 : Setting the Modem Type

1. From the Configuration Menu, select **N**etwork **M**odem **T**ype.
2. PC Link displays a menu of two choices:
   - Select **N**one for direct connection.
   - Select **H**ayes for a modem that uses the "AT" command sequence.
3. Press **Esc** twice to return to the Configuration Menu.

PC Link supports auto-dialing using either touch-tone dialing or the older pulse type of dialing. The Modem Dial-Type option specifies which type of dialing will be used. To set the modem dial type, use Procedure 28.19:

Procedure 28.19 : Setting the Modem Dial-Type

1. From the Configuration Menu, select **N**etwork **M**odem **D**ial-Type.
2. PC Link displays a menu of two choices:
   - Select **T**one for a touch-tone phone line.
   - Select **P**ulse for a pulse phone line.
3. Press **Esc** twice to return to the Configuration Menu.

When PC Link attempts an auto-dial connection to a Host system, the first attempt at connection may not be successful. The Host system phone line might be busy, for example. After it dials the auto-dial telephone number, PC Link waits a specified number of seconds for a *carrier signal*, which indicates that the modem on the other end of the phone line has answered the telephone and is ready for communication. If the carrier signal is not detected within this *timeout* period, PC Link hangs up the telephone line, and attempts to place the call again. You can also specify the number of *attempts* at connection that PC Link should make.

To set the number of seconds for the timeout period, use Procedure 28.20:

Procedure 28.20 : Setting the Modem Line Timeout

1. From the Configuration Menu, select **N**etwork **M**odem **L**ine-Timeout.
2. PC Link displays the current number of seconds to wait before timing out. Type the new number and press **Enter**.
3. Press **ESC** twice to return to the Configuration Menu.

To set the number of modem attempts, use Procedure 28.21:

Procedure 28.21 : Setting the Modem Attempts

1. From the Configuration Menu, select **N**etwork **M**odem **A**ttempts.
2. PC Link displays a prompt and the current number of attempts. Type the new number and press **Enter**.
3. Press **Esc** twice to return to the Configuration Menu.

Database Configuration Options

The Database configuration options control the operation of the PC Link Visual-Query-Language. Some of the options control selection of the Host database. Others control the way in which VQL generates output files. The database configuration options are set through the VQL choice of the Configuration Menu.

Database Name

When VQL first begins operation, you must select a particular Host database with which you want to work. You can select it manually through the Database Select or Database Name commands, or you can specify the name in the PC Link configuration file, and PC Link will automatically select it for you.

To set the database name, use Procedure 28.22:

Procedure 28.22 : Setting the Database Name

1. From the Configuration Menu, select **VQL Name**.
2. PC Link displays the name of the current database. Type the name of the database you want to access (maximum 64 characters) and press **Enter**. PC Link will not verify the existence of the database you specify until the next time VQL is started.
3. Press **Esc** to return to the Configuration Menu.

Query Template Directory

The Visual-Query-Language allows you to store pre-defined database inquiry specifications as query templates for later retrieval. The query templates are stored as individual files in a specified query template directory on the PC. Query templates located in other PC directories cannot be used by VQL. To set the query template directory, use Procedure 28.23:

Procedure 28.23 : Setting the Template Directory

1. From the Configuration Menu, select **VQL Template-Dir**.
2. PC Link prompts for the name of the directory and displays the current directory name. Type the new name and press **Enter**.
3. PC Link verifies that the directory exists before changing the configuration setting. If the directory does not exist, you will see an error message, and the setting will not change.
4. Press **Esc** to return to the Configuration Menu.

Column Titles

VQL can store the results of database inquiries in a PC file using six different file formats. For the database (DBF) file format, the title of each column in the query result is used as the name of the corresponding column in the generated dBASE II database. For the other five formats, you may optionally include column titles in the output file or choose to omit them. If the Column Titles option is set, titles are included as the first row of the row/column data in the generated output file.

To set the column titles, use Procedure 28.24:

Procedure 28.24 : Setting the Column Titles

1. From the Configuration Menu, select **V**QL **C**ol-Titles.
2. PC Link displays a No/Yes menu:
   - Select **N**o to omit the column titles.
   - Select **Y**es to display the column titles.
3. Press **Esc** to return to the Configuration Menu.

To retitle columns to accommodate the restrictions on column or field names in PC applications software, see Chapter 16.

Column Delimiter

When VQL generates output files in text format, the results of a database inquiry are stored in the output file (or printed on the printer) as rows and columns of data. You can specify the delimiter character that is used to separate the columns of data from one another through the Column Delimiter option.

Often, you will want to use a space or a tab character to create "white space" between the columns. But in cases where the data will be processed by another program (for example, by a BASIC program), or you want to create a Comma-Separated Variable (CSV) text file, use a comma.

To set the column delimiter, use Procedure 28.25:

Procedure 28.25 : Setting the Column Delimiter Option

1. From the Configuration Menu, select **V**QL **D**elimiter.
2. PC Link prompts for the delimiter character and displays the current character. Type the new character and press **Enter**.
3. Press **Esc** to return to the Configuration Menu.

Auto-Load

VQL offers you the option of automatically loading a PC application after it generates an output file. Typically, this option is used to load a program such as 1-2-3 or dBASE for processing the file just generated. You can specify a different program to be loaded for each different file format. The Auto-Load configuration options control whether and how the PC Link Visual-Query-Language loads other PC applications.

Auto-Load Switch serves as a "master switch" for the Auto-Load capability. If Auto-Load Switch is on, PC Link will attempt to load a PC application after generating an output file, if one is specified for the particular file format in the configuration. If Auto-Load Switch is off, PC Link will not attempt to load another application, and the Visual-Query-Language will retain control of the PC. To set Auto-Load Switch, use Procedure 28.26:

Procedure 28.26 : Setting the Auto-Load Switch

1. From the Configuration Menu, select **V**QL **A**uto-Load **S**witch.
2. PC Link displays a No/Yes menu:
   - Select **N**o to return to the PC Link VQL Menu after generating an output file.
   - Select **Y**es to load a PC application after generating an output file.
3. Press **Esc** twice to return to the Configuration Menu.

Auto-Load Options

For each of the six output file formats supported by VQL, the PC Link configuration file includes an Auto-Load Program and settings for Auto-Load Type and Directory. For 1-2-3, dBASE, and text files, you can set an Auto-Load Format to specify a sub-format for the output file.

When PC Link attempts to auto-load an application, it first makes the Auto-Load Directory setting the current drive and directory. Then it attempts to load the program specified in the Auto-Load Program setting by the type of file (Program, for COM or EXE files, or Batch, for BAT files) specified for that particular Auto-Load Type setting. Both the program and directory settings can contain full DOS pathnames.

For example, to auto-load WordStar on a dual-floppy PC, you might specify B:\ as the auto-load directory, A:ws as the auto-load program, and Program as the auto-load type because the file called WS.COM starts that program. This would load the WordStar software from the A: drive, ready to process the output file just created on the B: drive.

On the other hand, to load Lotus 1-2-3, you might specify A:\ as the auto-load directory and A:123 as the auto-load program because 1-2-3 requires the directory where the 1-2-3 program resides to be the active directory when the program is launched.

To set the Auto-Load Type, use Procedure 28.27:

Procedure 28.27 : Setting the Auto-Load Type

1. From the Configuration Menu, select **V**QL **A**uto-Load **1**-2-3 (or **d**BASE, **T**ext, **S**YLK, **I**nterchange, or **I**ngres/PC) **T**ype.
2. PC Link displays a menu of two choices:
   - Select **P**rogram to specify a .COM or .EXE file.
   - Select **B**atch to specify a .BAT file.
3. Press **Esc** three times to return to the Configuration Menu.

Batch File Arguments

If you use a batch file to auto-load, note that PC Link can pass three arguments about the output file:

- %1 name of output file
- %2 path of output file
- %3 drive of output file

For example, if the program TEST.EXE accepts a complete pathname as a command line argument, you could use this line in your TEST.BAT file to invoke it:

```
TEST  %3%2\%1
```

Auto-Load Formats

PC Link provides sub-formats for 1-2-3, dBASE and text output files. By setting this option, you can specify the exact format of an output file to match particular software releases (in the case of 1-2-3 and dBASE files) or column-width characteristics (in the case of text files).

The sub-formats include:

- .WKS for 1-2-3 Releases 1 and 1A
- .WK1 for 1-2-3 Release 2
- .WRK for Symphony Release 1
- .WR1 for Symphony Release 1.1
- II for dBASE II
- III for dBASE III
- Fixed for fixed-width column text
- Variable for variable-width column text

To set the Auto-Load Format for a 1-2-3, dBASE, or text output file, use Procedure 28.28:

Procedure 28.28 : Setting the Auto-Load Format

1. From the Configuration Menu, select **V**QL **A**uto-Load **1**-2-3 (or **d**BASE or **T**ext) **F**ormat.
2. Select the appropriate sub-format for your output file from the menu PC Link displays:
   - For 1-2-3: .WKS, .WK1, .WRK, or .WR1
   - For dBASE: II or III
   - For Text: Fixed or Variable
3. Press **Esc** three times to return to the Configuration Menu.

To set the Auto-Load Program, use Procedure 28.29:

Procedure 28.29 : Setting the Auto-Load Program

1. From the Configuration Menu, select **V**QL **A**uto-Load **1**-2-3 (or **d**BASE, **T**ext, **S**YLK, **I**nterchange, or **I**ngres/PC) **P**rogram.
2. PC Link displays the name of the program to be auto-loaded. Type a new program name if desired and press **Enter**.
3. Press **Esc** three times to return to the Configuration Menu.

To set the Auto-Load Directory, use Procedure 28.30:

Procedure 28.30 : Setting the Auto-Load Directory

1. From the Configuration Menu, select **V**QL **A**uto-Load **1**-2-3 (or **d**BASE, **T**ext, **S**YLK, **I**nterchange, or **I**ngres/PC) **D**irectory.
2. PC Link presents a prompt and displays the name of the current drive/directory for auto-load. Type the new drive/directory.
3. Press **Esc** three times to return to the Configuration Menu.

The PC Link File-Manager configuration options control how the File-Manager will display information and files on the PC screen, and how the contents and names of files will be converted during file transfer and file copy operations. These options are set through the File-Mgr choice of the Configuration Menu.

File Detail

The PC Link File-Manager constantly displays lists of files for your viewing and selection. Information about these files can be displayed in two different formats. In the short format, only the name of each file is displayed in a multi-column list on the screen. In the long format, more complete information about each file (such as its size, its owner, and the date and time the file was last modified) is displayed. In the long format, the information for each file takes up one entire line of the screen.

To set the File Detail option, use Procedure 28.31:

Procedure 28.31 : Setting the File Detail Option

1. From the Configuration Menu, select **F**ile-Mgr **D**etail.
2. PC Link presents a No/Yes menu:
   - Select **N**o to display only file names.
   - Select **Y**es to display complete file information.
3. Press **Esc** to return to the Configuration Menu.

File View-Mode

The PC Link File-Manager allows you to view the contents of a file on the PC screen. The contents of the file can be displayed in two different formats, depending on the type of data displayed in the file:

- The *ASCII* format is most appropriate for viewing text files. It displays each line of text in the file on one row of the PC display.
- The *Hexadecimal* format is most appropriate for viewing files that contain binary data. It displays the file in both hexadecimal and ASCII character representations, with 16 bytes of the file displayed on each row of the PC display.

To set the File View Mode, use Procedure 28.32:

Procedure 28.32: Setting the File View Mode

1. From the Configuration Menu, select **F**ile-Mgr **V**iew-Mode.
2. PC Link displays a menu of two choices:
   - Select **T**ext to display files in text mode.
   - Select **H**exadecimal to display files in hexadecimal mode.
3. Press **Esc** to return to the Configuration Menu.

End-of-Line Conversion

The PC Link File-Manager can optionally convert text files transferred between the PC and the Host system so that they use the proper end-of-line characters for the destination system. (The end-of-line character sequence for DOS on the PC is different from the sequence used by UNIX, VMS, and most Host operating systems.) The Transfer mode option specifies whether conversion is performed.

Note: This conversion should not be performed on binary files because it will alter the contents of the file.

To set the Transfer mode option, use Procedure 28.33:

Procedure 28.33 : Setting the Transfer Mode Option

1. From the Configuration Menu, select **F**ile-Mgr **T**ransfer.
2. PC Link displays a Binary/Text menu.
   - Select **B**inary to *not* convert end-of-line characters on transfer.
   - Select **T**ext to convert end-of-line characters on transfer.
3. Press **Esc** to return to the Configuration Menu.

Auto-Name

There are three options for naming a new file that has been created a result of a file copy or file transfer operation. If the Auto-Name option is turned off, PC Link prompts you for the name of the new file each time it creates a file. Otherwise, PC Link automatically uses the name of the source file as the name of the destination file.

PC Link also does one of two things: it either ensures that PC file names remain in upper case as files are sent to the Host or it automatically converts PC file names to lower case as files are sent to the host. The choice of case allows you to make sure that names of files sent to the Host conform to standard case conventions of the Host operating system, if you wish.

To set the Auto-Name option, use Procedure 28.34:

Procedure 28.34 : Setting the Auto-Name Option

1. From the Configuration Menu, select **F**ile-Mgr **A**uto-Name.
2. PC Link displays a menu of three choices:
   - Select **N**o to prompt the user for a file name before each file is processed.
   - Select **U**pper-Case to ensure that PC file names are not changed when files are sent to the Host system.
   - Select **L**ower-Case to automatically convert PC file names to lower case when sent to the Host.
3. Press **Esc** to return to the Configuration Menu.

Page Header

When you print files on the PC printer, the PC Link File-Manager gives you the option of printing a header page containing the name of each file before it prints the contents of the file.

To set the Page Header option, use Procedure 28.35:

Procedure 28.35 : Setting the Page Header Option

1. From the Configuration Menu, select **F**ile-Mgr **F**ile-Header.
2. PC Link presents a No/Yes menu:
   - Select **N**o to print without header pages.
   - Select **Y**es to print header pages.
3. Press **Esc** to return to the Configuration Menu.

The Terminal-Emulator configuration options control several keyboard and display features. Three of the options are used to select the special keys that access Terminal-Emulator functions from within an interactive Host session. The other two options control display of characters on the PC screen. The Terminal-Emulator Configuration options are set through the **T**erm-Emul choice of the Configuration Menu.

Keymap

The Keymap option specifies the name of the keymap file. Because PC keyboards are different from most Host computer terminal keyboards, key mapping allows you to correspond some of the PC keys to terminal keyboard functions. The keymap causes PC Link to send special control codes to the Host when the keys specified in the keymap file are pressed. To create a keymap, use the Keymap option on the Terminal-Emulator Menu or a text editor.

To set the Keymap option, use Procedure 28.36:

Procedure 28.36 : Setting the Keymap

1. From the Configuration Menu, select **T**erm-Emul **K**eymap.
2. PC Link displays a prompt and the name of the current keymap file. Type the new file name and press **Enter**.
3. Press **Esc** to return to the Configuration Menu.

Menu Access Key, Printer Logging Key and Capture Key

The PC Link Terminal-Emulator uses three special keys on the keyboard to provide access to its menus, print logging and file capture facilities from within an interactive Host session. These keys are identified in the PC Link configuration, and can be moved from their standard positions (e.g., **Alt M** for the Menu Access Key, **Alt P** for the Printer Logging Key and **ALT C** for the Capture Key, respectively) to almost any position on the PC keyboard.

To set the Menu Access Key, Printer Logging Key or Capture Key, use Procedure 28.37:

Procedure 28.37 : Setting the Menu Access Key (or Printer Logging Key or Capture Key)

1. From the Configuration Menu, select **T**erm-Emul **M**enu-Key (or **P**rint-Key or **C**apture-Key).
2. PC Link prompts you to press the key you want. Press the key and then press **Enter**.
3. Press **Esc** to return to the Configuration Menu.

Line-Wrap

The Line-Wrap option controls how the PC Link Terminal-Emulator handles long lines of text. If the Line-Wrap option is set on, long lines automatically "wrap" to the next row of the screen, causing them to be displayed over two or more rows. If the Line-Wrap option is set off, long lines do not wrap, and the characters at the end of the line "pile up" in the extreme right column of the screen.

To set the Line-Wrap option, use Procedure 28.38:

Procedure 28.38 : Setting the Line Wrap Option

1. From the Configuration Menu, select **T**erm-Emul **L**ine-Wrap.
2. PC Link displays a No/Yes menu:
   - Select **N**o not to wrap lines automatically at right margin.
   - Select **Y**es to wrap lines automatically at right margin.
3. Press **Esc** to return to the Configuration Menu.

Local Echo

The Local Echo option controls when the PC Link Terminal-Emulator displays characters you type on the PC screen. If the Local Echo option is set on, the Terminal-Emulator displays the characters as you type them and assumes that the Host system is not echoing received characters back to the PC. If the Local Echo option is set off (the most common setting), the Terminal-Emulator displays the characters you type only when it receives the echoed character back from the Host system.

To set the Local Echo Option, use Procedure 28.39:

Procedure 28.39 : Setting the Echo Option

1. From the Configuration Menu, select **T**erm-Emul **E**cho.
2. PC Link displays a No/Yes menu:
   - Select **N**o to turn the Local Echo off.
   - Select **Y**es to echo keystrokes locally on the PC.
3. Press **Esc** to return to the Configuration Menu.

Using PC Link Macros

PC Link macros help to reduce typing and automate repetitive operations. The concept behind a PC Link macro is very simple: if you will be typing the same sequence of keystrokes over and over again, you can save the sequence of keystrokes as a *macro* and assign it a name. Then, each time you need to type the keystrokes, you can give PC Link the name of the macro instead. PC Link will retrieve the keystrokes you saved, and "type" them for you.

PC Link stores each macro as a PC file in its current macro directory. The macros in this directory are available for your use at any time during a PC Link session. When you *execute* a macro, PC Link types the keystrokes in the macro and responds to the keystrokes as menu selections, list selections, input text, and so forth.

Macro Applications

Although the concept behind a macro is as simple as storing a sequence of keystrokes, macros are one of the most powerful features of PC Link. They allow you to automate PC Link operations and allow PC Link to operate unattended while you work on other tasks. They can also be used to simplify complex processing steps, so that even untrained users can perform them. A few typical applications of PC Link macros are listed below:

- Typing aid: Perhaps the simplest use of macros is to eliminate repetitive typing. For example, if found that you were frequently setting the width of text columns to twenty spaces, you could define a macro that performed exactly that function.
- Repetitive processing: Macros can save time when you are performing similar PC Link operations over and over again. For example, if you are using the PC Link Visual-Query-Language to extract sales results for each of six regions from a Host database, you could define a macro that performed the database inquiry, and then simply execute the macro once for each region.
- Unattended operation: Macros can be as long as you like. Once you start executing a macro, PC Link can continue to operate unattended. For example, you can use macros to begin a complex file transfer or database inquiry when you leave work, allowing it to complete its work overnight and provide you with the needed results in the morning.

- Unskilled use: Macros allow use of PC Link by an inexperienced user who is unfamiliar with PC Link operation. For example, monthly sales analyses involving complex database inquiries that produce multiple charts and graphs on the PC can be defined in a macro, and executed at the end of each month by inexperienced users, simply by training them to start the macro.
- Automatic startup: PC Link macros can be used to personalize the PC Link startup sequence. Special auto-exec macros automatically begin to execute each time a PC Link module is started. By placing a sequence of PC Link commands into these macros, PC Link can automatically perform any desired sequence of operations each time it starts.

Executing a Macro

You can use a macro from almost any PC Link menu, as described in Procedure 29.1.

Procedure 29.1 : Executing a Macro

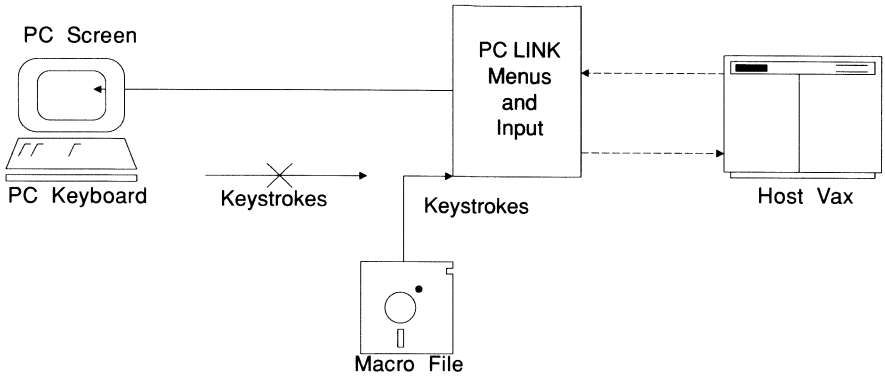
1. From any menu, press **F3** (Macro).
2. PC Link prompts for the name of the macro to execute and displays a list of available macros on the line below the prompt.
3. Type the name of a macro or select a macro from the list.

When you select a macro, PC Link displays the MACEXE indicator at the bottom of the screen to show that macro execution is in progress. PC Link immediately begins to take the keystrokes from the macro, and types them, key by key. The keystrokes become the menu selections, list selections, and input text that guide the execution of PC Link. Figure 29.1 illustrates macro execution.

The PC Link screen changes with each keystroke from the macro, just as it would if the keystrokes had been typed. However, because PC Link can type much faster than you, the screen will change very rapidly.

While PC Link is executing a macro, keys you type on the PC keyboard are ignored. When macro execution is complete, PC Link removes the MACEXE indicator and once again accepts keystrokes from the keyboard.

Figure 29.1.



If a PC Link error occurs while executing a macro, PC Link immediately halts macro execution and displays an error message. You should examine the error and determine its cause before retrying the macro.

A common source of errors is using a macro from a different menu than the one for which it was created. Remember that a macro is simply a sequence of keystrokes. If the keystrokes of a macro properly select a sequence of commands starting with the File-Manager Menu, or example, you should not execute the macro from other menus. The keystrokes in the macro may accidentally select a sequence of menu choices that will erase files or do other damage. The safest approach is always to define macros so that they are used from the top menu of the appropriate PC Link module.

Interrupting a Macro

Normally, PCLInk executes a macro until its keystrokes have all been exhausted. However, you can interrupt it before its execution is complete. To do so, press **Ctrl Break**. PC Link immediately stops processing keystrokes from the macro, cancels macro execution, and once again accepts input from the keyboard.

Note that all of the commands carried out by the macro before it was interrupted remain in place—you cannot undo the effects of a macro by interrupting it. You will want to check the window contents, file lists and inquiry specifications very carefully to make sure the interrupted macro has not done any damage, before proceeding with other work.

Macro execution cannot be restarted once it is interrupted. You can only execute the macro again.

User Input During Macro Execution

A PC Link macro can pause for user input during its execution. When a macro pauses for user input, PC Link temporarily stops taking keystrokes from the macro and accepts keystrokes from the keyboard. When you strike the **Enter** key on the keyboard, PC Link once again takes its keystrokes from the macro.

For example, you could define a macro that specified a database inquiry to be performed on a variety of projects in a project management database. PC Link would pause for the name of the project. The user would then type the name, press **Enter**, and PC Link would proceed to retrieve the information. With the pause for user input, a single macro can be used for any number of projects.

When a macro pauses for user input, PC Link displays the special mode indicator CMD immediately before the normal mode indicator. For example, if PC Link is expecting a menu choice when the macro pauses for user input, the mode indicator will appear as CMDMENU. If typed input is expected, the mode indicator will appear as CMDINPUT. The CMD mode indicator disappears when you complete your input by pressing the **Enter** key.

While the macro has paused for input, you can press any key and use any PC Link features you want except the **Enter** key. For example, you can invoke PC Link help or switch between input mode and edit mode, or even use the PC Link menus to display information that will help you supply the needed input. PC Link acts on each keystroke you type, performing whatever actions your keystrokes specify. When you press the **Enter** key, you signal PC Link that you are finished with your input.

Defining a Macro

To define a PC Link macro, you simply tell PC Link to store your keystrokes as you type. PC Link continues to monitor your keystrokes and build the macro definition until you tell it to stop. Figure 29.2 illustrates macro definition.

To begin defining a macro, follow Procedure 29.2:

Procedure 29.2 : Beginning a Macro Definition

1. From any menu, Press **Alt F3**.
2. PC Link displays the Macro Operations Menu shown in Figure 29.3 and prompts for a menu selection. Select **D**efine.
3. PC Link prompts for the name of the macro to be defined and lists the names of the current macros. Type the name of a new macro or select a macro from the list.
4. PC Link displays the MACDEF indicator and returns to the menu.
5. While you are defining a macro, you can perform any operations available within a PC Link module except executing a macro. Each keystroke you type is not only executed by PC Link but also placed into the macro definition.
6. When you have finished defining the macro, press **F3** (Macro). The macro is now defined and ready for use.

Defining a Pause for User Input

While defining a macro, you may want to specify that the macro should pause for user input at one or more points in its execution. Follow Procedure 29.3:

Procedure 29.3 : Including a Pause for User Input

1. While defining a macro, define the macro normally up to the point where the macro should pause for user input.
2. Press **Alt F3**. PC Link adds CMD to the mode indicator and places a special code into the macro definition to indicate that a pause for user input is needed.
3. Type the input characters as you expect the user to type.
4. Press **Enter**. PC Link once again resumes macro definition. CMD disappears from the mode indicator, and your keystrokes are once again placed into the macro definition.

You can define a pause for user input at any time during a macro definition, although the most common time is when PC Link is itself requesting input from you.

Auto-Exec Macros

With PC Link, you can define keystroke macros that are invoked automatically upon entry into a module. The auto-exec macro file names and corresponding modules are listed in Table 29.1.

Table 29.1 : Auto-Exec Macro Files

Module	Auto-Exec Macro File Name
Access Manager	AUTOAC.MAC
Visual-Query-Language	AUTODB.MAC
File-Manager	AUTOFM.MAC
Terminal-Emulator	AUTOTE.MAC

When a module begins operation, PC Link searches the macro directory named in the current configuration file for a macro file whose name corresponds to the auto-exec macro for that module. If PC Link finds an auto-exec macro file with the appropriate file name, it takes its keystrokes from the file rather than the keyboard. If PC Link finds no auto-exec file, it looks to the keyboard for input. As with any PC Link macro, pauses for user input during macro execution can be included, by means of the steps in Procedure 29.3.

Auto-exec macros can be defined using the steps described in Procedure 29.2. Alternatively, you may use a text editor. Appendix J lists valid keystroke symbols for macro files.

Auto-exec macros operate in the same way as other macros, but with a small difference. While other macros must start from a menu, auto-exec macros begin executing immediately as a module starts up, regardless of whether a menu is displayed.

Alternate Auto-exec Macros

You can specify that PC Link automatically execute a macro other than the four default auto-exec macros listed above. To specify an alternate auto-exec macro, make sure the macro name is in the Macro directory and leave off the .MAC suffix when you type the macro name at the command line.

For example, to have PC Link execute the ENDMONTH macro when you start up, at the command prompt (C>), type **pclink /m:endmonth** and press **Enter**.

Editing a Macro File

For simple macros, PC Link's built-in macro definition capability is the easiest way to define a macro. PC Link simply watches your keystrokes and automatically builds a macro definition. You do not need to be concerned with the internal format of the macro file. However, the built-in facility can be cumbersome to use if you are defining a long, involved macro. Also, even if a new macro is very similar to an existing macro, the built-in facility forces you to retype all of the keystrokes to define the new macro. For these and other advanced uses of macros, you can edit PC Link macro files directly using a text editor. However, editing a macro file requires an understanding of the internal format and structure of a macro file. Appendix K provides this information for advanced users.

Documenting a Macro

Using a text editor, comments may be included in files containing macros. All characters on a line to the right of a semicolon (;) are ignored by PC Link when a macro is executed. In addition, blank lines may be included in macro files.

Erasing a Macro

You can erase unneeded macros with Procedure 29.4.

Procedure 29.4 : Erasing a Macro

1. From any menu, press **Alt F3** and select **E**rase from the menu.
2. PC Link prompts for the name of the macro to erase and presents a list below the prompt. Type the name of a macro or select one from the list.
3. PC Link erases the macro and returns to the Macro Operations Menu.

Testing a Macro

To test a macro, place PC Link in *single-step macro execution* mode by pressing **Alt F1** before beginning macro execution. Each time you press **Space Bar**, you proceed through the macro, one keystroke at a time. To return to normal macro execution, press **Alt F1** again. The STEP indicator will appear when single-step execution is enabled.

Listing Available Macros

You can display a list of the macros that are currently defined through the Macro Operations Menu. Use Procedure 29.5.

Procedure 29.5 : Listing Macros

1. From any menu, press **Alt F3** and select **L**ist from the menu.
2. PC Link displays a list of the defined macros on the screen. Press **Enter** when you are finished viewing the list.
3. PC Link removes the list and returns to the Macro Operations Menu.

Changing the Macro Directory

PC Link stores each macro as a separate file in the current macro directory on your PC. The current macro directory is set when PC Link begins operation to the macro directory specified in the PC Link configuration file. You can change the current macro directory through the Macro Operations Menu using Procedure 29.6.

Procedure 29.6 : Changing the Macro Directory

1. From any menu, press **Alt F3** and select **M**acro-Dir from the menu.
2. PC Link prompts for the name of the new macro directory and displays the name of the current macro directory after the prompt. Type the name of the new directory and press **Enter**. To return to the Macro Operations Menu without changing the current macro directory, press **Esc**.
3. PC Link verifies that the directory exists and returns to the Macro Operations Menu.

All subsequent macro operations will use the macros stored in the new current macro directory.

INGRES/PCLINK Access Menu Commands

The PC Link Access Menu provides commands for changing configuration settings and starting the various modules of PC Link. The PC Link Access Menu itself is accessed from the DOS prompt with the **pclink** command.

The PC Link modules, Visual-Query-Language, File-Manager and Terminal-Emulator, can also be started directly from DOS. Chapter 10 describes that start-up procedure.

If a macro file called AUTOAC.MAC is found in the directory from which PC Link is started, macro execution begins when the **pclink** command is entered.

Configuration

Purpose

Access the PC Link Configuration Menu.

Description

PC Link displays the Configuration Menu on the screen. From here you can verify and set configuration options to affect the current PC Link session and subsequent sessions. For an explanation of Configuration Menu commands, please refer to Chapter 34.

Notes

- The configuration file must reside in the directory from which PC Link is started. The default configuration settings are stored in the PCLINK.CNF file. PC Link may be initialized with alternate configuration files by typing: pclink /c:*xxxxxxxx* where *xxxxxxxx* is the name of a configuration file stored in a file named *xxxxxxxx*.CNF. If no /c:*xxxxxxxx* argument is given with the pclink command, the settings in the PCLINK.CNF configuration file are used. For more information, refer to Chapters 10 and 28.

Exit

Purpose

Exit PC Link and return to DOS.

Description

PC Link presents a confirmation menu to verify your intent to exit PC Link. If you select No, the PC Link Access Menu returns. If you select Yes, PC Link returns to DOS.

File-Manager

Purpose

Start the PC Link File-Manager.

Description

PC Link loads the File-Manager module from disk, and after a few seconds, displays a copyright message, presents the File-Manager Menu, and begins operation. For more information about the File-Manager commands, please refer to Chapter 32.

Notes

- The File-Manager can be started from the DOS prompt by typing **fm**. Alternate configuration files can be used. For more information, refer to Chapters 10 and 28.
- If the Auto-Connect option is set to manual, use the Terminal-Emulator to log in and access the command prompt on the Host system before selecting the File-Manager command if you intend to manipulate Host files. If the Auto-Connect option is set to automatic, the File-Manager issues the login and password prompts automatically. For further information on the Auto-Connect option, see Chapter 28.
- If a macro file called AUTOFM.MAC is found in the directory from which PC Link is started, macro execution begins when the File-Manager command is selected. Please refer to Chapters 29 and 35 for further information.

Terminal-Emulator

Purpose

Start the PC Link Terminal-Emulator.

Description

PC Link loads the Terminal-Emulator module from disk, and after a few seconds, displays a copyright message, establishes a connection to the Host system, and clears the screen for the beginning of an interactive Host session. For more information about the Terminal-Emulator commands, please refer to Chapter 33.

Notes

- The Terminal-Emulator can be started from the DOS prompt by typing **te**. Alternate configuration files can be used. For more information, refer to Chapters 10 and 28.
- If a macro file called AUTOTE.MAC is found in the directory from which PC Link is started, macro execution begins when the Terminal-Emulator command is selected. Please refer to Chapters 29 and 35 for further information.

Visual-Query-Language

Purpose

Start the PC Link Visual-Query-Language.

Description

PC Link loads the Visual-Query-Language module from disk, and after a few seconds, displays a copyright message, establishes a connection to the PC Link Host program, starts the PC Link Host program and begins operation. For more information about the Visual-Query-Language commands, please refer to Chapter 31.

Notes

- The Visual-Query-Language can be started from the DOS prompt by typing **db**. Alternate configuration files can be used. For more information, refer to Chapters 10 and 28.

- If the Auto-Connect option is set to manual, use the Terminal-Emulator to log in and access the command prompt on the Host system before selecting the Visual-Query-Language command. If the Auto-Connect option is set to automatic, VQL begins operations from the Host system login prompt and issues the login and password prompts automatically. For further information on the Auto-Connect option, see Chapter 28.
- If a macro file called AUTODB.MAC is found in the directory from which PC Link is started, macro execution begins when the Visual-Query-Language command is selected. Please refer to Chapters 29 and 35 for further information.

Visual-Query-Language Commands

INGRES/PCLINK Visual-Query-Language commands provide tools for the following tasks:

- Selecting data
- Manipulating data
- Outputting data
- Manipulating screen windows
- Controlling file management settings

Browse

Purpose

Allows browsing of the table displayed in the current window with the cursor keys.

Description

PC Link places the cursor into the window header and activates the cursor keys for browsing the window contents. The horizontal keys move the contents left and right. The vertical keys move the window contents up and down. Browsing is terminated by pressing **Esc**, **Enter** or **F4** (Browse), and PC Link returns to the Access Menu.

Notes

- Browsing is directly available from most of the VQL and File-Manager menus by pressing **F4** (Browse).
- While browsing the contents of one window, you can switch to another window, if one is currently displayed, and browse its contents by pressing **F6** (Window). The window in which the cursor is located when browsing is terminated becomes the active window.
- **F5** (GoTo) lets you move the cursor directly to a specific column (by name) or row (by number) while browsing.
- Horizontal browsing takes place within PC memory and is very fast. Vertical browsing typically requires retrieval of data from the Host system; its speed is determined by the speed of the data communications network and the workload of the Host system.

- If the data in the active window is the result of a preview inquiry instead of a full inquiry, vertical browsing is limited, because only a single screenful of data is retrieved by the database inquiry.

Column Drop

Purpose

Drop columns from the active window.

Description

PC Link places the cursor in the header of the active window and prompts for the columns to be dropped. Make a multiple-choice selection. The dropped columns are immediately removed from the display, and PC Link returns to the Column Operations Menu. Columns dropped in error may be restored to the display with the Column Restore command. The dropped columns will not be requested from the Host database in subsequent database inquiries.

Notes

- The columns are dropped from the PC Link view of the table only—the underlying columns in the Host database table are not affected.
- If the number of columns to be dropped exceeds the number of columns that will remain on the display, the Column Keep command offers a more efficient way of dropping the columns.

Column Insert

Purpose

Inserts a blank column in the displayed table.

Description

PC Link prompts for a title for the blank column. Type the title. PC Link places the cursor in the header of the active window and prompts for the position to insert the blank column. Make a single-choice selection. A blank column eight positions wide is inserted into the displayed table to the left of the selected column. PC Link then prompts for the display width of the blank column. Specify the width by typing it as input, or by pressing the ← and → keys. PC Link adjusts the width of the blank column on the screen, and returns to the Column Operations Menu.

Notes

- PC Link takes blank columns into account when generating output files, but does not generate data for the columns.
- Blank columns dropped with the Column Keep and Column drop commands do not appear in subsequent lists of columns to be recovered.

Column Keep

Purpose

Keep specific columns of a displayed table, dropping all others.

Description

PC Link prompts for a choice of the columns which are to remain in the displayed table. Make a multiple-choice selection. All other columns in the displayed table are immediately dropped from the display, and PC Link returns to the Column Operations Menu. Columns dropped in error may be restored to the display with the Column Restore command. The dropped columns will not be requested from the Host in subsequent database inquiries.

Notes

- The columns are dropped from the PC Link view of the table only—the actual columns in the underlying Host database table are not affected.
- If the number of columns to be kept is larger than the number of columns to be dropped, the Column Drop command offers a more efficient way of changing the display.

Column List

Purpose

List the titles of the columns in the active window.

Description

PC Link displays the titles of the columns in the active window in a pop-up list on the screen. You can use the cursor keys to view the list. Press **Enter** or **Esc** to return to the Column Operations Menu.

Notes

- The display titles rather than the original column names from the database are displayed.

Column Move

Purpose

Changes the sequence of the columns in the active window.

Description

PC Link prompts the user for a multiple-choice selection of columns to move. A single column may be chosen by typing its current column title. Column(s) may be chosen by multiple-choice selection, using the horizontal cursor keys.

The user is then prompted for the position where the columns are to be moved. Indicate the position by single-choice selection of a column. The displayed columns are reordered to appear to the left of the selected column in the order in which they were selected.

Column Print

Purpose

Prints the titles of the columns in the active window on the PC printer.

Description

PC Link prints the display titles of the columns in the active window on the PC printer. When printing is complete, PC Link returns to the Column Operations Menu. Although there are no PC Link error conditions associated with this command, you may encounter some MS-DOS printer error messages.

Column Restore

Purpose

Restore one or more columns previously dropped from the display.

Description

PC Link presents a list of the columns that have been previously dropped from displayed table. Columns to be restored to the displayed table are chosen from this list by multiple-choice selection. PC Link then prompts for the location in the displayed table where the recovered columns are to be inserted. Indicate the position by single-choice selection of columns. The recovered columns are inserted into the display immediately before the selected column. PC Link returns to the Column Operations Menu.

Notes

- If no database inquiries have been performed since the restored column(s) were dropped from the display, PC Link still has the data for the columns, and will display it. If subsequent inquiries have been performed, the data for the dropped columns was not retrieved, and PC Link will fill the data fields for the recovered columns with question marks. The question marks are automatically replaced with actual data for the columns when the next database inquiry is performed.

Column Title

Purpose

Set the display title of the current column in the active window.

Description

PC Link displays a menu offering a choice of setting a new title or restoring the initial title for a column from the database. Selecting Reset changes the title to use its initial value, the column name from the Host database. Selecting Set results in a prompt that displays the current title. To change that title, type a new name and press **Enter**. To retain the current title, press **Esc**. PC Link returns to the Column Operations Menu.

Notes

- PC Link uses the display titles to generate titles in output files; use this command for effective control over output file formatting.
- Before selecting Set, the current column can be changed by using **F4** (Browse) and the cursor keys. The active window can be changed with **F6** (Window).

Column Width

Purpose

Set the displayed width of the current column in the active window.

Description

PC Link displays a menu offering a choice of setting a new column width or resetting the column to its original width. Selecting Reset restores the original width, and PC Link returns to the Column Operations Menu. Selecting Set results in a prompt that displays the current width. To change it, type a number or adjust the width by pressing the horizontal cursor keys. To retain the current width, press **Esc**. PC Link returns to the Column Operations Menu.

Notes

- Display column widths may be set wider or narrower than the actual width of the data from the Host database. If the display width is wider than the actual data, the remaining positions in the column are filled with spaces. If the display width of a column containing text is narrower than the actual data, PC Link displays as much of the data as possible. If the display width of a column containing numeric information is narrower than the data, PC Link fills the displayed cell with asterisks.
- The maximum display width permitted by PC Link is eighty spaces. If the width exceeds eighty spaces, only the first eighty positions of the column will be displayed on the screen; however, the full column width will be used to generate output files.
- PC Link uses the display widths, rather than the Host width of the data in the database, to generate output formats. Therefore, this command therefore provides effective control over output file formatting.

Database Host

Purpose

Break the connection to the current Host system and connect to a different Host system.

Description

PC Link presents a prompt with the name of your current Host System. Pressing **Enter** or **Esc** returns the program to the previous menu and retains the current Host system. If you type the name of a new Host system, PC Link presents a confirmation menu to verify your intention to change Host systems. If you confirm, PC Link erases all current work, closes the current database, and severs its connection to the current Host system. PC Link then prompts for the name of the new Host system to which you desire connection. PC Link connects to the Host system.

Notes

- This command is valid only when VQL is used in LAN (local area network) communication environments where multiple Host systems are connected to a single data communications network.

Database List

Purpose

List the names of the available databases on the Host system.

Description

PC Link presents the names of the databases on the Host system in a pop-up list on the screen. The list may be viewed with the cursor keys. When viewing is complete, press **Esc** or **Enter** to return to the VQL Menu.

Database Name

Purpose

Display the name of the currently active database and enable user to change databases.

Description

PC Link presents a prompt with the name of the currently active database. Pressing **Enter** or **Esc** returns the program to the VQL menu, and the current database remains active. If you enter the name of another database, PC Link erases all current work, closes the current database and attempts to open the new database.

Database Select

Purpose

Select a Host database for processing and make it the current database.

Description

PC Link presents the names of the available Host databases in a pop-up list on the screen and prompts for selection of a database for processing. Make a single-choice selection from the list. If there is already a current database, PC Link prompts for confirmation of the command, because selection of a new database erases all current work in the PC Link session. The confirmation menu allows you to abandon the selection of a new database or to proceed.

Notes

- Host database security is enforced through PC Link. Attempts to access databases for which the user does not have access permission result in errors.
- This command has far-reaching effects, and its accidental use can erase hours of work. Caution is advised.

Inquiry Criterion Add

Purpose

Add a new row selection criterion to the inquiry specifications for the Main Window.

Description

This command restricts the rows that are retrieved from the Host database on subsequent inquiries to only those rows that meet a specified selection criterion. The selection column contents are tested in each row to determine whether the row meets the selection criterion. The comparison value is the data to which the selection column is compared. The comparison operator specifies the type of comparison made. PC Link prompts the user through three actions to specify a row selection criterion:

- The selection column is a single-choice selection from the window header.
- The comparison operator is selected from a menu of relational comparisons.
- The comparison value is selected either by choosing a column from the window header or by typing a constant value.

If the BETWEEN comparison operator is selected, the third action is repeated twice—once to specify the lower bound for the comparison and once to specify the upper bound.

PC Link offers the following comparison for use in row selection criteria:

=	A row is selected if and only if the contents of its selection column are equal to the comparison value.
!=	A row is selected if and only if the contents of its selection column are not equal to the comparison value.
<	A row is selected if and only if the contents of its selection column are less than the comparison value.
<=	A row is selected if and only if the contents of its selection column are less than or equal to the comparison value.
>	A row is selected if and only if the contents of its selection column are greater than the comparison value.
>=	A row is selected if and only if the contents of its selection column are greater than or equal to the comparison value.
BETWEEN	A row is selected if and only if the contents of its selection column are greater than or equal to the first comparison value, and less than or equal to the second comparison value.
IN	A row is selected if and only if the contents of its selection column are equal to one of a list of comparison values. The comparison values are supplied as a comma-separated list.

Notes

- Row selection criteria may be applied to the Main Window only.
- Row selection criteria may be combined to form more complex selection criteria with the Inquiry Criterion Combine command.

Inquiry Criterion Combine

Purpose

Combine several row selection criteria together in an AND or OR logical relationship.

Description

This command is used to build row selection criteria of arbitrary complexity by combining simple criteria together in logical relationships. Two or more simple criteria can be combined in one of two ways:

- In an OR relationship, where, if a row meets any one of the individual criteria, it meets the combined criterion.
- In an AND relationship, where a row must meet all of the individual criteria to meet the combined criterion. The result of combining individual criteria is called a logical combination criterion. Logical combination criteria may themselves be combined with other criteria, and are limited only by the amount of available PC memory.

When the command is issued, PC Link presents a menu for specifying whether an OR or an AND combination is to be created. The current row selection criteria are then presented in a pop-up list on the screen. Make a multiple-choice selection from the list. The combined criteria form a new top-level logical combination criterion, which is added to the end of the list, and PC Link returns to the Inquiry Menu. Only top-level criteria may be combined with the Inquiry Criterion Combine command. When the criteria are combined, they lose their top-level position in the hierarchy and become second-level criteria. Thus, a hierarchy of logical relationships can be built.

PC Link allows you to select any criterion from the list for combination. When a lower-level criterion is selected, PC Link makes a new copy of the criterion at the top level and combines this new, top-level copy of the criterion with the others selected. Listing the row selection criteria after the command shows two copies of the criterion—the original and the new copy, which forms a part of the new combination just created.

Inquiry Criterion Drop

Purpose

Drop one or more row selection criteria from the inquiry specifications for the Main Window.

Description

PC Link presents the current row selection criteria in a pop-up list on the display, and prompts for a choice of criteria to be dropped. Make a multiple-choice selection from the list. The selected criteria are dropped, the remaining criteria are reorganized, if necessary, and PC Link returns to the Inquiry Menu. Dropping a row selection criterion may cause reorganization of the remaining criteria if individual criteria have been combined into a multi-level hierarchy with AND or OR logical operations:

- Dropping a logical criterion (AND or OR) causes each of the criteria combined by the logical operation to become top-level criteria. These criteria appear at the end of subsequently displayed lists of criteria. Note, however, that any of the lower-level criteria that are also selected to be dropped are still dropped.
- Dropping all of the criteria that are combined by a logical criterion automatically causes the logical criterion to be dropped as well.
- Dropping all but one of the criteria that are combined by a logical criterion causes the sole remaining criterion to move up a level in the hierarchy and replace the logical criterion.

Inquiry Criterion List

Purpose

List the current row selection criteria for the Main Window on the display.

Description

PC Link displays the current row selection criteria in a pop-up list. The cursor keys may be used to view the list in its entirety. When list viewing is complete, you may return to the Inquiry Menu by pressing **Esc** or **Enter**. Each row selection criterion in the list is identified by number. Logical combination criteria are presented on the list with an AND or OR to indicate the relationships among the lower-level criteria that they combine. Lower-level criteria that are combined by higher-level logical combinations are indented in the list.

Inquiry Criterion Negate

Purpose

Negate one or more row selection criteria for the current window.

Description

This command negates the meaning of a row selection criterion by placing a NOT in front of any comparison operator. PC Link presents the current row selection criteria in a pop-up list on the screen and prompts for choice of the criteria to be negated. Make a multiple-choice selection from the list. The selected criteria are negated, and PC Link returns to the Inquiry Menu.

Notes

- Double negation of a criterion returns the criterion to its original meaning and appearance.

Inquiry Criterion Reset

Purpose

Drop all row selection criteria for the Main Window.

Description

PC Link presents a confirmation menu to verify your desire to drop all row selection criteria. If you confirm, all row selection criteria are dropped, and the INQUIRE indicator is turned on to indicate that the data in the Main Window no longer agree with the current inquiry specifications.

Notes

- This command has far-reaching effects, and its accidental use can erase hours of work. Caution is advised.

Inquiry Go

Purpose

Perform a Host database inquiry using the current inquiry specifications for the active window.

Description

PC Link starts a database inquiry on the Host system using the specifications that have been built up for the active window. As an inquiry is processed, the mode indicator progresses from SENDING to WAITING to RECEIVING to indicate the stages of sending and executing the command and receiving the results of the inquiry. When the inquiry is complete, the contents of the active window are updated on the screen to reflect the latest information from the Host database.

Notes

- A database inquiry can also be requested from most VQL menus by pressing **F9** (Inquire).
- If you only want to examine a sample of the data that would be retrieved in a full inquiry, press **F7** (Preview). A Host database inquiry begins using the current inquiry specifications, but ceases execution as soon as it has produced enough rows to fill the PC display screen.

Inquiry Lookup Add

Purpose

Look up information from another table and add it to the information derived from the current inquiry specifications in the Main Window.

Description

This command combines information from two or more database tables in a single Host database inquiry. The lookup table is searched by matching the data values in one or more columns in the Main Window with one or more columns containing identical data values in the Lookup Window. When a matching row is found in the table in the Lookup Window, the contents of one or more columns from the Lookup Window are retrieved from that row and are inserted into the row in the Main Window. This operation is repeated for each row of the table in the Main Window, and the resulting table in the Main Window is wider by the addition of the lookup columns.

PC Link leads the user through the table lookup process with this sequence:

- The matching columns in the Main Window are selected.
- The corresponding columns in the Lookup Window are selected.
- The lookup columns from the Lookup Window are selected.
- The lookup columns are inserted into the Main Window at the position chosen by the user.

The matching columns are selected from the Main Window by multiple-choice selection from the Main Window header. The corresponding matching columns are chosen, in exactly the same order, from the Lookup Window header. The Lookup Window is not open when this command is given. PC Link automatically opens a Lookup Window and prompts the user for a choice of the table to be displayed before requesting a choice of matching columns.

For most table lookups only one pair of matching columns is required. If multiple matching columns are needed, exactly the same number of columns must be selected in both the Main and Lookup Windows, and the columns must be selected in corresponding order in both windows. The order of selection is unimportant.

After matching columns have been selected, PC Link prompts for selection of the lookup columns to be retrieved from the Lookup Window. Make a multiple-choice selection of the lookup columns from the Lookup Window header. PC Link prompts for the point in the Main Window at which the retrieved columns are to be inserted. The insertion point is specified by single-choice selection from the Main Window header, and the lookup columns are inserted into the Main Window immediately before the selected column. PC Link returns to the Inquiry Menu following execution of the command.

Notes

- PC Link does not allow a lookup in which only one table or view is used.
- The command can be repeated with a different table in the Lookup Window to combine information from several different tables.
- The matching columns in the Main Window may themselves be Lookup Columns retrieved with an earlier Inquiry Lookup Add command.
- PC Link requires that all table lookups for a given table be added in a single Inquiry Lookup Add command. If additional columns must be looked up in a table for which a table lookup is specified, first drop the table lookup specifications (with the Inquiry Lookup Drop command), and then respecify the lookup with the additional lookup columns.
- PC Link inserts all lookup columns, in the order selected, at a single point in the Main Window. If the columns are to appear at various points in the window, use the Column Move command to change their locations.

Inquiry Lookup Drop

Purpose

Drop one or more table lookups from the current inquiry specifications.

Description

PC Link presents the current table lookups in a pop-up list on the screen. Each line of the list displays one pair of matching columns. Choose the matching column pairs to be dropped using multiple-choice selection. When selection is complete, PC Link removes from the Main Window display any lookup columns that were retrieved by the table lookup(s) you specified. The INQUIRE indicator appears to indicate that the data displayed in the Main Window does not accurately reflect the current inquiry specifications, and PC Link returns to the Inquiry Operations Menu.

Notes

- If a table lookup uses multiple pairs of matching columns, all of the matching column pairs must be dropped to drop the lookup columns from the Main Window completely. Dropping some matching columns while leaving others changes the meaning of the table lookup and does not drop lookup columns in the Main Window.
- This command provides the only way to add additional lookup columns for an existing table lookup. Drop the table lookup and add it again to specify additional lookup columns for a pair of tables.

Inquiry Lookup List

Purpose

List the table lookup matching columns for the Main Window.

Description

PC Link displays information about the active table lookups in a pop-up list on the screen. Each row of the list identifies one pair of matching columns from a table lookup. Use the cursor keys to view the list and press **Enter** or **Esc** to return to the Inquiry Operations Menu.

Notes

- If a table lookup uses more than one pair of columns for matching, the pairs of matching columns appear on successive lines of the displayed list.

Inquiry Lookup Reset

Purpose

Drop all table lookups for the Main Window.

Description

PC Link presents a confirmation menu to verify your intent to drop all table lookups. If you confirm, PC Link drops all the table lookups for the Main Window and drops all lookup columns from the display. The INQUIRE flag is turned on to indicate that the data displayed in the Main Window no longer reflects the current inquiry specifications, and PC Link returns to the Inquiry Operations Menu.

Notes

- This command has far-reaching effects, and its accidental use can erase hours of work. Caution is advised.

Inquiry Reset

Purpose

Drop all inquiry specifications for the active window.

Description

PC Link presents a confirmation menu to verify your intent to clear all inquiry specifications for the active window. If you confirm, PC Link drops all active inquiry specifications for the active window. Any lookup columns displayed in the Main Window are dropped. The INQUIRE flag appears to indicate that the data in the Lookup Window no longer reflect the current inquiry specifications, and PC Link returns to the Query Operations Menu.

Notes

- This command has far-reaching effects, and its accidental use can erase hours of work. Caution is advised.

Inquiry Sort Add

Purpose

Add an additional sort specification for the active window.

Description

The command causes a new sort specification to be added to the current sort specifications for the active window. The new sort key column is added as the last sort on the sort specification list. PC Link prompts for the new sort key column, which is selected by single-choice selection. After you select the column, PC Link offers a menu choice of Ascending or Descending order for the sort. PC Link adds the new sort key column to the current inquiry specifications, and returns to the Inquiry Menu.

Notes

- **F5** (GoTo) may be used to move directly to a column by name when selecting the sort key column.
- Sort specifications are processed sequentially from the beginning to the end of the sort list. To modify the order in which sort specifications are processed, use the Inquiry Sort Drop or Inquiry Sort Reset command.

Inquiry Sort Drop

Purpose

Drop one or more of the current sort specifications for the active window.

Description

PC Link presents the current sort specifications in a pop-up list on the display and prompts for selection of the sort key columns to be dropped. The columns are chosen by multiple-choice selection from the list. PC Link drops the selected specifications and returns to the Inquiry Menu. Any remaining sort specifications retain the same ordering they had before the command.

Inquiry Sort List

Purpose

List the current sort specifications for the active window.

Description

PC Link displays the sort key columns for the active window in a pop-up list on the display screen. Columns sorted in descending order have a "(D)" after their names; all other columns are sorted in ascending order. The list may be viewed with the cursor keys. When list viewing is complete, press **Enter** or **Esc** to return to the Inquiry Menu.

Inquiry Sort Reset

Purpose

Drop all current sort specifications for the active window.

Description

PC Link presents a confirmation menu to verify your intent to drop all sort specifications for the active window. If you confirm, all sort specifications are dropped. The INQUIRE flag is turned on to indicate that the data displayed in the active window no longer matches the current inquiry specifications, and PC Link returns to the Inquiry Operations Menu. Data obtained in subsequent Host database inquiries are unsorted.

Inquiry Template Directory

Purpose

Display the name of the current template directory, enabling you to change it to a new directory.

Description

PC Link displays a prompt with the name of the current template directory. Pressing **Enter** or **Esc** returns you to the VQL menu, and the current template directory remains active. If you type a new directory name, PC Link verifies that the directory exists. Subsequent Inquiry Template commands apply only to the query templates stored in this new directory. This command changes the current template directory for the current PC Link session only.

Inquiry Template Erase

Purpose

Remove a query template from the current template directory.

Description

PC Link presents a list of templates in the current template directory. Make a multiple-choice selection or type the name of the template to be erased. The template file is erased from the disk.

Notes

- This command has far-reaching effects, and its accidental use can erase hours of work. Caution is advised.

Inquiry Template List

Purpose

Display a list of query templates in the current template directory.

Description

A multi-column list of the query templates is displayed in a pop-up list on the PC screen. The list may be viewed with the cursor keys. Press the **Enter** or **Esc** keys to stop viewing the list and return the screen to its normal appearance.

Inquiry Template Retrieve

Purpose

Retrieve a query template from the current template directory and set the current PC Link inquiry specifications to those found in the Template.

Description

PC Link presents a list of inquiry specifications in the current directory. Select a query template from the displayed list. PC Link presents a confirmation menu to verify your intent to erase all previous work. If you confirm, PC Link erases all current inquiry specifications and resets them to the specifications found in the retrieved template.

Notes

- This command has far-reaching effects, and its accidental use can erase hours of work. Caution is advised.

Inquiry Template Save

Purpose

Save the current inquiry specifications as a query template in the current template directory.

Description

PC Link saves the current inquiry specifications in a query template. The template to be used is indicated either by selecting from a displayed list of existing templates or by typing a template name. Template names are restricted to eight characters or less. If a template with the selected name does not exist, a new one is created. Otherwise, PC Link requests confirmation before overwriting the existing template with the new inquiry specifications. The query template saves both inquiry and display specifications, including:

- Window status and position on the screen

- Column names, titles, widths, data types, and position on the screen (for displayed columns only)
- Sort specifications
- Row selection criteria specifications
- Table lookup specifications
- Unique row selection

Inquiry Unique

Purpose

Control whether duplicate rows or unique rows only are displayed in the results of an inquiry.

Description

Inquiries into a Host database may retrieve two or more rows whose contents are identical. This is likely when some of the columns of a table have been dropped, causing rows whose contents differed only in those dropped columns to become identical. When you select the Inquiry Unique command, PC Link presents a menu with three choices. If you select Set, inquiry results are restricted to unique rows only in the Main Window. If you select Reset, PC Link allows duplicate rows. If you select Display, PC Link displays a message indicating which option (Set or Reset) is currently in effect.

Output 1-2-3

Purpose

Create an output file in worksheet (WKS) format.

Description

PC Link presents a list of the current worksheet files in the working directory and prompts for the name of the output file to be generated. Specify the output file by single-choice selection or type a new file name. If the selected file already exists, PC Link prompts for confirmation of your intention to replace the file. PC Link generates the output file from the active window, obtaining data from the Host database in accordance with the Main Window inquiry specifications as necessary.

If a database inquiry for the Main Window has already been performed and the inquiry specifications have not been changed, PC Link can obtain the results from the Host system without performing another inquiry. Otherwise, PC Link automatically performs a Host database inquiry. In either case, the results are transmitted from Host to PC and placed in the output file in worksheet (WKS) format. The file is ready for processing by Lotus 1-2-3, Symphony, and other PC software packages that use the worksheet (WKS) format.

If the Auto-Load option is on, the user can automatically start a PC application to process the output file. PC Link presents a confirmation menu, allowing the user to proceed with auto-load or return immediately to PC Link. See the Output Options Auto-Load for more information on the Auto-Load option.

Choosing Yes from the Auto-Load confirmation menu causes PC Link to load the selected application and begin its execution. You may now freely use the selected application with no interference from PC Link. When you exit the selected application, PC Link regains control. If the Auto-Load option is turned off, PC Link returns to the VQL Menu after the output file is complete.

Notes

- Auto-loading a PC application and accessing the worksheet (WKS) format file are governed by the Auto-Load configuration settings, the configuration of your PC and the operation of the PC application. See the Configuration VQL Auto-Load 1-2-3 command and the operations manual of your PC product for further information.

Output dBASE

Purpose

Create an output file in database (DBF) format.

Description

PC Link presents a list of the current dBASE files in the working directory and prompts for the name of the output file to be generated. Specify the output file by single-choice selection or type a new file name. If the selected file already exists, PC Link prompts for confirmation of your intention to replace the file. PC Link generates the output file from the active window, obtaining data from the Host database in accordance with the Main Window inquiry specifications as necessary.

If a database inquiry for the Main Window has already been performed and the inquiry specifications have not been changed, PC Link can obtain the results from the Host system without performing another inquiry. Otherwise, PC Link automatically performs a Host database inquiry. In either case, the results are transmitted from Host to PC and placed in the output file in database (DBF) format. The file is ready for processing by dBASE II, dBASE III, Framework, and other PC software packages that use dBASE (DBF) file format.

If the Auto-Load option is on, the user can automatically start a PC application to process the output file. PC Link presents a confirmation menu, allowing the user to proceed with auto-load or return immediately to PC Link. See the Output Options Auto-Load command for more information on the Auto-Load option.

Choosing Yes from the Auto-Load confirmation menu causes PC Link to load the selected application and begin its execution. You may now freely use the selected application with no interference from PC Link. When you exit the selected application, PC Link regains control. If the Auto-Load option is turned off, PC Link returns to the VQL Menu after the output file is complete.

Notes

- Auto-loading a PC application and accessing the database (DBF) format file are governed by the Auto-Load configuration settings, the configuration of your PC and the operation of the PC application. See the Configuration VQL Auto-Load dBASE command and the operations manual of your PC product for further information.
- dBASE III text fields longer than 255 characters are converted to dBASE III memo fields and stored in a .DBT file associated with the database.

Output Erase

Purpose

Erase a file from the current PC working directory.

Description

PC Link presents a menu offering a choice of output formats. The menu choices, format types and default file suffixes are:

Menu Choice	Format Type	File Suffix
1-2-3	Worksheet	.WKS
dBASE	Database	.DBF
Text	ASCII Text	.TXT
SYLK	Symbolic Link	.SYL
Interchange	Data Interchange Format	.DIF
Ingres/PC	Ingres for PCs	(none)

When you choose one of the formats, PC Link displays a list of all the files in the current PC working directory that match the format. Make a multiple-choice selection, or type a file name. If the specified file exists, PC Link presents a confirmation menu to verify your intention to erase files. If you confirm, PC Link erases the selected files and returns to the Output Menu.

Notes

- This command has far-reaching effects, and its accidental use can erase hours of work. Caution is advised.
- The default file format for 1-2-3, dBASE, or Text files can be changed through the VQL Auto-load portion of the Configuration Menu.

Output Ingres/PC

Purpose

Create an output file in Ingres for PCs format.

Description

If you are connected to a Host, PC Link presents a list of the available databases and prompts you to select one or enter a different database name. After you specify the database, it prompts you to select a table.

If you are not connected to a Host (have started VQL at the command line or chosen None for a Network type in the Configuration Menu), PC Link displays a list of tables for you to select from; you do not get the option of naming a database.

If the selected file already exists, PC Link prompts for confirmation of your intention to replace the file. PC Link generates the output file from the active window, obtaining data from the Host or the local PC database in accordance with the Main Window inquiry specifications.

If a database inquiry for the Main Window has already been performed and the inquiry specifications have not been changed, PC Link can obtain the results without performing another inquiry. Otherwise, PC Link automatically performs a database inquiry. In either case, the results are placed in the output file in Ingres for PC's format. The file is ready for processing by Ingres for PCs.

Output Interchange

Purpose

Create an output file in data interchange (DIF) file format.

Description

PC Link presents a list of the current data interchange (DIF) format files in the working directory and prompts for the name of the output file to be generated. Specify the output file by single-choice selection or type a new file name. If the selected file already exists, PC Link prompts for confirmation of your intention to replace the file.
PC Link generates the output file from the active window, obtaining data from the Host database in accordance with the Main Window inquiry specifications as necessary. If a database inquiry for the Main Window has already been performed and the inquiry specifications have not been changed, PC Link can obtain the results from the Host system without performing another inquiry. Otherwise, PC Link automatically performs a Host database inquiry. In either case, the results are transmitted from Host to PC, and placed in the output file in data interchange (DIF) format. The file is ready for processing by VisiCalc and other PC software packages that use data interchange (DIF) format.

If the Auto-Load option is on, the user can automatically start a PC application to process the output file after. PC Link presents a confirmation menu, allowing the user to proceed with auto-load or return immediately to PC Link. See the Output Options Auto-Load command for more information on the Auto-Load option.

Choosing Yes from the Auto-Load confirmation menu causes PC Link to load the selected application and begin its execution. You may now freely use the selected application with no interference from PC Link. When you exit the selected application, PC Link regains control of the system, and the VQL Menu is presented. If the Auto-Load option is turned off, PC Link returns to the VQL Menu after the output file is complete.

Notes

- Auto-loading a PC application and accessing the data interchange format (DIF) file are governed by the Auto-Load configuration settings, the configuration of your PC and the operation of the PC application. See the Configuration VQL Auto-Load Interchange command and the operations manual of your PC product for further information.

Output List

Purpose

List the files in the current PC working directory that have a given file suffix for one of the five formats of output files generated by PC Link.

Description

PC Link presents a menu offering a choice of output formats. When you choose one of the formats, PC Link displays a list of the files with that format in the current PC working directory. Use the cursor keys to browse the list. The menu choices, format types and default file suffixes are:

Menu Choice	Format Type	File Suffix
1-2-3	Worksheet	.WKS
dBASE	Database	.DBF
Text	ASCII Text	.TXT
SYLK	Symbolic Link	.SYL
Interchange	Data Interchange Format	.DIF
Ingres/PC	Ingres for PCs	(none)

Output Options Auto-Load

Purpose

Specify whether another PC application program is to be automatically loaded after PC Link has generated an output file.

Description

PC Link presents a No/Yes menu for user selection. If No is selected, the Auto-Load feature is switched off, and PC Link returns to the Access Menu after an output file is generated. If Yes is selected, the Auto-Load feature is switched on, and PC Link presents an Auto-Load confirmation menu immediately after it has generated an output file. If the user then confirms his intention to Auto-Load a PC application, the appropriate application is determined from the configuration file, and the application program is started.

Notes

- If Auto-Load is on, upon exiting the application program, PC Link returns to the Access Menu, and your previous inquiry specification is no longer available. See the Configuration VQL Auto-Load command for more information about Auto-Load configuration and options.
- This command has far-reaching effects, and its accidental use can erase hours of work. Caution is advised.

Output Options Delimiter

Purpose

Specify the character to appear as a delimiter between columns in text (TXT) format files generated by PC Link.

Description

PC Link prompts for the character that is to be used as an inter-column delimiter in text (TXT) format files, and the current delimiter character is displayed after the prompt. To specify a new character, type the character, followed by **Enter**. To retain the current delimiter character, press **Esc**.

- Any delimiter character may be specified. This command is useful because various applications and programming languages use various delimiters to separate successive data elements.

Output Options Titles

Purpose

Specifies that column titles be included in output files generated by PC Link.

Description

PC Link presents a No/Yes menu choice for user selection. If Yes is selected, column titles are included in generated output files as part of the data. If No is selected, column titles are not included in generated output files. PC Link returns to the Output Options menu.

Notes

- Titles are generated in worksheet (WKS), text (TXT), symbolic link (SYL) and data interchange (DIF) format files; this command has no effect on database (DBF) format files, where column titles become the names of the columns in the generated database.

Output Options Work-Dir

Purpose

Display the current PC working directory and set a new PC working directory.

Description

PC Link prompts for your choice of a new PC working directory and displays the current working directory following the prompt. To reset your PC working directory, type another directory name and press **Enter**. PC Link verifies that the chosen directory exists, makes it the current working directory, and returns to the Output Options Menu. To return to the Output Options menu without resetting the PC Working Directory, press **Esc** at the prompt.

Output SYLK

Purpose

Create an output file in symbolic link (SYL) format.

Description

PC Link presents a list of the current symbolic link (SYL) files in the working directory and prompts for the name of the output file to be generated. Specify the output file by single-choice selection or type a new file name. If the selected file already exists, PC Link prompts for confirmation of your intention to replace the file. PC Link generates the output file from the active window, obtaining data from the Host database in accordance with the Main Window inquiry specifications as necessary.

If a database inquiry for the Main Window has already been performed and the inquiry specifications have not been changed, PC Link can obtain the results from the Host system without performing another inquiry. Otherwise, PC Link automatically performs a Host database inquiry. In either case, the results are transmitted from Host to PC, and placed in the output file in symbolic link (SYL) format. The file is ready for processing by Multiplan, other Microsoft products and other PC software packages that use symbolic link (SYL) file format.

If the Auto-Load option is on, the user can automatically start a PC application to process the output file. PC Link presents a confirmation menu, allowing the user to proceed with auto-load or return immediately to PC Link. See the Output Options Auto-Load for more information on the Auto-Load option.

Choosing Yes from the Auto-Load confirmation menu causes PC Link to load the selected application and begin its execution. You may now freely use the selected application with no interference from PC Link. When you exit the application, PC Link regains control of the system, and the VQL Menu is presented. If Auto-Load is off, PC Link returns to the VQL Menu after the output file is complete.

Notes

- Auto-loading a PC application and accessing the symbolic link (SYL) format file are governed by the Auto-Load configuration settings, the configuration of your PC and the operation of the PC application. See the Configuration VQL Auto-Load SYLK command and the operations manual of your PC product for further information. Refer to Chapter 14 for a description of the Auto-Load option.
- PC Link generates SYL format files with the extension SYL appended to the file name. All files with the SYL extension in the PC working directory are listed for selection by this command.
- SYLK output file format uses the double quote (") character to indicate a text string. Because of this, you must strip any double quotes from Host database text strings when you generate a SYLK output file.

Output Text

Purpose

Create an output file in text (TXT) format, or print inquiry results on the PC printer.

Description

PC Link presents a menu offering a choice of output to a file or output to the PC printer.

If output to a file is chosen, PC Link presents a list of the current text (TXT) format files in the working directory and prompts for the name of the output file to be generated. Specify the output file by single-choice selection or type a new file name.

If the selected file already exists, PC Link prompts for confirmation of your intention to replace the file. PC Link generates the output file from the active window, obtaining data from the Host database in accordance with the Main Window inquiry specifications as necessary. If a database inquiry for the Main Window has already been performed and the inquiry specifications have not been changed, PC Link can obtain the results from the Host system without performing another inquiry. Otherwise, PC Link automatically performs a Host database inquiry. In either case, the results are transmitted from Host to PC, and placed in the output file in text (TXT) format. The file is ready for processing by WordStar, other PC word processors and other PC software that can process row/column ASCII files.

If output to a file has been chosen and the Auto-Load option is on, the user can automatically start a PC application to process the output file. PC Link presents a confirmation menu, allowing the user to proceed with auto-load or return immediately to PC Link. See the Output Options Auto-Load for more information on the Auto-Load option.

If output to a file has been chosen, selecting Yes from the Auto-Load confirmation menu causes PC Link to load the selected application and begin its execution. You may now freely use the selected application with no interference from PC Link. When you exit the selected application, PC Link regains control of the system, and the VQL Menu is presented. If the Auto-Load option is turned off, PC Link returns to the VQL Menu after the output file is complete.

If output to the PC printer is selected, text returned by an inquiry is sent directly to the PC printer.

Notes

- Auto-loading a PC application and accessing the text (TXT) format file are governed by the Auto-Load configuration settings, the configuration of your PC and the operation of the PC application. See the Configuration VQL Auto-Load Text command and the operations manual of your PC product for further information.
- If no printer is attached to PRN:, a long pause followed by a DOS error message occurs.

Quit

Purpose

Exit the INGRES/PCLINK Visual-Query-Language and return to the PC Link Access Menu.

Description

PC Link presents a confirmation menu to verify that you want to exit the Visual-Query-Language. If you confirm, PC Link closes the Host system database and returns to the Access Menu. All current work is lost.

Notes

- If the PC Link database link is executed directly from MS-DOS, the Quit command returns you to the MS-DOS command prompt.
- This command has far-reaching effects, and its accidental use can erase hours of work. Caution is advised.

Table List

Purpose

List the names of the available tables in the current database.

Description

PC Link presents the names of the tables in the current database in a pop-up list on the screen. The list may be viewed with the cursor keys. When viewing is complete, press **Enter** or **Esc** to return to the VQL Menu.

Notes

- PC Link presents the names of all tables and views available to you; both tables and views may be processed transparently by PC Link.

Table Name

Purpose

Display the name of the currently active table, enabling you to designate a new active table.

Description

PC Link displays a prompt with the name of the currently active table. Pressing **Enter** or **Esc** returns the program to the VQL Menu and the current table remains active. However, if you type the name of another table, PC Link erases all current work, abandons the current table and opens the new table.

Table Print

Purpose

Prints a list of the tables in the current database on the printer.

Description

PC Link prints a list of the available tables in the current database, then returns to the VQL Menu.

Notes

- PC Link prints on the PC PRN: device, which may be reassigned using MS-DOS commands as needed.
- If there is no printer attached to the PRN: port, you will receive a DOS error message.

Table Select

Purpose

Selects a new table for display in the active window.

Description

PC Link presents the names of the tables available in the current Host database in a pop-up list on the screen and prompts for selection of the new table to appear in the active window. Make a single-choice selection. If a new table is selected for the Main Window, PC Link first presents a confirmation menu to verify your intention to select a new table. If you confirm, the current contents of both the Main and Lookup Windows, and all inquiry specifications and column display information are discarded. The Main Window header is redisplayed with the names of the columns of the selected table as column titles. After a new table has been selected, the active window is blank, and PC Link returns to the Access Menu. If a new table is selected for the Lookup Window, the current contents of the Lookup Window and all inquiry specifications are immediately discarded. The Lookup Window header is re-displayed with the names of the columns as column titles.

Window Close

Purpose

Close the Lookup Window.

Description

PC Link closes the Lookup Window, adjusts the Main Window to fill the entire screen, and returns to the VQL Menu. This command is valid only when the Lookup Window is displayed; if the Lookup Window is not open, PC Link simply beeps and ignores the command.

Window Move

Purpose

Changes the relative size of the Main Window and Lookup Window.

Description

PC Link prompts you to move the border between the Main Window and the Lookup window using the ↑ and ↓ keys. The border between the two windows moves, and their relative sizes change by one row each time the keys are pressed. When the windows reach their desired configuration, press Enter to return to the Access Menu. The command is valid only if the Lookup Window is open; otherwise, PC Link simply beeps and ignores the command. The body of the Main Window or Lookup Window cannot be removed entirely from the screen—at least one row of the body must remain displayed. Attempts to shrink either window beyond this limit are ignored, and PC Link beeps when the arrow key is pressed.

Window Open

Purpose

Opens a Lookup Window to permit simultaneous viewing of two tables.

Description

PC Link displays a pop-up list of tables in the current database, and prompts for a choice of the table to be displayed in the Lookup Window. Make a single-choice selection or type a table name. PC Link opens the Lookup Window and presents the names of the columns in the specified table as column titles in the Lookup Window header. The body of the Lookup Window is blank. The contents of the table may be displayed in the Lookup Window by first making it the active window with the Window Switch command, and then performing a full or preview inquiry. PC Link returns to the VQL Menu. Window Open is valid only when the Lookup Window is not displayed; PC Link beeps and ignores the command if the Lookup Window is already open. To change the table displayed in the Lookup Window, make the Lookup Window active with the Window Switch command, then use the Table Select command.

Window Switch

Purpose

Switch the active window between the Main Window and the Lookup Window.

Description

If the Main Window is currently the active window, the Lookup Window becomes the active window; otherwise the Main Window becomes the active window. The command is valid only if the Lookup Window is open; otherwise, PC Link simply beeps and ignores the command.

Notes

- The active window can be switched from most PC Link menus and while browsing window contents by pressing **F6** (Window).

File-Manager Commands

INGRES/PCLINK File-Manager commands provide tools for:

- Transferring files between the PC and the Host
- Manipulating PC and Host files
- Controlling optional file management settings

Browse

Purpose

Allow browsing of the lists of files displayed in the PC and Host windows.

Description

PC Link places the cursor in the header of the active window and activates the cursor keys for browsing the window contents. The vertical keys move the window contents up and down, bringing into view various rows of file information in the active window. Browsing is terminated by pressing **Esc**, **F4** (Browse) or **Enter**, and PC Link returns to the File-Manager Menu.

Notes

- Browsing is directly available from most File-Manager menus by pressing **F4** (Browse).
- While browsing the contents of one window, you can switch to the other window and browse its contents by pressing **F6** (Window). The window in which the cursor is located when browsing is terminated becomes the active window.
- **F5** (GoTo) lets you go directly to a specific file name.

Host Copy

Purpose

Make a duplicate copy of a Host file.

Description

PC Link expands the Host window and prompts for selection of file(s) to be copied. Make a multiple-choice selection or type a file name. The file name may contain wild card matching characters to allow you to copy groups of files.

PC Link then prompts for the name of the Host system directory where copies of the files are to be made. The current Host working directory is presented as a default choice for the prompt. Specify a different destination directory by typing its name. Press **Enter** to select the default directory.

PC Link makes copies of the files in the destination directory. If the Auto-Name option is off, or if the destination directory is the same as the current Host working directory, PC Link prompts for the new name of each file before copying it. Type the new name in response to the prompt. When copying is complete, PC Link returns to the Host Menu.

If the Auto-Name option is set either to upper case or lower case, and there is no file in the destination directory with the same name, PC Link will assign the current file name automatically. If there is a file with the same name in the destination directory, PC Link presents a transfer confirmation menu. When copying is complete, PC Link returns to the Host Menu.

Pressing **Ctrl Break** interrupts the copying. The Host file currently being copied is allowed to complete, but no further files are copied.

Host Erase

Purpose

Erase one or more files from the Host working directory.

Description

PC Link expands the Host window and prompts for a selection of file(s) to erase. Make a multiple-choice selection or type a file name. The name may include wild card characters to allow erasing of multiple files. When selection is complete, PC Link highlights the names of files selected for erasure, presents a confirmation menu, and, if you select Yes, erases the files and returns to the Host Menu.

Erasure of Host files may be interrupted by pressing **Ctrl Break**. PC Link immediately stops erasing files and returns to the Host Menu.

Host Move

Purpose

Move files to another directory, removing the original from the Host working directory.

Description

PC Link expands the Host window and prompts for selection of the file(s) to move. Make a multiple-choice selection or type a file name. The file name may contain wild card characters to allow moving multiple files. When selection is complete, PC Link highlights the names of files selected.

Specify the destination directory by typing its name and pressing **Enter**. PC Link moves the files to the destination directory. If the Auto-Name option is off, PC Link prompts for a new name for each file before moving it. Type the new file name in response to the prompt. If the Auto-Name option is set to either upper case or lower case, PC Link will assign the file name automatically. If there is a file with the same name in the destination directory, PC Link presents a transfer confirmation menu. When all files have been moved, PC Link returns to the Host Menu.

The command may be interrupted by pressing **Ctrl Break**. The Host file currently being moved is allowed to complete, but no further files are moved.

Host Print

Purpose

Print one or more files from the Host working directory on either the PC printer or a Host system printer.

Description

After prompting you to select either the local PC printer or the Host printer, PC Link expands the Host window and prompts for a selection of file(s) to print. Make a multiple-choice selection or type a file name. The file name may contain wild card characters to allow printing multiple files. When printing is complete, PC Link returns to the Host Menu.

Printing can be interrupted by pressing **Ctrl Break**. If the files are being printed on the PC, printing is halted immediately. If the files are being printed on the Host system, printing is halted before the next file is printed.

Notes

- Files to be printed on the Host system printer are typically spooled, so the user waits only for the spool requests to be submitted to the Host operating system, not for actual printing of the files.
- Selection of the Host system printer to be used is made when configuring the PC Link Host software and is not adjustable by the user. Consult your system administrator for more information about printing files on the Host printer.

Host Rename

Purpose

Rename one or more files in the Host working directory.

Description

PC Link expands the Host window and prompts for selection of the file(s) to rename. Make a multiple-choice selection or type a file name. The file name may contain wild card characters to allow renaming multiple files.

PC Link then prompts for the new name of each file and renames each one in sequence. If the new name chosen for the file conflicts with an existing file name on the Host system, PC Link prompts for confirmation before overwriting the file.

Notes

- This command renames files within the Host working directory only. To rename a file and move it to another directory, use the Host Move command.

Host View

Purpose

Browse the contents of a file in the Host working directory.

Description

PC Link expands the Host window and prompts for selection of a single file. Make a single-choice selection or type a file name. The file is displayed on the PC screen. You can browse its contents with the cursor keys. When browsing is complete, press **Enter** or **Esc** to return to the Host Menu.

If the View-Mode option is Text, one line of text from the file is displayed on each row of the screen. If the View-Mode option is Hex-dump, the file is displayed in both hexadecimal and ASCII notation with sixteen bytes of data on each line.

F5 (GoTo) can move the display to a specific location in the file. In text format, PC Link allows you to go to a specific record number in the file. In hexdump mode, PC Link allows you to go to a specific byte offset in the file.

Options Auto-Name

Purpose

Control automatic file naming during copy, move and transfer operations.

Description

PC Link presents a confirmation menu to set the Auto-Name option. This option affects the operation of the Send, Receive, PC Copy, Host Copy, PC Move and Host Move commands.

If No is selected, PC Link prompts the user for a file name before each file is processed in these operations. If Upper-Case is selected, PC file names are not changed when files are sent to the Host. If Lower-Case is selected, PC file names are automatically converted to lower case when sent to the Host.

Notes

- The Auto-Name setting applies to the current INGRES/PCLINK session only. To modify the default Auto-Name setting, use the PC Link Access Menu.

Options Detail

Purpose

Controls the format of the file lists in the PC and Host windows.

Description

PC Link prompts for a choice in the level of detail of information on file lists. If the Options Detail is off, the PC and Host windows display a multi-column list of file names. If the Options Detail is on, the PC and Host windows display full information about files, including ownership, modification date and access permissions. Information about each file is on a separate line. After a choice is made, PC Link returns to the Options Menu.

Options EOL

Purpose

Specify whether end-of-line delimiter conversion is to be performed when transferring files.

Description

PC Link prompts for a choice in end-of-line conversion behavior in file transfer operations. If the Options EOL is on, PC Link converts text files to use the proper end-of-line characters for the destination system. If the option is set off, no conversion is performed. After a choice is made, PC Link returns to the Options Menu.

Notes

- End-of-line delimiter conversion should normally be set on when text files are being transferred and off when binary data are being transferred. However, if data from either the Host system or the PC are simply being archived (and not processed) on the other system, end-of-line conversion is not necessary.

Options File-Header

Purpose

Specify whether to include file header pages at the beginning of each printed file.

Description

PC Link prompts for a choice of file header inclusion in PC printing operations.

If Options File-Header is on, a page with the file name and time of printing is printed before each file. If Options File-Header is off, no file header page is printed. After a choice is made, PC Link returns to the Options Menu.

Notes

- Printing header pages on the Host system printer is under the control of the Host spooling subsystem.

Options Host-Dir

Purpose

Display and/or set the Host working directory.

Description

PC Link displays a prompt with the name of the current Host working directory. To change it, enter the name of a valid Host directory. To retain the current Host working directory, press **Esc** or **Enter**. PC Link sets the Host working directory and displays the list of files contained in it in the Host window before returning to the Options Menu.

If a Host connection is active, PC Link verifies that the directory exists on the Host system, and changes the contents of the Host window to display the files in the new directory. If no Host connection is active, PC Link sets the new Host directory and returns immediately to the Options Menu. The directory is validated when the next Host connection is made.

Notes

- Gathering information about each file in the Host working directory and sending it to the PC can produce a small delay. The mode indicator changes to WAITING and then to RECEIVING while the information is being transferred.
- New information about files in the Host working directory is obtained each time the command is executed, even if the Host working directory is not changed. To access files that may have been placed in the Host working directory by other users during your PC Link session, select the Options Host-Dir command and simply press **Enter** when prompted for the name of the new directory.

Options PC-Dir

Purpose

Display and/or set the PC working directory.

Description

PC Link displays a prompt with the name of the current PC working directory. To change it, enter the name of a valid PC directory. To retain the current PC working directory, press **Esc** or **Enter**. PC Link sets the PC working directory and displays the list of files contained in it in the PC window before returning to the Options Menu.

Options View-Mode

Purpose

Set the view mode so that files are viewed as ASCII text.

Description

PC Link presents a menu to set the View-Mode option. If Text is selected, PC Link displays one line of text from the file on each row of the screen. If Hex-Dump is selected, PC Link displays sixteen bytes of the file on each row of the screen in hexadecimal, with ASCII notation. After a choice is made, PC Link returns to the File-Manager Options menu.

PC Copy

Purpose

Make a duplicate of one or more files in the PC working directory.

Description

PC Link expands the PC window and prompts for selection of file(s) to be copied. Make a multiple-choice selection from the list or type a file name. The file name may contain wild card matching characters to allow copying multiple files.

PC Link then prompts for the name of the PC directory where copies of the files are to be made. The current PC working directory is presented as a default choice immediately following the prompt. Specify a different destination directory by typing its name. Press **Enter** to select the default directory.

PC Link makes copies of the files in the destination directory. If the Auto-Name option is off, or if the destination directory is the same as the current PC working directory, PC Link will prompt for the new name of each file before beginning to copy it. Type the new name in response to the prompt. When all copying is complete, PC Link returns to the PC Menu.

If the Auto-Name option is set to either Upper-case or Lower-case and there is no file in the destination directory of the same name, PC Link will assign the current file name automatically. If there is a file with the same name in the destination directory, PC Link displays a transfer confirmation menu. When copying is complete, PC Link returns to the PC Menu.

Pressing **Ctrl Break** interrupts the copying. The PC file currently being copied is allowed to complete, but no further files will be copied.

PC Erase

Purpose

Erase one or more files from the PC working directory.

Description

PC Link expands the PC window and prompts for a selection of file(s) to erase. Make a multiple-choice selection from the list or type a file name. The name may contain wild card matching characters to allow erasing multiple files. When selection is complete, PC Link highlights the names of files selected for erasure, presents a confirmation menu and, if you select Yes, PC Link erases the files and returns to the PC Menu.

Erasure of PC files may be interrupted by pressing **Ctrl Break**. PC Link immediately stops erasing files and returns to the PC Menu.

PC Move

Purpose

Move files to another directory, removing the original from the PC working directory.

Description

PC Link expands the PC window and prompts for selection of the file(s) to move. Make a multiple-choice selection or type a file name. The file name may contain wild card characters to allow moving multiple files. When selection is complete, PC Link highlights the names of files selected.

Specify the destination directory by typing its name and pressing **Enter**. PC Link moves the files to the destination directory. If the Auto-Name option is off, PC Link will prompt for a new name for each file before moving it. Type the new file name in response to the prompt. If the Auto-Name option is set to either Upper-case or Lower-case, PC Link assigns the file name automatically. If there is a file of the same name in the destination directory, PC Link presents a transfer confirmation menu. When all files have been moved, PC Link returns to the PC Menu.

The command may be interrupted by pressing **Ctrl Break**. The PC file currently being moved is allowed to complete, but no further files will be moved.

PC Print

Purpose

Print one or more files from the PC working directory on the PC printer or the Host system printer.

Description

After prompting for the choice of either the local PC printer or the Host System printer, PC Link expands the PC window and prompts for a selection of file(s) to print. Make a multiple-choice selection or type a file name. The file name may contain wild card characters to allow printing multiple files. When printing is complete, PC Link returns to the PC Menu.

Printing can be interrupted by pressing **Ctrl Break**. If the files are being printed locally on the PC, printing is halted immediately. If the files are being printed on the Host system, printing is halted before the next file is printed.

Notes

- Files to be printed on the Host system printer are typically spooled, so the user waits only for the spool requests to be submitted to the Host operating system, not for actual printing of the files.
- Selection of the Host system printer that will be used is made when configuring the PC Link Host software and is not adjustable by the user. Consult your system administrator for more information on printing files on the Host printer.

PC Rename

Purpose

Rename one or more files in the PC working directory.

Description

PC Link expands the PC window and prompts for selection of file(s) to rename. Make a multiple-choice selection or type a file name. The file name may contain wild card characters to allow renaming multiple files.

PC Link then prompts for the new name of each file and renames each one in sequence. If the new name chosen for the file conflicts with an existing file name on the PC system, PC Link prompts for confirmation before overwriting the file.

Notes

- This command renames files within the PC working directory only. To rename a file and move it to another directory, use the PC Move command.

PC View

Purpose

Browse the contents of a file in the PC working directory.

Description

PC Link expands the PC window and prompts for selection of a single file. Make a single-choice selection or type a file name. The file is displayed on the PC screen, and you can browse its contents with the cursor keys. When browsing is complete, press **Enter** or **Esc** to return to the PC Menu.

If the View-Mode option is Text, one line of text from the file is displayed on each row of the screen. If the View-Mode option is Hex-Dump, the file is displayed in both hexadecimal format and ASCII notation, with sixteen bytes of data on each line.

F5 (GoTo) can move the display to a specific location in the file. In text format, PC Link allows you to go to a specific record number in the file. In hexdump mode, PC Link allows you to go to a specific byte offset in the file.

Receive

Purpose

Receive file(s) from the current working directory on the Host system into the current working directory on the PC.

Description

If PC Link is not already connected to the Host File-Manager module, it establishes a connection. It then obtains a list of the files in the current Host system working directory and presents it in the Host window. In the Host window, PC Link prompts for a choice of files to receive. Make a multiple-choice selection or type the name of a file. You may use wild card characters to select multiple file. When selection is complete, PC Link begins transferring the files.

If the Auto-Name option is turned off, PC Link prompts you for the name of the file to be created on the local system before each file is transferred. Type the file name in response to the prompt, and press **Enter**. If the Auto-Name option is set to Upper-case, PC Link automatically names files on the Host using upper-case characters. If the Auto-Name option is set to Lower-case, the program uses lower-case characters instead.

If the name of the file being created on the local system conflicts with the name of a file that already exists, PC Link presents a transfer confirmation menu. After transfer is complete, PC Link updates the PC window to include the files just transferred, and returns to the File-Manager Menu.

You can interrupt the file transfer by pressing **Ctrl Break**. PC Link informs you of the interruption with an error message. When the error is cleared, PC Link returns to the File-Manager Menu.

Notes

- An interrupted file transfer leaves part of the file being transferred at the time of interruption on the PC system. The partial file may be deleted with the PC Erase command.
- Files chosen by multiple-choice selection are sent in the order selected.

Send

Purpose

Send a file from the current working directory on the PC to the current working directory on the Host system.

Description

If PC Link is not already connected to the Host File-Manager module, it establishes a connection. It then obtains a list of the files in the current Host system working directory and presents the list in the Host window. In the PC window, PC Link prompts for a choice of files to send. Make a multiple-choice selection or type the name of a file. You may use wild card characters to select multiple files. When selection is complete, PC Link begins transferring the files.

If the Auto-Name option is turned off, PC Link prompts you for the name of the file to be created on the Host system before each file is transferred. Type the file name in response to the prompt and press **Enter**. If the Auto-Name option is set to Upper-case, PC Link automatically names the files on the Host using upper-case characters. If the Auto-Name option is set to Lower-case, PC Link automatically names the files on the Host using lower-case characters.

If the name of the file being created on the Host system conflicts with the name of a file that already exists, PC Link presents a transfer confirmation menu. After transfer is complete, PC Link updates the Host window to include the files just transferred and returns to the File-Manager Menu.

You can interrupt the file transfer by pressing **Ctrl Break**. PC Link informs you of the interruption with an error message. When the error is cleared, PC Link returns to the File-Manager Menu.

Notes

- An interrupted file transfer leaves part of the file being transferred at the time of interruption on the Host system. The partial file may be deleted with the Host Erase command.
- Files chosen by multiple-choice selection are sent in the order selected.

Window Close

Purpose

Sever the connection to the Host File-Manager module and close the Host window.

Description

PC Link shuts down the connection to the Host File-Manager module, expands the PC window to fill the entire screen and returns to the File-Manager Menu.

Notes

- The command is only valid if a connection to the Host File-Manager has been made, either with the Window Open command or automatically through the Send, Receive, or one of the Host File-Manager commands.

Window Move

Purpose

Change the relative size of the PC window and the Host window.

Description

PC Link prompts you to use the ↑ and ↓ keys to move the border between the PC and Host windows. By pressing either key, the border between the two windows moves up or down one line. The smallest size of either window is one display line. When you are finished resizing the windows, press Enter.

Window Open

Purpose

Connect to the Host system and open a Host window for viewing a list of the files in the Host system working directory.

Description

PC Link connects to the PC Link Host File-Manager and obtains information from the Host about the files in the current working directory. A Host window is opened on the screen, and the list of files is presented. PC Link returns to the File-Manager Menu.

Notes

- This command is only valid if there is not already a connection to the PC Link Host File-Manager. The Host window and PC window are always *both* displayed beneath the Main File-Manager Menu, if a Host connection has been established.

Chapter 33

Terminal-Emulator Commands

INGRES/PCLINK Terminal-Emulator commands provide tools for the following tasks:

- Running Host applications through a PC, including full-screen applications dependent upon VT100 terminal emulation and ANSI escape sequences
- Capturing data sent from the Host system
- Mapping functions to PC keystroke combinations
- Printing logs of the Host system session
- Sending PC files to the Host system
- Controlling Terminal-Emulator setting for the current session.

Capture Begin

Purpose

Begin capturing data sent from the Host system into a PC file.

Description

PC Link turns the File Capture option on and prompts for the name of the PC file into which the Host session is to be captured. PC Link automatically creates the file if it does not exist and overwrites the file if it does exist. The program displays the CAPTURE indicator on the PC screen. PC Link returns to the Terminal-Emulator Menu.

When you resume your interactive Host session, all characters you type and all characters sent by the Host are captured in the file and displayed on the PC screen. The capture file contains a running log of your interaction with the Host system.

Notes

- File Capture is designed for use with Host systems that do not have the Host File-Manager module software installed, such as public information services. The File-Manager provides superior error-checking for file transfer from Host systems with PC Link software installed.
- The characters captured in the file may not resemble the screen appearance. Certain character sequences create graphic displays on the screen, and these character sequences, rather than the graphics displayed on the screen, are captured.

Capture End

Purpose

Stop capturing data into a PC capture file.

Description

PC Link turns File Capture off, closes the capture file currently in use, and returns to the Terminal-Emulator Menu.

Capture Resume

Purpose

Resume capturing data into a PC file after suspending with a Capture Suspend command.

Description

PC Link turns File Capture back on, changes the CAPSUSP flag to CAPTURE, and returns to the Terminal-Emulator Menu.

Notes

- File Capture may be suspended and resumed from within an interactive Host session with the Capture Key.

Capture Suspend

Purpose

Temporarily suspend capture of data into a PC file.

Description

File Capture is turned off temporarily, but the capture file remains open. INGRES/PCLINK displays the CAPSUSP flag at the bottom of the screen and returns to the Terminal-Emulator Menu. When you resume your interactive Host session, characters are not added to the capture file. Resume file capture with the Capture Resume command, or end it permanently with the Capture End command.

Notes

- File capture may also be suspended and resumed from within an interactive Host session through the use of the Capture key.

Keymap Clear

Purpose

Drop all keystroke definitions from the current keymap.

Description

PC Link presents a menu to confirm your intention to drop all key definitions from the current keymap.

Notes

- Keymap definitions are cleared for the current Terminal-Emulator session only. Use the Keymap Save command to save the current keymap permanently.

Keymap Drop

Purpose

Drop a keystroke definition from the current keymap.

Description

PC Link asks you to press the key or key combination whose mapping is to be dropped. Press the key(s) and then press **Enter**. PC Link returns to the Keymap Menu.

Keymap List

Purpose

List the current keyboard mappings.

Description

PC Link displays key mappings from the current keyboard map until the screen is full or until all mappings have been displayed. Press **Enter** repeatedly to see all the mappings and then return to the Keymap Menu. You may press **Esc** to stop displaying mappings and immediately return to the Keymap Menu.

Notes

- Keymap entries are displayed in key code sequence.

Keymap Modify

Purpose

Add or modify a keystroke mapping in the current keymap.

Description

PC Link asks you to press the keystroke or keystroke combination that is to be defined. Press the key, then press **Enter**. PC Link then asks you to type the keystroke sequence that becomes the definition for the key. Press **Enter** when the key definition is complete. The keystroke definition is added to the current map, and PC Link returns to the Keymap Menu.

Notes

- Keystroke combinations that can be defined include combinations of **Alt**, **Ctrl** and **Shift** and all alphabetic, numeric and function keys, as well as the keys on the PC cursor keypad.
- Keymap definitions may include any ASCII character, including control characters, but may not include PC keystrokes that do not have ASCII equivalents, such as a **PgUp** keystroke.

Keymap Retrieve

Purpose

Retrieve a keymap from a keymap file on the PC.

Description

INGRES/PCLINK prompts for the name of a keymap file to load and presents a list of keymap files in the current PC directory. Make a single-choice selection or type a file name. PC Link returns to the Terminal-Emulator Menu.

Notes

- PC Link retrieves and saves keymap files in the PC directory from which the Terminal-Emulator is launched, not in the PC working directory. Keymap files should therefore be installed in the same directory as the TE.EXE file.

Keymap Save

Purpose

Save the current keymap in a PC keymap file.

Description

PC Link prompts for the name of the keymap file to use and presents a list of the current keymap files. Make a single-choice selection or type a file name. PC Link automatically creates the keymap file if it does not already exist and overwrites the current keymap file if it does exist. PC Link returns to the Terminal-Emulator Menu.

Notes

- Keymap files are created in the PC directory from which the Terminal-Emulator is invoked, not in the PC working directory.

Options Capture-Key

Purpose

Change the Capture Key used to suspend and resume file capture.

Description

PC Link asks you to press the key or key combination to become the new Capture Key. To change the assignment, press the key(s), and then press **Enter**. The Capture Key is changed to represent the new key(s), and PC Link returns to the Options Menu. To retain the original current Capture Key, simply press **Enter**.

Notes

- Pressing the Capture Key while in an interactive Host session suspends file capture if it is currently on, and resumes file capture if it is suspended. The Capture Key is not sent to the Host system.
- The **Esc** key can be assigned as the Capture Key. If this is done, returning to the previous menu from the Capture Key prompt cannot be accomplished by pressing **Esc**. You must press **Enter** instead.

Options Echo

Purpose

Specify whether local echo of characters is required.

Description

PC Link presents a confirmation menu for selection. Selecting Yes turns on the Local Echo mode. Characters typed on the PC keyboard are immediately displayed on the screen and sent to the Host system. The Host system does not echo the characters back to the PC. Selecting No turns off the Local Echo mode. Characters typed on the keyboard are sent to the Host system. The Host echoes the character back to the PC, and the echoed character is displayed.

Notes

- The Local Echo mode setting should be based on the communications characteristics of the Host system. Consult Chapter 3 for the correct setting for your system.

Options Line-Wrap

Purpose

Set the automatic line wrap mode.

Description

PC Link presents a confirmation menu for selection. Selecting Yes turns on the Auto-Line-Wrap feature. In this mode, PC Link automatically generates a carriage return/line feed sequence when the cursor reaches the right edge of the display.

Selecting No turns off the Auto-Line-Wrap feature. The cursor remains at the right edge of the display and does not automatically wrap to the next line.

Options Menu-Key

Purpose

Change the Menu Access Key used to access the Terminal-Emulator Menu.

Description

PC Link displays the current value of the Menu Access Key and asks you to type the key or key combination for the new Menu Access Key. To leave Options Menu-Key without changing the Menu Access Key assignment, press **Enter**. To change the Menu Access Key, press the key(s), then press **Enter**. The Menu Access Key is changed to represent the new key(s), and PC Link returns to the Options Menu.

Notes

- Pressing the Menu Access Key while in an interactive Host session causes PC Link to present the Terminal-Emulator Menu.

- The current Menu Access Key is always displayed at the bottom of the screen in the Terminal-Emulator. The **Esc** key can be assigned as the Menu Access Key. If this is done, using **Esc** to return to the previous menu is not available from this prompt. Press **Enter** instead.

Options Print-Key

Purpose

Change the Printer Logging Key used to turn printer logging on and off.

Description

PC Link asks you to press the key or key combination to become the new Printer Logging Key. To leave the current Printer Logging Key unchanged, simply type **Enter**. To change it, press the key(s), then press **Enter**. The Printer Logging Key is changed to represent the new key(s), and PC Link returns to the Options Menu.

Notes

- Pressing the Printer Logging Key while in an interactive Host session begins print logging if it is not active, and ends print logging if it is currently active. The Printer Logging Key is not sent to the Host system.
- The **Esc** key can be assigned as the Printer Logging Key. If this is done, using **Esc** to return to the previous menu is not available from this prompt. Press **Enter** instead.

Options Work-Dir

Purpose

Change the PC working directory.

Description

PC Link prompts for the name of the new working directory and displays the name of the current PC working directory after the prompt. To leave the PC working directory unchanged, simply type **Enter** or **Esc**. To change the PC working directory, type the name of the new directory, then press **Enter** to return to the Options Menu. The current PC working directory changes to the new directory.

Notes

- The PC Link Terminal-Emulator uses the PC working directory for the Capture File and Send File options.

Print Begin

Purpose

Print a log of the interactive Host session on the PC printer.

Description

PC Link turns Printer Logging on and returns to the Terminal-Emulator Menu. When you resume your interactive Host session, every character typed and every character received from the Host system is printed on the printer and displayed on the PC screen. The printer produces a running log of your interaction with the Host system.

Notes

- Although PC Link sends each character to the printer as it is displayed on the screen, the printer may store up characters until it has a full line to be printed.
- The Printer Logging feature can also be turned on and off from within an interactive Host session by using the Printer Logging Key.

- Certain characters captured in the file may not resemble their original appearance. This is because certain character sequences create graphic displays on the screen, and these sequences, rather than their displays, are captured.

Print End

Purpose

Stop printing a log of the interactive Host session on the PC printer.

Description

PC Link turns Printer Logging off and returns to the Terminal-Emulator Menu. When you resume your interactive Host session, your dialogue with the Host system is no longer logged to the printer.

Notes

- The Printer Logging feature can be turned on and off from within an interactive Host session by using the Printer Logging Key. See the Options Print-Key command for further information.

Resume

Purpose

Resume the interactive Host session.

Description

INGRES/PCLINK removes the Terminal-Emulator Menu and restores the PC screen to the way it appeared before the Menu Access Key was pressed. You may resume typing characters to the Host system.

Send Begin

Purpose

Begin sending characters from a PC file to the Host system.

Description

PC Link prompts for the name of a PC file to be sent to the Host system. Type the name of the file at the prompt. PC Link opens the file, displays the SEND indicator, and returns to the Terminal-Emulator Menu. When you resume your interactive Host session, characters are immediately taken from the file instead of from the keyboard and sent to the Host system as if you had typed them. The entire contents of the file are sent in this way, without pause. At the end of the file, PC Link closes the file, removes the SEND indicator, and begins accepting characters from the keyboard again.

You can interrupt sending a PC file to the Host system with **Ctrl Break**. PC Link immediately closes the file being sent, removes the SEND flag and begins accepting characters from the keyboard again.

Notes

- For Host systems that do not have PC Link software installed or for executing short command scripts stored in PC files, the Send File capability may be useful. The PC Link File-Manager provides a much better alternative for file transfer if PC Link software is installed on the Host system. See Chapter 23 for information on transferring files with the File-Manager.
- Under some circumstances, the Send File capability may be effectively used in combination with a Host system editor that accepts input lines from a terminal for addition to a file. It can also be used effectively with Host system copy utilities that can use the terminal as a "source file." In each case, you should type the commands that prepare the Host to receive data before beginning to send the file.

Send End

Purpose

Stop sending a file to the Host system and begin accepting keystrokes from the keyboard again.

Description

PC Link closes the file being sent, removes the SEND indicator, and returns to the Terminal-Emulator Menu to begin accepting characters from the keyboard again.

INGRES/PCLINK Configuration Commands

INGRES/PCLINK Configuration commands provide tools for:

- Controlling the communications on the network chosen for PC Link operation
- Setting the display type and directories used on the PC
- Managing the Host-to-PC connection, such as login prompts and passwords
- Generating output files and arranging for their storage in the proper PC directory
- Handling various options that affect the operation of PC Link modules, for example, the use of header pages in the File-Manager
- Arranging the automatic loading of PC application programs after you generate an output file in PC Link.

VQL Auto-Load 1-2-3 Directory

Purpose

Specify which directory is to become the current working directory before auto-loading a program for the 1-2-3 or Symphony worksheet (WKS) file format.

Description

The Visual-Query-Language will automatically make the specified directory the current working directory before attempting to auto-load a PC application program following generation of an output file in worksheet (WKS) format.

PC Link prompts for the name of the new drive/directory and displays the current drive/directory following the prompt. You may press **Enter** to retain the current directory or type the name of a new directory. PC Link checks to make sure that the specified directory exists, and stores the name of the directory in the current PC Link configuration.

VQL Auto-Load 1-2-3 Format

Purpose

Specify what format to use when loading a 1-2-3 or Symphony worksheet file.

Description

The Visual-Query-Language will use the format you specify for 1-2-3 or Symphony worksheet files when auto-loading an output file. You have four options for 1-2-3 or Symphony formats:

File Format	Program
.WKS	1-2-3 Release 1 or 1A
.WK1	1-2-3 Release 2
.WRK	Symphony Release 1
.WR1	Symphony Release 1.1

Make a selection and press **Enter**. The format type for 1-2-3 or Symphony files is stored in the current configuration.

VQL Auto-Load 1-2-3 Program

Purpose

Specify what program to load following generation of a file using the 1-2-3 or Symphony worksheet (WKS) file format.

Description

The Visual-Query-Language will automatically load the specified program after generating an output file in 1-2-3 or Symphony worksheet (WKS) format, if Auto-Load is on. The specified program can be a file name or a full pathname, including drive designator, as required.

PC Link prompts for the name of the new program to auto-load and displays the current program name following the prompt. You may press **Enter** to retain the current program or type the name of a new program. PC Link stores the program name in the current configuration and returns to the Auto-Load Configuration Menu.

VQL Auto-Load 1-2-3 Type

Purpose

Specify whether a program file or batch file is used to load a program for the 1-2-3 or Symphony worksheet (WKS) file format.

Description

When PC Link auto-loads Lotus 1-2-3 or Symphony, it locates the application files in the specified directory and loads the proper program file. If the file type is designated as a program file, PC Link locates the file with the COM or EXE extension. If batch is specified, PC Link locates the file with the BAT extension.

PC Link presents a menu for your selection. Make a selection and press **Enter**. The file type for Lotus 1-2-3 or Symphony is stored in the current configuration.

VQL Auto-Load dBASE Directory

Purpose

Specify which directory is to become the current working directory before auto-loading the program for the dBASE database (DBF) file format.

Description

The Visual-Query-Language will automatically make the specified directory the current working directory before attempting to auto-load a PC application program following generation of an output file in database (DBF) format.

PC Link prompts for the name of the new drive/directory and displays the current drive/directory following the prompt. You may press **Enter** to retain the current directory or type the name of a new directory. PC Link checks to make sure that the specified directory exists and stores the name of the directory in the current PC Link configuration.

VQL Auto-Load dBASE Format

Purpose

Specify what format to use when loading a dBASE worksheet file.

Description

The Visual-Query-Language will use the format you specify for dBASE worksheet files when auto-loading an output file. You have two options for dBASE formats, dBASE II or dBASE III.

Make a selection and press **Enter**. The format type for dBASE files is stored in the current configuration.

VQL Auto-Load dBASE Program

Purpose

Specify what program to load following generation of a file using the dBASE database (DBF) file format.

Description

The Visual-Query-Language will automatically load the specified program after generating an output file in database (DBF) format, if Auto-Load is on. The specified program can be a file name or a full pathname, including drive designator, as required.

PC Link prompts for the name of the new program to auto-load and displays the current program name following the prompt. You may press **Enter** to retain the current program or type the name of a new program.

PC Link stores the program name in the current PC Link configuration and returns to the Auto-Load Configuration Menu.

VQL Auto-Load dBASE Type

Purpose

Specify whether a program file or batch file is used to load a program for the dBASE database (DBF) file format.

Description

When PC Link auto-loads dBASE II or III, it locates the application files in the specified directory and loads the proper program file. If the file type is designated as a program file, PC Link locates the file with the COM or EXE extensions. If batch is specified, PC Link locates the file with the BAT extension.

PC Link presents a menu for your selection. Make a selection and press **Enter**. The file type for dBASE II or III is stored in the current configuration.

VQL Auto-Load Ingres/PC Directory

Purpose

Specify which directory is to become the current working directory before auto-loading a program for the Ingres for PCs file format.

Description

The Visual-Query-Language will automatically make the specified directory the current working directory before attempting to auto-load Ingres for PCs following generation of an output file in Ingres/PC format.

PC Link prompts for the name of the new drive/directory and displays the current drive/directory following the prompt. You may press **Enter** to retain the current directory or type the name of a new directory. PC Link checks to make sure that the specified directory exists and stores the name of the directory in the current PC Link configuration.

VQL Auto-Load Ingres/PC Program

Purpose

Specify what program to load following generation of a file using the Ingres/PC file format.

Description

The Visual-Query-Language will automatically load the specified program after generating an output file in Ingres/PC format, if Auto-Load is on. The specified program can be a file name or a full pathname, including drive designator, as required.

PC Link prompts for the name of the new program to auto-load and displays the current program name following the prompt. You may press **Enter** to retain the current program or type the name of a new program. PC Link stores the program name in the current PC Link configuration and returns to the Auto-Load Configuration Menu.

VQL Auto-Load Ingres/PC Type

Purpose

Specify whether a program file or batch file is used to load a program for the Ingres/PC file format.

Description

When PC Link auto-loads Ingres for PCs, it locates the application files in the specified directory and loads the proper program file. If the file type is designated as a program file, PC Link locates the file with the COM or EXE extensions. If batch is specified, PC Link locates the file with the BAT extension.

PC Link presents a menu for your selection. Make a selection and press **Enter**. The file type for Ingres/PC is stored in the current configuration.

VQL Auto-Load Interchange Directory

Purpose

Specify which directory is to become the current working directory before auto-loading a program for the data interchange (DIF) file format.

Description

The Visual-Query-Language will automatically make the specified directory the current working directory before attempting to auto-load a PC application program following generation of an output file in the data interchange (DIF) format.

PC Link prompts for the name of the new drive/directory and displays the current drive/directory following the prompt. You may press **Enter** to retain the current directory or type the name of a new directory. PC Link checks to make sure that the specified directory exists and stores the name of the directory in the current PC Link configuration.

VQL Auto-Load Interchange Program

Purpose

Specify what program to load following generation of a file using the data interchange (DIF) file format.

Description

The Visual-Query-Language will automatically load the specified program after generating an output file in data interchange (DIF) format, if Auto-Load is on. The specified program can be a file name or a full pathname, including drive designator, as required.

PC Link prompts for the name of the new program to auto-load and displays the current program name following the prompt. You may press **Enter** to retain the current program or type the name of a new program. PC Link stores the program name in the current PC Link configuration and returns to the Auto-Load Configuration Menu.

VQL Auto-Load Interchange Type

Purpose

Specify whether a program file or batch file is used to load a program for the data interchange (DIF) file format.

Description

When PC Link auto-loads Interchange, it locates the application files in the specified directory and loads the proper program file. If the file type is designated as a program file, PC Link locates the file with the COM or EXE extensions. If batch is specified, PC Link locates the file with the BAT extension. PC Link presents a menu for your selection. Make a selection and press **Enter**. The file type for Interchange is stored in the current configuration.

VQL Auto-Load SYLK Directory

Purpose

Specify which directory is to become the current working directory before loading the Auto-Load program for the symbolic link (SYL) file format.

Description

The Visual-Query-Language will automatically make the specified directory the current working directory before attempting to auto-load a PC application program following generation of an output file in the symbolic link (SYL) format.

PC Link prompts for the name of the new drive/directory and displays the current drive/directory following the prompt. You may press **Enter** to retain the current directory or type the name of a new directory.

PC Link checks to make sure that the specified directory exists and stores the name of the directory in the current PC Link configuration.

VQL Auto-Load SYLK Program

Purpose

Specify what program to load following generation of a file using the symbolic link (SYL) file format.

Description

The Visual-Query-Language will automatically load the specified program after generating an output file in the symbolic link (SYL) format, if Auto-Load is on. The specified program can be a file name or a full pathname, including drive designator, as required.

PC Link prompts for the name of the new program to auto-load and displays the current program name following the prompt. You may press **Enter** to retain the current program or type the name of a new program. PC Link stores the program name in the current PC Link configuration and returns to the Auto-Load Configuration Menu.

VQL Auto-Load SYLK Type

Purpose

Specify whether a program file or batch file is used to load a program for the symbolic link (SYL) file format.

Description

When PC Link auto-loads SYLK, it locates the application files in the specified directory and loads the proper program file. If the file type is designated as a program file, PC Link locates the file with the COM or EXE extensions. If batch is specified, PC Link locates the file with the BAT extension.

PC Link presents a menu for your selection. Make a selection and press **Enter**. The file type for SYLK is stored in the current configuration.

VQL Auto-Load Switch

Purpose

Set the Auto-Load option on and off.

Description

PC Link presents a No/Yes menu to confirm the setting for the Auto-Load option. Visual-Query-Language automatically loads other PC applications after generating an output file, if the Auto-Load option is on. If Auto-Load is off, VQL will not load an application.

VQL Auto-Load Text Directory

Purpose

Specify which directory is to become the current working directory before auto-loading the program for the text (TXT) file format.

Description

The Visual-Query-Language will automatically make the specified directory the current working directory before attempting to auto-load a PC application program following generation of an output file in text (TXT) format.

PC Link prompts for the name of the new drive/directory, and displays the current drive/directory following the prompt. You may press **Enter** to retain the current directory or type the name of a new directory.

PC Link checks to make sure that the specified directory exists and stores the name of the directory in the current configuration.

VQL Auto-Load Text Format

Purpose

Specify what format to use when loading a text file.

Description

The Visual-Query-Language will use the format you specify for text files when auto-loading an output file. You have two options for text formats, Fixed or Variable. This refers to the column-widths of the text in the file.

Make a selection and press **Enter**. The format type for text files is stored in the current configuration.

Notes

- If you want to use Comma-Separated-Variable (CSV) text output files, select Variable for the format and set the VQL Delimiter (discussed in this chapter) to a comma (,) character.

VQL Auto-Load Text Program

Purpose

Specify what program to load following generation of a file using the text (TXT) file format.

Description

The Visual-Query-Language will automatically load the specified program after generating an output file in text (TXT) format, if Auto-Load is on. The specified program can be a file name or a full pathname, including drive designator, as required.

PC Link prompts for the name of the new program to auto-load and displays the current program name following the prompt. You may press **Enter** to retain the current program type the name of a new program. PC Link stores the program name in the current PC Link configuration and returns to the Auto-Load Configuration Menu.

VQL Auto-Load Text Type

Purpose

Specify whether a program file or batch file is used to load a program for the text (TXT) file format.

Description

When PC Link auto-loads a program using text files, it locates the application files in the specified directory and loads the proper program file. If the file type is designated as a program file, PC Link locates the file with the COM or EXE extensions. If batch is specified, PC Link locates the file with the BAT extension.

PC Link presents a menu for your selection. Make a selection and press **Enter**. The file type for a program using text files is stored in the current configuration.

VQL Col-Titles

Purpose

Specify that column titles be included in output files generated by PC Link.

Description

PC Link presents a No/Yes menu for user selection. If No is selected, column titles are not included in generated output files. If Yes is selected, column titles are included in generated output files as part of the data. The setting is stored in the current configuration.

Notes

- This command has no effect on database (DBF) format files, where column titles become the names of the columns in the generated database automatically.
- Use the Column Title command in VQL to change column titles to acceptable values for target PC applications.

VQL Delimiter

Purpose

Specify the character to appear as a delimiter between columns in text (TXT) format files generated by VQL.

Description

PC Link prompts for the character that is to be used as an inter-column delimiter in text (TXT) format files, and the current delimiter character is displayed after the prompt. To specify a new character, type the character, followed by **Enter**. To retain the current delimiter character, press **Esc**. The character is stored in the current configuration.

Notes

- Any delimiter character may be specified. This command is useful because various applications and programming languages use different delimiters to separate successive data elements.

VQL Name

Purpose

Display the name of the current database and enable the user to change databases.

Description

PC Link presents a prompt with the name of a database or the value <none>. Press **Enter** or **Esc** to retain the current entry. If you enter a database name and press **Enter**, PC Link stores the value in the current configuration.

PC Link will attempt to open the specified database upon starting VQL. If the value for VQL Name is blank (i.e., <none>) in the current configuration, use the Database Name or Database Select command from the VQL menu to select a new database.

VQL Template-Dir

Purpose

Display the name of the current template directory and enable the user to change it to a new directory.

Description

PC Link displays a prompt with the name of the current template directory. If you type a new directory name, PC Link verifies that the directory exists. Subsequent query template commands apply only to the query templates stored in this new directory. The drive/directory name you specify is stored in the current configuration.

File-Mgr Auto-Name

Purpose

Control automatic file naming during copy, move and transfer operations.

Description

PC Link presents a menu to set the Auto-Name option. This option affects the operation of the Send, Receive, PC Copy, Host Copy, PC Move and Host Move commands.

If No is selected, PC Link prompts the user for a file name before each file is processed in these operations. If Upper-Case is selected, PC file names are not changed when files are sent to the Host. If Lower-Case is selected, PC file names are automatically converted to lower case when sent to the Host. The selection is stored in the current configuration file.

File-Mgr File-Detail

Purpose

Control the format of file lists in the PC and Host windows.

Description

PC Link prompts for a choice in the level of detail of information on file lists. If Options Detail is off, the PC and Host windows display a multi-column list of file names. If Options Detail is on, the PC and Host windows display full information about files, including ownership, modification date and access permissions. Information about each file is on a separate line. The selection is stored in the current configuration.

File-Mgr Header

Purpose

Specify whether to include header pages at the beginning of each printed file.

Description

PC Link prompts for a choice of file-header inclusion in PC printing operation.

If the Header option is on, a page with the file name and time of printing is printed before each file. If the Header option is off, no file header page is printed on the PC printer. The selection is stored in the current configuration.

Notes

- Printing header pages on the Host system printer is under the control of the Host spooling subsystem.

File-Mgr Transfer

Purpose

Specify whether end-of-line delimiter conversion is to be performed when transferring files.

Description

PC Link prompts for a choice of text or binary to specify the end-of-line conversion behavior in file transfer operations. If you select binary, PC Link converts text files to use the proper end-of-line characters for the destination system. If you select text, no conversion is performed. PC Link stores the selection in the current configuration.

Notes

- End-of-line delimiter conversion should normally be set on when text files are being transferred, and off when binary data are being transferred. However, if data from either the Host system or the PC are simply being archived (and not processed) on the other system, end-of-line conversion is not necessary.

File-Mgr View-Mode

Purpose

Set the view mode so that files are viewed as ASCII text or hexadecimal characters.

Description

PC Link presents a menu to set the View-Mode option. If Text is selected, PC Link displays one line of text from the file on each row of the screen. If Hex-Dump is selected, PC Link displays sixteen bytes of the file on each row of the screen in hexadecimal, with ASCII notation. The selection is stored in the current configuration.

Host Auto-Connect

Purpose

Specify the procedure for initiating and terminating Host system sessions.

Description

The Auto-Connect option controls login and logout. PC Link displays a menu from which you select a choice. If you select Automatic, PC Link uses a simple, single-stage login and attempts to log in automatically to the Host system when connection is required. If the user identification and password are stored in the configuration file, these values are automatically used for login. If no user identification is stored in the current configuration, PC Link prompts for the user name and password before attempting to log in. PC Link automatically logs out upon exit from VQL or the File-Manager, using the logout command in the current configuration.

If you select Manual, PC Link assumes that the user will perform his own login by direct dialogue with the Host system. To initiate a connection with the Host system, the Terminal-Emulator is used. Upon leaving the Terminal-Emulator, you should select Yes to leave the network connection intact. You can enter the Visual-Query-Language and File-Manager at will. When the session is complete, enter the Terminal-Emulator, log out and close the connection by selecting Quit Disconnect from the menus.

Note

- Both automatic and manual connections request auto-dialing a modem if the Modem Type setting is set in the current configuration and a telephone number is specified. PC Link detects a carrier and does not request dialing if a carrier is sensed.

Host Host-Prompts Command

Purpose

Specify the Host system command prompt.

Description

When PC Link attempts an automatic asynchronous connection to a Host system, it scans the incoming communications stream for a command prompt from the Host, after sending a user name and password, to verify correct login. This command is used to specify the command prompt for a particular Host system.

PC Link prompts for the command prompt and displays the current command prompt. Press **Enter** to preserve the current prompt or type the new command prompt to be used. PC Link places the new command prompt into the current configuration for use in subsequent attempts at automatic connection.

Host Host-Prompts Login

Purpose

Specify the Host system login prompt.

Description

When PC Link attempts an automatic asynchronous connection to a Host system, it scans the incoming communications stream for a login prompt from the Host, indicating that the Host is prepared to accept user logins. This command is used to specify the login prompt for a particular Host system.

PC Link prompts for the login prompt and displays the current login prompt. Press **Enter** to preserve the current prompt or type the new login prompt to be used. PC Link places the new login prompt in the current configuration for use in subsequent attempts at automatic connection.

Notes

- Host systems often differ in whether the initial letter of the login prompt is capitalized or not. It may be advisable to leave off the initial letter of this and all other Host prompts, so that the prompts **Login:** and **login:** are both recognized as matching **ogin:** .

Host Host-Prompts Password

Purpose

Specify the Host system password prompt.

Description

When PC Link attempts an automatic asynchronous connection to a Host system, it scans the incoming communications stream for a password prompt from the Host, after having sent the user name in response to a login prompt. This command is used to specify the login prompt for a particular Host system.

PC Link prompts for the password prompt and displays the current password prompt. Press **Enter** to preserve the current prompt or type the new password prompt to be used. PC Link places the new password prompt in the current configuration for use in subsequent attempts at automatic connection.

Host Logout

Purpose

Specify the Host system logout command.

Description

At the end of a Host session, PC Link must end its dialogue with the Host system by sending the command to log out or exit the Host system. Each Host system has a different dialogue for its asynchronous access.

PC Link prompts for the logout command and displays the current command. Press **Enter** to preserve the current setting or type the new command. The logout command is stored in the current configuration.

Host Password

Purpose

Specify the password used for access to the Host system.

Description

The Host Password command allows you to specify the password associated with the user name stored in the configuration. The password is used when the Host Auto-Connect option is set to automatic to establish a network connection to the Host.

PC Link prompts for the password you want to use. As you type the password, the cursor advances, but the characters do not display. When you press **Enter** after typing the complete password, PC Link prompts for you to retype it, to verify its accuracy. The password you supply is encrypted and stored in the current configuration for use during subsequent attempts at network connection.

Notes

- Passwords are encrypted using a character scrambling technique. In high-security applications, use of the Auto-Connect option and the accompanying storage of encrypted passwords in the current configuration is discouraged.
- If Auto-Connect is set to Automatic and the Host User setting is blank in the current configuration, PC Link always prompts for user identification and password each time you attempt to auto-connect.
- If Auto-Connect is set to Automatic, the Host User setting is not blank and the Host Password setting is blank in the current configuration, PC Link assumes that the user identification on the Host system has no password.

Host Timeouts Command

Purpose

Specify how long to wait for a Host command prompt following login.

Description

When PC Link attempts an automatic asynchronous connection to a Host system, it sends a user name and password in response to Host prompts and then waits for a command prompt to indicate successful login. This command specifies how long PC Link will wait for the command prompt before reporting an error to you.

PC Link prompts for the password timeout and places the number of seconds you specify into the current configuration.

Notes

- Be certain to allow enough time to accommodate busy system conditions on the Host system.

Host Timeouts Login

Purpose

Specify how long to wait for a Host login prompt before giving up or retrying.

Description

When PC Link attempts an automatic asynchronous connection to a Host system, it waits for a login prompt from the Host system on the asynchronous communication line before beginning the login process. This command specifies how long PC Link will wait for a prompt before giving up or retrying.

PC Link prompts for the login timeout and places the number of seconds you specify into the current configuration.

Notes

- Be certain to allow enough time to accommodate busy system conditions on the Host system.

Host Timeouts Password

Purpose

Specify how long to wait for a Host password prompt.

Description

When PC Link attempts an automatic asynchronous connection to a Host system, it sends a user name in response to the login prompt and then awaits a password prompt. This command specifies how long PC Link will wait for the password prompt before reporting an error to you.

PC Link prompts for the password timeout and places the number of seconds you specify into the current configuration.

Notes

- Be certain to allow enough time to accommodate busy system conditions on the Host system.

Host User

Purpose

Specify the user identification for Automatic connection to the Host system.

Description

On most Host systems, access is restricted by requiring that a user supply a user identification and associated password before a connection is established. This command allows you to set the user name that is used when the Host Auto-Connect option is set to Automatic.

PC Link prompts for the user name and displays the current user name after the prompt. You may press **Enter** to keep the current user name or type a new name. The name you supply is stored in the current configuration for use during subsequent attempts at network connection.

Host Work-Dir

Purpose

Specify the Host system working directory.

Description

PC Link uses the Host working directory for all PC Link file transfer and Host file management operations. This command allows you to change the current Host working directory to permit processing in other directories.

PC Link prompts for the name of the new directory and displays the name of the current Host working directory after the prompt. You may press **Enter** to keep the current directory or enter a new directory name. PC Link places the setting for Host Work-Dir in the current configuration for use in subsequent File-Manager operations.

Notes

- The format of directory names varies considerably among Host systems. PC Link makes no attempt to verify the correctness or existence of the Host working directory. Instead, PC Link checks the validity of the Host working directory when it initiates a connection to the Host File-Manager module.

Network Bits

Purpose

Specify the number of data bits for asynchronous connections.

Description

PC Link presents a menu for selection. Selecting 7-Bits means that characters are transmitted with seven data bits. Selecting ASCII-8 means that characters are transmitted with eight data bits; the high-order bit of outgoing characters is always set to 0 (zero), and the high-order bit of incoming characters is stripped to 0 (zero) to convert the character to 7-bit ASCII representation. Selecting INTL-8 means that characters are transmitted with a full eight data bits, and no bit-stripping is performed. This option permits full use of the PC's graphics and international character sets in transmissions to and from the Host system.

Network Flow-Control

Purpose

Specify flow control for an asynchronous connection.

Description

PC Link presents a menu for selection. If None is selected, no flow control is used. If PC is selected, the PC regulates incoming characters by sending XON/XOFF. If Host is selected, the Host regulates incoming characters by sending XON/XOFF. If Both is selected, both the PC and the Host can send XON/XOFF to regulate incoming characters from the other system. PC Link sets the selected flow control in the current configuration, and subsequent attempts to establish network connection will be made using the selected setting for flow control.

Notes

- PC Link obeys XON/XOFF characters sent by the Host system only if Host or Both are selected.
- The PC Link modules send transactions to the Host in the form of uninterrupted character sequences, sent at maximum transmission speed. If the Host system has a heavy workload or uses relatively small data communications buffers, careful use of flow control and selection of an appropriately small packet size (for async communications) are required.

Network Host

Purpose

Specify the name of the Host system for LAN connections.

Description

PC Link prompts for the name of the Host system and stores the Host name in the current configuration. Subsequent attempts to establish a LAN connection will access this Host system.

Network I/O-Port

Purpose

Select the I/O port for asynchronous connection.

Description

PC Link presents a menu of ports for selection and sets the selected port in the current configuration. Subsequent attempts at asynchronous network connection will be made using the selected port.

Network Length

Purpose

Set the packet size for asynchronous communications.

Description

The PC Link asynchronous packet protocol insures accurate exchange of information between the PC and Host systems by packaging data into packets that contain error-correction and sequencing information. Data are transmitted over the asynchronous line in discrete packets that are re-transmitted if a communications error occurs. This command sets the maximum packet length to adapt the protocol to various Host systems and communication line conditions.

PC Link prompts for the maximum packet length and stores it in the current configuration. Subsequent Host asynchronous communications will use the packet length setting.

Notes

- When PC Link is used with Host systems that buffer asynchronous input, the packet size should be set to less than the size of the input buffer.
- On noisy communications lines with high error rates, smaller packet sizes (e.g., 128 characters) should be used to minimize the amount of data that must be retransmitted on each error.
- On direct connections, larger packet sizes (e.g., 512 characters) offer better efficiency.

Network Modem Attempts

Purpose

Specify the number of times to attempt to establish a modem connection to a Host system automatically.

Description

PC Link prompts for a number of attempts, and stores the number in the current configuration. Each time an attempt to establish network communication to a Host system is made, PC Link waits for a carrier signal for the time interval specified with the Modem Line-Timeout option. The Modem Attempts option specifies how many times to try automatically before giving up.

Network Modem Dial-Type

Purpose

Specify the type of auto-dialing.

Description

PC Link presents a menu for selecting pulse dialing or touch-tone dialing. PC Link stores the selected dialing type in the current configuration. Subsequent attempts to establish network connection through a modem are made using this selected dialing type.

Network Modem Line-Timeout

Purpose

Specify how long to wait for a carrier signal from the Host system before hanging up.

Description

PC Link prompts for the timeout to use, in seconds, and places the time specified in the current configuration. On subsequent attempts to establish network connection, PC Link will wait for the specified time period for the Host modem to answer before hanging up the phone line.

Network Modem Phone

Purpose

Set the telephone number for auto-dialing.

Description

PC Link prompts for a telephone number. PC Link sets the telephone number in the current configuration. Subsequent attempts at establishing network connection through a modem will be made using the selected number.

Notes

- The telephone number can include area code and PBX access codes, as well as "special" characters defined in the AT modem command set.
- A comma inserted in the telephone number causes a two-second pause before the remainder of the number is auto-dialed.
- If no telephone number is specified, PC Link performs no auto-dialing.

Network Modem Type

Purpose

Specify the type of modem used in an asynchronous connection.

Description

PC Link presents a menu of supported modem types to specify a direct connection to the Host or a connection through a supported modem. PC Link sets the selected modem type in the current configuration. Subsequent attempts at asynchronous communication are made using the selected modem type.

Notes

- When Modem Type is set to Hayes, PC Link attempts to make a connection to the Host automatically using settings in the current configuration using the "AT" command set.
- When Modem Type is set to None, PC Link does not attempt to establish connection automatically. PC Link assumes that a carrier from the Host system is available at the selected I/O port each time PC Link starts up.

Network Parity

Purpose

Set the character parity for asynchronous connections.

Description

PC Link presents a menu for selection of the character parity. Selecting None means that no parity bit is added to outgoing characters, and no parity checking is done on incoming characters. Selecting Even means that an even parity bit is added to the data bits on outgoing characters, and is checked for on incoming characters. Selecting Odd means that an odd parity bit is added to the data bits on outgoing characters, and is checked for on incoming characters. PC Link sets the selected parity in the current configuration file. Subsequent attempts at asynchronous communications will be made using the selected parity.

Network Speed

Purpose

Sets the transmission speed of an asynchronous connection.

Description

PC Link presents a menu of speed selections, from 110 to 19200 baud and sets the selected speed in the current configuration. Subsequent attempts at network connection will be made using the selected transmission rate.

Network Type

Purpose

Specify the type of network for PC Link to use to connect to the Host system.

Description

PC Link presents a menu for selection. Selecting Async-Packet specifies that you use an asynchronous connection to the Host system. Selecting None specifies that you don't connect to a Host. You also select None to connect to an Ingres for PCs database on your local PC.

PC Link sets the Network Type option in the current configuration. Subsequent attempts at Host connection will be made using the selected Network Type.

PC Display

Purpose

Specify the type of display adapter used on the PC.

Description

The PC's supported by PC Link use a variety of display adapters with different capabilities and requirements. This command is used to specify the type of display adapter used on your particular PC.

PC Link presents a choice of three display adapter types. Selecting Monochrome specifies an IBM Monochrome display or compatible adapter. Selecting IBM-Color specifies an IBM Color/Graphics or compatible adapter. Selecting Compaq specifies a COMPAQ personal computer or another PC with COMPAQ-compatible display characteristics.

PC Link sets the selected display adapter type in the current configuration.

Notes

- PC Link automatically senses whether it is running on a monochrome or color system, and adjusts itself accordingly, ignoring any conflicting configuration setting.

PC Macro-Dir

Purpose

Set the current PC Link macro directory.

Description

PC Link stores and retrieves its macro files in the current macro directory on the PC. This command allows you to change the current macro directory to a different directory.

PC Link prompts for the name of a new macro directory and displays the current macro directory after the prompt. Press **Enter** to keep the same macro directory or type a new drive/directory name. PC Link verifies the existence of the drive/directory you type and sets the current configuration.

PC Printer

Purpose

Specify which PC printer will receive printed output from PC Link.

Description

A PC supports up to two parallel printer interfaces. It also allows you to connect a serial printer to either of its asynchronous communications ports.

PC Link presents a menu with 1, 2, 3, and 4 as its options. Options 1 and 3 correspond to parallel printers. Options 2 and 4 correspond to serial printers connected to the specified communications port. Make a selection. PC Link returns to the PC Menu.

Notes

- The standard PC printer (PRN:) corresponds to the first parallel printer interface.

PC Work-Dir

Purpose

Set the current PC Link PC working directory.

Description

PC Link uses the PC working directory for all File-Manager operations, and the Visual-Query-Language output files are also stored in the PC working directory.

PC Link prompts for the name of the new directory to be used and displays the current PC Working Directory after the prompt. You may press **Enter** to keep the current directory or type a new drive/directory name. PC Link checks to make sure the drive/directory that you specify exists and changes the PC working directory setting in the current configuration.

Status

Purpose

Display the settings of all the options in the current configuration.

Description

PC Link presents a series of screens with configuration status information, in sequence, and prompts you to press **Enter** after each screen to advance to the next. Status information is grouped into Network status, PC and Host system, VQL, TE and FM, and DOS status.

Term-Emul Capture-Key

Purpose

Change the Capture Key used to suspend and resume file capture.

Description

PC Link asks you to press the key or key combination to become the new Capture Key. To change the assignment, press the key(s) and then press **Enter**. The Capture key is changed to represent the new key(s), and the setting is stored in the current configuration. To retain the original Capture Key, simply press **Enter**.

Notes

- Pressing the Capture Key while in interactive Host session suspends file capture if it is currently on and resumes file capture if it is suspended. The Capture Key is not sent to the Host system.
- The **Esc** key can be assigned to the Capture Key. If this is done, returning to the previous menu from the Capture Key prompt cannot be accomplished by pressing **Esc**. You must press **Enter** instead.

Term-Emul Echo

Purpose

Specify whether local echo of characters is required.

Description

PC Link presents a confirmation menu for selection. Selecting Yes turns on the local echo mode. Characters typed on the PC keyboard are immediately displayed on the screen and sent to the Host system. The Host system does not echo the characters back to the PC. Selecting No turns off the local echo mode. Characters typed on the keyboard are sent to the Host system. The Host echoes the character back to the PC, and the echoed character is displayed.

Notes

- The local echo mode setting should be based on the communications characteristics of the Host system. Consult Chapter 3 for the correct setting for your system.

Term-Emul Keymap

Purpose

Specify the name of the file that stores key definitions for the Terminal-Emulator.

Description

This command indicates which keymap is used in the current configuration. The keymap file contains the definitions for the various escape and character sequences on the PC that are mapped and sent to the Host. PC Link allows multiple keymaps. They can be modified from the Terminal-Emulator Menu with the Keymap choice. The keymap files can also be edited by experienced users with the system editor.

PC Link prompts for the name of the keymap file and displays the current name. Press **Enter** to retain the current keymap or type the new name.

Term-Emul Line-Wrap

Purpose

Set the automatic line wrap mode.

Description

PC Link presents a No/Yes menu for selection. Selecting No turns off Auto-Line-Wrap. The cursor remains at the right edge of the display and does not automatically wrap to the next line. Selecting Yes turns on Auto-Line-Wrap. In this mode, PC Link automatically generates a carriage return/line feed sequence when the cursor reaches the right edge of the display.

Term-Emul Menu-Key

Purpose

Change the Menu Access Key used to access the Terminal-Emulator Menu.

Description

PC Link displays the current value of the Menu Access Key and asks you to type the key or key combination for the new Menu Access Key. To retain the current Menu Access Key assignment, press **Enter**. To change the Menu Access Key, press the key(s), then press **Enter**. The Menu Access Key is changed to represent the new key(s), and the setting is stored in the current configuration.

Notes

- Pressing the Menu Access Key while in an interactive Host session causes PC Link to present the Terminal-Emulator Menu.
- The current Menu Access Key is always displayed at the bottom of the screen in the Terminal-Emulator.
- The **Esc** key can be assigned as the Menu Access Key. If this is done, using **Esc** to return to the previous menu is not available from this prompt. Press **Enter** instead.

Term-Emul Print-Key

Purpose

Change the Printer Logging Key used to turn printer logging on or off.

Description

PC Link asks you to press the key or key combination to become the new Printer Logging Key. To leave the current Printer Logging Key unchanged, simply type **Enter**. To change it, press the key(s), then press **Enter**. The Printer Logging Key is changed to represent the new key(s), and the setting is stored in the current configuration.

Notes

- Pressing the Printer Logging Key while in an interactive Host session begins printer logging if it is not active and ends print logging if it is currently active. The Printer Logging Key is not sent to the Host system.
- The **Esc** key can be assigned as the Printer Logging Key. If this is done, using **Esc** to return to the previous menu is not available from this prompt. Press **Enter** instead.

Update

Purpose

Write the current configuration settings into the configuration file.

Description

PC Link writes the current settings of all the configuration options into the configuration file, overwriting the information in the file. The new configuration file will be used the next time that the PC Link Access Manager (or any of the other PC Link modules) are started from the DOS command prompt.

PC Link presents a menu to confirm your intention to overwrite the configuration file on disk.

Notes

- The file on your disk that you use to enter PC Link is affected by this command. Therefore, both the default configuration file, PCLINK.CNF, and alternate configuration files can be changed with this command.

PC Link Macro Commands

INGRES/PCLINK macro commands are accessed by pressing **Alt F3** from within any PC Link module. They provide tools for the following tasks:

- Defining macros
- Erasing macros
- Listing macros
- Specifying the macro directory

For further information on using PC Link macros, refer to Chapter 29.

Macro-Dir

Purpose

Change the current macro directory. PC Link creates and executes macros in this directory.

Description

PC Link prompts for the new directory and displays the name of the current directory. Press **Enter** to retain the current macro directory or type the new name.

PC Link sets the current macro directory to the new directory. Subsequent macro operations will use macros stored in this directory.

Macro Define

Purpose

Define a new macro or replaces an existing macro definition.

Description

The Macro Menu can be accessed from any PC Link menu by pressing **Alt F3**. Selecting the Define command causes PC Link to display a prompt for the name of the macro to be defined or redefined. A list of current macros is displayed. Type the name of a new macro or select from the list.

PC Link returns to normal processing and begins defining the macro with your next keystroke. Macro definition continues until you press **F3** (Macro) to end the definition. The MACDEF indicator is displayed during macro definition.

Macro Erase

Purpose

Erase one or more macros from the disk.

Description

PC Link displays the currently defined macros in the current Macro Directory in a pop-up list, and prompts for macros to be deleted. Type the name of the macro to be deleted or select from the list. PC Link deletes the macro definitions from the disk.

Macro List

Purpose

List the currently defined macros.

Description

PC Link displays the macros in the current Macro Directory in a pop-up list. Use the cursor keys to scroll the list up and down. Press **Enter** when you are finished viewing the list.

Appendix A

INGRES/PCLINK Files and System Requirements

The INGRES/PCLINK distribution diskettes contain the following files:

Program Diskette

Name	Description
PCLINK.EXE	PCLINK program executable
PCLINK.OVL	Overlay file
PCLINK.MSG	Messages
DB.BAT	Batch file to start only Visual-Query-Language
FM.BAT	Batch file to start only File Manager
TE.BAT	Batch file to start only Terminal Emulator
VT100.MAP	Default VT-100 keymap
HARDDSK.CNF	Default configuration file for hard disk PCs
PCLINK.CNF	Default configuration file for dual floppy PCs
VQL.EXE	Executable to start Visual-Query-Language, naming a database on the command line (i.e., VQL dbname)
SETCNF.COM	Program to change PCLINK.CNF to reflect correct directories
DUMMY.HLP	Blank help file needed for dual floppy PCs

Help Diskette

Name	Description
PCLINK.HLP	Help files
TPLCONV.EXE	Program to convert templates created with PCLINK version 1.0
INSTALL.EXE	Program for hard disk installation
INSTALL\ INSTALL.MSG	Message file for install program
INSTALL\LOAD.0	File configuration for install program
UTEXE.DEF	Replacement for existing UTEXE.DEF file in ingres\files directory of INGRES for PCs
RELNOTES.TXT	INGRES/PCLINK Release Notes

A file called PCLINK.CNF, the default configuration file, is created during installation. See Chapter 3 for further information on creating PCLINK.CNF.

INGRES/PCLINK has been designed to run on the IBM PC. It may be used on the following computer systems:

IBM PC, IBM PC-XT, IBM PC-AT
Compaq, Compaq Plus, Compaq DeskPro, Compaq 286
AT&T 6300
Zenith 150

To operate PC Link, you must have a personal computer and a Host running INGRES Version 5.0 or higher, with the PC Link Host module installed. In addition, your PC must have:

- 256K of Random Access Memory (320K recommended)
- Serial Interface Card or local area network hardware
- MS-DOS Version 3.0 or higher
- Dual floppy disks or a floppy disk and a hard disk

INGRES/PCLINK Configuration Worksheet

Answer these questions before setting up PC Link on your PC. Valid responses appear in capital letters, followed by an explanation in parentheses.

PC Monitor Information

A. What kind of monitor do you have on your PC?

_____MONOCHROME (Monochrome monitor)

_____IBM/COLOR (IBM color graphics or equivalent)

_____COMPAQ (Compaq computer built-in monitor)

Host Information

B. What is your Host home directory (the directory you use when you initially get a command prompt/where you normally keep your personal files?) _____

C. Do you want PC Link to connect to the Host automatically?

_____AUTOMATIC (Yes, I want to use automatic connection.)

_____MANUAL (No, I want to use manual connection.)

D. What do you type to terminate a session on the Host from a command prompt? _____

If your response to item C is MANUAL, skip now to item J.

Automatic Connection Information

E. What is the user identification you type to initiate a session on your Host? _____

F. What is the password you type to initiate a session on your Host? (Do not write this down, just remember it.)

When you answer items G, H and I, be sure to include the last five characters including blanks.

G. What is the prompt sequence the Host system issues to request your user identification? _____

H. What is the prompt sequence the Host system issues to request your password? _____

I. What is the prompt sequence the Host system issues to indicate a command prompt? _____

If your response to item C is AUTOMATIC, skip to item K.

Manual Connection Information

J. What is the complete dialogue that must occur on the Host to log in as a terminal over the communications network? Note: this is the communications network you will be using to reach the command prompt that in turn allows you to access INGRES. (Do not write down passwords, just remember them. Be sure to include whatever dialogue is necessary to traverse to your internal data switches and security scheme.)

Prompts You Receive	**Your Response**
_____	_____
_____	_____
_____	_____
_____	_____

Communications Network Information

K. What type of network are you using?

_____ASYNC-PACKET (Asynchronous communications network)

_____NONE

If your response to item K is NONE, you are finished with this worksheet.

L. Which communications port on your PC is connected to the Host system?

_____COM1 _____ COM2

M. What communications speed is used?

_____ 110 _____ 300 _____ 600 _____ 1200

_____ 2400 _____ 4800 _____ 9600 _____ 19200

N. What parity is used?

_____NONE (No parity)

_____EVEN (Even parity)

_____ODD (Odd parity)

O. How many data bits are used?

_____7-BIT (7 data bits)

_____ASCII-8 (8 data bits)

_____INTL-8 (8 data bits, international)

P. What flow control is used?

_____NONE (No flow control is used.)

_____HOST (Host accepts XON/XOFF characters but does not send them.)

_____PC (Host sends XON/XOFF but does not respond.)

_____BOTH (Host both sends and receives XON/XOFF.)

Q. Are you using a modem that support the Hayes "AT" command set?

_____HAYES (Yes, my modem supports the Hayes "AT" command set.)

_____NONE (No, my modem does *not* support the Hayes "AT" command set.)

If your response to item Q is NONE, skip to item T.

Hayes Modem Information

R. What is the exact telephone number the modem must dial to reach the Host? (Be sure to include access codes, area codes, credit card number, etc. Insert commas in dialing sequence to cause delays in dialing, if desired.) _____

S. What type of dialing does my phone line support?

_____TONE (Tone dialing)

_____PULSE (Pulse dialing)

If you responded HAYES to item Q, you are finished with this worksheet.

Direct or Other Modem Information

T. Are you using a modem that supports the "AT" command set?

_____Yes

_____No

If your response to item T is "Yes," you are finished with this worksheet.

U. What sequence of events must occur so that you can use your modem to open a communications line from your PC to your Host?

What You Must Do	**Responses You Receive Before Continuing**
_____	_____
_____	_____
_____	_____

Switch Settings for Hayes Smartmodem

PC Link requires the following switch settings for the Hayes Smartmodem 1200B (internal):

Switch Number	Setting	Description
1	Optional	Identifies which communications port modem connects to. Switch setting must be identical to the setting in your PC Link current configuration. Switch 1 on for COM1. Switch 1 off for COM2.
2	Optional	Identifies the phone jack type: On indicates RJ12 or RJ13 multi-line connection. Off indicates RJ11 single-line connections. On is the normal phone selection; Off is for phones that carry multiple lines.
3	On	PC Link requires carrier signal detection.

PC Link requires the following switch settings for the Hayes Smartmodem 1200 (external):

Switch Number	Setting	Description
1	Up	PC Link requires this switch to be in the up position, so that the program can hang up phone for you.
2	Up	PC Link requires this switch to be in the up position so that error codes are sent as English words.
3	Down	PC Link requires that result codes be sent.
4	Up	PC Link requires that an echo be sent.
5	Up	PC Link requires that auto-answer of incoming calls be set off.

6	Up	PC Link requires carrier detection to be active.
7	Optional	Set according to your phone jack type.
8	Down	PC Link requires that Smartmodem command recognition be active.

Default Configuration Files

Your installation diskettes include these default configuration files:

The HARDDSK.CNF File

Network	Type:	None
	I/O Port:	COM1:
	Speed:	1200
	Parity:	None
	Data Bits:	ASCII-8
	Flow Ctrl:	Both
	Pkt Length:	256
	Host Name:	
	Modem Type:	None
	Telephone:	
	Dial Type:	Tone
	Timeout:	30 seconds
	Attempts:	1
PC/LOCAL		
Work Dir:		c:\pclink
Macro Dir:		c:\pclink\macros
Display:		Monochrome
Printer:		Parallel interface
Host		
Work Dir:		Autoconnect: Manual
User Name:		Logout:
Password:		
Prompts:		Timeouts:
Login:		5 seconds
Password:		5 seconds
Command:		45 seconds
VQL		
Template Dir:		c:\pclink\template
Name:		
Titles:		Yes
Delimiter:		' '

FILE-MGR

Transfer:	Text
List Detail:	No
Auto-Name:	Lower-case
File Headers:	Yes
View Mode:	Text

TERM-EMUL

Keymap file:	vt100
Menu key:	{ALT-M}
Print key:	{ALT-P}
Capture Key:	{ALT-C}
Line Wrap:	No
Local Echo:	No

Autoload is: OFF

1-2-3 (.WKS) Output Format
Program File:
Directory:

dBase (III) Output Format
Program File:
Directory:

Ingres/PC Output Format
Program File:
Directory:

Interchange Output Format
Program File:
Directory:

SYLK Output Format
Program File:
Directory:

Text (Variable) Output Format
  Program File:
  Directory:

The PCLINK.CNF File

NETWORK	Type:	None
	I/O Port:	COM1:
	Speed:	1200
	Parity:	None
	Data Bits:	ASCII-8
	Flow Ctrl:	Both
	Pkt Length:	256
	Host Name:	
	Modem Type:	None
	Telephone:	
	Dial Type:	Tone
	Timeout:	30 seconds
	Attempts:	1

PC/LOCAL	
Work Dir:	b:\
Macro Dir:	b:\
Display:	Monochrome
Printer:	Parallel interface

Host		
Work Dir:		Autoconnect: Manual
User Name:		Logout:
Password:		
Prompts:		Timeouts:
Login:		5 seconds
Password:		5 seconds
Command:		45 seconds

VQL

Template Dir:	b:\
Name:	
Titles:	Yes
Delimiter:	' '

FILE-MGR

Transfer:	Text
List Detail:	No
Auto-Name:	Lower-case
File Headers:	Yes
View Mode:	Text

TERM-EMUL

Keymap file:	vt100
Menu key:	{ALT-M}
Print key:	{ALT-P}
Capture Key:	{ALT-C}
Line Wrap:	No
Local Echo:	No

Autoload is: OFF

1-2-3 (.WKS) Output Format

Program File:	
Directory:	

dBase (III) Output Format

Program File:	
Directory:	

Ingres/PC Output Format

Program File:	
Directory:	

Interchange Output Format
Program File:
Directory:

SYLK Output Format
Program File:
Directory:

Text (Variable) Output Format
Program File:
Directory:

Appendix E

PC Link Performance Considerations

Here are a few simple hints to reduce how long PC Link takes to process your Visual-Query-Language inquiries:

- Drop the columns you do not need. Remember that PC Link receives only up to eighteen rows at a time from the Host, but it receives all the columns in those rows that you request. The "wider" the rows, the longer it takes for your PC to present the data on your screen.
- Use **F7** (Preview) if you only need a sample of the result.
- Use row selection criteria to eliminate the rows of data that are unnecessary to satisfy your information request.
- Use sorting judiciously. Only request sorted results if you need them, because sorting adds significantly to processing time.

As you define your information requests with PC Link, you will often want to develop inquiry specifications on an iterative basis to see what data from your database fit you evolving inquiry specifications. As you might expect, the amount of time PC Link takes to present inquiry results on the screen is affected by the size of your database tables and the complexity of your information requests. Response is also affected by the volume of data sent over the communications network to define your request and to display the first screenful of data.

In cases where you know the name of the database or the table you wish to choose, use the Database Name or Table Name commands instead of the Database Select or Table Select commands.

The amount of time required to start up the File-Manager is directly related to the number of files in your Host working directory. As it starts up, PC Link reads each file from the Host working directory into PC memory over the communications link. To reduce the amount of time PC Link takes to complete a connection to the Host File-Manager module, reduce the number of files in your Host working directory.

Terminal-Emulator Default Keymap

The mapping keys defined by the default PC Link keymap are listed in the table below, along with the character sequence defined for each key. This keymap is stored in the VT100.MAP file, which is installed in the same directory as the PC Link software during PC Link installation. The standard PC Link configuration file defines VT100.MAP as the default keymap file, causing it to be retrieved automatically as part of the PC Link Terminal-Emulator start-up sequence.

Key Definitions in the VT100 Keymap

TE Key	Sequence	VT100 Key
{UP}	{ESC}[A	Up arrow
{LEFT}	{ESC}[D	Left arrow
{RIGHT}	{ESC}[C	Right arrow
{DOWN}	{ESC}[B	Down arrow
{BS}	{CTRL-BS}	Delete
{CTRL-BS}	{BS}	Beginning of line
F1	{ESC}OP	PF1
F2	{ESC}OQ	PF2
F3	{ESC}OR	PF3
F4	{ESC}OS	PF4
{CTRL-DEL}	{ESC}On	Period (.)
{CTRL-MINUS}	{ESC}Om	Minus (-)
{CTRL-PRTSC}	{ESC}Ol	Comma (,)
{CTRL-PLUS}	{ESC}OM	Enter
{CTRL-INS}	{ESC}Op	0
{CTRL-END}	{ESC}Oq	1
{CTRL-DOWN}	{ESC}Or	2
{CTRL-PGDN}	{ESC}Os	3
{CTRL-LEFT}	{ESC}Ot	4
{CTRL-CENTER}	{ESC}Ou	5
{CTRL-RIGHT}	{ESC}Ov	6
{CTRL-HOME}	{ESC}Ow	7
{CTRL-UP}	{ESC}0x	8
{CTRL-PGUP}	{ESC}Oy	9

Appendix G

INGRES/PCLINK Keymap File Format

PC Link stores keymaps in keymap files with names of the form *mapname*.MAP, where *mapname* is the name of the keymap. Ordinarily, the internal format of a keymap file is of no importance, because PC Link provides an easy method for editing and listing keymaps through its Terminal-Emulator Menus. The format of the PC Link keymap file is described here for advanced users who may want to edit the contents of the keymap file directly, or who may want to generate a keymap file from another PC application.

The contents of a keymap file are composed entirely of printable ASCII text. Control characters and other PC keys without printable character equivalents are represented in the file by mnemonics enclosed in braces. For example, the mnemonics:

{ESCAPE} and {F1}

appear in the file to represent the (unprintable) escape character and PC Function Key **F1**, respectively.

Characters generated by holding down **Ctrl** or **Alt** in combination with other keys are similarly represented, by prefixing the base character with "CTRL-" or "ALT-" , respectively, and enclosing it in braces. Thus, the mnemonics:

{CTRL-H} and {ALT-H}

appear in the file for the character generated by holding down **Ctrl** or **Alt** and pressing **H**, respectively. Note that some control characters have more than one representation. For example, the two mnemonics:

{CTRL-H} and {BACKSPACE}

are equivalent.

Characters whose shifted representations are not ASCII characters (such as the function keys) are represented by the "SHIFT-" prefix in combination with their mnemonic, again enclosed in braces. The shifted PC function key **F1** thus becomes:

{SHIFT-F1}

Finally, because the left and right brace characters and the colon (:) are used as delimiters in the file, they have their own mnemonics, which are used whenever they are to appear as a mapped key or as part of a key definition. The mnemonics are, respectively:

{LBRACE} and {RBRACE} and {COLON}

The contents of a keymap are organized into variable-length records. Each record defines the mapping for a single PC key. Each record is terminated by the standard MS-DOS CR/LF character pair and consists of three fields:

- A *mapped key*, which identifies the key whose mapping is given by this record. Any single printable character may be a mapped key, or the mapped key may be a mnemonic for any single key on the PC keyboard.
- A *colon*, which separates the mapped key from its definition.
- A *key definition*, consisting of a sequence of characters which is to be sent to the Host system when the mapped key is pressed. Any sequence of printable characters or mnemonics can appear as a key definition; however the mnemonics are restricted to those which have ASCII representations.

Spaces and blank lines can appear freely within a record to improve readability, except that no spaces are permitted within the braces that delimit mnemonics. Characters on a line to the right of a semicolon are ignored to allow text comments within the keymap file.

For example, to have **Home** send the three-character sequence

Esc [H

to the Host system, the keymap file should have a record of the form:

{HOME} : {ESCAPE} [H

Similarly, if shifted **F6** to send the sequence "I am here" , including the embedded spaces, the following record may be used:

{SHIFT-F6} : I {SPACE} a m {SPACE} h e r e

Note that the spaces within the record are present for readability only; the embedded spaces are generated by the {SPACE} mnemonics.

The easiest way to understand the format of the keymap file is to use the PC Link Terminal-Emulator menus to add several definitions to a keymap, save the keymap in a file, and then examine the file with a PC editor program or word processor. A complete list of the mnemonics and prefixes which are valid in PC Link keymap files is given in the table below:

Prefixes:

{ALT-} {CTRL-} {SHIFT-}

Mnemonics:

{BACKSPACE}	{BACKTAB}	{BELL}	{COMMA}	{DEL}
{DOWN}	{END}	{ESCAPE}	{INS}	{LBRACE}
{LEFT}	{F1}	{F2}	{F3}	{F4}
{F5}	{F6}	{F7}	{F8}	{HOME}
{PGDN}	{PGUP}	{RBRACE}	{RIGHT}	{SPACE}
{TAB}	{UP}	{XON}	{XOFF}	

Terminal-Emulator Escape Sequences

PC Link supports the control (escape) sequences listed in the tables below, which are a subset of the ANSI X3.64 standard. The supported sequences also conform to the most popular escape sequences used by the VT100 terminal series. The sequences are listed here for identification only, and there is no attempt made to fully describe the terminal behavior which they cause. Consult the ANSI standard or documentation for a VT100-compatible terminal for a full description of the sequences.

The following table presents the escape sequences recognized and supported by PC Link. Spaces are included in the escape sequences for readability only. The # characters appearing in the table represent optional numeric parameters which may be present in the sequence, and whose interpretation is explained in the "Meaning" column.

Sequence	Meaning
ESC 7	Save Cursor Position.
ESC8	Restore Cursor Position.
ESC [# @	Insert Characters (# = number of characters)
ESC [# A	Cursor Up (# = number of rows)
ESC [# B	Cursor Down (# = number of rows)
ESC [# C	Cursor Forward (# = number of columns)
ESC D	Index (cursor down one row)
ESC [# D	Cursor Backward (# = number of columns)
ESC E	New Line (cursor to first column of next line)
ESC [# E	Next Line (# = number of rows)
ESC [# F	Previous Line (# = number of rows)
ESC [# G	Absolute Column Position (# = column)
ESC H	Set Tab
ESC [H	Home Cursor (cursor to upper left)
ESC [# ; # H	Cursor Position (# = row; # = column)
ESC [# I	Forward Tab (# = number of tab stops)
ESC [# J	Erase in Display (# = 0 → Erase cursor to end of display) (# = 1 → Erase from home to cursor) (# = 2 → Erase entire display)

ESC [# K	Erase in Line (# = 0 → Erase cursor to end of line) (# = 1 → Erase beginning of line to cursor) (# = 2 → Erase entire line)
ESC [# L	Insert Line (# = number of lines)
ESC M	Reverse Index (cursor up one row)
ESC [# M	Delete Line (# = number of lines)
ESC [# P	Delete Characters (# = number of characters)
ESC Z	Identify terminal
ESC [# Z	Back Tab (# = number of tab stops)
ESC [# a	Relative Cursor Forward (# = number of columns)
ESC [# d	Absolute Row Position (# = row)
ESC [# e	Relative Cursor Down (# = number of rows)
ESC [# ; # f	Cursor Position (same as ESC [# ; # H)
ESC [# g	Clear Tab (# = 0 → At cursor position only) (# = 3 → Clear all tab stops)
ESC ? 0 g	Reset Tabs to every eight positions
ESC ? 1 h	Cursor Key Mode On
ESC [4 h	Insert Mode On
ESC ? 5 h	Set Normal Video to Black-on-White
ESC ? 7 h	Auto-Wrap On
ESC [? 25 h	Cursor On
ESC ? 1 l	Cursor Key Mode Off
ESC [4 l	Insert Mode Off
ESC ? 5 l	Set Normal Video to White-on-Black
ESC ? 7 l	Auto-Wrap Off
ESC [? 25 l	Cursor Off
ESC [# m	Set Visual Attributes (multiple # allowed) (# = 0 → Reset all attributes) (# = 1 → Boldface) (# = 2 → Dim) (# = 3 → Non-Display) (# = 4 → Underline) (# = 5 → Blink) (# = 7 → Reverse) (# = 8 → Non-Display) (# = 30 - 37, 40 - 47 → Color attributes)
ESC [6 n	Cursor Position Report

ESC [3 ; # z	Set Cursor Mode (# = 0 → Block Cursor) (# = 1 → Block Cursor) (# = 2 → Underline Cursor) (# = 3 → Underline Cursor) (# = 4 → No Cursor)
ESC [7 ; 0 z	Set Normal Contrast to Normal Characters
ESC [7 ; 1 z	Set Normal Contrast to Boldface Characters

The following table presents those sequences recognized but ignored by PC Link.

Sequence	**Meaning**
ESC =	Alternate Keypad Mode On
ESC >	Alternate Keypad Mode Off

Using Wild Card Characters in PC Link

PC Link supports special wild card characters for use with the equals comparison operator (=) to indicate partial matches of character string data. These characters allow the following partial match specifications:

*	matches any string of zero or more characters
?	matches any single character
[..]	matches any of the characters in the brackets

PC Link allows any of these special characters singly or in combination to specify a comparison value:

*	matches any value in the selection column
E*	matches any value beginning with "E" in the selection column
*ein	matches any value ending with "ein" in the selection column
[aeiou]	matches any value with at least one vowel in the selection column
Br???	matches any five-character value beginning with "Br" in the selection column
[A-J]*	matches any value beginning with A, B, C, ..., J in the selection column
[N-Z]???	matches any four-character value beginning with N, O, P, ..., Z in the selection column

Note that blanks must not be used in bracketed expressions such as [A–J]* or [N–Z]???.

Key Names in Macro Files

In macro files, non-character key names are represented by special key names enclosed in brackets:

Special Key	Macro File Representation
CURS-LEFT	{LEFT}
CURS-RIGHT	{RIGHT}
CURS-UP	{UP}
CURS-DOWN	{DOWN}
CTRL-LEFT	{PGLEFT}
CTRL-RIGHT	{PGRIGHT}
PAGE-UP	{PGUP}
PAGE-DOWN	{PGDN}
HOME	{HOME}
END	{END}
ESCAPE	{ESC}
TAB	{TAB}
SHIFT-TAB	{BKTAB}
BACKSPACE	{BS}
SPACE-BAR	{SPACE}
RETURN	{CR}
DELETE	{DEL}
F1/HELP	{HELP}
F2/EDIT	{EDIT}
F4/BROWSE	{BROWSE}
F5/GOTO	{GOTO}
F6/WINDOW	{WINDOW}
F7/PREVIEW	{PREVIEW}
F8/HOST	{HOST}
F9/INQUIRE	{INQUIRE}
F10/DOS	{DOS}

PC Link Macro File Format

PC Link stores macros as pure ASCII text in DOS files. The name of a macro file is *xxxxxxxx*.MAC, where *xxxxxxxx* is the name assigned to the macro by the PC Link user when the macro is defined. The contents of a macro file are:

- Special key names, enclosed in braces
- ASCII characters, including alphabetics and numerics
- "White space" characters

ASCII characters in the macro file represent ordinary characters typed from the keyboard. For example, if the user presses **C**, **W** and **S** to select the Column Width Set command from the VQL Menu, the letters "C," "W" and "S" appear literally in the macro file at that point.

Keys on the PC keyboard that do not have direct character representations (such as the function keys) are represented in the macro file by special key names, enclosed in braces. When the user presses **F4** (Browse) during macro definition, for example, PC Link places the characters {F4/BROWSE} into the macro file. Appendix J lists the special key names used by the PC Link macro capability. Users familiar with Lotus 1-2-3 will find the names familiar and, in most cases, identical to their 1-2-3 counterparts.

White space characters (spaces, tabs, line feed and carriage return characters) in the macro file are ignored during macro execution. This allows easy creation and editing of macro files by PC text editors and word processors. Line feed and carriage return characters are not placed into macro files when they are defined through PC Link. In addition, so that documentation can be added to macro files, all characters to the right of a semicolon are ignored when a macro is executed.

PC Link Program Errors

Ambiguous; press [Enter] to confirm choice.
Menu selection by first letter failed. Move cursor to your selection and press **Enter**.

Cannot auto-load without Access System.
This error occurs when you attempt to utilize the PC Link Auto-Load capability while running the Visual-Query-Language directly from the DOS prompt.

Cannot change Host directory.
This error occurs when the Host working directory in the current configuration does not exist. Use the Configuration Menu to specify the setting.

Cannot close Host file.
PC Link is unable to close indicated file. Correct Host working directory specification.

Cannot close PC file.
PC Link is unable to close indicated file. Check for write-protect tab on floppy disk.

Cannot erase file.
PC Link is unable to write to indicated file. Check for write-protect tab on floppy disk.

Cannot hang up telephone line.
This message informs you that PC Link was unable to hang up the telephone. Hang up manually and check connection.

Cannot initialize Host server.
The host process did not start up properly or was not found. Contact your system manager.

Cannot load application.
The files containing the PC Link modules, DB.EXE, FM.EXE, TE.EXE or other programs could not be found and loaded.

Cannot move files to same directory.
To move files to the same directory, use the rename command.

Cannot open configuration file.
The default configuration file could not be found in the directory in which PC Link was initialized, or the configuration file specified on the command line does not exist.

Cannot open help file.
An error has occurred while PC Link tried to read the help file.

Cannot open Host file.
PC Link is unable to open indicated file.

Cannot open keymap file.
The keymap file in your current configuration could not be found in the directory in which PC Link was initialized.

Cannot open PC file.
PC Link is unable to open indicated file. Check for write-protect tab on floppy disk.

Cannot overwrite directory.
This error occurs when you supply a directory specification at the time that a file name is requested.

Cannot remove old copy of file.
PC Link was unable to delete a source file during a move operation.

Cannot rename file.
PC Link has tried to read or write on a disk and was unable to do so.

Cannot reset drive/directory.
The drive/directory specified in your current configuration does not exist.

Cannot reset Host server—save work and quit.
This error informs you that PC Link was unable to recover automatically from a Host module error condition. You must save your work and quit. Use the Terminal-Emulator to proceed with standard logout or terminal initialization procedure.

Cannot select directory.
There is no directory with the name you entered.

Cannot shut down Host server.
When an error condition is encountered by the Host module, PC Link will attempt to reset from the error. If it is unable to do so, PC Link will attempt to shut down the Host server process. If PC Link is unable to do so, the user must manually abandon the Host server process. Use the Terminal-Emulator to proceed with standard logout or terminal initialization procedure.

Cannot sort on nondisplayed column.
A sort specification on a non-displayed column is not permitted.

Cannot specify blank column.
This error occurs when an attempt is made to place a inquiry specification on an inserted column.

Cannot spool Host file.
This error occurs when the default Host printer is not properly configured. See your Host system manager.

Cannot start command processor.
PC Link was unable to start up a subshell on either the PC or the Host. For the PC, be certain that the COMMAND.COM file is available on the default drive or that the COMSPEC environment variable is properly set. For the Host, a session must be previously established.

Cannot telephone Host system.
The error occurs when PC Link is unable to make your modem initiate an auto-dial sequence. Check modem settings and connections.

Column not found.
This error occurs when the column name you specified is not currently available.

Ctrl-Break Interrupt.
This message confirms that your previous command has been successfully cancelled.

Directory does not exist.
There is no directory with the name you entered.

Directory name required.
A valid directory name must be supplied for certain file management operations.

Duplicate lookup for table in lookup window.
All matches between columns in a single table must be specified in a single lookup operation.

Duplicate sort key column.
Each column in the Main Window may have only one sort specification.

Error getting information from Host.
An error occurred while PC Link attempted to process Host file information. Check Host working directory and retry.

Error processing file.
This error occurs when PC Link fails to complete a File-Manager operation. Check the Host working directory and retry.

Error processing query.
INGRES was unable to process the query. Save work and exit.

Error writing Host query results file.
This error occurs when PC Link is unable to write to the temporary files on the Host which are created automatically to buffer inquiry results. Save work and exit.

Exit Host subshell to quit.
This occurs when you have neglected to log out of your Host subshell before trying to exit the Terminal-Emulator.

File does not exist.
There is no file with the file specification you entered.

Help stack overflow.
Memory required for display of help file information exceeds currently available memory. See Appendix M.

Host file I/O error.
PC Link encountered an error condition when manipulating a PC file.

Illegal value.
You provided an invalid number in response to a command prompt. This could be a syntax error or a number larger or smaller than the command can accept.

Incomplete data from preview.
This error informs you that PC Link is unable to scroll vertically to allow you to view additional rows fitting the inquiry specification. To see additional rows, press **F9** (Inquire) then enter **F4** (Browse) again.

Insufficient memory.
The memory available to PC Link has been exhausted. See Appendix M for suggestions on improving memory usage.

Invalid auto-load drive/directory.
There is no directory of the name in your current configuration.

Invalid auto-load program.
There is no file of the name and type specified in indicated auto-load drive/directory.

Invalid configuration file.
The file can be read but has been corrupted, that is, the labels and other information in the file are not where PC Link expects them to be. Reload file from your installation disks.

Invalid file format.
The file can be read but has been corrupted, that is, the labels and other information in the file are not where PC Link expects them to be.

Invalid help file.
The file can be read but has been corrupted, that is, the labels and other information in the file are not where PC Link expects them to be. Reload file from your installation disks.

Invalid login configuration parameters.
The values for login or password in the current configuration are incorrect.

Keymap overflow.
Memory required for keymap information exceeds currently available memory.

Lookups have dependent sort(s) and/or criteria.
This error occurs when you attempt to drop a lookup with a sort or criteria attached.

Macro directory does not exist.
There is no directory with the name you entered.

Macro file I/O error.
An error has occurred while PC Link tried to read or write a macro file.

Must combine two or more criteria.
In inquiry criteria combine operations, multiple criteria must be selected.

Network I/O Error.
This error occurs when PC and Host modules are unable to establish or maintain a connection. Can be caused by extreme line interference. Terminate session and retry. If error persists, contact your system manager.

No database selected.
A table cannot be selected before a database is selected.

No displayed columns.
No columns can be dropped as none are displayed in the active window.

No dropped columns.
No columns can be restored as none have been dropped from the active window.

No Host connection established.
PC Link informs you that it must establish a Host connection for a designated operation, then it proceeds to attempt to connect to the Host module.

No Host databases.
There are no INGRES databases on your Host computer.

No query specifications of this type.
There are no inquiry specifications of the specified type to be dropped or listed.

No rows match query specifications.
This message informs the user that no rows matched the inquiry specification.

No tables in database.
The database specified in your current configuration has no table for which you have permission to access with PC Link.

No table selected.
No table has been specified for the Main Window. Use the Table Name or the Table Select command to choose a table.

Old filename and new filename must differ.
For certain File-Manager commands, the source and destination file specifications cannot be identical.

PC file I/O error.
PC Link encountered an error condition when manipulating a PC file.

PC working directory does not exist.
There is no directory with the name you entered.

Printer I/O error.
There are problems with your printer. See your system manager or pc printer manual.

Printer output error.
There are problems with your printer. This may be as simple as being out of paper or having a loose cable.

Row selection criteria illegal in lookup window.
Row selection criteria may only be applied to data in the Main Window.

Same password must be entered twice.
When entering the password in the current configuration, the same value must be entered twice.

Same table displayed in both windows.
PC Link will not allow the user to perform a lookup of a table on itself.

System error.
An internal coding error has occurred. Ask your system manager to contact your INGRES representative.

Table does not exist.
The specified table does not exist. Specify another table.

Table lookups illegal in lookup window.
Table lookups may only be applied to data in the Main Window.

Table width too large for query.
This error occurs when the result of inquiry exceeds the limit imposed by your version of INGRES.

Template directory does not exist.
There is no directory with the name you entered.

Timeout awaiting login prompt.
The login prompt specified in the current configuration was not received within the specified timeout period. Check value of login prompt or adjust timeout period. Also check network settings in current configuration.

Timeout awaiting password prompt.
The login prompt specified in the current configuration was not received within the specified timeout period.

Unequal matching column count.
When specifying a multi-column lookup operation, an equal number of columns from the Main and Lookup Windows must be specified.

Unsupported communication protocol.
The selected communications protocol is unavailable at your installation.

Inquiry Processing Errors
Certain errors may occur in the processing of inquiries, which are reported by INGRES to PC Link with an EQUEL error number. The following is a list of EQUEL messages you may encounter while using PC Link:

1. 1000 to 1999. These are internal INGRES errors and a problem report should be issued to RTI through your system manager.
2. 2106, 2118, 3700, 3701, 4100, 4106, 4112, 45xx, 46xx. These are INGRES buffer overflow errors. These errors indicate that the buffer quotas you have been allocated are insufficient for your query. Contact your system manager.
3. 3370. Base relation in view does not exist. The table you have requested is a view and one of the tables in that view has been destroyed. Contact your database administrator.
4. 3500. No access to requested data. You do not have permission to view that data you have requested. Contact your database administrator.

INGRES Startup Errors

There is a class of errors that will cause the Host server process to fail in starting up. If such an error occurs, you will need to restart your PC Link Host session. What follows is a set of conditions which may cause such an error.

1	Number of users has exceeded limit.
3	User does not have permission to access this database
4	Could not access the database.
12	You are not a valid INGRES user.
16	Database does not exist.

If you encounter an error of this type, contact your INGRES database administrator.

Appendix M

Operating PC Link on a Floppy Diskette or Small Memory System

PC Memory Limitations

Although PC Link may be run with as little as 256K of memory available, 320K is strongly recommended. If you have only 256K installed, you must use the method outlined below to start up PC Link.

If you start PC Link using the Access Manager, that program is still in memory when you start the Visual-Query-Language, File-Manager or Terminal-Emulator. Any of these three modules can be started up separately once your configuration file is properly set up. For example, to start up the File-Manager from the DOS command prompt, type:

fm	(if you are using the default configuration file)
or	
fm /c:*xxxxxxxx*	(if you are using a configuration file called *xxxxxxxx*)

This procedure can be used at any time and will free up a large amount of memory for other uses.

There are three situations in which the PC may run out of memory:

- Too many INGRES databases on your Host computer
- Too many tables in the database you use with Visual-Query-Language
- Too many files in the directories you use with the File-Manager

PC Link will use as much memory as is available on the PC. Any of these problems can be eliminated by installing more memory up to the 640K limit supported by DOS. When you receive an out-of-memory message, you should save your work and exit from the module. If you should encounter an error that indicates that you have run out of memory, one of the following procedures can be used to circumvent the problem in future sessions:

1. When you select a database from the Visual-Query-Language, you are presented with a list of databases on your Host computer. If this list is extremely long, your PC may run out of memory. In this case, use the INGRES catalogdb command through the Terminal-Emulator to find the database you desire and then use the Database Name command (rather than Database Select) to change the database you are using. If you have only a single database with which you work, you can place the name of the database in your PC Link configuration file and set it to automatically select that database each time you start up.
2. Selecting tables is similar to selecting databases, and it is possible to run out of memory if there are large numbers of tables in your database. PC Link provides a mechanism to allow the database administrator to limit the list of tables displayed to PC Link users. If this problem occurs, ask your database administrator to create an "iipclink" table in the database according to the instructions in the *INGRES/PCLINK Host Installation Instructions.*
3. The File-Manager may run out of memory if there are a large number of files in your working directory on the Host or on the PC. This problem can be best dealt with by reducing the number of files in the directories that you use with PC Link with the appropriate operating system commands.

Dual Floppy Systems

In the interests of clarity, the *INGRES/PCLINK Manual* and its Tutorial are oriented toward PCs with hard disk configurations. PC Link can be used on dual floppy systems by following these simple steps:

- The A drive should be used for programs and help, and the B drive should be used for data.
- Start by putting the PC Link Program diskette in drive A and your data disk in drive B.

- To auto-load another software package, you should set up the PC Link Auto-Load configuration to look for the software in drive A. When VQL asks you whether or not you wish to auto-load, you should remove the Program diskette, place the software package in drive A and select Yes to confirm Auto-Load. Your software package should be configured to look for its data in drive B. When you want to exit your software package, use the normal procedures for that package; when the message "Return to INGRES/PCLINK" appears, place the Program diskette in drive A and press **Enter**.

B

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