Application System/400
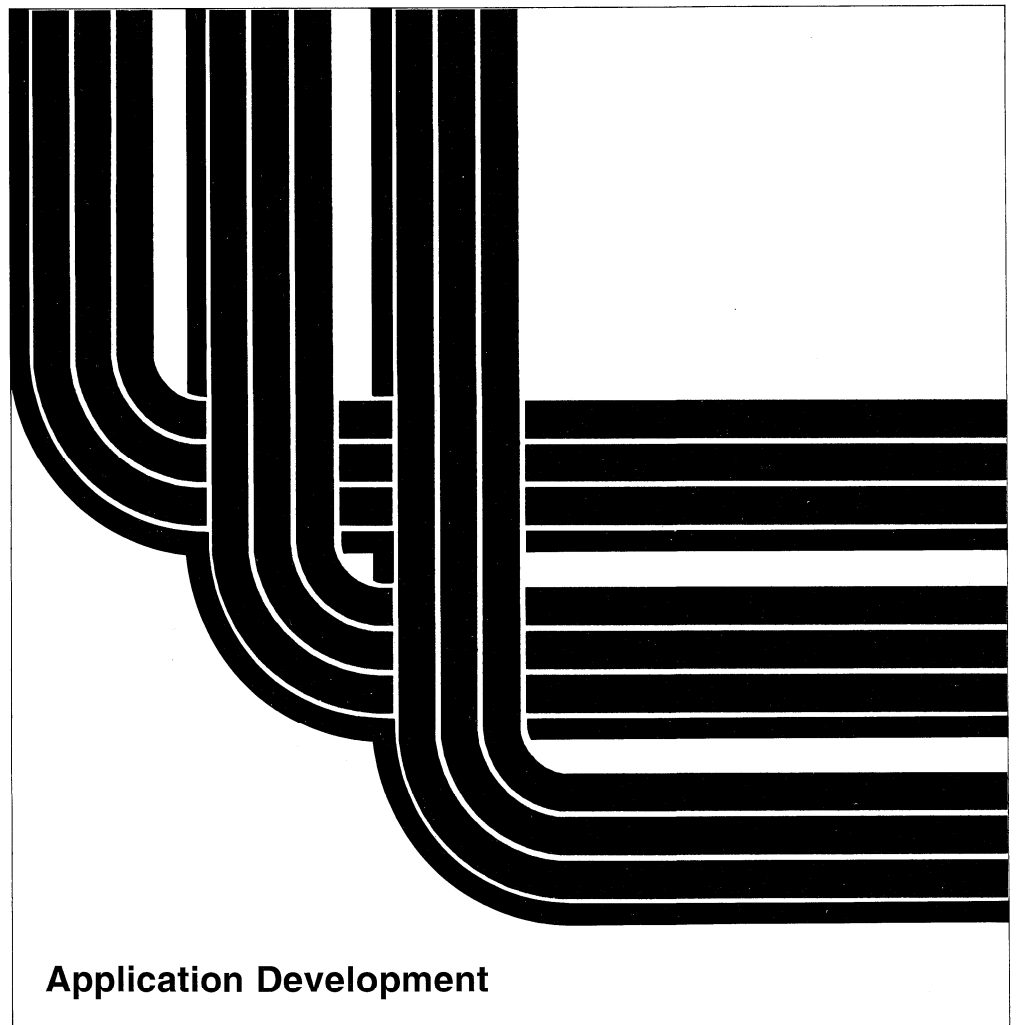
**Application Development Tools:
Screen Design Aid
User's Guide and Reference**

Version 2

Application Development

IBM

Application System/400

**Application Development Tools:
Screen Design Aid
User's Guide and Reference**

Version 2

> **Note!**
>
> Before using this information and the product it supports, be sure to read the general information under
> "Notices" on page vii.

Third Edition (September 1993)

This edition applies to Version 2, Release 3, Modification Level 0, of IBM AS/400 Application Development Tools (Program 5738-PW1) and to all subsequent releases and modifications until otherwise indicated in new editions. Make sure you are using the correct edition for the level of the product.

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About This Manual

This manual contains exercises and reference information to help you learn how to use the screen design aid (SDA).

Use this manual to learn how to design, create, and maintain the following for programs that you develop:

- Displays
- Menus
- Online help information

This manual does not describe all of the functions of SDA.

You may need to refer to other IBM manuals for more specific information about a particular topic. The *Publications Guide*, GC41-9678, provides more information on all the manuals in the AS/400 library.

For a list of related publications, see the "Bibliography" on page 213.

Who Should Use This Manual

This manual is intended for application programmers and system programmers who work in an AS/400 environment. To use this manual effectively, you must know how to use your workstation, understand and use messages, and have a general knowledge of the AS/400 system.

If you are unfamiliar with your workstation, refer to the specific manual for your workstation. If you are unfamiliar with the AS/400 system, use the *System Concepts*, GC41-9802.

Three versions of SDA are available to you:

- AS/400 environment

  Use this version to develop and process displays to be used in the AS/400 environment.

- System/38 environment

  Use this version to develop displays to be used on a System/38 or in the System/38 environment of the AS/400 system. You also use this version to process displays migrated from a System/38.

- System/36 environment

  Use this version to develop displays to be used on a System/36 or in the System/36 environment of the AS/400 system. You also use this version to process displays migrated from a System/36.

Summary of Changes

The following enhancements were made to SDA:

- The Work with Display Records display and the Design Image Work Screen have a new function key. The F13 key displays the new Change Defaults display, with which you can specify whether or not to print a field listing when you print a work screen image. For more information on using this function key, see "Printing the Work Screen Image" on page 63.

- The *Message line* prompt has been added to the Define Window Parameters display. You can use this prompt to specify whether or not a window contains a message line. The new display is shown in "Specifying Window Keywords" on page 68.

- You can specify a library for the display file and message file on the Create Menu (CRTMNU) display. For more information on this display, see "Restricting Access to the Command Line and Saving the Menu" on page 115.

- The Define Help Area display has two new prompts for defining help for a field or constant. The new display is shown in "Defining Online Help Information" on page 136.

- You can now perform a block delete on the Design Image Work Screen. For information on how to do this, see "Deleting Fields" and "Moving Fields" on page 161. You can also delete multiple fields. For more information, see "Deleting Multiple Fields" on page 170.

- The Design Image Work Screen has a new function key, F22 (System command), which displays a window in which you can type a system command. For more information on this option, see "Entering System Commands" on page 173.

- You can now work with DBCS data on an SBCS display, but cannot add or change DBCS characters. For more information on using DBCS data on an SBCS display, see Appendix C, "Using Double-Byte Character Set Characters" on page 191.

- The Define Window Parameters display has been improved.

- The Define Application Help display processing and error handling has been improved.

- The Define Help Area display has been improved.

- The HLPTITLE keyword can be defined on the Define Help Keywords display in the *Define help title* prompt.

- The End of Member Options display now has the *Maximum devices* prompt, in which you can specify the maximum number of devices to use a display file at a time in a System/36 environment.

The following enhancements were made to this manual:

- Additional descriptions for the F9 key have been added to "Function Keys" on page 5.

- A new section has been added on how to print the work screen image. For more information, see "Printing the Work Screen Image" on page 63.

This manual contains many editorial changes that are not indicated by a vertical bar to the left of the change.

Chapter 1. Introducing Screen Design Aid

You can use the screen design aid (SDA) to design menus and displays, and to create online help information. (You cannot create online help information in the System/38 environment.) Menus present a list of options from which the work-station user can make a selection. When a user works with an application program, the user uses the displays that you define. You can create online help information for both displays and menus.

Features of SDA

SDA offers several advantages over traditional methods of designing displays because it:

- Generates Data Description Specifications (DDS). You do not need extensive knowledge of the DDS coding forms, keywords, or syntax to use SDA.

- Presents displays in functional groups to make DDS keyword selection easier at the file, record, or field level.

- Allows you to select fields from existing database files to design a display.

- Allows you to see the display you are designing or changing as you work on it.

- Allows you to test displays with the data and status of the condition indicators specified for each test.

- Allows you to create the menus and the message files that Application System/400* (AS/400*) environment SDA uses to run the menus.

- Allows you to create the menus and the control language (CL) programs that System/38 environment SDA uses to run the menus.

- Allows you to create a display file from the DDS source statements that SDA creates.

- Supplies error messages with explanations. Diagnostics are supplied for con-flicting source statements when you select DDS keywords.

SDA Concepts

This section describes the concepts and terminology used in SDA.

Relationships among Display Files, Records, and Fields

When you work with SDA, you need to understand the relationships among display files, records, and fields. A display file contains one or more records. Each record specifies all the characteristics of one display. Each display is composed of fields that are designated as input, output, both (input and output), or constants.

Figure 1 on page 2 shows the relationships among files, records, and fields.
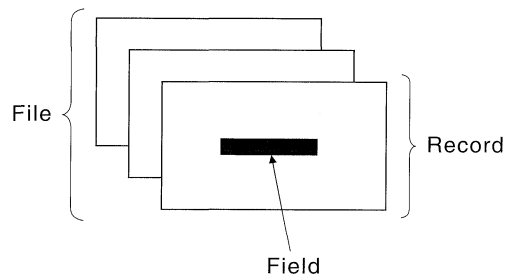
SDA000-1

Figure 1. A Field in a Record and Records in a File

Description of Terms Used in SDA

This section provides a brief explanation for some of the terms that you encounter while using SDA. For a more complete description, refer to the *Database Guide*, the *Data Management Guide*, and the *DDS Reference*.

Keywords

Keywords are used to define a display. Keywords that define a field are known as **field-level keywords**, keywords that define a display (record) are known as **record-level keywords**, and keywords that define the whole file (all the records) are known as **file-level keywords**.

The set of keywords available on the AS/400 system make up a language called the **data description specifications** (DDS). On the AS/400 system, displays are described by DDS, which groups all the fields on one display into one record and all the records within a member into a file.

Field

SDA uses the term **field** in two different ways:

- In DDS, a field refers to an item that you specify for defining a display.

- In a database file, a field refers to an item that you define for storing data.

Record

SDA uses the term **record** in two different ways:

- In DDS, all the fields on a display are grouped together in a record. To DDS, a record represents a display. When you define a display, SDA prompts you for a record name to be used for the display. When you compile your DDS to create a display file, you reference each display in the display file by its record name. When you test a display file, SDA prompts you for the record name within the display file that you want to test.

- In a database file, a record is a group of fields and their definitions. The record also stores data from the fields. The record itself is in a database file. When you retrieve field definitions from a database file, SDA prompts you for the name of the record and the database file.

Member

A **member** stores DDS statements. When you define displays in SDA, it generates corresponding DDS source statements. When you want to store the DDS source, SDA prompts you for a name for the member, source file, and library where you want the source to be stored. The member is stored in a database source file, which you compile to create a display file.

File

SDA uses the term **file** in three different ways:

- A **database file** contains data definitions.

- A **database source file** contains the DDS source member.

- A **display file** contains compiled DDS. SDA generates DDS for the displays that you define. You must compile the DDS into a display file before you can use the display.

Special Considerations for Menus

You can use SDA to create menus as well as displays. A menu is composed of the following parts:

- A display file
- A message file

In the AS/400 environment, a display file contains the menu image, a message file contains the commands, and a *MENU object contains the name of the display file and the message file. Use the GO menu-name function to run a *MENU object.

In the System/38 environment, the display file contains the menu image. A CL program displays the menu image and runs the command or program associated with the option selected from the menu. Use the CALL menu-name statement to run your menu.

SDA Considerations

SDA operates on any AS/400 model with the Operating System/400* (OS/400*) or its equivalent and any 24 x 80 or 27 x 132 workstation. Use SDA to design and maintain display files. In the System/38 environment, mixed file displays can be used on any size workstation.

Operating differences between AS/400 SDA and System/38 environment SDA are noted in the text.

In AS/400 SDA, you can create free-form menus, while menus designed using System/38 environment SDA are fixed-form menus.

In System/38 environment SDA you can modify the display source file of a fixed-form menu to make it a more elaborate free-form menu. Free-form menus are displays and not typical menus. Creating and maintaining programs that use such displays is your responsibility.

To put menus or display files back to the previous release, you must create the objects outside of SDA. For display files, prompt the CRTS36DSPF command and type *PRV in the *Target release* prompt. For menus, prompt the CRTS36MNU command and specify *PRV in the *Target release* prompt. For information about

System/36 environment SDA, refer to *Application Development Tools: Screen Design Aid User's Guide and Reference for the System/36 Environment*, SC09-1418.

Using Existing Data Description Specifications with SDA

The following points should be considered when using existing DDS with SDA:

- Comment lines are identified by an asterisk (*) in column 7. SDA keeps only some of the comment lines in the existing DDS source.

  Additional file-level comment lines following the marker and preceding the first keyword are not retained. When SDA generates the DDS source, it places record-level comments immediately before the record specification.

  File-level comment lines between the marker and first keyword or record specification (R in column 17) are not retained. Comment lines immediately before or after the record specification are retained.

  SDA retains no other comment lines.

  Note: SDA retains all comment lines that are added by the DDS Design Utility (DDU).

- SDA is designed for standard 92-byte records. The first 12 bytes contain the sequence number and date, and the last 80 bytes contain the DDS source.

- When you select a member from a database file to change or add new information, DDS checks the keyword syntax and drops any incorrect keywords. On the SDA Work with Display Records display, each record with errors and incorrect keywords has *ERROR in the *DDS Error* column. If you create DDS in the SDA session, these dropped DDS statements will not be in your new DDS. To avoid dropping incorrect keywords:

  1. Do not save your source.
  2. Sign off SDA.
  3. Use the CRTDSPF command to determine the errors.
  4. Use the source entry utility (SEU) to correct the errors.

- When you save a changed display, any invalid fields are dropped. To avoid dropping invalid fields, compile the display source, check the source listing for errors, and correct them before saving the display.

- The text fields in the existing DDS source must be 50 characters or fewer, including embedded quotation marks. SDA drops any characters after the first 50.

- SDA, like source entry utility (SEU), can process up to 32 764 lines of DDS source. When you use SDA to create, change, or add new information to a source member, the sequence numbers start at .10 and increment by a default value of .10. You can change the sequence numbers and the increment values on the Specify Additional Options display.

- The Design menus option accepts up to 148 DDS records for each menu, one record for the menu image and up to 147 records of menu help. The Design screens option accepts up to 149 DDS records for each display.

For more information about keywords and the displays they are associated with, see "DDS Keyword and Parameter Organization" on page 179.

Function Keys

Figure 2 gives a brief description of only those keys used to perform basic functions in SDA. These function keys are not available on every display. For a list of all available function keys on individual displays, press Help. Detailed definitions of the available function keys are in numerical order.

Figure 2 (Page 1 of 2). Definition of Function Keys

Function Key	Name of Function Key	Description
F1	Help	Shows the same information as the Help key. F1 is active on all displays but does not appear in the function key area.
F3	Exit	Ignores information typed on an SDA display and exits from the display.
F4	Prompt	Calls the command prompt display for a command typed on the command line, or provides a selection list if the cursor is in a field that supports lists.
F5	Refresh	Discards input and displays the original or default values.
F9	Retrieve	Displays the last command you typed on the command line.
	Select HLPPNLGRP keyword	Shows the version of the display on which you can select the HLPPNLGRP keyword. This function is available on the Define Application Help and Select Help Keyword displays.
	Select HLPRCD or HLPDOC keyword	Shows the version of the display on which you can select either the HLPRCD or HLPDOC keyword. This function is available on the Define Application Help and Select Help Keyword displays.
	Select additional records for display	Selects additional records for display from the work screen.
F10	Save	Saves the menu changes in the System/38 environment.
F11	Switch	Shows an alternate format for information on the display.
F12	Cancel	Ends the current task and returns the previous display without processing any options or changes that you typed in the input prompts.
F13	Print field definitions	Shows a prompt on which you can specify whether or not to include field definitions when you print the Design Image Work Screen display.
F14	Ruler	Shows a ruler on the work screen.
F18	Tab forward	Tabs forward to the next defined field on the work screen.
F19	Tab backward	Tabs backward to the previous defined field on the work screen.
F22	System command	Pops up a window on the Design Image Work Screen in which you can type system commands.
F24	More keys	Displays the next set of function keys available for the display.
Enter	Enter	Submits or validates information on the display for processing.
Help	Help	Shows additional information about the display or option that you selected.

Figure 2 (Page 2 of 2). Definition of Function Keys

Function Key	Name of Function Key	Description
	Page Down (Roll Up)	Moves forward to show additional information for the display.
	Page Up (Roll Down)	Moves backward to show additional information for the display.
	Print	Prints information shown on the display.
	Sysreq	Interrupts the job you are working on and, when you press Enter, shows a menu from which you can do tasks such as: • Start a second interactive job on the system at the same display station. • End the previous request. • Display information about the current job. • Display and send messages.

Starting and Ending SDA

This section shows you how to start and end SDA. It describes the STRSDA command, and shows you how to use this command to start both AS/400 SDA and System/38 environment SDA. This section also describes how to start AS/400 SDA from the programming development manager (PDM), as well as how to end SDA.

Notes:

1. The display that appears after you type your password depends on your authority and the data processing procedures at your installation. For a description of the user profiles that can start SDA and a description of object existence authority, see the *Operator's Guide*.

2. You can also press F4 (Prompt) to receive system prompting.

   For more information on commands and parameters, see the online help information for the command.

Using the STRSDA (Start Screen Design Aid) Command

Figure 3 on page 7 shows the syntax for the STRSDA command. A description of the STRSDA command follows Figure 3.

```
                                    ┌─*SELECT──────────┐
►►──STRSDA───────────────────────────────────────────────────────────────►
              └─OPTION──(──┴─main-menu-option-number─┴──)─┘

           ┌─*PRV──────────────────────────┐
           │  ┌─*PRV/─────────┐            │
►─────────────────────────────────────────────────────────────────────────►
  └─SRCFILE──(──┤           ├──source-file-name──┤──)─┘
              ├─*LIBL/──────┤
              ├─*CURLIB/────┤
              └─library-name/┘

       ┌─*PRV──────────────┐            ┌─*LIBL──────────────┐
►────────────────────────────────────────────────────────────────────────►
  └─SRCMBR──(──┼─*SELECT──────────┼──)─┘  └─OBJLIB──(──┼─*CURLIB────────────┼──)─┘
            └─source-member-name─┘                └─object-library-name─┘

       ┌─*PRV──────────────────────────┐
       │  ┌─*PRV/─────────┐            │
►────────────────────────────────────────────────────────────────────────►
  └─JOBD──(──┤           ├──┬─*USRPRF──────────────┬──)─┘
          ├─*LIBL/──────┤   └─job-description-name─┘
          ├─*CURLIB/────┤
          └─library-name/┘

       ┌─*PRV──────────────────────────┐                    ┌─*STD─┐
       │  ┌─*PRV/─────────┐            │                    │      │
►──────────────────────────────────────────────────────────────────────────►◄
  └─TSTFILE──(──┤           ├──test-file-name──┤──)─┘  └─MODE──(──┼─*S36─┼──)─┘
            ├─*LIBL/──────┤                                   └─*S38─┘
            ├─*CURLIB/────┤
            └─library-name/┘
```
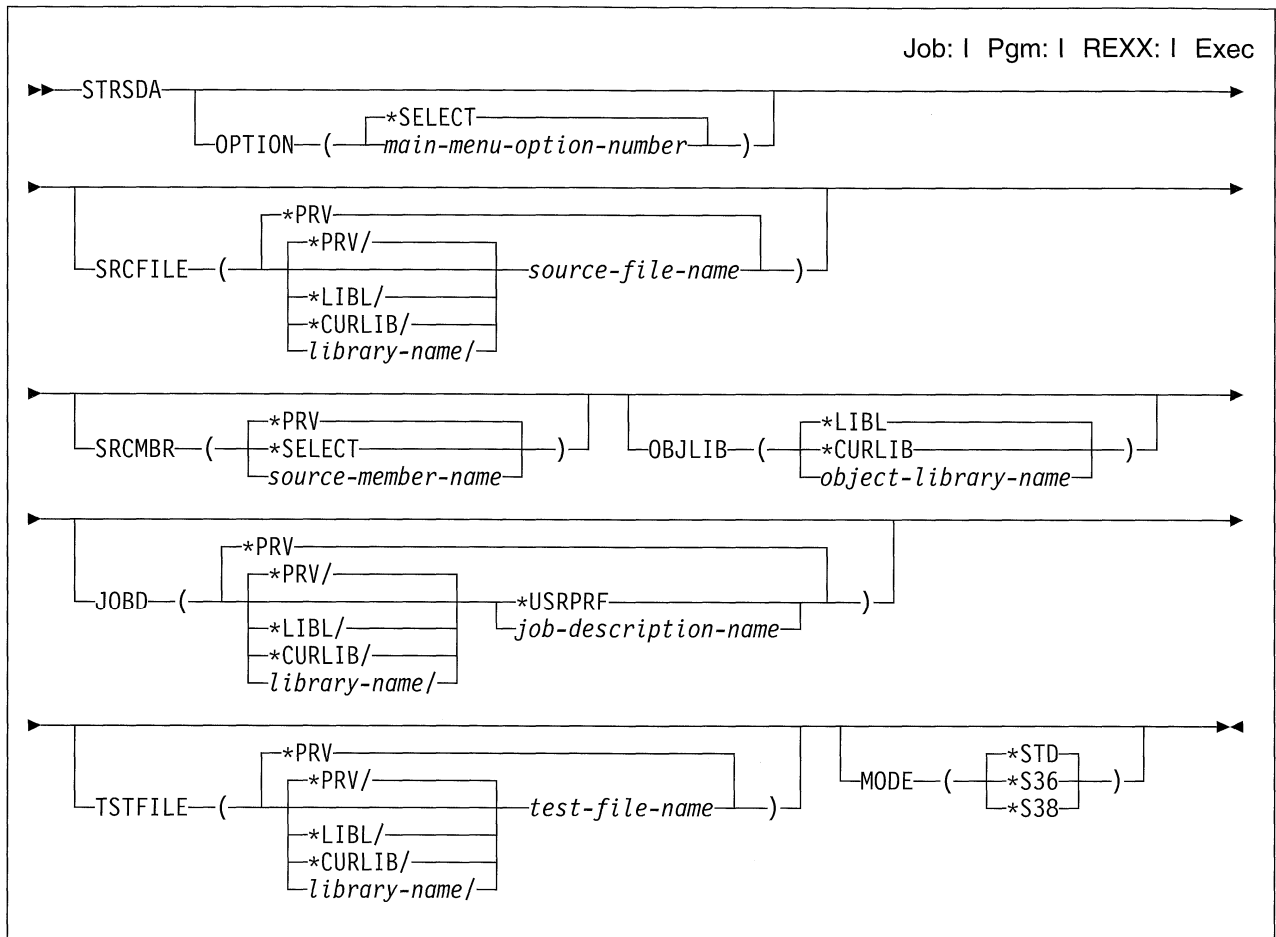
Figure 3. Start SDA (STRSDA) Command

Purpose

The Start SDA (STRSDA) command is the primary command for the IBM* AS/400 screen design aid (SDA) utility. You can use this command in the System/36 and System/38 environments, as well as the AS/400 environment.

Optional Parameters

OPTION

Specifies which option to use as a value for the SDA main menu. This parameter is ignored if MODE (*S36) is specified.

*SELECT: The SDA main menu is shown.

main-menu-option-number: Specify a number ranging from 1 through 3 that corresponds to an option on the SDA main menu. If this parameter value is selected, the SDA main menu does not appear.

SRCFILE

Specifies the qualified name of the source file that contains the source member being updated, or the name of the source file to which a new source member is being added. If you specify MODE (*S36), the only qualifier used is the library.

*PRV: The SDA uses the name of the source file used in the previous SDA session for the AS/400 system only if MODE(*STD) is specified.

The possible library values are:

*PRV: SDA uses the name of the library used in the previous SDA session for the AS/400 system (only when *STD is specified on the MODE parameter).

*LIBL: The library list is used to locate the source file.

*CURLIB: The current library for the job is used to locate the source file. If no library is specified as the current library for the job, the QGPL library is used.

library-name: Specify the name of the library where the source file is located.

source-file-name: Specify the name of an existing source file that is used by SDA.

SRCMBR

Specifies the name of a new or existing source file member that either contains or will contain source data for the displays or menus updated or created by SDA.

*PRV: SDA uses the name of the source member used in the previous SDA session for the AS/400 system (only when *STD is specified on the MODE parameter).

*SELECT: The source file member name is left blank until it is selected later in the session.

source-member-name: Specify the name of the source file member being created or updated.

OBJLIB

Specifies the name of the object library where the program or display file created by SDA is stored.

*PRV: The SDA uses the name of the object library used in the previous SDA session for the AS/400 system (only when *STD is specified on the MODE parameter).

*CURLIB: The current library for the job is used to store the SDA objects.

object-library-name: Specify the name of the library where objects created by the SDA are stored.

JOBD

Specifies the qualified name of the job description used with batch jobs being submitted by SDA. This parameter is not used if *S36 is specified on the MODE parameter.

*PRV: The SDA uses the name of the job description used in the previous SDA session for the AS/400 system (only when *STD is specified on the MODE parameter).

The possible library values are:

*PRV: The SDA uses the name of the library used in the previous SDA session for the AS/400 system (only when *STD is specified on the MODE parameter).

*LIBL: The library list is used to locate the job description.

*CURLIB: The current library for the job is used to locate the job description. If no library is specified as the current library for the job, the QGPL library is used.

library-name: Specify the name of the library where the job description is located.

*USRPRF: The SDA uses the name of the job description defined in the user profile.

job-description-name: Specify the name of the job description used with submitted jobs.

TSTFILE

Specifies the qualified name of the display file used for testing. This parameter is ignored if *S36 is specified on the MODE parameter.

*PRV: The SDA uses the name of the display file used in the previous SDA session for the AS/400 system (only when *STD is specified on the MODE parameter).

The possible library values are:

*PRV: The SDA uses the name of the library used in the previous SDA session for the AS/400 system (only when *STD is specified on the MODE parameter).

*LIBL: The library list is used to locate the name of the display file.

*CURLIB: The current library for the job is used to locate the name of the display file. If no library is specified as the current library for the job, the QGPL library is used.

library-name: Specify the name of the library where the name of the display file is located.

test-file-name: Specify the name of the display file used for testing.

MODE

Specifies whether the System/36 environment, System/38 environment, or the AS/400 system is used by the SDA.

*STD: The AS/400 SDA is used. The AS/400 SDA main menu is shown. The main menu does not appear if the OPTION parameter is specified.

*S36: The System/36 environment of SDA is used. The System/36 SDA main menu is shown.

*S38: The System/38 environment of SDA is used. The System/38 SDA main menu is shown. The main menu does not appear if the OPTION parameter is specified.

Example

```
STRSDA  SRCFILE(TESTLIB/TESTFILE)  SRCMBR(TESTMBR)
  JOBD(*CURLIB/TESTJOB)
```

This command shows the SDA main menu. The source member being created or updated is TESTMBR from the source file TESTFILE in the library TESTLIB. The name of the job description used with SDA batch jobs is TESTJOB in library *CURLIB. The defaults for all other parameters are assumed.

Starting AS/400 SDA

To start AS/400 SDA, type STRSDA on an AS/400 command line and press Enter. You see the AS/400 Screen Design Aid (SDA) menu (called the Screen Design Aid (SDA) menu for the remainder of this manual) shown in Figure 4.

```
                         AS/400 Screen Design Aid (SDA)

 Select one of the following:

      1. Design screens
      2. Design menus
      3. Test display files













 Selection or command
 ===> _____

 _____
 F1=Help   F3=Exit   F4=Prompt   F9=Retrieve   F12=Cancel
                                       (C) COPYRIGHT IBM CORP. 1981, 1993.
```

Figure 4. Screen Design Aid Menu

Starting System/38 Environment SDA

To start System/38 environment SDA, type STRSDA MODE (*S38) on the Command Entry display. Press Enter to see the Screen Design Aid (SDA) menu.

Notes:

1. The default mode is the AS/400 environment (*STD).

2. The command line in System/38 environment SDA only accepts AS/400 syntax. System/38 syntax is supported on the System/38 environment Command Entry display.

Starting SDA from the Programming Development Manager (PDM)

To start AS/400 SDA from the programming development manager (PDM), type 17 (Change using SDA) in the *Opt* column next to a member of type MNUDDS, MNUCMD, or DSPF on the Work with Members Using PDM display. Press Enter. You see either the Design Screens display or the Design Menus display depending on the type of the member you selected.

Ending SDA

To end SDA, press F3 (Exit) repeatedly until you see the system menu. You can then use another feature on the system, return to SDA, or exit from the system.

Note: You must press Enter on the Exit confirmation displays to save any changes that you made during the session.

Chapter 2. Creating Simple Displays

This chapter describes how to create a display. In the example in this chapter, you create an inquiry into a customer master file that allows the user to check the accounts receivable balance and credit limit for any customer. To create the display, you select fields from a database file to place on the Design Image work screen. The fields in the database already have attributes defined for them. You then add the fields to the display.

Before you can create the New Customer Inquiry display in this example, you must have the following authority to the required source file QDDSSRC.

1. To access the source file you require:

   - *OBJOPR
   - *OBJMGT
   - *READ
   - *DLT

2. To save your source you require:

   - *OBJOPR
   - *OBJMGT
   - *READ
   - *ADD
   - *DLT

QDDSSRC is the IBM supplied DDS source file, and is in the library QGPL.

As you work on the example, you should become familiar with the SDA displays and functions used to:

- Design a display record (SDA creates DDS for the display).
- Create a display file. The display file is the compiled DDS.

Figure 5 on page 12 shows the path of SDA displays that you use to create the New Customer Inquiry display. To test the display file you create in this chapter, see Chapter 6, "Testing Display Files" on page 99.

```
        ┌──────────┐
        │  Screen  │
        │  Design  │
        │  Aid     │
        └──────────┘
            ↑↓
        ┌──────────┐
        │  Design  │◄──────────────┐
        │  Screens │               │
        └──────────┘               │
            │                      │
        ┌──────────┐   ┌──────────┐│
        │ Work with│   │ Save DDS-│
        │ Display  │──►│ Create   │
        │ Records  │   │Display File│
        └──────────┘   └──────────┘
            ↑↓
        ┌──────────┐
        │   Work   │
        │  Screen  │
        └──────────┘
            │
     ┌──────┴──────┐
     │             │
┌──────────┐  ┌──────────┐
│ Select   │  │ Select   │
│ Field    │  │ Database │
│ Keywords │  │ Files    │
└──────────┘  └──────────┘
                  ↑↓
              ┌──────────┐
              │ Select   │
              │ Database │
              │ Records  │
              └──────────┘
                  ↑↓
              ┌──────────┐
              │ Select   │
              │ Database │
              │ Fields   │
              └──────────┘
```
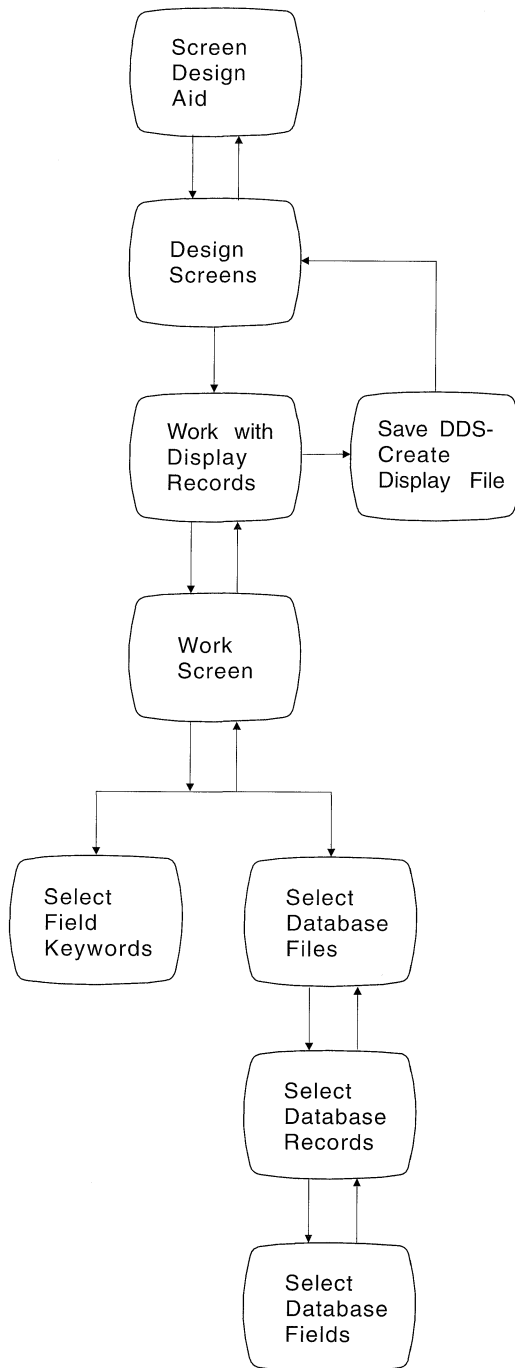
Figure 5. Displays You Use to Create the New Customer Inquiry Display

Considerations for Using SDA Displays

Some of the SDA displays in the example have special extensions to define indicators or long parameters. In such situations, the following apply:

- When indicators are allowed on a display, you can access an indicators display by typing + in the *Indicators* prompt anywhere in SDA.

- When duplicate keywords (such as INDTXT) are allowed, scroll through those keywords by typing + or – in the *More/Roll* prompt for the keyword.

- When long parameters are allowed (with the EDTWRD keyword), you can get extension space by typing + in the *More* prompt for the keyword. The *More* prompt does not appear if the field length is less than the standard input field for the keyword.

- When you press F3 (Exit) or F12 (Cancel) on a display, you lose all the input from the display. SDA does no processing.

- Keywords that are not valid for the record or file type being processed do not appear on the displays.

Note: The displays shown in the examples appear if you are using AS/400 SDA (unless the example is specifically for the System/38 environment). If you are using the System/38 environment, your displays may have minor differences.

Designing a Display

To design a display, select database fields, align them on the display with a ruler, save the DDS, and compile the DDS to create the display file.

1. On the Screen Design Aid (SDA) menu:

   a. Select option 1 (Design screens) from the Screen Design Aid (SDA) menu. The menu looks like Figure 6.

```
                       AS/400 Screen Design Aid (SDA)

          Select one of the following:

               1. Design screens
               2. Design menus
               3. Test display files













          Selection or command
          ===> 1 _____
          _____
           F1=Help   F3=Exit   F4=Prompt   F9=Retrieve   F12=Cancel
                                           (C) COPYRIGHT IBM CORP. 1981, 1993.
```
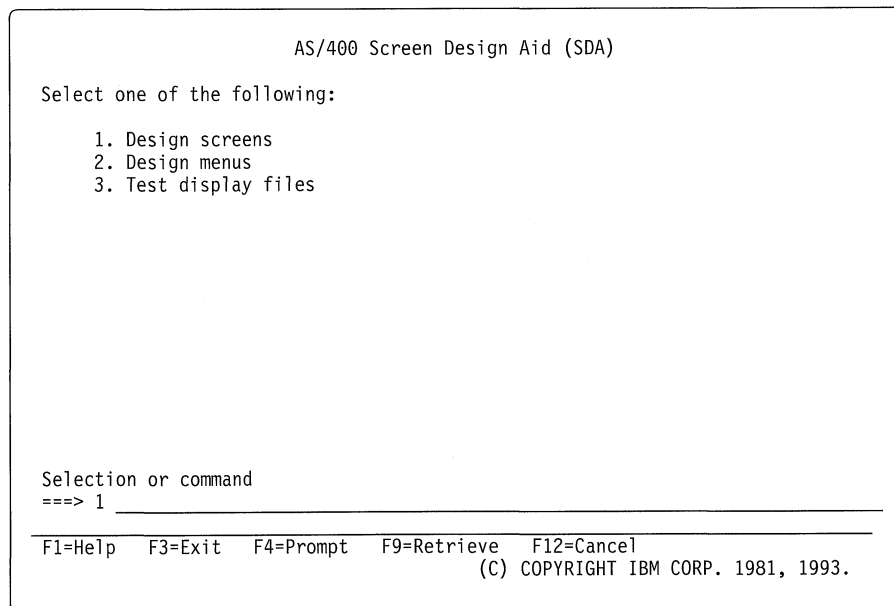
Figure 6. Screen Design Aid (SDA) Menu with Option 1 Selected

   b. Press Enter to see the Design Screens display.

2. On the Design Screens display, specify the name of the source file, library, and member:

   a. Type QDDSSRC in the *Source file* prompt.

   b. Type QGPL in the *Library* prompt.

   c. Type CUSMASTER in the *Member* prompt.

The display now looks like Figure 7 on page 14.

Note: This display is slightly different if you are using the System/38 environment.

```
                           Design Screens

 Type choices, press Enter.

      Source file . . . . . . .    QDDSSRC___     Name, F4 for list

         Library . . . . . . . .   QGPL_____     Name, *LIBL, *CURLIB

         Member. . . . . . . . .   CUSMASTER_     Name, F4 for list













 F3=Exit      F4=Prompt      F12=Cancel
```

Figure 7. Design Screens Display

    d. Press Enter to see the Work with Display Records display.

3. On the Work with Display Records display, indicate that you want to create a new record:

    a. Type 1 (Add) in the *Opt* column.

    b. Type INQUIRY in the *Record* column.

The display looks like Figure 8.

```
                      Work with Display Records
 File . . . . . . :   QDDSSRC            Member . . . . . . :   CUSMASTER
    Library . . . :     QGPL            Source type  . . . :   DSPF

 Type options, press Enter.
   1=Add            2=Edit comments    3=Copy          4=Delete
   7=Rename         8=Select keywords  12=Design image

 Opt  Order    Record      Type    Related Subfile   Date      DDS Error
 1_            INQUIRY___

   (No records in file)








 F3=Exit                    F12=Cancel       F14=File-level keywords
 F15=File-level comments    F17=Subset       F24=More keys
```

Figure 8. Work with Display Records Display

c. Press Enter to see the Add New Record display shown in Figure 9. The name of the record (INQUIRY) and the record type (RECORD) are shown on the display.

```
                           Add New Record

 File . . . . . . :   QDDSSRC              Member . . . . . . :   CUSMASTER
    Library  . . . :      QGPL             Source type  . . . :   DSPF

 Type choices, press Enter.

    New record . . . . . . . . . . . . .   INQUIRY___     Name

    Type . . . . . . . . . . . . . . . .   RECORD         RECORD, USRDFN
                                                          SFL,    SFLMSG
                                                          WINDOW, WDWSFL









 F3=Exit      F5=Refresh      F12=Cancel
```
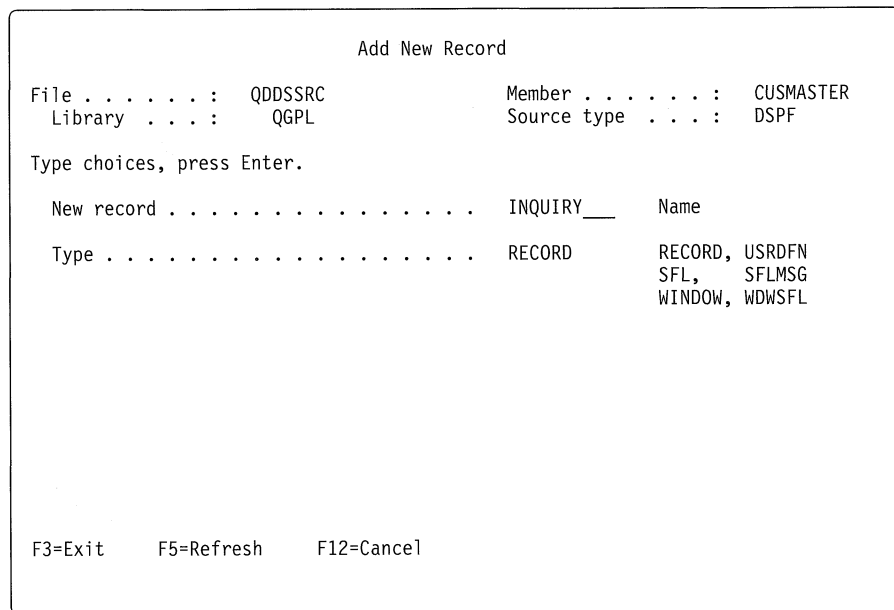
Figure 9. Add New Record Display

d. Press Enter to see the Design Image work screen.

You use the Design Image work screen to design the displays that a user will use. The first time you see the work screen, shown in Figure 10, a message appears at the bottom.

```














 Work screen for record INQUIRY: Press Help for function keys.
```
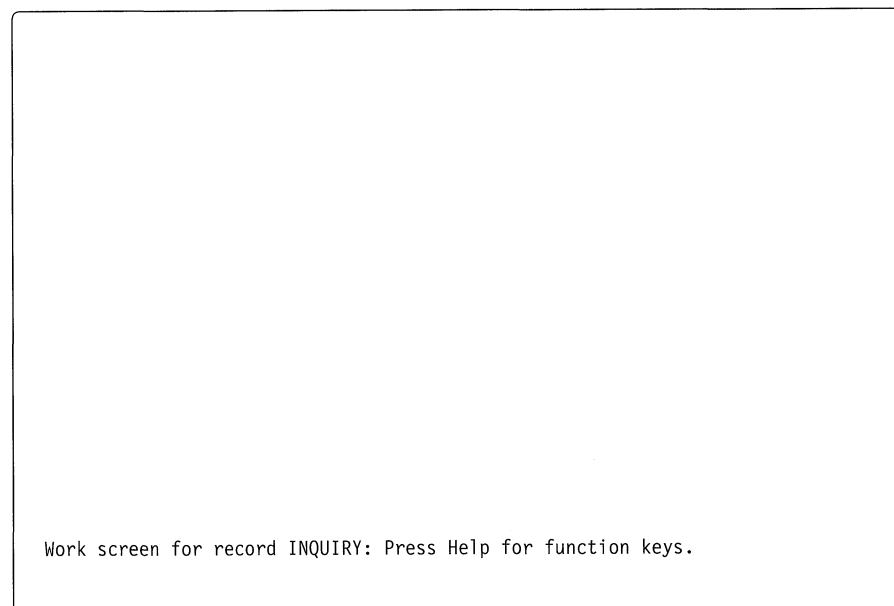
Figure 10. A Blank Design Image Work Screen

The first position (row 01, column 01) of the work screen is reserved by SDA as an attribute byte. Any attempt to type in this position results in a keyboard error.

You can add fields to the last row if it is not being used for an SDA prompt or message. For more information, see Chapter 9, "Work Screen Reference Information."

4. On the Design Image work screen:

   a. Press the Help key to see the help information available.

   b. Press the Rollup key to browse through the help information.

   c. Press F12 (Cancel) to return the work screen.

   d. Press F10 (Database) to see the Select Database Files display.

Selecting Fields from a Database File

Now select database fields. The fields that you select from a database file appear at the bottom of the Design Image work screen.

1. On the Select Database Files display, specify the database file from which you want to select fields:

   a. Type 1 (Display database field list) in the *Option* column.

   b. Type CUSDATA in the *Database File* column.

   c. Type QPDA in the *Library* column.

   The Select Database Files display now looks like Figure 11.

```
                        Select Database Files

Type options and names, press Enter.
  1=Display database field list
  2=Select all fields for input (I)
  3=Select all fields for output (O)
  4=Select all fields for both (B) input and output

  Option    Database File    Library      Record
    1        CUSDATA___       QPDA_____   _____
    _        _____       _____   _____
    _        _____       _____   _____
    _        _____       _____   _____
```

Figure 11. Select Database Files Display with the CUSDATA File Selected

   d. Position the cursor in the *Record* column and press F4 (Prompt) to see the Select Database Records display. The names of the database file, library, and a list of records appear on the Select Database Records display.

   Note: You can also press F4 (Prompt) in the *Database File* column to see a list of database files in the library.

2. On the Select Database Records display:

   a. Type 1 (Select) in the *Option* column for the record CUSMST. The display looks like Figure 12 on page 17.

```
                      Select Database Records

Database file  . . . . . :    CUSDATA        Library . . . :   QPDA

Type options, press Enter.
  1=Select

Option   Record
  1      CUSMST
```

Figure 12. Select Database Records Display with the CUSMST Record Selected

    b. Press Enter to see the Select Database Fields display.

3. On the Select Database Fields display, specify the fields that you want to use for designing the display:

    a. Type 2 (Select for input) in the *Option* column for the CUST field.

    b. Type 3 (Select for output) in the *Option* column for the NAME field.

    The display now looks like Figure 13.

```
                      Select Database Fields

Record . . . :   CUSMST

Type information, press Enter.
  Number of fields to roll  . . . . . . . . . . . . . . . . . _8
  Name of field to search for . . . . . . . . . . . . . . . . _____

Type options, press Enter.
  1=Display extended field description
  2=Select for input (I), 3=Select for output (O), 4=Select for both (B)

Option  Field       Length  Type   Column Heading
  2     CUST             5   A      Customer Number
  3     NAME            20   A      Customer Name
  _     ADDRESS         20   A      Street Address
  _     CITY            20   A      City
  _     STATE            2   A      State
  _     ZIP            5,0   P      Zip Code
  _     SEARCH           6   A      Search Code
  _     CUTYPE           1   A      Cust Type
                                                                 More...
F3=Exit   F12=Cancel
```

Figure 13. Select Database Fields Display with CUST and NAME Selected

    c. Press Page Down (Roll Up) to see more fields.

    d. Type 3 (Select for output) in the *Option* column for the ARBAL field.

    e. Type 3 (Select for output) in the *Option* column for the CRDLMT field.

    f. Press Enter to return the Select Database Files display.

4. Press Enter on the Select Database Files display to return the Design Image work screen. SDA displays the fields that you selected on the bottom row of the work screen.

Positioning the Ruler and Placing Constants on the Design Image Work Screen

Now position the ruler and place constants on the work screen. The ruler helps you to line up the fields on the work screen. The F14 (Ruler) function key acts like a toggle: press it once to display the ruler and press it again to remove the ruler.

1. On the Design Image work screen:

   a. Position the cursor on row 3, column 1.

   b. Press F14 (Ruler) to display the ruler on row 3, column 1. You can type data over the ruler. The ruler does not delete data.

      Note: The ruler does not appear on the display that the user sees.

   c. Type the output constant *TIME starting at row 1, column 2. The constant supplies the system time provided by DDS.

   d. Type the output constant *DATE starting at row 1, column 61. The constant supplies the date on which the current session started.

      The system time and the date appear whenever you use the NEW CUSTOMER INQUIRY application.

      Note: If you are using the AS/400 environment, you can also specify the *USER and *SYSNAME output constants. The *USER constant supplies the name of the user. The *SYSNAME constant supplies the name of the system.

   e. Type the constant 'NEW CUSTOMER INQUIRY' beginning at row 2, column 1 as the display heading.

      Note: If you enclose a constant in single quotation marks, SDA treats the entire string as one constant. If you do not use the single quotation marks, SDA treats each word in the string as a separate constant.

   f. Press Enter. SDA displays the heading you typed and removes the quotation marks. The time and date constants appear at the top of the display as the six-digit edited numbers TT:TT:TT and DD/DD/DD.

   g. Type ac in the attribute position of the heading as shown in Figure 14 on page 19.

      Note: You cannot use ac (attribute center) to center double-byte character set (DBCS) characters. You must type the heading in the position that you want.

```
TT:TT:TT                                              DD/DD/DD
acEW CUSTOMER INQUIRY
... ... 1 ... ... 2 ... ... 3 ... ... 4 ... ... 5 ... ... 6 ... ... 7 ... ... 8
 4
 5
 6
 7
 8
 9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
 1:CUST 2:NAME 3:ARBAL 4:CRDLMT
```

Figure 14. Design Image Work Screen with Title and TIME and DATE Constants

> h. Press Enter to center the heading.

Placing Database Fields on the Design Image Work Screen

Now add prompts and data fields to the work screen by typing work screen symbols that show SDA where to position the database fields.

1. Type the following work-screen symbols to position the database fields:

   a. &1L beginning at row 7, column 20.

   b. &2L beginning at row 9, column 25.

   c. &3L beginning at row 11, column 25.

   d. &4L beginning at row 13, column 25.

   The & indicates the starting position of the data field, the number specifies the database field to use from the list at the bottom of the display, and the L indicates that the prompt is to be to the left of the data field. You can also place the prompt to the right of the data field or above the data field. For more information, see "Using Symbols to Place a Database Field on the Work Screen" on page 166.

   Note: Only information that is positioned on the Design Image work screen is saved as DDS. If you end an SDA session and save the DDS, the fields that you did not position on the work screen are not saved. You must reselect these fields on the Select Database Fields display.

The work screen now looks like Figure 15 on page 20.

```
TT:TT:TT                                            DD/DD/DD
2                        NEW CUSTOMER INQUIRY
... ... 1 ... ... 2 ... ... 3 ... ... 4 ... ... 5 ... ... 6 ... ... 7 ... ... 8
4
5
6
7                    &1L
8
9                        &2L
10
11                       &3L
12
13                       &4L
14
```

Figure 15. Design Image Work Screen with Work Screen Symbols

2. Press Enter to place the prompts and data fields in the locations that you speci-
   fied. The database field names that you selected no longer appear at the
   bottom of the work screen.

The work screen now looks like Figure 16.

```
TT:TT:TT                                            DD/DD/DD
2                        NEW CUSTOMER INQUIRY
... ... 1 ... ... 2 ... ... 3 ... ... 4 ... ... 5 ... ... 6 ... ... 7 ... ... 8
4
5
6
Customer Number:  IIIII
8
9       Customer Name:  OOOOOOOOOOOOOOOOOOOO
10
11  Accts Rec Balance:  666,666.66-
12
13        Credit Limit:  66666666
14
```

Figure 16. Design Image Work Screen with Database Fields Displayed

Specifying Display Attributes and User-Defined Fields on the Design Image Work Screen

Now specify display attributes for a prompt and a data field to modify how they are
displayed. You can change display attributes such as color and highlighting by
specifying an **attribute character**. The attribute character defines how the field is
displayed. You can also define your own fields instead of selecting them from a
database file.

To specify display attributes and user-defined fields:

1. Press F19 (Back Tab) repeatedly to tab backward to the Customer Number
   prompt.

2. Type the attribute character H immediately preceding the Customer Number
   prompt to highlight the prompt.

   The position immediately preceding a field is the **attribute position** for the
   field.

3. Press F18 (Tab) to tab forward to the attribute position of the data field `IIIII`. Pressing Enter causes the `Customer Number` prompt to be displayed as highlighted.

4. Type `S` immediately before the data field to specify column separators. For more information on display attributes, see "Specifying Display Attributes" on page 163.

5. Type `Adjustment: +3(8,2)` beginning at row 15, column 11. The constant `Adjustment:` serves as the prompt, and `+3(8,2)` is the data field. The + specifies a user-defined field, 3 specifies that the field is an input numeric field, and 8,2 specifies a field length of 8 with 2 decimal positions. For more information on user-defined fields, see "Adding Fields to the Work Screen" on page 168.

The work screen now looks like Figure 17.

```
TT:TT:TT                                        DD/DD/DD
2                          NEW CUSTOMER INQUIRY
... ... 1 ... ... 2 ... ... 3 ... ... 4 ... ... 5 ... ... 6 ... ... 7 ... ... 8
4
5
6
Customer Number: SIIIII
8
9        Customer Name:   OOOOOOOOOOOOOOOOOOOO
10
11   Accts Rec Balance:   666,666.66-
12
13        Credit Limit:   66666666
14
15          Adjustment:   +3(8,2)
```

Figure 17. Design Image Work Screen with User-Defined Fields and Display Attributes Specified

The default for numeric fields is signed numeric. Only input and both (input and output) fields show the minus sign at the end of the field. The `666,666.66-` data field appears with a trailing minus sign because of its definition in the database file. You edit the data field to change the definition in "Editing a Field" on page 22.

6. Press Enter and SDA processes the display attributes.

Figure 18 shows the Design Image work screen after the display attributes are processed. The data field `IIIII` now has column separators and the `Adjustment` prompt and the data field `333333.33` are displayed.

```
TT:TT:TT                                        DD/DD/DD
2                          NEW CUSTOMER INQUIRY
... ... 1 ... ... 2 ... ... 3 ... ... 4 ... ... 5 ... ... 6 ... ... 7 ... ... 8
4
5
6
Customer Number:  IIIII
8
9        Customer Name:   OOOOOOOOOOOOOOOOOOOO
10
11   Accts Rec Balance:   666,666.66-
12
13        Credit Limit:   66666666
14
15          Adjustment:   333333.33
```

Figure 18. Design Image Work Screen with Display Attributes

7. Press F14 (Ruler) to remove the ruler.

Editing a Field

Now edit the 666,666.66- data field to show commas, zero balances, and no sign. You edit the data field by specifying an **edit code** for the data field. Edit codes tell SDA how to display numeric values.

1. On the Design Image work screen:

   a. Type an asterisk (*) immediately before the 666,666.66- data field.

   b. Press Enter to see the Select Field Keywords display.

2. On the Select Field Keywords display, specify that you want to edit keywords:

   a. Type Y (Yes) in the *Editing keywords* prompt. The display looks like Figure 19.

   > **Note:** This display is slightly different if you are using the System/38 environment.

```
                         Select Field Keywords

   Field . . . . . :   ARBAL            Usage . . :  0
   Length  . . . . :   8,2              Row . . . :  11    Column . . . :  25

   Type choices, press Enter.
                                        Y=Yes    For Field Type
      Display attributes . . . . . . .   _       All except Hidden
      Colors . . . . . . . . . . . . .   _       All except Hidden



      General keywords . . . . . . . .   _       All types
      Editing keywords . . . . . . . .   Y       Numeric Output or Both
      Database reference . . . . . . .   _       Hidden, Input, Output, Both
      Error messages . . . . . . . . .   _       Input, Output, Both
      Message ID (MSGID) . . . . . . .   _       Output or Both


      TEXT keyword . . . . . . . . . .   Accts Rec Balance_____


   _____
   F3=Exit   F12=Cancel
```

Figure 19. Select Field Keywords Display with the Editing Keywords Prompt Selected

   b. Press Enter to see the Select Editing Keywords display. The name of the field that you selected with the asterisk appears at the top of the display, along with the field usage, length, and position.

3. On the Select Editing Keywords display, change the edit code:

   a. Type 1 in the *Edit code* prompt to change the edit code to show commas, zero balances, and no sign for the data field.

   Notes:

   1) Select the EDTCDE keyword for most numeric fields and the EDTWRD keyword for fixed-format fields such as currency symbols and asterisks.

   2) You can select the currency symbol ($) or the asterisk for the EDTCDE keyword to replace leading zeros. You can define your own text for the edit code by typing it in *Edit word* prompt for the EDTWRD keyword.

The display now looks like Figure 20.

```
                        Select Editing Keywords

Field . . . . . :   ARBAL              Usage . . :  0
Length . . . . :    8,2                Row . . . :  11    Column . . . :  25

Edit Code Description            No Sign  CR Sign  - Sign(R) - Sign(L)
Commas and zero balances           1        A         J         N
Commas                             2        B         K         O
Zero balances                      3        C         L         P
No commas or zero balances         4        D         M         Q
User defined edit codes           5-9
Date edit                          Y
Suppress leading zeros             Z

Type choices, press Enter.
                                      Keyword                      More
     Edit code . . . . . . . . . . . . . . . EDTCDE  1   A-D, J-Q, Y, Z, 1-9
       Replace leading zeros with . . . .             -   *, $
     Edit word . . . . . . . . . . . . . .  EDTWRD   _____

     _____  -

F3=Exit   F12=Cancel
```

Figure 20. Select Editing Keywords Display with a Changed Edit Code

    b. Press Enter to return the Select Field Keywords display.

4. Press Enter on the Select Field Keywords display to return the Design Image work screen.

The 666,666.66 data field no longer has a trailing minus sign. The completed display looks like Figure 21.

```
TT:TT:TT                                                 DD/DD/DD
                        NEW CUSTOMER INQUIRY



Customer Number:  IIIII

         Customer Name:  OOOOOOOOOOOOOOOOOOOO

     Accts Rec Balance:  666,666.66

         Credit Limit:  66666666

           Adjustment:  333333.33
```

Figure 21. The Completed New Customer Inquiry Display

Adding a Message Identifier

Now define a message ID for the 66666666 data field. To define message IDs on the Define Message ID display, you specify a message prefix, identifier, and condition indicators.

1. On the Design Image work screen:

    a. Type an asterisk (*) immediately before the 66666666 data field.

    b. Press Enter to see the Select Field Keywords display.

2. On the Select Field Keywords display, specify that you want to define a message ID:

    a. Type Y (Yes) in the *Message ID (MSGID)* prompt. The display looks like Figure 22.

```
                         Select Field Keywords

       Field . . . . . :   CRDLMT          Usage . . :  0
       Length  . . . . :   8               Row . . . :  13   Column . . . :  25

       Type choices, press Enter.
                                           Y=Yes   For Field Type
         Display attributes . . . . . . .   _      All except Hidden
         Colors . . . . . . . . . . . . .   _      All except Hidden



         General keywords . . . . . . . .   _      All types
         Editing keywords . . . . . . . .   _      Numeric Output or Both
         Database reference . . . . . . .   _      Hidden, Input, Output, Both
         Error messages . . . . . . . . .   _      Input, Output, Both
         Message ID (MSGID) . . . . . . .   Y      Output or Both


         TEXT keyword . . . . . . . . . .          Customer Credit Limit_____

       _____
       F3=Exit    F12=Cancel
```

Figure 22. Select Field Keywords Display with the Message ID (MSGID) Prompt Selected

    b. Press Enter to see the Define Message ID display. The name of the field that you selected with the asterisk appears at the top of the display, along with the field usage, length, and position.

3. On the Define Message ID display:

    a. Type MSG in the *Message prefix* prompt.

    b. Type 0001 in the *Message identifier* prompt.

    The message prefix and message identifier make up the identifier used in the message file.

    c. Type USRMSGS in the *Message file* prompt. The message file contains the messages you are using.

    d. Type USRL in the *Library* prompt to specify the library. The display now looks like Figure 23 on page 25.

```
                      Define Message ID

Field . . . . . :   CRDLMT        Usage . . . :  0
Length  . . . . :   8             Row . . . . :  13        Column . . . :  25

Type choices, press Enter.

                                  Keyword
       Message ID:                MSGID
          Message prefix . . . . . . . .      MSG
          Message identifier . . . . . .   _  0001_____    & Field name,
                                                              Message ID,
                                                              Message number
          Message file . . . . . . . . .   _  USRMSGS____   & Field name,
                                                              Name
             Library  . . . . . . . . . .   _  USRL_____   & Field name,
                                                              Name,
                                                              *LIBL, *CURLIB
          Indicators . . . . . . . . . .       ___ ___ ___   Nnn,+



F3=Exit   F12=Cancel
```

Figure 23. Define Message ID Display

    e. Press Enter to return the Select Field Keywords display.

4. On the Select Field Keywords display, type Y in the *Message ID (MSGID)* prompt and press Enter. You now see the Work with Message ID Keyword display with the message you defined.

```
                   Work with Message ID Keyword

Field . . . . . :   CRDLMT        Usage . . . :  0
Length  . . . . :   8             Row . . . . :  13        Column . . . :  25

Type options, press Enter.
   1=Add             2=Change              3=Copy          4=Delete

Option   Order   Indicators     Parameters

           10                   MSG 0001 USRL/USRMSGS








                                                             Bottom
F3=Exit        F5=Refresh      F10=Change Order     F12=Cancel
```

Figure 24. Work with Message ID Keyword

5. Press F12 (Cancel) until you see the Work with Display Records display.

Saving the Data Description Specifications and Creating the Display File

Now save the DDS created by SDA for this display and create the display file:

1. Press Enter on the Work with Display Records display to see the Save DDS - Create Display File display shown in Figure 25.

```
                     Save DDS - Create Display File

 Type choices, press Enter.

     Save DDS source  . . . . . . . . . . . .   Y           Y=Yes
         Source file  . . . . . . . . . . . .   QDDSSRC___  F4 for list
             Library  . . . . . . . . . . . .   QGPL_____  Name, *LIBL ...
         Member . . . . . . . . . . . . . . .   CUSMASTER_  F4 for list
         Text . . . . . . . . . . . . . . . .               _____


     Create display file  . . . . . . . . . .   Y           Y=Yes
         Prompt for parameters  . . . . . . .   _           Y=Yes
         Display file . . . . . . . . . . . .   CUSMASTER_  F4 for list
             Library  . . . . . . . . . . . .   QGPL_____  Name, *CURLIB
         Replace existing file  . . . . . . .   Y           Y=Yes

     Submit create job in batch . . . . . . .   Y           Y=Yes

     Specify additional
        save or create options  . . . . . . .   _           Y=Yes

 F3=Exit   F4=Prompt   F12=Cancel
```

Figure 25. Save DDS - Create Display File Display with Default Values

2. On the Save DDS - Create Display File display, indicate that you want to specify additional options for creating the display file:

   a. Type Y (Yes) in the *Specify additional save or create options* prompt.

   b. Press Enter to see the Specify Additional Options display shown in Figure 26 on page 27.

```
                       Specify Additional Options

  Type choices, press Enter.

    For save DDS source=Yes:
      Sequence number
        Start  . . . . . . . . . . . . . . .   0000.10      0000.01-9999.99
        Increment  . . . . . . . . . . . . .   00.10        00.01-99.99

    For create display file=Yes:
      If create fails, display listing . . .   Y            Y=Yes
      Create file if DDS message severity
        (GENLVL) is less than  . . . . . . .   20           0-30
      Flagging severity level  . . . . . . .   _0           0-30

    For submit create job in batch=Yes:
      Job description  . . . . . . . . . . .   QBATCH____   F4 for list
                Library  . . . . . . . . . . . . . . .   QGPL_____   Name, *LIBL ...




    F3=Exit   F4=Prompt   F12=Cancel

```

Figure 26. The Specify Additional Options Display

If you want, you can change the defaults on this display. In this example, the defaults are not changed.

3. Press Enter or F12 (Cancel) to return the Save DDS - Create Display File display.

4. Press Enter on the Save DDS - Create Display File display to:

   • Save the DDS source created by SDA.

   • Create the display file CUSMASTER from the DDS source.

   • Submit CUSMASTER as a batch job. (If you leave the *Submit create job in batch* prompt blank, SDA creates the display file CUSMASTER interactively.)

     Note: If the member CUSMASTER or the display file already exists, SDA indicates this by displaying a message. If a message appears, press Enter to replace the existing file, or F12=Cancel if you do not want to replace the file.

   When SDA displays a completion message, you have finished creating the New Customer Inquiry display.

5. Press Enter to return the Design Screens display.

Copying a Record

Now copy the INQUIRY record. The copied record serves as a template that you modify to create a new display.

1. On the Design Screens display, specify where the record is stored:

   a. Type QDDSSRC in the *Source file* prompt.

   b. Type QGPL in the *Library* prompt.

   c. Type CUSMASTER in the *Source Member* prompt.

   d. Press Enter to see the Work with Display Records display.

2. On the Work with Display Records display:

   a. Type 3 (Copy) in the *Opt* column for INQUIRY. The display looks like Figure 27.

```
                        Work with Display Records

File . . . . . . :   QDDSSRC            Member . . . . . . :   CUSMASTER
   Library  . . . :     QGPL            Source type  . . . :   DSPF

Type options, press Enter.
   1=Add              2=Edit comments      3=Copy          4=Delete
   7=Rename           8=Select keywords   12=Design image

Opt  Order    Record       Type      Related Subfile   Date        DDS Error
                         _____
3_   __10     INQUIRY__    RECORD                       09/21/92
```

Figure 27. Work with Display Records Display with Copy Option

   b. Press Enter to see the Copy Records display. The name of the file, the library, the member, and the source type appear at the top of the display.

3. On the Copy Records display, specify a name for the new record:

   a. Type INQUIRY2 in the *New Name* column. The display looks like Figure 28.

```
                           Copy Records

File . . . . . . :   QDDSSRC            Member . . . . . . :   CUSMASTER
   Library  . . . :     QGPL            Source type  . . . :   DSPF

To rename copied record, type new name, press Enter.
Press F12=Cancel to return to change your choices.

Record         Type         New Name
INQUIRY        RECORD       INQUIRY2__
```

Figure 28. Copy Records Display

   b. Press Enter to return the Work with Display Records display shown in Figure 29. The copied record appears at the bottom on the *Record* column.

```
                        Work with Display Records

File . . . . . . :   QDDSSRC            Member . . . . . . :   CUSMASTER
   Library  . . . :     QGPL            Source type  . . . :   DSPF

Type options, press Enter.
   1=Add              2=Edit comments      3=Copy          4=Delete
   7=Rename           8=Select keywords   12=Design image

Opt  Order    Record       Type      Related Subfile   Date        DDS Error
                         _____
__   __10     INQUIRY__    RECORD                       09/21/92
__   __20     INQUIRY2__   RECORD                       09/21/92
```

Figure 29. Work with Display Records Display Showing Record Just Copied

4. On the Work with Display Records display, indicate that you want to modify the image of the new record:

   a. Type 12 (Design image) in the *Opt* column for the record INQUIRY2.

   b. Press Enter to see the Design Image work screen. The record INQUIRY2 is displayed on the work screen.

5. On the Design Image work screen:

   a. Make a few modifications to the image of the record INQUIRY2.

   b. When you finish modifying the image, press F12 (Cancel) to return the Work with Display Records display.

Renaming a Record

If you want to specify a new name for a record, you can rename the record. You now rename the record INQUIRY2.

1. On the Work with Display Records display:

   a. Type 7 (Rename) in the *Opt* column for the record INQUIRY2.

   b. Press Enter to see the Rename Records display.

2. On the Rename Records display, specify the new name for the record:

   a. Type NEWINQUIRY in the *New Name* column as the new name for the record INQUIRY2. The display now looks like Figure 30.

```
                            Rename Records

 File . . . . . . :   QDDSSRC              Member . . . . . . :   CUSMASTER
   Library  . . . :     QGPL              Source type  . . . :   DSPF

 To rename record, type new name, press Enter.
 Press F12=Cancel to return to change your choices.

 Record        Type       New Name
 INQUIRY2      RECORD     NEWINQUIRY
```
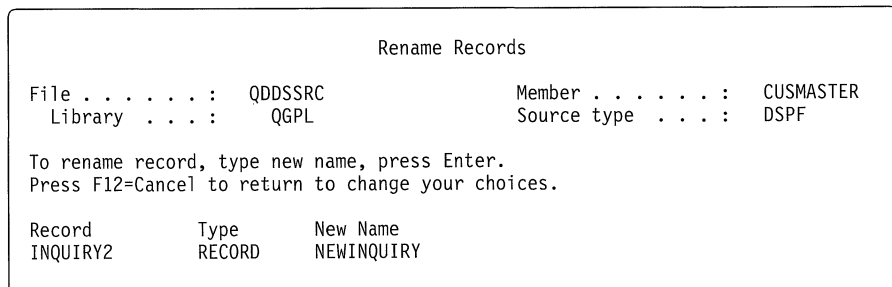
Figure 30. Rename Records Display

   b. Press Enter to see the Work with Display Records display. The display shows the renamed record.

Deleting a Record

When you no longer require a record, you can delete it.

1. On the Work with Display Records display:

   a. Type 4 (Delete) in the *Opt* column for the record NEWINQUIRY.

   b. Press Enter to see the Confirm Delete of Records display shown in Figure 31 on page 30.

```
                        Confirm Delete of Records

   File . . . . . . :   QDDSSRC              Member . . . . . . :   CUSMASTER
      Library  . . . :      QGPL             Source type  . . . :   DSPF

   Press Enter to confirm your choices for 4=Delete.
   Press F12=Cancel to return to change your choices.

   Opt   Record      Type      Related Subfile   Date          DDS Error
    4    NEWINQUIRY  RECORD                       09/21/92
```

Figure 31. The Confirm Delete of Records Display

2. Press Enter on the Confirm Delete of Records display to confirm that you want to delete NEWINQUIRY. When you press Enter, NEWINQUIRY is deleted and you see the Work with Display Records display.

Procedure Summary

This chapter described the following procedure to design and create an example Customer Inquiry display:

1. Select the Design screens option.

2. Create a record.

3. Display the Design Image work screen.

4. Display the ruler and place constants on the Design Image work screen.

5. Select fields from a database file.

6. Design the display on the Design Image work screen.

7. Add a message identifier.

8. Save the DDS and create the display file.

This chapter also described how to:

1. Copy a record.

2. Rename a record.

3. Delete a record.

Deleting a Display Source Member by Using the Program Development Manager (PDM)

When you no longer need a display source member, use the following example to delete it by using the Program Development Manager (PDM).

1. Type STRPDM on the command line of any AS/400 display. Press Enter to see the AS/400 Programming Development Manager (PDM) menu.

2. On the Programming Development Manager (PDM) menu:

   a. Select option 3 (Work with members).

   b. Press Enter to see the Specify Members to Work With display.

3. On the Specify Members to Work With display:

   a. Type the name of the file to be deleted in the *File* prompt.

   b. Type the library name in the *Library* prompt.

   c. Type the name of the member in the *Name* prompt.

   d. Type the member type in the *Type* prompt.

   e. Press Enter to see the Work with Members Using PDM display.

4. On the Work with Members Using PDM display:

   a. Type 4 (Delete) in the *Opt* column for the member that you want to delete.

   b. Press Enter to delete the member.

   c. Press Enter again to confirm the deletion.

   d. Press F12 (Cancel) until you return the display on which you typed the STRPDM command.

Note: If you delete the display source member, you should also delete the display file object by using option 2 (Work with objects) on the Programming Development Manager (PDM) menu.

Chapter 3. Creating Complex Displays

The example in this chapter describes how to select file-level, record-level, and field-level keywords, and how to define fields and constants to create the Customer Master File Maintenance (CUSMAINT) display. You then use CUSMAINT as a template from which you create the Customer Master File Inquiry (CUSTINQ) display.

You can use the two sample displays that you design for customer master file maintenance and inquiry. When completed, the Customer Master File Maintenance (CUSTMAINT) and Customer Master File Inquiry (CUSTINQ) displays appear on the same work screen.

Figure 32 on page 34 shows the path of SDA displays that you use to create the two sample displays. To test the display file that you create in this chapter, see Chapter 6, "Testing Display Files" on page 99.
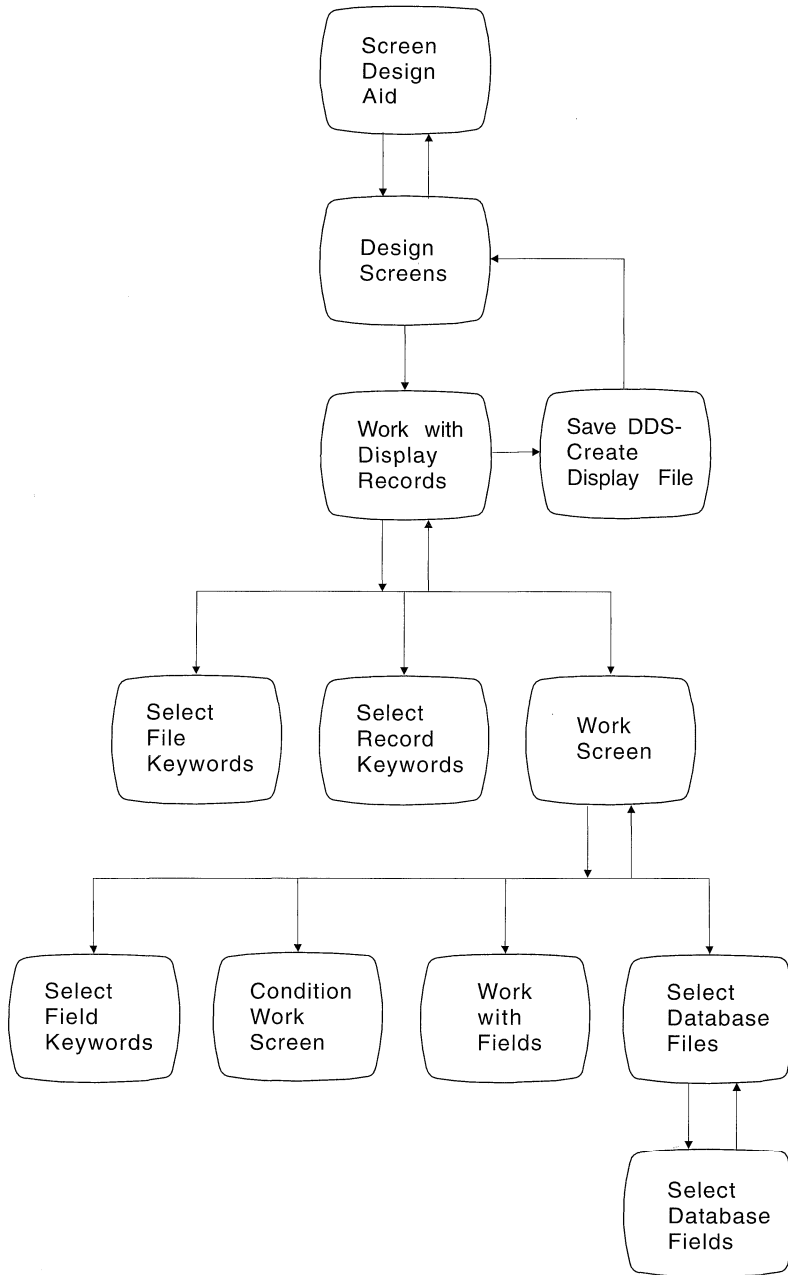
Figure 32. SDA Displays Used to Create Complex Displays

Creating a Display

Before you can create the two displays in this example, you must have change authority to access the required source file QDDSSRC (the IBM supplied DDS source file) in the library QGPL.

Selecting File-Level Keywords

File-level keywords affect all the records in a source member unless overridden by a record-level or field-level keyword. The file-level keywords used in this example:

- Identify the database file to be used
- Define the user function keys
- Define the printing specifications

Now select file-level keywords.

1. On the Screen Design Aid (SDA) menu:

    a. Select option 1 (Design screens).

    b. Press Enter to see the Design Screens display.

2. On the Design Screens display, specify the source file, and a library and member name:

    a. Type QDDSSRC in the *Source file* prompt.

    b. Type QGPL in the *Library* prompt.

    c. Type CUSMASTER in the *Source Member* prompt.

    d. Press Enter to see the Work with Display Records display.

3. On the Work with Display Records display, press F14 (File-level keywords) to see the Select File Keywords display.

4. On the Select File Keywords display, indicate the keywords that you want to select:

    a. Type Y (Yes) in the *General keywords* prompt to define general file-level keywords.

    b. Type Y (Yes) in the *Indicator keywords* prompt to define keywords for condition indicators.

    c. Type Y (Yes) in the *Print keywords* prompt to select the PRINT keyword and enable the user to print the display.

    d. Type Y (Yes) in the *Alternate keywords* prompt to define keys for alternative keywords.

    The display now looks like Figure 33.

```
                            Select File Keywords

   Member . . . :   CUSMASTER

   Type choices, press Enter.

                                           Y=Yes
       General keywords  . . . . . . . .    Y
       Indicator keywords  . . . . . . .    Y
       Print keywords  . . . . . . . . .    Y
       Help keywords . . . . . . . . . .    _
       Display sizes . . . . . . . . . .    _
       Alternate keywords  . . . . . . .    Y
       DBCS conversion . . . . . . . . .    _
       Window borders  . . . . . . . . .    _
```

Figure 33. Select File Keywords Display with Keywords Selected

You can select more than one option at a time on the display. SDA processes the selections one after another until finished. If you press F12 (Cancel) or F3 (Exit) any time during processing, you return the Select File Keywords display.

e. Press Enter to see the Select General Keywords display.

5. On the Select General Keywords display, select the database file that you want to use as a reference file:

a. Type `CUSDATA` in the *Reference database file* prompt.

b. Type `QPDA` in the *Library* prompt.

c. Type `CUSMST` in the *Record* prompt.

The display now looks like Figure 34.

Note: This display is slightly different if you are using the System/38 environment.

```
                      Select General Keywords

   Member . . . :   CUSMASTER

   Type choices, press Enter.
                                           Keyword      Y=Yes   Indicators/+
      Invite devices for later read . . . . . .  INVITE       _      __ __ __
      Allow graphics  . . . . . . . . . . . . .  ALWGPH       _      __ __ __
      Sound alarm on messages . . . . . . . . .  MSGALARM     _      __ __ __
      Separate indicators area  . . . . . . . .  INDARA       _
      Manage display in S/36 mode . . . . . . .  USRDSPMGT    _
      Allow blanks. . . . . . . . . . . . . . .  CHECK(AB)    _
      Move cursor right-left, top-bottom  . . .  CHECK(RLTB)  _
      Move cursor right to left . . . . . . . .  CHECK(RL)    _
      Change input defaults . . . . . . . . . .  CHGINPDFT    _
         Select parameters . . . . . . . . . . .
      Write error messages to subfile . . . . .  ERRSFL       _
      Reference database file . . . . . . . . .  REF          CUSDATA___    Name
         Library . . . . . . . . . . . . . . . .               QPDA_____    Name
         Record  . . . . . . . . . . . . . . . .               CUSMST____    Name
      Record to pass unformatted data . . . . .  PASSRCD      _____     Name

   F3=Exit    F12=Cancel
```

Figure 34. Select General Keywords Display with Entries

d. Press Enter to see the Define Indicator Keywords display.

6. On the Define Indicator Keywords display, define the function key CF12 and the HELP keyword:

a. Type `CF12` in the *Keyword* column, 12 in the *Resp* column, and `End of job indication for all displays in file` in the *Text* column.

The user can press this key to indicate the end of the job for all displays in a file. When the user presses CF12, the program sets indicator 12 on, and the text that you typed appears.

b. Type `HELP` in the *Keyword* column, 17 in the *Resp* column, and `Enable help key` in the *Text* column.

The display now looks like Figure 35.

Note: This display is slightly different if you are using the System/38 environment.

```
                       Define Indicator Keywords

Member . . . :   CUSMASTER

Type keywords and parameters, press Enter.
  Conditioned keywords:       CFnn CAnn CLEAR PAGEDOWN/ROLLUP PAGEUP/ROLLDOWN
                              HOME HELP HLPRTN
  Unconditioned keywords:     INDTXT VLDCMDKEY


Keyword   Indicators/+ Resp Text
CF12____  __ __ __    12   End of job indication for all displays in file____
HELP____  __ __ __    17   Enable help key_____
_____  __ __ __    __   _____
```

Figure 35. Define Indicator Keywords Display with CF12 Defined

You have now defined the file-level function keys, which apply to all records in the source member.

  c. Press Enter twice to see the Define Print Keywords display.

7. On the Define Print Keywords display:

  a. Type Y (Yes) in the *Enable keyword* prompt to select the PRINT keyword. Because PRINT is selected, the user can print the Customer Inquiry display. The display looks like Figure 36.

    Note: This display is slightly different if you are using the System/38 environment.

```
                       Define Print Keywords

Member . . . :   CUSMASTER

Type choices, press Enter.
                                      Keyword
  Enable keyword . . . . . . . . . .  PRINT     Y              Y=Yes
    Indicators . . . . . . . . . . .            __ __ __

  Program handles print:
    Response indicator . . . . . . .            _              01-99
    Text . . . . . . . . . . . . . .            _____

  _____

  System handles print:
    Print file . . . . . . . . . . .            _____      Name, *PGM
      Library  . . . . . . . . . . .            _____      Name,
                                                               *LIBL, *CURLIB
  Leave print file open until
    display file is closed . . . . .  OPENPRT   _              Y=Yes


F3=Exit   F12=Cancel
```

Figure 36. Define Print Keywords Display with the PRINT Keyword Selected

  b. Press Enter to see the Define Alternate Keywords display.

8. On the Define Alternate Keywords display, specify CA17 as the alternate help key:

  a. Type Y (Yes) in the *Alternative help* prompt.

  b. Type CA17 in the *Alternative key* prompt.

The CA keyword defines an alternative function for a function key.

The display now looks like Figure 37.

```
                        Define Alternate Keywords

 Member . . . :    CUSMASTER

 Type choices, press Enter.
                                      Keyword
     Alternative help . . . . . . . .  ALTHELP      Y              Y=Yes
        Alternative key  . . . . . . . . . . .             CA17    CA01-CA24

     Alternative page up  . . . . . .  ALTPAGEUP    _              Y=Yes
        Alternative key  . . . . . . . . . . .             ____    CF01-CF24

     Alternative page down. . . . . .  ALTPAGEDWN   _              Y=Yes
        Alternative key  . . . . . . . . . . .             ____    CF01-CF24






 F3=Exit    F12=Cancel
```

Figure 37. Define Alternate Keywords Display

Note: If you specify Y in the *Alternative page up* and *Alternative page down* prompts but do not specify alternate keys, CF07 and CF08 respectively are used by default. If you specify Y in the *Alternative help* prompt but do not specify an alternative key, CA01 is used by default.

c. Press Enter and the Select File Keywords display returns.

9. Press Enter to return the Work with Display Records display.

Adding Record-Level Keywords

Now create a new record and specify record-level keywords. Record-level keywords define functions available for the display that you are designing.

1. On the Work with Display Records display:

   a. Type 1 (Add) in the *Opt* column to indicate that you want to add a new record.

   b. Press Enter to see the Add New Record display. The display shows the filename, library, member, and source type at the top of the display.

2. On the Add New Record display, specify a name for the new record:

   a. Type CUSMAINT in the *New record* prompt. The display looks like Figure 38 on page 39.

```
                         Add New Record

File . . . . . . :    QDDSSRC            Member . . . . . . :   CUSMASTER
   Library  . . . :       QGPL           Source type  . . . :   DSPF

Type choices, press Enter.

   New record . . . . . . . . . . . . . .    CUSMAINT__     Name

   Type . . . . . . . . . . . . . . . . .    RECORD         RECORD, USRDFN
                                                            SFL,    SFLMSG
                                                            WINDOW, WDWSFL
                                                            PULDWN, PDNSFL
```

Figure 38. The Add New Record Display

    b. Press Enter to add the new record. You see the Design Image work screen.

3. Press F12 (Cancel) on the Design Image work screen to return the Work with Display Records display.

4. On the Work with Display Records display, indicate that you want to select record-level keywords:

    a. Type 8 (Select keywords) in the *Opt* column for the record CUSMAINT. The display looks like Figure 39.

```
                   Work with Display Records

File . . . . . . :    QDDSSRC            Member . . . . . . :   CUSMASTER
   Library  . . . :       QGPL           Source type  . . . :   DSPF

Type options, press Enter.
   1=Add                2=Edit comments      3=Copy          4=Delete
   7=Rename             8=Select keywords    12=Design image

Opt  Order   Record       Type      Related Subfile   Date        DDS Error

__     __10   INQUIRY___   RECORD                      09/21/92
8_     __20   CUSMAINT__   RECORD                      09/21/92
```

Figure 39. Work with Display Records Display Showing Option 8

    b. Press Enter to see the Select Record Keywords display.

5. On the Select Record Keywords display:

    a. Type Y (Yes) in the *Indicator keywords* prompt. The display looks like Figure 40 on page 40.

        Note: This display is slightly different if you are using the System/38 environment.

```
                        Select Record Keywords

    Record . . . :   CUSMAINT

    Type choices, press Enter.

                                              Y=Yes
        General keywords  . . . . . . . .   _
        Indicator keywords  . . . . . . .   Y
        Application help  . . . . . . . .
        Help keywords . . . . . . . . . .   _
        Output keywords . . . . . . . . .   _
        Input keywords  . . . . . . . . .   _
        Overlay keywords  . . . . . . . .   _

        Print keywords  . . . . . . . . .   _
        ALTNAME keyword . . . . . . . . .   _____

        TEXT keyword  . . . . . . . . . .   _____

    _____
```

Figure 40. Select Record Keywords Display with Indicator Keywords Selected

> b. Press Enter to see the Define Indicator Keywords display.

6. On the Define Indicator Keywords display, define function keys CF04, CF07, CF08, and CF10:

   a. Type `CF04` in the *Keyword* column, `04` in the *Resp* column, and `Use search code to search for customer number` in the *Text* column.

   b. Type `CF07` in the *Keyword* column, `07` in the *Resp* column, and `Update customer record with data keyed` in the *Text* column.

   c. Type `CF08` in the *Keyword* column, `08` in the *Resp* column, and `Add a new customer master record` in the *Text* column.

   d. Type `CF10` in the *Keyword* column, `10` in the *Resp* column, and `Delete this customer master record` in the *Text* column.

   The display now looks like Figure 41.

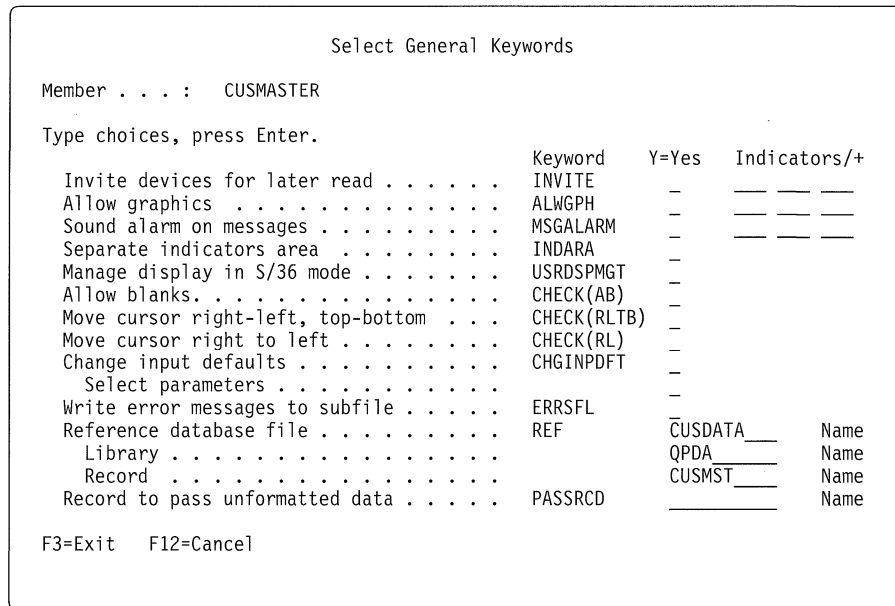   **Note:** This display is slightly different if you are using the System/38 environment.

```
                        Define Indicator Keywords

    Record . . . :   CUSMAINT

    Type keywords and parameters, press Enter.
        Conditioned keywords:       CFnn CAnn CLEAR PAGEDOWN/ROLLUP PAGEUP/ROLLDOWN
                                    HOME HELP HLPRTN
        Unconditioned keywords:     INDTXT VLDCMDKEY SETOF CHANGE

    Keyword     Indicators/+ Resp Text
    CF04____  ___ ___ ___    04   Use search code to search for customer number
    CF07____  ___ ___ ___    07   Update customer record with data keyed
    CF08____  ___ ___ ___    08   Add a new customer master record
    CF10____  ___ ___ ___    10   Delete this customer master record
```

Figure 41. Define Indicator Keywords Display with Keyword Entries

   e. Press Enter to return the Select Record Keywords display.

7. On the Select Record Keywords display, indicate that you want to select an output keyword:

   a. Type Y (Yes) in the *Output keywords* prompt.

   b. Press Enter to see the Select Output Keywords display.

8. On the Select Output Keywords display, indicate that you want the cursor to blink on the display:

   a. Type Y (Yes) in the *Blink cursor* prompt. The display looks like Figure 42.

```
                          Select Output Keywords

      Record . . . :    CUSMAINT

      Type choices, press Enter.
                                         Keyword  Y=Yes  Indicators/+
         Blink cursor . . . . . . . . . . .  BLINK      Y      ___ ___ ___
         Sound the alarm  . . . . . . . . .  ALARM      _      ___ ___ ___
         Sound alarm on messages . . . . . . MSGALARM   _      ___ ___ ___
```
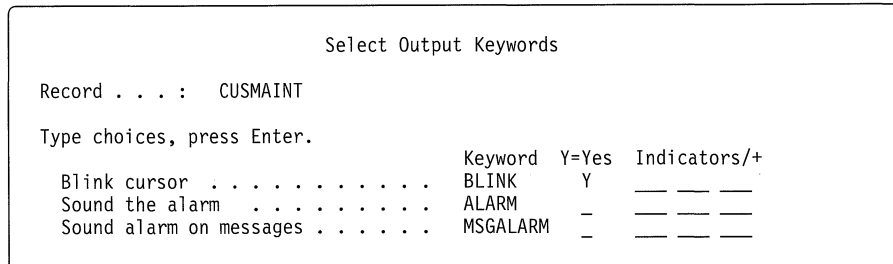
Figure 42. Select Output Keywords Display with Blink Keyword Selected

   b. Press Enter to return the Select Record Keywords display.

9. Press Enter on the Select Record Keywords display to see the Work with Display Records display.

10. On the Work with Display Records display:

    a. Press F11 (Display text) to display the *Text* column for the records.

       Note: If you press F11 (Display text) again, you see the *Related Subfile, Date,* and *DDS Error* columns.

    b. Type 12 (Design image) in the *Opt* column for CUSMAINT to define the fields for this display.

    The display looks like Figure 43.

```
                          Work with Display Records

      File . . . . . . :   QDDSSRC              Member . . . . . . :   CUSMASTER
        Library  . . . :    QGPL                Source type  . . . :   DSPF

      Type options, press Enter.
        1=Add              2=Edit comments     3=Copy         4=Delete
        7=Rename           8=Select keywords   12=Design image

      Opt  Order    Record       Type      Text

      __     __10   INQUIRY___   RECORD
      12     __20   CUSMAINT__   RECORD
```
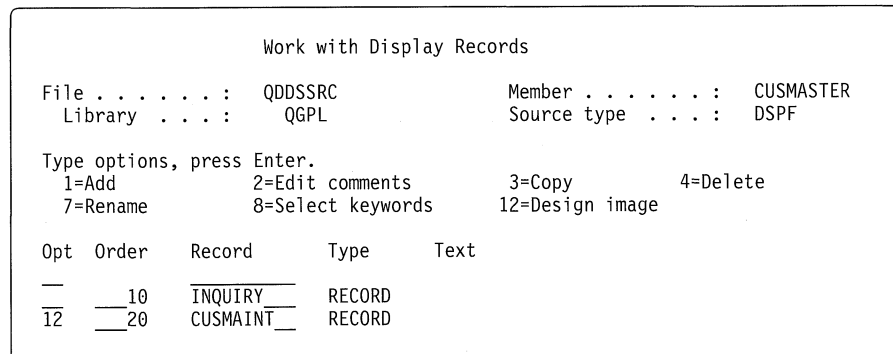
Figure 43. Work with Display Records Display Showing Option 12

    c. Press Enter to see the Design Image work screen.

11. Press F10 (Database) on the Design Image work screen to see the Select Database Files display. You see the names of the database file, library, and record that you specified on the Select General Keywords display.

After you create a new record, you can define or change keywords for the record by selecting 8 (Select keywords) on the Work with Display Records display.

Selecting Fields from a Database File

Now select fields from a database file to place in the record CUSMAINT.

1. On the Select Database Files display:

   a. Type 1 (Display database field list) in the *Option* column for CUSDATA. The display looks like Figure 44.

```
                          Select Database Files

Type options and names, press Enter.
  1=Display database field list
  2=Select all fields for input (I)
  3=Select all fields for output (O)
  4=Select all fields for both (B) input and output


  Option   Database File   Library      Record
    1         CUSDATA___    QPDA_____   CUSMST____

    _         _____      _____     _____

    _         _____      _____     _____
```

Figure 44. Select Database Files Display with Option 1 Selected

   b. Press Enter to see the Select Database Fields display. The display shows the field names, lengths, types, and column headings of fields in the file CUSDATA.

2. On the Select Database Fields display:

   a. Type 4 (Select for both) in the *Option* column for all the displayed fields. The fields you select from the Select Database Fields display will appear on the bottom row of the Design Image work screen, and the application will use these fields for input and output. The display looks like Figure 45.

```
                         Select Database Fields

  Record . . . :   CUSMST

  Type information, press Enter.
    Number of fields to roll  . . . . . . . . . . . . . . . . .  _8
    Name of field to search for . . . . . . . . . . . . . . . .  _____

  Type options, press Enter.
    1=Display extended field description
    2=Select for input (I), 3=Select for output (O), 4=Select for both (B)

  Option  Field       Length   Type    Column Heading
    4     CUST            5     A       Customer Number
    4     NAME           20     A       Customer Name
    4     ADDRESS        20     A       Street Address
    4     CITY           20     A       City
    4     STATE           2     A       State
    4     ZIP           5,0     P       Zip Code
    4     SEARCH          6     A       Search Code
    4     CUTYPE          1     A       Cust Type
                                                            More...
  F3=Exit    F12=Cancel
```

Figure 45. Select Database Fields Display with Fields Selected

b. Press Page Down to display more database fields.

c. Type 3 (Select for output) in the *Option* column for the ARBAL field.

d. Type 3 (Select for output) in the *Option* column for the ORDBAL field.

e. Type 4 (Select for both) in the *Option* column for the CRDLMT field.

f. Press Enter to return the Select Database Files display.

3. Press Enter on the Select Database Files display to return the Design Image work screen.

Designing the Display on the Design Image Work Screen

You use the Design Image work screen to design your Customer Master File Maintenance/Inquiry display. The fields that you selected on the Select Database Fields display appear in **multiple-field mode** at the bottom of the Design Image work screen; that is, more than one field name appears at the bottom of the work screen. The cursor automatically goes to row 1, column 2, and the + at the end of the field name list indicates that there are more field names. Press Page Down to display additional field names. Press Page Up to display the initial field names.

The Design Image work screen looks like Figure 46.

```
  -




















  1:CUST 2:NAME 3:ADDRESS 4:CITY 5:STATE 6:ZIP 7:SEARCH 8:CUTYPE 9:ARBAL        +
```
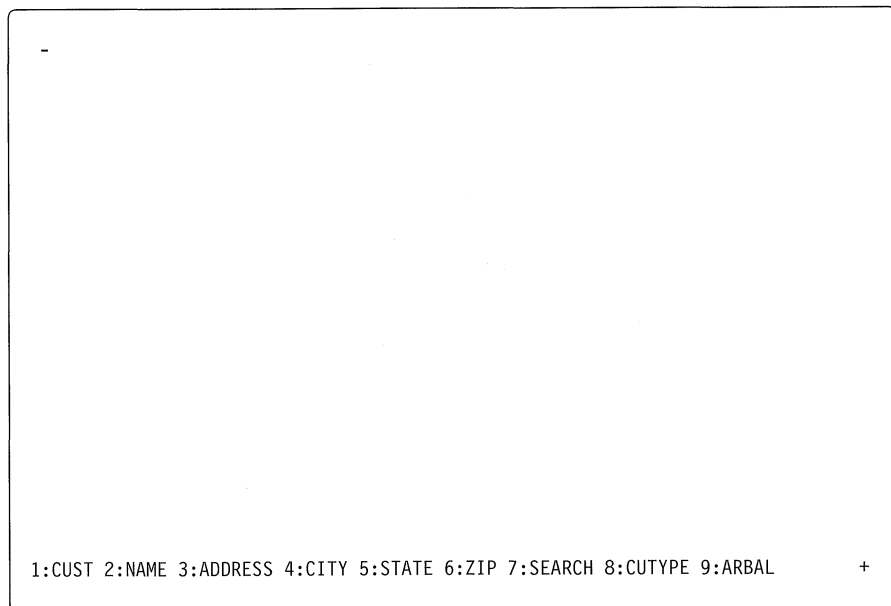
Figure 46. Design Image Work Screen with Database Field Names

Placing Fields and Adding Constants on the Work Screen

Now add fields and constants to the work screen. You use the field names listed on the bottom of the work display to design the Customer Master File Maintenance/Inquiry display.

On the Design Image work screen:

1. Press F14 (Ruler) to display the ruler on row 1, column 2.

2. Type the heading constant 'CUSTOMER MASTER FILE MAINTENANCE/INQUIRY' beginning at row 2, column 19.

Notes:

   a. If you enclose a constant in single quotation marks, SDA treats the entire string as one constant. If you do not use the single quotation marks, SDA treats each word in the string as a separate constant.

   b. You can center the heading by typing ac in the attribute position of the heading as shown in Figure 14 on page 19.

3. Type &1L starting at row 4, column 23. The & indicates the starting position of the data field. The 1 specifies the CUST database field. The L indicates that the prompt appears to the left of the data field.

The Design Image work screen now looks like Figure 47.

```
 ... ... 1 ... ... 2 ... ... 3 ... ... 4 ... ... 5 ... ... 6 ... ... 7 ... ... 8
  2                   'CUSTOMER MASTER FILE MAINTENANCE/INQUIRY'
  3
  4                   &1L
  5
  6
  7
  8
  9
 10
 11
 12
 13
 14
 15
 16
 17
 18
 19
 20
 21
 22
 23
 1:CUST 2:NAME 3:ADDRESS 4:CITY 5:STATE 6:ZIP 7:SEARCH 8:CUTYPE 9:ARBAL          +
```

Figure 47. Design Image Work Screen with the Heading and Customer Field Specified

4. Press Enter to position the prompt and data field for CUST on the work screen. Because the CUST field has been moved into position, each remaining field adjusts its number accordingly on the bottom row.

5. Type &6L beginning at row 3, column 51 to position the SEARCH field with the prompt to the left of the data field.

6. Type &1L, &2L, &3L, &4L, and &5L in column 23 below the BBBBB data field to place these fields on the work screen. B means that this is both an input and output field.

7. Type &7L in the same column, but leave a space between this entry and &5L.

8. Type &8C beginning at row 20, column 6 to place the ARBAL field on the Design Image work screen with the column heading above the data field.

The work screen now looks like Figure 48 on page 45.

```
... ... 1 ... ... 2 ... ... 3 ... ... 4 ... ... 5 ... ... 6 ... ... 7 ... ... 8
 2                CUSTOMER MASTER FILE MAINTENANCE/INQUIRY
 3                                            &6L
 4 Customer Number:  BBBBB
 5                   &1L
 6                   &2L
 7                   &3L
 8                   &4L
 9                   &5L
10
11                   &7L
12
13
14
15
16
17
18
19
20  &8C
21
22
23
1:NAME 2:ADDRESS 3:CITY 4:STATE 5:ZIP 6:SEARCH 7:CUTYPE 8:ARBAL 9:ORDBAL        +
```

Figure 48. Design Image Work Screen with Customer Entries

9. Press Enter to place the prompts and data fields on the work screen. The
    ORDBAL and CRDLMT fields are at the bottom of the work screen.

10. Type &2L beginning at row 13, column 23 to place the CRDLMT field on the work
    screen with its prompt to the left of the data field.

11. Type the constant '1-Gov, 2-School, 3-Business, 4-Pvt, 5-Other' beginning
    at row 11, column 32.

The work screen now looks like Figure 49.

```
... ... 1 ... ... 2 ... ... 3 ... ... 4 ... ... 5 ... ... 6 ... ... 7 ... ... 8
 2                CUSTOMER MASTER FILE MAINTENANCE/INQUIRY
 3                               Search Code:  BBBBBB
 4 Customer Number:  BBBBB
 5   Customer Name:  BBBBBBBBBBBBBBBBBBBBBB
 6  Street Address:  BBBBBBBBBBBBBBBBBBBBBB
 7            City:  BBBBBBBBBBBBBBBBBBBBBB
 8           State:  BB
 9        Zip Code:  99999-
10
11       Cust Type:  B          '1-Gov, 2-School, 3-Business, 4-Pvt, 5-Other'
12
13                   &2L
14
15
16
17
18    Accts Rec
19      Balance
20  666,666.66-
21
22
23
1:ORDBAL 2:CRDLMT
```

Figure 49. Design Image Work Screen with Constant Customer Type Displayed

12. Press Enter to place the fields and constant on the work screen.

13. Type the constant 'Over' beginning at row 13, column 40.

The work screen looks like Figure 50.

```
... ... 1 ... ... 2 ... ... 3 ... ... 4 ... ... 5 ... ... 6 ... ... 7 ... ... 8
 2                CUSTOMER MASTER FILE MAINTENANCE/INQUIRY
 3                               Search Code:  BBBBBB
 4 Customer Number:  BBBBB
 5   Customer Name:  BBBBBBBBBBBBBBBBBBBBBB
 6  Street Address:  BBBBBBBBBBBBBBBBBBBBBB
 7            City:  BBBBBBBBBBBBBBBBBBBBBB
 8           State:  BB
 9        Zip Code:  99999-
10
11       Cust Type:  B         1-Gov, 2-School, 3-Business, 4-Pvt, 5-Other
12
13    Credit Limit:  99999999-        'Over'
14
15
16
17
18    Accts Rec
19       Balance
20  666,666.66-
21
22
23
1:ORDBAL
```

Figure 50. Design Image Work Screen with Credit Limit Displayed

14. Press Enter to place the constant Over on the work screen.

After you place fields on the work screen you can select field-level keywords that affect how the fields are displayed, as described in "Editing a Field" on page 22.

Creating Overlapping Fields

You can create an overlapping field by typing a constant such as Close to limit in the same column and row as the existing constant Over. You also specify a condition indicator for each constant to turn on the constant. The condition indicator specifies that:

- If the credit limit is exceeded by a customer, Over blinks in reverse image.

- If the customer account is close to the credit limit, Close to limit is displayed in high intensity.

Now specify a condition indicator for the constant Over.

1. On the Design Image work screen:

   a. Type an asterisk (*) immediately before the constant Over. The work screen looks like Figure 51 on page 47.

```
   ... ... 1 ... ... 2 ... ... 3 ... ... 4 ... ... 5 ... ... 6 ... ... 7 ... ... 8
   2                    CUSTOMER MASTER FILE MAINTENANCE/INQUIRY
   3                                      Search Code:  BBBBBB
   4 Customer Number:  BBBBB
   5   Customer Name:  BBBBBBBBBBBBBBBBBBBBB
   6  Street Address:  BBBBBBBBBBBBBBBBBBBBB
   7            City:  BBBBBBBBBBBBBBBBBBBBB
   8           State:  BB
   9        Zip Code:  99999-
  10
  11       Cust Type:  B         1-Gov, 2-School, 3-Business, 4-Pvt, 5-Other
  12
  13    Credit Limit:  99999999-      *Over
  14
```

Figure 51. Design Image Work Screen with a Field Selected for Display Attribute Specification

    b. Press Enter to see the Select Field Keywords display.

2. On the Select Field Keywords display, indicate that you want to change a display attribute for the constant:

    a. Type Y (Yes) in the *Display attributes* prompt. The display looks like Figure 52.

      Note: This display is slightly different if you are using the System/38 environment.

```
                            Select Field Keywords

Constant  . . . :   Over
Length  . . . . :   4                      Row . . . :  13   Column . . . :  41

Type choices, press Enter.
                                     Y=Yes    For Field Type
     Display attributes . . . . . . .   Y      All except Hidden
     Colors . . . . . . . . . . . . .   _      All except Hidden




     General keywords . . . . . . . .   _      All types




     TEXT keyword . . . . . . . . .     _____


 _____
 F3=Exit    F12=Cancel
```

Figure 52. Select Field Keywords Display with Display Attributes Selected

    b. Press Enter to see the Select Display Attributes display.

3. On the Select Display Attributes display, specify an indicator and display attributes for the constant Over:

    a. Type 31 in the *Indicators/+* column so that the constant Over appears when the condition indicator 31 is on.

    b. Type Y (Yes) in the *Reverse image* prompt.

    c. Type Y (Yes) in the *Blink* prompt.

The Select Display Attributes display now looks like Figure 53.

```
                        Select Display Attributes

Constant  . . . :    Over
Length  . . . . :    4                   Row . . . :  13   Column . . . :  41

Type choices, press Enter.

                                         Keyword  Y=Yes   Indicators/+
   Field conditioning . . . . . . . . . .                   _31 __ __
   Program-to-system field . . . . . . . . _____            __ __ __
   Display attributes:                     DSPATR
      High intensity . . . . . . . . . . .  HI      _        __ __ __
      Reverse image  . . . . . . . . . . .  RI      Y        __ __ __
      Column separators  . . . . . . . . .  CS               __ __ __
      Blink  . . . . . . . . . . . . . . .  BL      Y        __ __ __
      Nondisplay . . . . . . . . . . . . .  ND      _        __ __ __
      Underline  . . . . . . . . . . . . .  UL      _        __ __ __
```

Figure 53. Select Display Attributes Display with Attributes Selected

> d. Press Enter to return the Select Field Keywords display.

4. Press Enter on the Select Field Keywords display to return the Design Image work screen.

The constant Over blinks in reverse image because SDA assumes all condition indicators are on. The Design Image work screen now looks like Figure 54.

```
  ... ... 1 ... ... 2 ... ... 3 ... ... 4 ... ... 5 ... ... 6 ... ... 7 ... ... 8
 2              CUSTOMER MASTER FILE MAINTENANCE/INQUIRY
 3                           Search Code:  BBBBBB
 4 Customer Number:  BBBBB
 5   Customer Name:  BBBBBBBBBBBBBBBBBBBBB
 6  Street Address:  BBBBBBBBBBBBBBBBBBBBB
 7            City:  BBBBBBBBBBBBBBBBBBBBB
 8           State:  BB
 9        Zip Code:  99999-
10
11       Cust Type:  B        1-Gov, 2-School, 3-Business, 4-Pvt, 5-Other
12
13    Credit Limit:  99999999-        Over
14
```

Figure 54. Design Image Work Screen with the Constant Over Displayed in Reverse Image

5. Press F6 (Condition) on the Design Image work screen to see the Condition Work Screen display.

6. On the Condition Work Screen display, turn off the constant Over:

> a. Type Y (Yes) in the *Activate indicators* prompt to condition the Design Image work screen with the specified indicator.

> b. Type 32 in the *Indicators to be turned ON* prompt.

The display looks like Figure 55 on page 49.

```
                         Condition Work Screen

  Record . . . :   CUSMAINT

  Type choices, press Enter.

     Activate indicators . . . . . . . . . . . . . .  Y              Y=Yes
     Indicators to be turned ON  . . . . . . . . .   32 __ __ __ __ __   01-99
                                                     __ __ __ __ __ __
                                                     __ __ __ __ __ __
                                                     __ __ __ __ __ __
                                                     __ __ __ __ __ __
     Indicators to condition all new
        fields and attributes . . . . . . . . . . .    __ __ __

     Show indicator setting for field  . . . . . .    _____      Name
     Delete all fields on bottom line  . . . . . .    _             Y=Yes
     Reference database fields . . . . . . . . . .    Y             Y=Yes
     Display in single-field mode  . . . . . . . .    _             Y=Yes



  F3=Exit    F12=Cancel
```
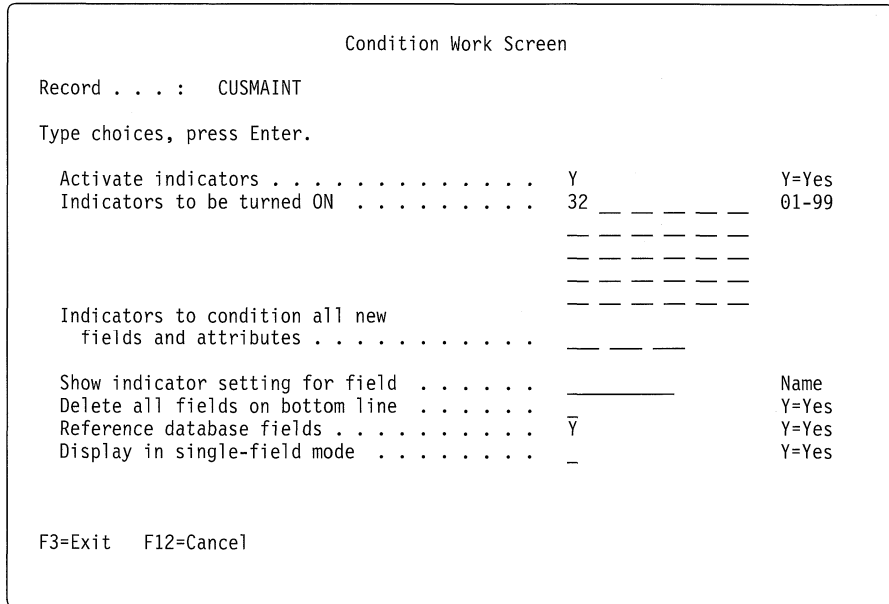
Figure 55. Condition Work Screen with Indicators Selected

   c. Press Enter to return the Design Image work screen.

   The work screen appears as if indicator 32 is the only indicator on. Because
   the constant `Over` has a condition indicator of 31, it does not appear on the
   Design Image work screen.

7. To specify the constant `Close to limit` as an overlapping field:

   a. Type `'Close to limit'` beginning on row 13, column 40. The constant
      `Over` is displayed here when indicator 31 is on. The work screen now looks
      like Figure 56.

```
... ... 1 ... ... 2 ... ... 3 ... ... 4 ... ... 5 ... ... 6 ... ... 7 ... ... 8
 2                 CUSTOMER MASTER FILE MAINTENANCE/INQUIRY
 3                             Search Code:  BBBBBB
 4 Customer Number:  BBBBB
 5   Customer Name:  BBBBBBBBBBBBBBBBBBBBB
 6  Street Address:  BBBBBBBBBBBBBBBBBBBBB
 7            City:  BBBBBBBBBBBBBBBBBBBBB
 8           State:  BB
 9        Zip Code:  99999-
10
11       Cust Type:  B         1-Gov, 2-School, 3-Business, 4-Pvt, 5-Other
12
13     Credit Limit:  99999999-        'Close to limit'
14
```
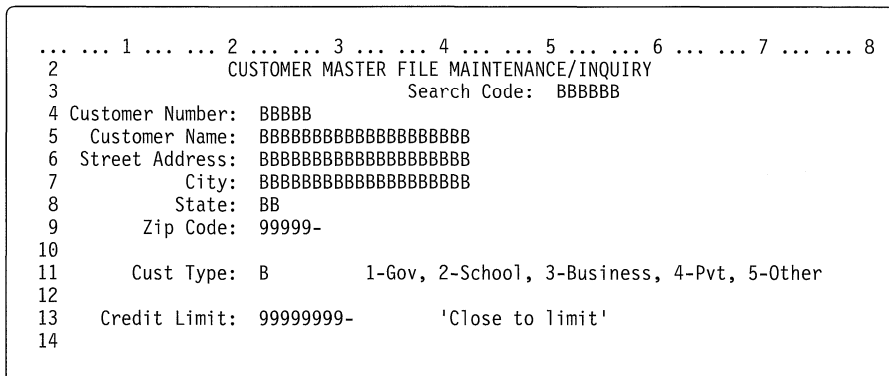
Figure 56. Design Image Work Screen with Overlapping Constants

   b. Press Enter to position the constant.

   c. Type an asterisk (*) immediately preceding `Close to limit` to indicate that
      you want to specify keywords for the constant. The work screen looks like
      Figure 57 on page 50.

```
... ... 1 ... ... 2 ... ... 3 ... ... 4 ... ... 5 ... ... 6 ... ... 7 ... ... 8
 2                CUSTOMER MASTER FILE MAINTENANCE/INQUIRY
 3                                 Search Code:  BBBBBB
 4 Customer Number:  BBBBB
 5    Customer Name:  BBBBBBBBBBBBBBBBBBBBBB
 6   Street Address:  BBBBBBBBBBBBBBBBBBBBBB
 7             City:  BBBBBBBBBBBBBBBBBBBBBB
 8            State:  BB
 9         Zip Code:  99999-
10
11        Cust Type:  B         1-Gov, 2-School, 3-Business, 4-Pvt, 5-Other
12
13     Credit Limit:  99999999-        *Close to limit
14
```

Figure 57. Design Image Work Screen with a Constant Selected for Display Attribute Specification

> d. Press Enter to see the Select Field Keywords display.

8. On the Select Field Keywords display:

> a. Type Y (Yes) in the *Display attributes* prompt.

> b. Press Enter to see the Select Display Attributes display.

9. On the Select Display Attributes display, specify an indicator and highlighting for the constant:

> a. Type 32 in the *Indicators/+* column.

> b. Type Y (Yes) in the *High intensity* prompt.

The display now looks like Figure 58.

```
                        Select Display Attributes

Constant  . . . :   Close to Limit
Length  . . . . :   14              Row . . . :  13   Column . . . :  41

Type choices, press Enter.

                                         Keyword  Y=Yes   Indicators/+
   Field conditioning . . . . . . . . . .                  _32 __ __
   Program-to-system field  . . . . . . . . _____        __ __ __
   Display attributes:                      DSPATR
      High intensity . . . . . . . . . . .  HI       Y     __ __ __
      Reverse image  . . . . . . . . . . .  RI       _     __ __ __
      Column separators  . . . . . . . . .  CS       _     __ __ __
      Blink  . . . . . . . . . . . . . . .  BL       _     __ __ __
      Nondisplay . . . . . . . . . . . . .  ND       _     __ __ __
      Underline  . . . . . . . . . . . . .  UL       _     __ __ __
```

Figure 58. Select Display Attributes Display with High Intensity Selected

> c. Press Enter to see the Select Field Keywords display.

10. Press Enter on the Select Field Keywords display to see the Design Image work screen.

When the program using this display determines that a customer account is close to the credit limit, the constant Close to limit appears in high intensity.

Moving a Field on the Design Image Work Screen

Notes:

1. Do not use the Del/Ins key to move or delete fields, because the results cannot be predicted.

2. Because the Design Image work screen still has condition indicator 32 set on, the constant `Close to limit` is displayed in high intensity.

If you are not satisfied with the position of a field on the work screen, you can move the field as follows:

1. Type eight greater-than signs (>>>>>>>>) immediately following the BBBBBB data field to move the field eight places to the right. The work screen now looks like Figure 59.

```
... ... 1 ... ... 2 ... ... 3 ... ... 4 ... ... 5 ... ... 6 ... ... 7 ... ... 8
 2                     CUSTOMER MASTER FILE MAINTENANCE/INQUIRY
 3                                Search Code:  BBBBBB>>>>>>>>
 4 Customer Number:  BBBBB
 5   Customer Name:  BBBBBBBBBBBBBBBBBBBBBB
 6  Street Address:  BBBBBBBBBBBBBBBBBBBBBB
 7            City:  BBBBBBBBBBBBBBBBBBBBBB
 8           State:  BB
 9        Zip Code:  99999-
10
11       Cust Type:  B          1-Gov, 2-School, 3-Business, 4-Pvt, 5-Other
12
13    Credit Limit:  99999999-       Close to limit
14
```

Figure 59. Design Image Work Screen with Field Selected for Moving

Each field has an attribute character before and after it. Because you typed over the ending attribute character, the function of the beginning attribute character is extended until the next attribute character.

2. Press Enter to move the data field BBBBBB eight positions to the right.

3. Type eight greater-than signs (>>>>>>>>) immediately following the `Search Code` prompt to move the prompt eight positions to the right. The work screen now looks like Figure 60.

```
... ... 1 ... ... 2 ... ... 3 ... ... 4 ... ... 5 ... ... 6 ... ... 7 ... ... 8
 2                     CUSTOMER MASTER FILE MAINTENANCE/INQUIRY
 3                                Search Code:>>>>>>>>  BBBBBB
 4 Customer Number:  BBBBB
 5   Customer Name:  BBBBBBBBBBBBBBBBBBBBBB
 6  Street Address:  BBBBBBBBBBBBBBBBBBBBBB
 7            City:  BBBBBBBBBBBBBBBBBBBBBB
 8           State:  BB
 9        Zip Code:  99999-
10
11       Cust Type:  B          1-Gov, 2-School, 3-Business, 4-Pvt, 5-Other
12
13    Credit Limit:  99999999-       Close to limit
14
```

Figure 60. Design Image Work Screen with a Prompt Selected for Moving

4. Press Enter to move the `Search Code` prompt. The work screen now looks like Figure 61 on page 52.

```
...  ... 1 ...  ... 2 ...  ... 3 ...  ... 4 ...  ... 5 ...  ... 6 ...  ... 7 ...  ... 8
 2                CUSTOMER MASTER FILE MAINTENANCE/INQUIRY
 3                                          Search Code:   BBBBBB
 4 Customer Number:  BBBBB
 5   Customer Name:  BBBBBBBBBBBBBBBBBBBB
 6  Street Address:  BBBBBBBBBBBBBBBBBBBB
 7            City:  BBBBBBBBBBBBBBBBBBBB
 8           State:  BB
 9        Zip Code:  99999-
10
11       Cust Type:  B         1-Gov, 2-School, 3-Business, 4-Pvt, 5-Other
12
13    Credit Limit:  99999999-      Close to limit
14
```

Figure 61. Design Image Work Screen with a Moved Prompt

5. Press F4 (prompt) to see the Work with Fields display.

For information about moving a block of fields, see "Moving Fields" on page 161.

Selecting Fields

Now specify field-level keywords for the SEARCH and CUTYPE fields. The keyword
that you specify for SEARCH places the cursor in the data field when the display
appears. The keyword that you specify for CUTYPE causes the OS/400 system to
check the data that the operator types in the Cust Type data field.

1. On the Work with Fields display, indicate that you want to specify keywords for
   the SEARCH and CUTYPE fields:

   a. Type 1 (Select keywords) in the *Option* column for the SEARCH field. The
      display looks like Figure 62.

```
                          Work with Fields

       Record . . . :   CUSMAINT

       Type information, press Enter.
         Number of fields to roll . . . . . . . . . . . . . . . .  __6

       Type options, change values, press Enter.
        1=Select keywords   4=Delete field

       Option  Order  Field       Type Use  Length  Row/Col  Ref Condition  Overlap
         _      __10   CUSTOMER M   C          40     02 020
         _      __20   Customer N   C          16     04 005
         _      __30   CUST_____    B           5     04 023   Y
         _      __40   Search Cod   C          12     03 045
         1      __50   SEARCH___    B           6     03 059   Y
         _      __60   Customer N   C          14     05 007
                                                                       More...
       Add    ____  _____    H   _____  Hidden
       Add    ____  _____    M   _____  Message
       Add    ____  _____    P   _____  Program-to-system

       F3=Exit   F6=Sort by row/column   F12=Cancel
```

Figure 62. Work with Fields Display with the SEARCH Field Selected

   b. Press the Page Down key two times.

   c. Type 1 (Select keywords) in the *Option* column for the CUTYPE field.

   d. Press Enter to see the Select Field Keywords display for the SEARCH field.

2. On the Select Field Keywords display:

   a. Type Y (Yes) in the *Display attributes* prompt.

   b. Press Enter to see the Select Display Attributes display for the SEARCH field.

      Note: When more than one field is selected, the field located first on the Work with Fields display appears first.

3. On the Select Display Attributes display:

   a. Type 32 for the *Field Conditioning* prompt in the *Indicators/+* column.

   b. Type Y (Yes) in the *Position cursor* prompt to position the cursor at the SEARCH field.

The display looks like Figure 63.

```
                        Select Display Attributes

 Field . . . . . :   SEARCH          Usage . . :   B
 Length  . . . . :   6               Row . . . :   3   Column . . .:  59

 Type choices, press Enter.

                                     Keyword   Y=Yes    Indicators/+
   Field conditioning . . . . . . . . . . .                _32 __ __
   Program-to-system field  . . . . . . . .    _____     __ __ __
   Display attributes:                         DSPATR
     High intensity . . . . . . . . . . . .      HI      _     __ __ __
     Reverse image  . . . . . . . . . . . .      RI      _     __ __ __
     Column separators  . . . . . . . . . .      CS      _     __ __ __
     Blink  . . . . . . . . . . . . . . . .      BL      _     __ __ __
     Nondisplay . . . . . . . . . . . . . .      ND      _     __ __ __
     Underline  . . . . . . . . . . . . . .      UL      _     __ __ __
     Position cursor  . . . . . . . . . . .      PC      Y     __ __ __
     Set modified data tag  . . . . . . . .      MDT     _     __ __ __
     Protect field  . . . . . . . . . . . .      PR      _     __ __ __
     Operator ID magnetic card  . . . . . .      OID     _
     Select by light pen  . . . . . . . . .      SP      _

 F3=Exit   F12=Cancel
```

Figure 63. Select Display Attributes with the Position Cursor Attribute Selected

   c. Press Enter to process the information that you typed.

   d. Press Enter again to see the Select Field Keywords display for the CUTYPE field.

4. On the Select Field Keywords display, indicate that you want the OS/400 system to perform a validity check on data typed in the Cust Type data field:

   a. Type Y (Yes) in the *Validity check* prompt.

   b. Press Enter to see the Define Validity Check Keywords display shown in Figure 64 on page 54.

```
┌──────────────────────────────────────────────────────────────────────┐
│                    Define Validity Check Keywords                      │
│                                                                        │
│  Field . . . . . :   CUTYPE              Usage . . :  B                │
│  Length . . . . .:   1                   Row . . . :  11   Column . . . :  23 │
│                                                                        │
│  Type parameters for ONE of the following keywords, press Enter.       │
│                                                                        │
│    Keyword               Parameters                            More    │
│    RANGE     Low  . . . . '1'_____         │
│              High . . . . '5'_____         │
│    COMP      Operator . .  __                                          │
│              Value  . . .  _____         │
│    VALUES    List . . . .  _____    _    │
│                                                                        │
│    Type choices, press Enter.                     Keyword   Y=Yes  Immed│
│       Validity check:                             CHECK                │
│          Name extended field  . . . . . . . . . . VNE       _          │
│          Name field . . . . . . . . . . . . . . . VN        _          │
│          Allow blanks . . . . . . . . . . . . . . AB        _          │
│          Modulus 10 self check  . . . . . . . . . M10/M10F  _      _   │
│          Modulus 11 self check  . . . . . . . . . M11/M11F  _      _   │
│                                                                        │
│                                                            More...     │
│    F3=Exit   F12=Cancel                                                │
│                                                                        │
└──────────────────────────────────────────────────────────────────────┘
```

Figure 64. Define Validity Check Keywords Display for the CUTYPE Field

Note: When you press Page Down (Roll Up) on the Define Validity Check
Keywords display, you see the prompts that you use to specify the
CHKMSGID keyword.

The range of 1 (low) and 5 (high) appears because it was defined in the database
file that was used as a reference file. You can type over these values if you want
to change them.

Note: The validation is performed according to the job's sort sequence, which is
normally *HEX.

When the user works with the Customer Master File Maintenance/Inquiry display,
the OS/400 system checks the Cust Type field to verify that the data the operator
types is within the valid range.

5. Press Enter on the Define Validity Check Keywords display to return to the
   Select Field Keywords display.

6. Press Enter twice on the Select Field Keywords display to process the entries
   on the display and to see the Design Image work screen.

Deleting Fields from the Design Image Work Screen

Because the second display that you design in this example requires the Accounts
Receivable Balance field (ARBAL), you must remove it from the display that you are
designing. The ARBAL field is displayed on row 20, column 6 of the Design Image
work screen.

Now remove the ARBAL field from the Design Image work screen:

1. Type d immediately preceding the column heading and the data field. The
   work screen looks like Figure 65 on page 55.

```
17
18    dAccts Rec
19      dBalance
20 d666,666.66-
21
22
23
1:ORDBAL
```

Figure 65. Design Image Work Screen with the ARBAL Field Marked for Deletion

2. Press Enter to remove the `ARBAL` field from row 20 and place it in the list of fields with `ORDBAL` at the bottom of the Design Image work screen. The work screen looks like Figure 66.

```
18
19
20
21
22
23
1:ORDBAL 2:ARBAL
```

Figure 66. Design Image Work Screen with the ARBAL Field Deleted from the Display

3. Press F11 (Nondisplay selected fields) to display the original list of database fields. The + at the end of the list indicates there are more field names. The work screen looks like Figure 67.

```
18
19
20
21
22
23
1:CUST 2:NAME 3:ADDRESS 4:CITY 5:STATE 6:ZIP 7:SEARCH 8:CUTYPE 9:ARBAL      +
```

Figure 67. Design Image Work Screen with Original List of Database Fields

You have now completed the CUSMAINT display.

4. Press F12 (Cancel) to return the Work with Display Records display.

Now design the CUSINQ display. When you design CUSINQ, you use the two remaining fields, ORDBAL and ARBAL.

Designing a Second Display by Using the First Display

To design a second display, CUSINQ, you use the CUSMAINT display that you designed previously as a template to help you to align the fields. Because CUSMAINT acts as a template, the two displays appear simultaneously to the user.

1. On the Work with Display Records display:

   a. Type 1 (Add) in the *Opt* column.

   b. Press Enter to see the Add New Record display.

2. On the Add New Record display, specify a name for the new record:

   a. Type CUSINQ in the *New record* prompt.

   b. Press Enter to see the Design Image work screen.

3. Press F12 (Cancel) on the Design Image work screen to see the Work with Display Records display.

Overlaying a Display

Now specify that you want the two displays CUSMAINT and CUSINQ to appear simultaneously. To cause the displays to appear simultaneously, you specify the OVERLAY keyword. Displays can only be overlaid one on top of the other, so that you can see only one display at a time.

1. On the Work with Display Records display:

   a. Type 8 (Select keywords) in the *Opt* field for the record CUSINQ. The display looks like Figure 68.

```
                    Work with Display Records

     File . . . . . . :   QDDSSRC              Member . . . . . . :   CUSMASTER
       Library  . . . :     QGPL               Source type  . . . :   DSPF

     Type options, press Enter.
       1=Add              2=Edit comments      3=Copy           4=Delete
       7=Rename           8=Select keywords    12=Design image

     Opt  Order     Record       Type      Text

      __    __10    INQUIRY___   RECORD
      __    __20    CUSMAINT__   RECORD
      _8    __30    CUSINQ____   RECORD
```

Figure 68. Work with Display Records Display with Option 8 Selected

   b. Press Enter to see the Select Record Keywords display.

2. On the Select Record Keywords display:

   a. Type Y (Yes) in the *Overlay keywords* prompt.

   b. Press Enter to see the Select Overlay Keywords display.

3. On the Select Overlay Keywords display:

   a. Type Y (Yes) in the *Overlay without erasing* prompt to select the OVERLAY keyword. The display looks like Figure 69 on page 57.

```
                        Select Overlay Keywords

 Record . . . :   CUSINQ

 Type choices, press Enter.
                                      Keyword   Y=Yes  Indicators/+  Roll
     Overlay without erasing  . . . . . .  OVERLAY    Y    __ __ __
     Retain data on re-display  . . . . .  PUTRETAIN  _    __ __ __
     Protect all input fields . . . . . .  PROTECT    _    __ __ __
     Activate OVRDTA and OVRATR . . . . .  PUTOVR     _    __ __ __
     Override Data  . . . . . . . . . . .  OVRDTA     _    __ __ __
     Override Attribute . . . . . . . . .  OVRATR     _    __ __ __
     Initialize input fields  . . . . . .  INZINP     _    __ __ __
     Reset all modified data tags . . . .  MDTOFF     _    __ __ __      _
       MDTOFF parameter . . . . . . . . .    *UNPR    _
                                             *ALL     _
     Erase all input fields . . . . . . .  ERASEINP   _    __ __ __      _
       ERASEINP parameter . . . . . . . .    *MDTON   _
                                             *ALL     _
     Erase all records below  . . . . . .  ERASE      _    __ __ __      _
    _____  _____  _____  _____  _____          _

 F3=Exit    F12=Cancel
```

Figure 69. Select Overlay Keywords Display with the OVERLAY Keyword Selected

     b. Press Enter to return the Select Record Keywords display.

4. Press Enter on the Select Record Keywords display to return the Work with Display Records display.

5. On the Work with Display Records display, indicate that you want to design the image for the CUSINQ record:

     a. Type 12 (Design image) in the *Opt* column for the CUSINQ record.

     b. Press Enter to see the Design Image work screen.

6. Press F9 (Select additional records) on the Design Image work screen to see the Select Additional Records for Display display.

7. To select the record CUSMAINT on the Select Additional Records for Display display:

     a. Type 1 (Select for display as additional record) in the *Option* column for CUSMAINT. The display looks like Figure 70.

```
                    Select Additional Records for Display

 File . . . . . . . . :   QDDSSRC_           Member . . . . . . :   CUSMASTER
 Library  . . . . . :     QGPL___            Source Type  . . . :   DSPF_____

 Type options, press Enter.
   1,2,3=Select for display as additional record

 Option   Record      Type    Status
   1     _____
   2     _____
   3     _____
   _      INQUIRY      RECORD
   1      CUSMAINT     RECORD
   _      CUSINQ       RECORD  In use
```
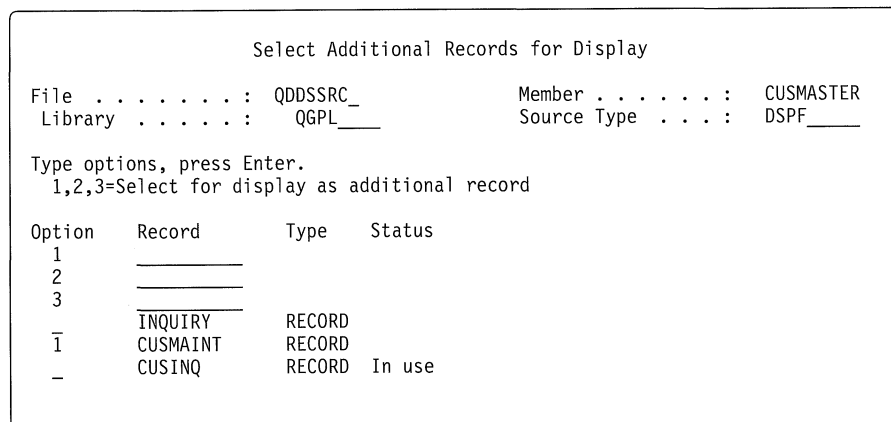
Figure 70. Select Additional Records for Display Display

b. Press Enter to return the Design Image work screen.

Defining Fields for the Second Display

Now define the fields for the second display on the Design Image work screen by using CUSMAINT as a template.

The bottom row on the work screen specifies that the record CUSMAINT is the additional record selected. You cannot change the information in the CUSMAINT record, because it is an additional record, not the primary record. The work screen looks like Figure 71.

```
... ... 1 ... ... 2 ... ... 3 ... ... 4 ... ... 5 ... ... 6 ... ... 7 ... ... 8
 2                 CUSTOMER MASTER FILE MAINTENANCE/INQUIRY
 3                                    Search Code:  BBBBBB
 4 Customer Number:  BBBBB
 5   Customer Name:  BBBBBBBBBBBBBBBBBBBB
 6  Street Address:  BBBBBBBBBBBBBBBBBBBB
 7            City:  BBBBBBBBBBBBBBBBBBBB
 8           State:  BB
 9        Zip Code:  99999-
10
11        Cust Type:  B          1-Gov, 2-School, 3-Business, 4-Pvt, 5-Other
12
13    Credit Limit:  99999999-         Close to limit
14
15
16
17
18
19
20
21
22
23
Additional record(s) selected: CUSMAINT
```

Figure 71. Design Image Work Screen with CUSMAINT Displayed on the Bottom Row

To design the new display by using CUSMAINT as the template:

1. Press F6 (Condition) on the Design Image work screen to see the Condition Work Screen display.

2. On the Condition Work Screen display:

   a. Type a blank space in the *Activate indicators* prompt to display the Design Image work screen without indicator settings.

   b. Type Y (Yes) in the *Display in single-field mode* prompt. **Single-field mode** displays the data field length and column heading of the database field. Single-field mode permits you to place one database field at a time on the Design Image work screen and to review the field length and column heading.

The Condition Work Screen display looks like Figure 72 on page 59.

```
                          Condition Work Screen

    Record . . . :    CUSINQ

    Type choices, press Enter.

       Activate indicators . . . . . . . . . . . . . .    _              Y=Yes
       Indicators to be turned ON  . . . . . . . . .     32 __ __ __ __ __   01-99
                                                            __ __ __ __ __
                                                            __ __ __ __ __
                                                            __ __ __ __ __
    Indicators to condition all new                         __ __ __ __ __
       fields and attributes  . . . . . . . . . . .        __ __ __

       Show indicator setting for field . . . . . . .    _____     Name
       Delete all fields on bottom line . . . . . . .    _              Y=Yes
       Reference database fields  . . . . . . . . . .    Y              Y=Yes
       Display in single-field mode . . . . . . . . .    Y              Y=Yes



    F3=Exit    F12=Cancel
```
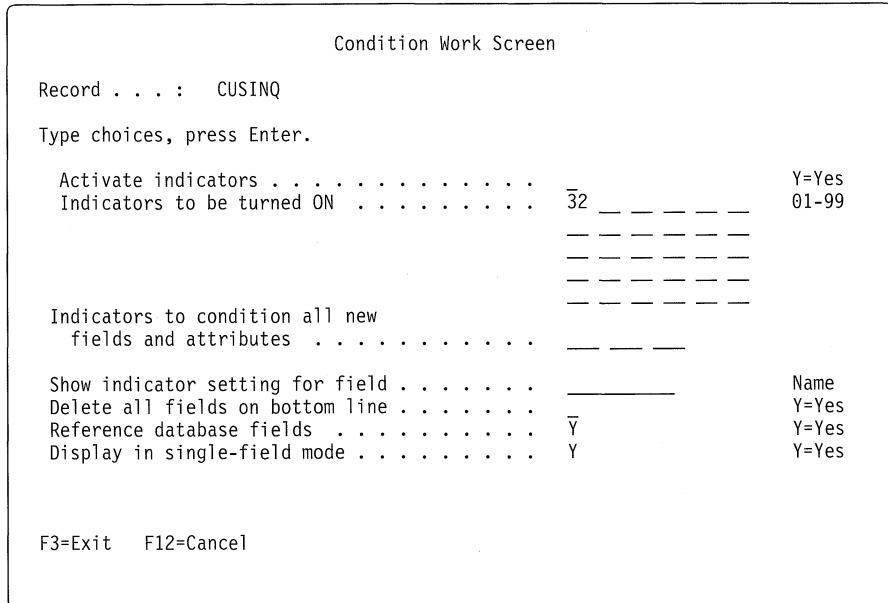
Figure 72. Condition Work Screen Display with Single-Field Mode Selected

   c. Press Enter to return the Design Image work screen. The ORDBAL field appears on the bottom row of the Design Image work screen.

The constant Over is blinking and in reverse image because you cleared the *Activate indicators* prompt on the Condition Work Screen display.

3. On the Design Image work screen:

   a. Press Page Down to display the ARBAL field.

   b. Type &C beginning at row 20, column 6 to place the ARBAL field on the Design Image work screen. The C indicates that the column heading is placed immediately above the data field.

The work screen looks like Figure 73.

```
    18
    19
    20   &C
    21
    22
    23
    ARBAL       Length: 08,02  COLHDG: Accts Rec Balance
```
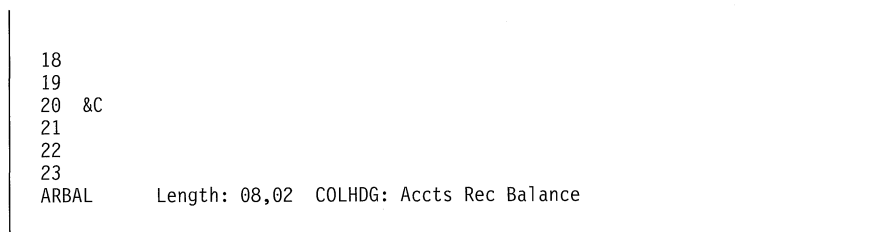
Figure 73. Design Image Work Screen with the ARBAL Field Displayed in Single-Field Mode

   c. Press Enter to position the ARBAL column heading and data field on the Design Image work screen. The ORDBAL field appears on the bottom row.

   d. Type &C beginning at row 20, column 24 to place the ORDBAL column heading and data field on the work screen.

The work screen looks like Figure 74 on page 60.

```
17
18   Accts Rec
19     Balance
20 666,666.66-           &C
21
22
23
ORDBAL     LENGTH: 8,2  COLHDG: A/R Amt in Order File
```

Figure 74. Design Image Work Screen with ORDBAL Displayed in Single-Field Mode

e. Press Enter to position the column heading and data field on the work screen.

Adding User-Defined Fields on the Design Image Work Screen

Now add two user-defined fields: the column heading `Total Balance`, and the data field `666666.66`. The data field is a signed, output numeric field. It totals the amounts in the `Accts Rec Balance` and `A/R Amt in Order File` data fields.

1. To create column heading and data field:

a. Type the constant `Total` beginning at row 18, column 43.

b. Type the constant `Balance` beginning at row 19, column 41.

c. Type `+6(8,2)` beginning at row 20, column 38 to specify the data field. The 6 specifies that the data field is an output numeric field. The `(8,2)` specifies a field length of 8 positions with 2 decimal places.

The Design Image work screen now looks like Figure 75.

```
17
18   Accts Rec     A/R Amt in        Total
19     Balance      Order File       Balance
20 666,666.66-     666,666.66-     +6(8,2)
21
22
23
```

Figure 75. Design Image Work Screen with the Total Balance Field Specified

d. Press Enter to position the column heading `Total Balance` and the output data field `666666.66`.

e. Type an asterisk (`*`) immediately preceding the data field `666666.66` to indicate that you want to specify a field-level keyword for the field.

The work screen now looks like Figure 76.

```
17
18   Accts Rec     A/R Amt in        Total
19     Balance      Order File       Balance
20 666,666.66-     666,666.66-     *666666.66
21
22
23
```

Figure 76. Design Image Work Screen with the Total Balance Field Selected for Editing

f. Press Enter to see the Select Field Keywords display.

2. On the Select Field Keywords display, indicate that you want to specify an edit code for the data field:

   a. Type Y (Yes) in the *Editing keywords* prompt. The display looks like Figure 77.

      Note: This display is slightly different if you are using the System/38 environment.

```
                           Select Field Keywords

Field   . . . . :  FLD001              Usage . . :  0
Length  . . . . :  8,2                 Row . . . :  20   Column . . . :  39

Type choices, press Enter.
                                  Y=Yes    For Field Type
   Display attributes . . . . . . .   _     All except Hidden
   Colors . . . . . . . . . . . . .   _     All except Hidden



   General keywords . . . . . . . .   _     All types
   Editing keywords . . . . . . . .   Y     Numeric Output or Both
   Database reference . . . . . . .   _     Hidden, Input, Output, Both
```

Figure 77. Select Field Keywords Display with Editing Keywords Selected

   b. Press Enter to see the Select Editing Keywords display.

3. On the Select Editing Keywords display:

   a. Type J in the *Edit code* prompt. The J specifies that the data field is displayed with commas, zero balances, and a minus sign if the number is negative.

   b. Clear the *Edit word* prompt.

   The display now looks like Figure 78.

```
                          Select Editing Keywords

Field . . . . . :  FLD001             Usage . . :  0
Length  . . . . :  8,2                Row . . . :  20   Column . . . :  39

Edit Code Description      No Sign   CR Sign   - Sign(R)  - Sign(L)
Commas and zero balances      1        A          J          N
Commas                        2        B          K          0
Zero balances                 3        C          L          P
No commas or zero balances    4        D          M          Q
User defined edit codes      5-9
Date edit                     Y
Suppress leading zeros        Z

Type choices, press Enter.
                                  Keyword                          More
   Edit code  . . . . . . . . . . . . .  EDTCDE   J   A-D, J-Q, Y, Z, 1-9
      Replace leading zeros with . . . .          -   *, $
   Edit word  . . . . . . . . . . . . .  EDTWRD   _____
   _____
   _____   _

F3=Exit    F12=Cancel
```

Figure 78. Select Editing Keywords Display with the Edit Code J Selected

c. Press Enter to return the Select Field Keywords display.

4. On the Select Field Keywords display indicate that you want to specify error messages:

   a. Type Y (Yes) in the *Error messages* prompt.

   b. Press Enter to see the Define Error Messages display.

5. On the Define Error Messages display, define a message for indicators 20 and 21:

   a. Type 20 in the *Indicators/+* prompt, `$5,000 credit limit for business exceeded` in the *ERRMSG - Message Text* prompt, and `40` in the *Ind* prompt.

   b. Type 21 in the *Indicators/+* prompt, `$2,000 credit limit for private exceeded` in the *ERRMSG - Message Text* prompt, and `41` in the *Ind* prompt.

   If indicator 20 or 21 is set on by the application program using this display, the associated message is displayed. The display now looks like Figure 79.

```
                          Define Error Messages

   Field . . . . . :   FLD001           Usage . . :  O
   Length  . . . . :   8,2              Row . . . :  20   Column . . . . :  39

   Type parameters, press Enter.

    Indicators/+   ERRMSG - Message Text                        More   Ind
    _20 ___ ___    $5,000 credit limit for business exceeded_____   _   __
    _21 ___ ___    $2,000 credit limit for private exceeded_____    _   __
```
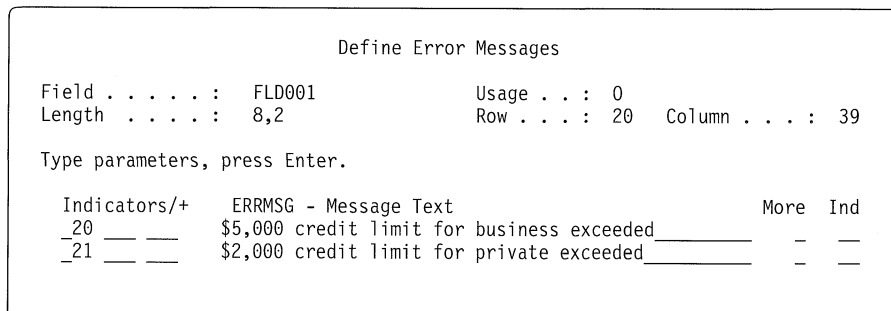
Figure 79. Define Error Messages Display with Indicators and Messages

   c. Press Enter to see the Select Field Keywords display.

6. Press Enter on the Select Field Keywords display to return the Design Image work screen.

7. On the Design Image work screen:

   a. Type the following constant beginning at row 22 column 5:

      `'CF keys:  4-Search, 7-Update, 8-Add, 10-Delete, 12-End'`

      The work screen now looks like Figure 80.

```
   17
   18   Accts Rec       A/R Amt in        Total
   19      Balance      Order File       Balance
   20 666,666.66-       666,666.66-    666,666.66-
   21
   22'CF keys:  4-Search,  7-Update,  8-Add,  10-Delete,  12-End'
   23
   24
```
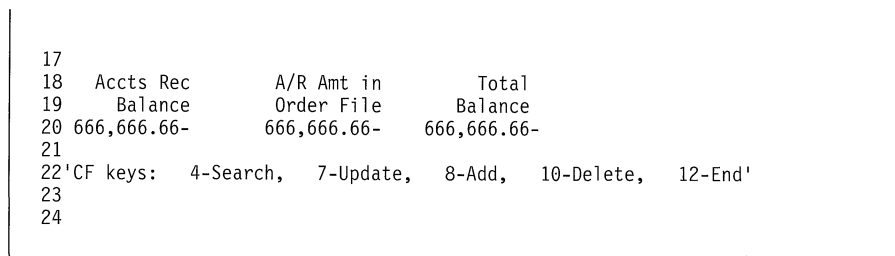
Figure 80. Design Image Work Screen with Constant Displayed

   b. Press Enter to remove the single quotation marks.

c. Press F14 (Ruler) to remove the ruler. (You do not have to remove the ruler; it does not appear to the person using this display.)

The completed display looks similar to Figure 81.

```
                   CUSTOMER MASTER FILE MAINTENANCE/INQUIRY
                                      Search Code:   BBBBBB
   Customer Number:  BBBBB
     Customer Name:  BBBBBBBBBBBBBBBBBBBBB
    Street Address:  BBBBBBBBBBBBBBBBBBBBB
              City:  BBBBBBBBBBBBBBBBBBBBB
             State:  BB
          Zip Code:  99999-

          Cust Type:  B        1-Gov, 2-School, 3-Business, 4-Pvt, 5-Other

       Credit Limit:  99999999-          Over



     Accts Rec       A/R Amt in       Total
      Balance        Order File      Balance
    666,666.66-      666,666.66-    666,666.66-

    CF keys:  4-Search,  7-Update,  8-Add,  10-Delete,  12-End
```

Figure 81. Design Image Work Screen with Completed Customer Master File Maintenance/Inquiry Display

You have now completed the CUSINQ display.

d. Press F12 (Cancel) to return the Work with Display Records display.

Printing the Work Screen Image

You can print the work screen image with or without a field listing. To print the work screen image, press F17 from the Work with Display Records display.

The work screen image and a field listing are printed by default. To print the work screen image without the field listing, do the following:

1. Press F13 from the Work with Display Records display to see the Change Defaults display. You can also press F13 from the work screen to access the Change Defaults display.

2. On the Change Defaults display, type N in the *Include field definitions* prompt. This setting stays until it is changed again. The display is shown in Figure 82 on page 64.

```
                             Change Defaults
   Type choices, press Enter.

      Print work screen image
         Include field definitions . . . . . . .   N       Y=Yes, N=No

















   F3=Exit      F12=Cancel
```
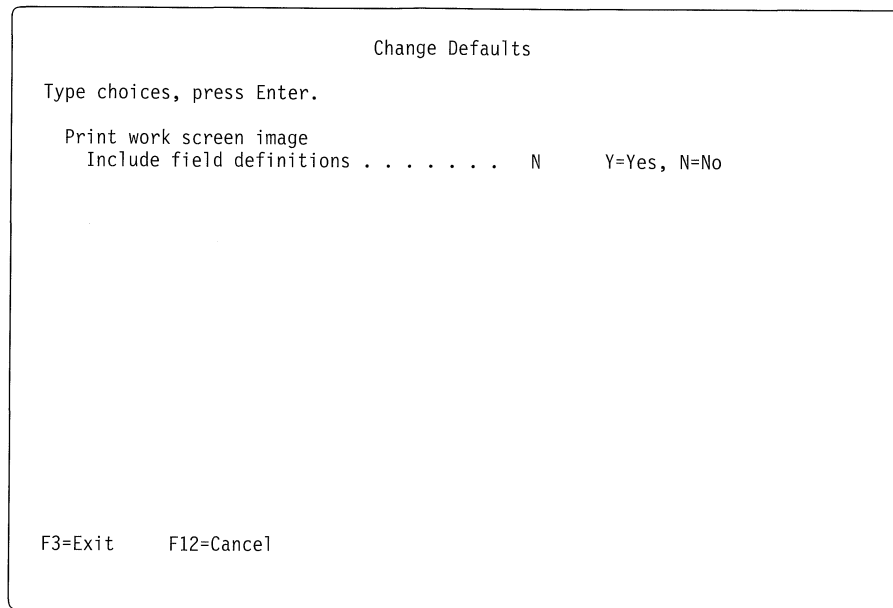
Figure 82. Change Defaults Display

3. Press Enter to return the Work with Display Records display.

4. On the Work with Display Records display, type 12 next to the CUSINQ record to display the record on the work screen.

5. On the work screen, press F17 to print the customer inquiry display without the field listing.

6. When the completion message appears, press F12 (Cancel) to return the Work with Display Records display.

Saving the Data Description Specifications and Creating the Display File

Now save the data description specifications (DDS) and create the display file:

1. Press F3 (Exit) on the Work with Display Records display to see the Save DDS - Create Display File display shown in Figure 83 on page 65.

```
                    Save DDS - Create Display File

Type choices, press Enter.

        Save DDS source . . . . . . . . . . . . .  Y           Y=Yes
            Source file . . . . . . . . . . . . .  QDDSSRC___  F4 for list
                Library . . . . . . . . . . . . .  QGPL_____  Name, *LIBL ...
            Member . . . . . . . . . . . . . . . . CUSMASTER_  F4 for list
            Text . . . . . . . . . . . . . . . .   _____


        Create display file . . . . . . . . . . . Y           Y=Yes
            Prompt for parameters . . . . . . . .  _           Y=Yes
            Display file . . . . . . . . . . . . . CUSMASTER_  F4 for list
                Library . . . . . . . . . . . . .  QGPL_____  Name, *CURLIB
            Replace existing file . . . . . . . .  Y           Y=Yes

        Submit create job in batch . . . . . . .   Y           Y=Yes

        Specify additional
            save or create options . . . . . . .   _           Y=Yes

    F3=Exit   F4=Prompt   F12=Cancel
```

Figure 83. Save DDS - Create Display File Display

2. On the Save DDS - Create Display File display:

   a. Press Enter to:

- Save the DDS source generated by SDA.

- Re-create the display file CUSMASTER from the generated DDS source. (You created this display file in the example in Chapter 2, "Creating Simple Displays.")

- Submit CUSMASTER as a batch job. (If you leave the *Submit create job in batch* prompt blank, SDA creates the display file CUSMASTER interactively.)

   SDA displays a completion message.

   b. Press Enter to return the Design Screens display.

3. Press F3 (Exit) to return the Screen Design Aid (SDA) menu.

Procedure Summary

In this chapter, you used the following procedure to design and create two displays:

1. Select file-level keywords for the display file.

2. Select record-level keywords for the display file.

3. Select database fields from the reference file.

4. Use the Design Image work screen to design the displays.

5. Specify condition indicators and attributes.

6. Design a display by repeating steps 4 and 5.

7. Save DDS and create the display file.

Chapter 4. Creating Windows

This chapter describes how to create a window for a display. In the example in this chapter, you create a window record and select record-level DDS keywords to define the window. You can then work with the window to define fields for the display.

Figure 84 shows the path of SDA displays that you use to define a window.
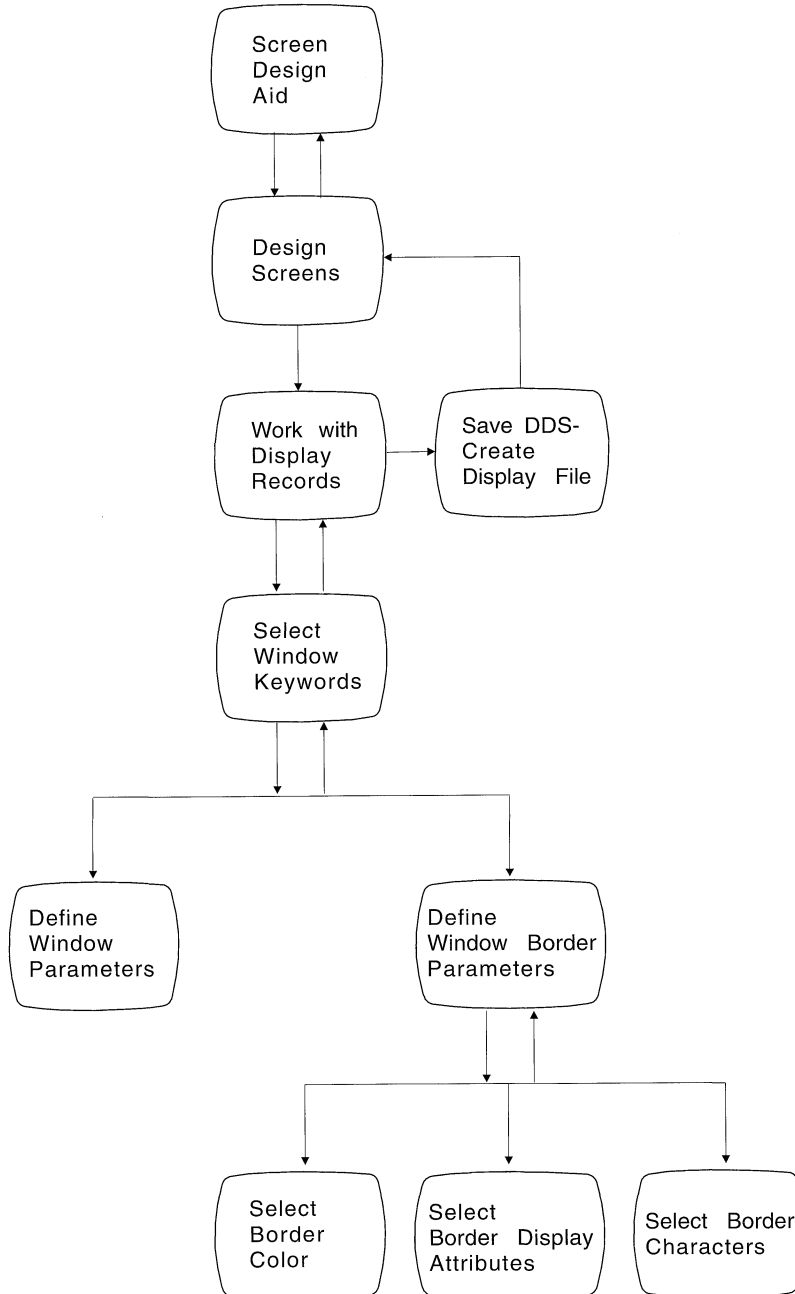
Figure 84. SDA Displays Used to Define Window Displays

Creating a Window

Before you can create the window in this example, you must have change authority to access the required source file QDDSSRC (the IBM-supplied DDS source file in the library QGPL).

To create a window:

1. On the Screen Design Aid (SDA) menu, select option 1 (Design screens) and press Enter to see the Design Screens display.

2. On the Design Screens display, specify the source file, and a library and member name:

   a. Type QDDSSRC in the *Source file* prompt.

   b. Type QGPL in the *Library* prompt.

   c. Type WDW1 in the *Member* prompt.

   d. Press Enter until the Work with Display Records display appears.

Specifying Window Keywords

Now create a new window record and specify window keywords. Window keywords define functions available for the window that you are creating.

1. On the Work with Display Records display, indicate that you want to create a new record by typing 1 (Add) in the *Opt* column and pressing Enter to see the Add New Record display.

2. On the Add New Record display, specify a name and type for the new window record:

   a. Type WINDOW01 in the *New record* prompt.

   b. Type WINDOW in the *Type* prompt to specify that the record is a window. The display looks like Figure 85 on page 69.

   Note: To create a window record with a subfile, you can type WDWSFL in the *Type* prompt. For more information about window subfiles, see Chapter 5, "Creating Subfiles" on page 77.

```
                       Add New Record

    File . . . . . . :    QDDSSRC          Member . . . . . . :   WDW1
      Library . . . . :    QGPL            Source type  . . . :   DSPF

    Type choice, press Enter.

      New record . . . . . . . . . . . . . .  WINDOW01__   Name

      Type . . . . . . . . . . . . . . . . .  WINDOW____   RECORD, USRDFN,
                                                           SFL,    SFLMSG,
                                                           WINDOW, WDWSFL,
                                                           PULDWN, PDNSFL










    F3=Exit     F5=Refresh     F12=Cancel
```

Figure 85. Add New Record Display

   c. Press Enter to add the new window record. You now see the Select
    Window Keywords display.

3. On the Select Window Keywords display, indicate that you want to select
  general record-level keywords to define the window record:

   a. Type Y in the *General keywords* prompt. The display looks like Figure 86.

```
                     Select Window Keywords

    Window record . . . . . . . . . . . . . .:   WINDOW01

    Type choices, press Enter.

                                       Y=Yes
      General keywords  . . . . . . . .  Y
      Select record keywords  . . . . .  _




      TEXT keyword . . . . . . . . .   _____
    _____




    F3=Exit   F12=Cancel
```

Figure 86. Select Window Keywords Display

   b. Press Enter to see the Select General Keywords display.

In this display you choose from the following four record-level window keywords:

WINDOW

Displays a record format inside a window. The parameters for the `WINDOW` keyword can be position attributes or the name of the record that specifies the window attributes.

WDWBORDER

Specifies the border color, display attributes, and characters for the window. `WDWBORDER` is also a file-level keyword.

RMVWDW

Allows existing windows to be removed from the display when another window is displayed.

USRRSTDSP

Allows the application to specify that the system should not save or restore the underlying display when a window is displayed.

Note: In this display, the `WINDOW` keyword is automatically generated as a default. The `WINDOW` keyword can be edited but not removed. The `WDWBORDER` keyword is not automatically generated. To modify the parameters for either keyword, type `Y` in the appropriate *Select parameters* prompt.

4. On the Select General Keywords display:

   a. Type `Y` in the *Select parameters* prompts located under the *Window parameters* and *Window borders* prompts. The display now looks like Figure 87.

```
                        Select General Keywords

Window record . . . . . . . . . . . . . .:   WINDOW01

Type choices, press Enter.

                                     Keyword    Y=Yes   Indicators/+

Window parameters . . . . . . . . . . . WINDOW      Y
   Select parameters . . . . . . . . . .            Y
Window borders  . . . . . . . . . . . . WDWBORDER
   Select parameters . . . . . . . . . .            Y
Remove windows  . . . . . . . . . . . . RMVWDW      _        __ __ __
User restore display  . . . . . . . . . USRRSTDSP   _        __ __ __




    F3=Exit    F12=Cancel
```
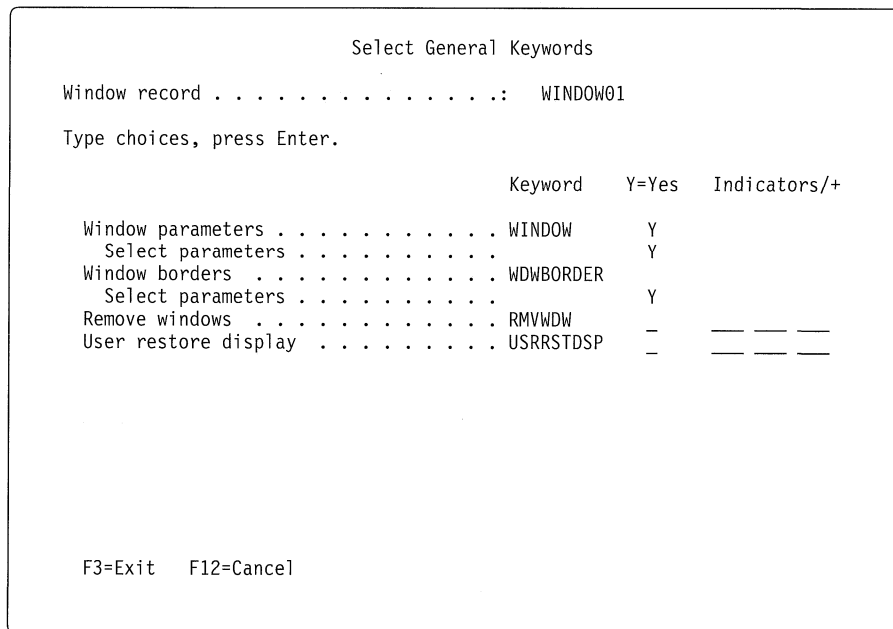
Figure 87. Select General Keywords Display

   b. Press Enter to see the Define Window Parameters display shown in Figure 88 on page 71.

On the Define Window Parameters display, you define the position and size of the window. You can specify the parameters in two ways:

- Identify the record name that specifies the window attributes. This is the Referenced Window format.

- Identify the window as a Window Definition by specifying the window attributes, which are the position of the upper-left corner of the window border and the number of rows and columns within the window.

```
                        Define Window Parameters

  Record . . . :   WINDOW01                 Display Size    Roll
  Keyword. . . :   WINDOW                    *DS3_____  +     _  +, -

  Referenced window . . . . . . . . . . . .  _____     Name
  -OR-
  Window definition
    Default start positioning . . . . . . . .  _            Y=Yes
    -OR-
    Start line
      Program-to-system field . . . . . . . .  _____   Name
      -OR-
      Actual line . . . . . . . . . . . . . .  2            1-25
    Start position
      Program-to-system field . . . . . . . .  _____     Name
      -OR-
      Actual position . . . . . . . . . . . .  2            1-128
    Window lines. . . . . . . . . . . . . . .  10           1-25
    Window positions. . . . . . . . . . . . .  10           1-128
    Message line. . . . . . . . . . . . . . .  Y            Y=Yes

  F3=Exit    F12=Cancel
```

Figure 88. Define Window Parameters Display

5. Press Enter to accept the default values shown in Figure 88 and to see the Define Window Border Parameters display.

6. On the Define Window Border Parameters display:

   a. Type Y in the *Define parameters* prompt under the *Color* prompt.

   b. Type Y in the *Define parameters* prompt under the *Display Attributes* prompt.

   c. Type Y in the *Define parameters* prompt under the *Border Characters* prompt. The display now looks like Figure 89 on page 72.

```
                    Define Window Border Parameters

         Record . . . :    WINDOW01
         Keyword. . . :    WDWBORDER
                                                 Border number  ROLL
                                                  1  of   1       _


         Indicators/+  . . . . . . . . . . . . . . . . . . .    ___ ___ ___


         Color . . . . . . . . . . . . . . . . . . . . . . .   _
            Define parameters . . . . . . . . . . . . . . . .  Y           Y=Yes

         Display attributes. . . . . . . . . . . . . . . . .   _
            Define parameters . . . . . . . . . . . . . . . .  Y           Y=Yes

         Border characters . . . . . . . . . . . . . . . . .   _
            Define parameters . . . . . . . . . . . . . . . .  Y           Y=Yes



            F3=Exit    F12=Cancel
```
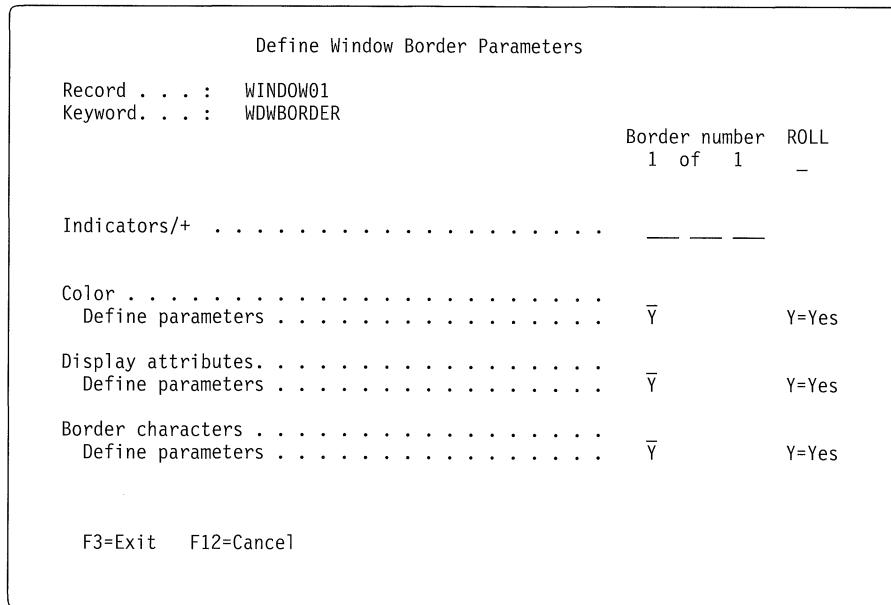
Figure 89. Define Window Border Parameters Display

      d. Press Enter to see the Select Border Color display shown in Figure 90.

7. On the Select Border Color display:

      a. Type Y next to the color that you want to specify for the window border.
You can only choose one color.

```
                         Select Border Color

         Record . . . :    WINDOW01
         Keyword. . . :    WDWBORDER
                                                 Border number
                                                  1  of   1
         Type choice, press Enter.


         Colors:                                 COLOR    Y=Yes

            Blue . . . . . . . . . . . . . . . . . . . .   BLU      _
            Green  . . . . . . . . . . . . . . . . . . .   GRN      _
            Pink . . . . . . . . . . . . . . . . . . . .   PNK      _
            Red  . . . . . . . . . . . . . . . . . . . .   RED      _
            Turquoise  . . . . . . . . . . . . . . . . .   TRQ      _
            White  . . . . . . . . . . . . . . . . . . .   WHT      _
            Yellow . . . . . . . . . . . . . . . . . . .   YLW      _



            F3=Exit    F12=Cancel
```

Figure 90. Select Border Color Display

      b. Press Enter to see the Select Border Display Attributes display shown in
Figure 91 on page 73.

8. On the Select Border Attributes display:

      a. Type Y next to the display attributes that you want to specify for the window
border.

```
                      Select Border Display Attributes

        Record . . . :  WINDOW01
        Keyword. . . :  WDWBORDER
                                                        Border number
                                                        1  of   1
        Type choices, press Enter.


        Display attributes:                             DSPATR     Y=Yes

           High intensity . . . . . . . . . . . . . . . . .  HI        _
           Reverse image  . . . . . . . . . . . . . . . .    RI        _
           Column separators  . . . . . . . . . . . . . .    CS        _
           Blink  . . . . . . . . . . . . . . . . . . . .    BL        _
           Nondisplay . . . . . . . . . . . . . . . . . .    ND        _
           Underline  . . . . . . . . . . . . . . . . . .    UL        _




           F3=Exit   F12=Cancel
```
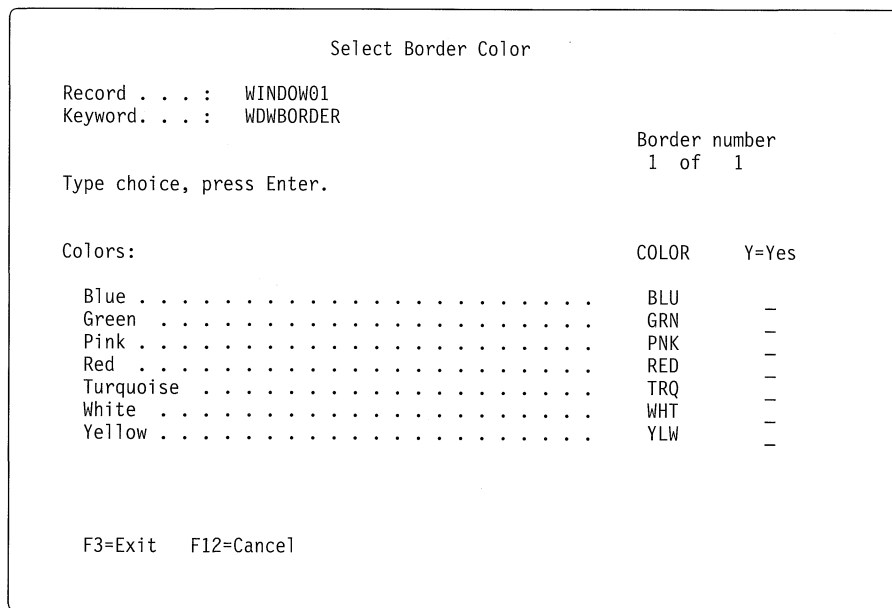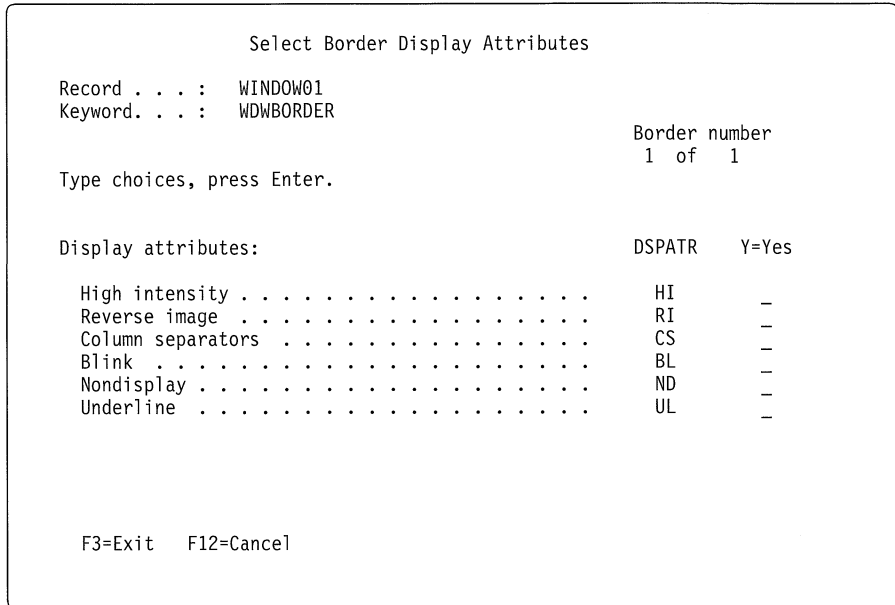
Figure 91. Select Border Display Attributes Display

> b. Press Enter to see the Select Border Characters display shown in
>   Figure 92.

9. On the Select Border Characters display:

> a. You specify the characters that you want to use for the parts of the window
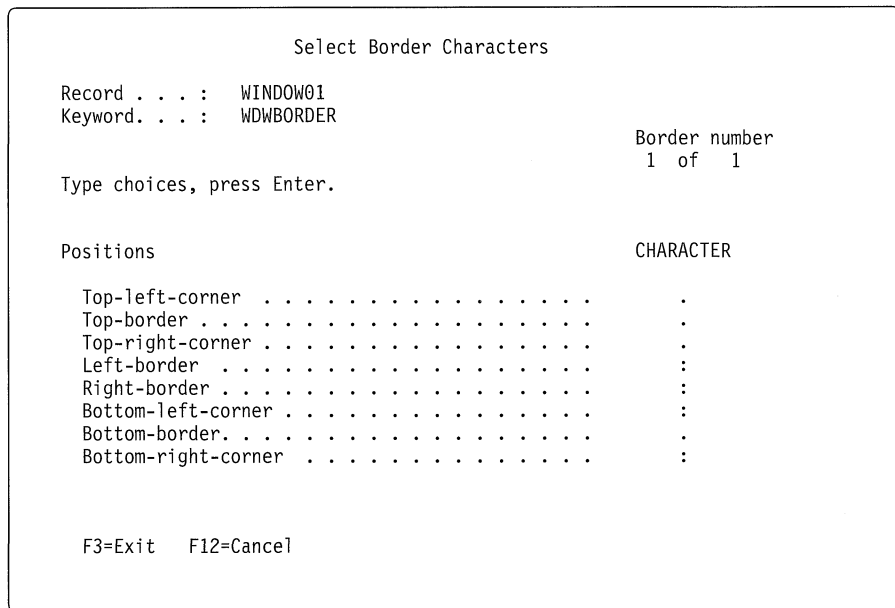>   border in the *CHARACTER* column.

```
                         Select Border Characters

        Record . . . :  WINDOW01
        Keyword. . . :  WDWBORDER
                                                        Border number
                                                        1  of   1
        Type choices, press Enter.


        Positions                                       CHARACTER

           Top-left-corner  . . . . . . . . . . . . . . . . .     .
           Top-border . . . . . . . . . . . . . . . . . . .      .
           Top-right-corner . . . . . . . . . . . . . . . .      .
           Left-border  . . . . . . . . . . . . . . . . . .      :
           Right-border . . . . . . . . . . . . . . . . . .      :
           Bottom-left-corner . . . . . . . . . . . . . . .      :
           Bottom-border. . . . . . . . . . . . . . . . . .      .
           Bottom-right-corner  . . . . . . . . . . . . . .      :




           F3=Exit   F12=Cancel
```

Figure 92. Select Border Characters Display

> b. Press Enter to use the defaults shown in Figure 92 and to return the
>   Define Window Border Parameters display.

Viewing the Window on the Design Image Work Screen

You can see the window you created with the Design Image work screen.

1. On the Define Window Border Parameters display, press Enter until the Work with Display Records display appears.

2. On the Work with Display Records display:

   a. Type 12 in the *Opt* column. The display looks like Figure 93.

```
                      Work with Display Records

    File . . . . . . . :    QDDSSRC          Member . . . . . . . :   WDW1
       Library. . . . :      QGPL            Source type  . . . :   DSPF

    Type choice, press Enter.
      1=Add              2=Edit comments      3=Copy          4=Delete
      7=Rename           8=Select keywords   12=Design image

    Opt  Order    Record        Type      Related Subfile   Date        DDS Error

    12    __10    WINDOW01__    WINDOW                       09/21/92

       (No records in file)




    F3=Exit                    F12=Cancel      F14=File-level keywords
    F15=File-level comments    F17=Subset      F24=More keys
```

Figure 93. Work with Display Records Display

   b. Press Enter to see the Design Image work screen shown in Figure 94 on page 75.

Note: The procedure for editing keywords and parameters for a window is the same as that used for editing keywords and parameters for other records and files. To edit record-level keywords and parameters for an existing window, type 8 in the *Opt* column on the Work with Display Records display, and press Enter. To edit file-level window border keywords and parameters, press F14 on the Work with Display Records display.
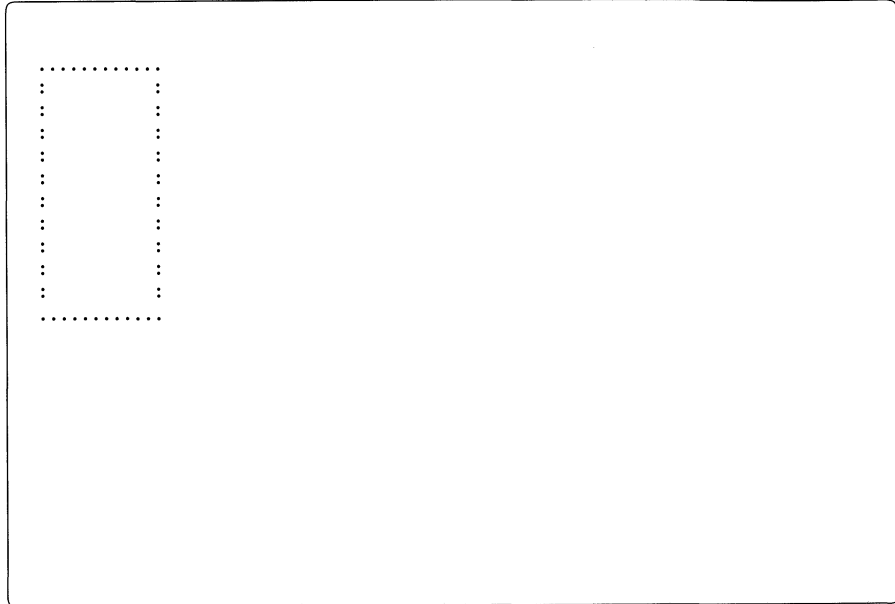
Figure 94. Design Image Work Screen Showing a Window

The window is empty, because no fields were created for the display. You can now work with the display to define fields for the window.

Procedure Summary

This chapter described the following procedure to create and view a window display:

1. Select the Design screens option.

2. Create a window record.

3. Define the DDS record-level keywords for the window.

4. View the window on the Design Image work screen.

Chapter 5. Creating Subfiles

In the example in this chapter, you create a **subfile record** and a **subfile control record** to examine line items from a database file on an order entry display. The subfile holds 60 records and displays 17 records at a time.

A subfile is a group of records with the same record name. The group is read from and written to a display device in a single operation. A subfile is made up of a subfile record and a subfile control record.

A subfile record:

- Selects keywords to process the data
- Defines fields

A subfile control record:

- Defines the size of the subfile
- Defines the user messages
- Defines the control keys the user uses when looking at the display
- Defines the fixed portions of the display

Figure 95 on page 78 shows the path of SDA displays that you use to create a subfile. To test your display file, see Chapter 6, "Testing Display Files" after you complete the example in this chapter.
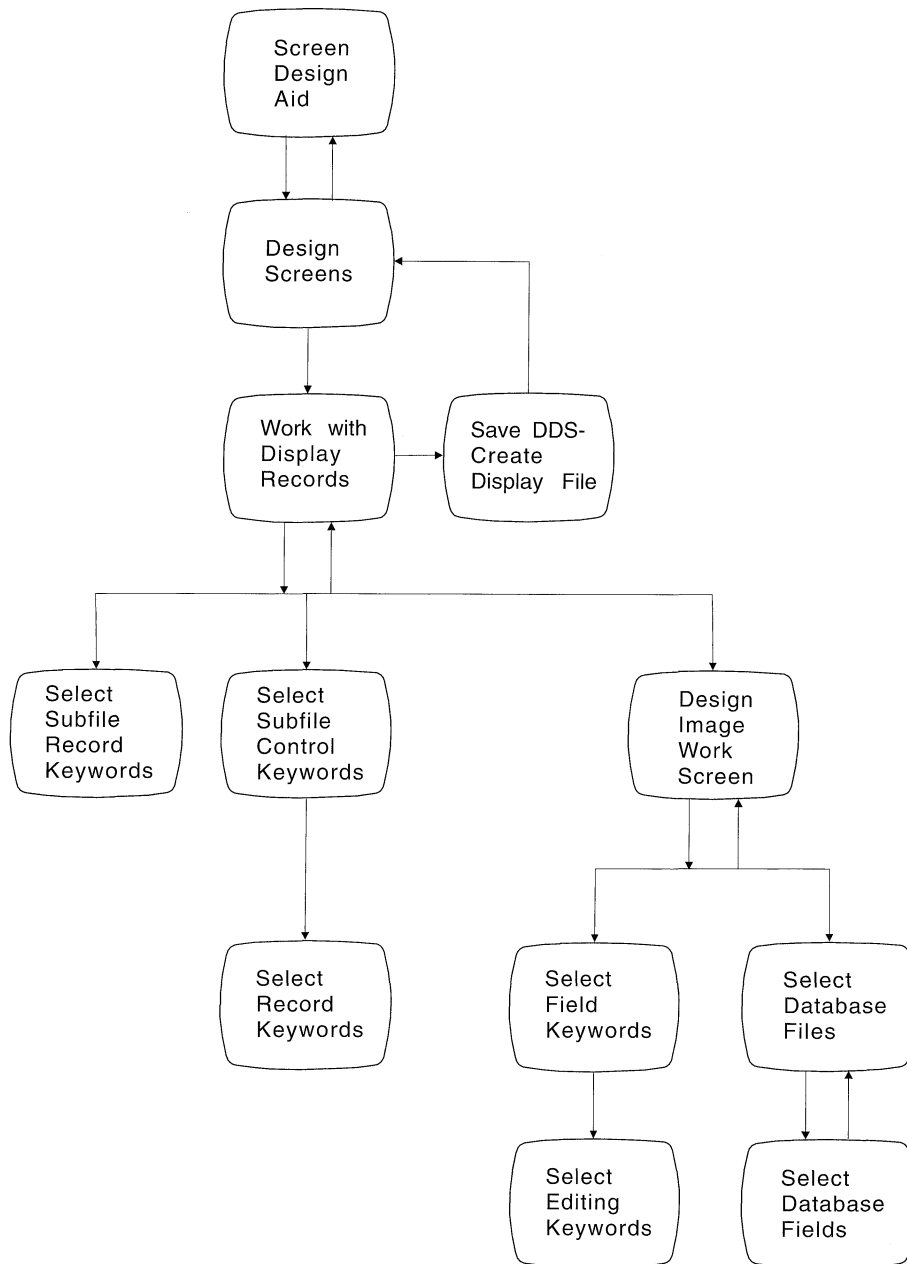
```
                    ┌─────────┐
                    │ Screen  │
                    │ Design  │
                    │ Aid     │
                    └────┬────┘
                       │  ▲
                       ▼  │
                    ┌─────────┐
                    │ Design  │◄──────────────┐
                    │ Screens │               │
                    └────┬────┘               │
                       │                      │
                       ▼                      │
              ┌──────────┐   ┌──────────┐     │
              │ Work with│   │ Save DDS-│     │
              │ Display  ├──►│ Create   │─────┘
              │ Records  │   │ Display  │
              └────┬─────┘   │ File     │
                 │  ▲        └──────────┘
                 ▼  │
   ┌──────────┬───────────┬─────────────────────┐
   │          │           │                     │
┌──────────┐ ┌──────────┐          ┌──────────┐
│ Select   │ │ Select   │          │ Design   │
│ Subfile  │ │ Subfile  │          │ Image    │
│ Record   │ │ Control  │          │ Work     │
│ Keywords │ │ Keywords │          │ Screen   │
└──────────┘ └────┬─────┘          └────┬─────┘
                │                     │
                ▼               ┌─────┴──────┐
          ┌──────────┐          │            │
          │ Select   │    ┌──────────┐ ┌──────────┐
          │ Record   │    │ Select   │ │ Select   │
          │ Keywords │    │ Field    │ │ Database │
          └──────────┘    │ Keywords │ │ Files    │
                          └────┬─────┘ └────┬─────┘
                             │            │  ▲
                             ▼            ▼  │
                       ┌──────────┐ ┌──────────┐
                       │ Select   │ │ Select   │
                       │ Editing  │ │ Database │
                       │ Keywords │ │ Fields   │
                       └──────────┘ └──────────┘
```

Figure 95. SDA Displays Used to Design and Create a Subfile

Creating a Subfile Record

To create the subfile record and subfile control record in this example, you must have authority to access the required source file QDDSSRC (the IBM supplied DDS source file), which is in the library QGPL.

You create the subfile record and the subfile control record by indicating that you want to design a screen.

1. On the Screen Design Aid (SDA) menu:

   a. Select option 1 (Design screens).

   b. Press Enter to see the Design Screens display.

2. On the Design Screens display:

   a. Type QDDSSRC in the *Source file* prompt.

   b. Type QGPL in the *Library* prompt.

   c. Type EXAMPLE in the *Source Member* prompt.

   The display now looks like Figure 96.

   Note: This display is slightly different if you are using the System/38 environment.
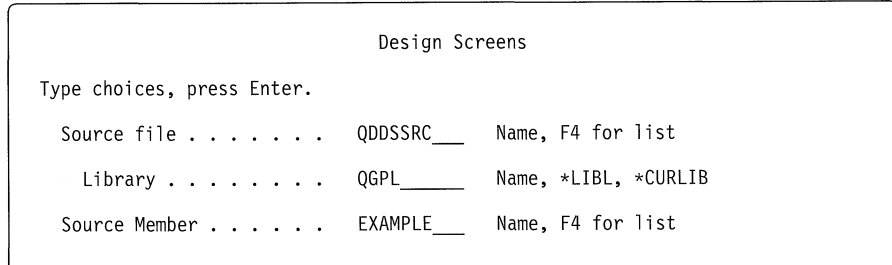
```
                                Design Screens

Type choices, press Enter.

     Source file . . . . . . .   QDDSSRC___   Name, F4 for list

        Library . . . . . . . .  QGPL_____   Name, *LIBL, *CURLIB

     Source Member . . . . . .   EXAMPLE___   Name, F4 for list
```

Figure 96. Design Screens Display

   d. Press Enter to see the Work with Display Records display.

Selecting Record-Level Keywords for the Subfile Record

Now select record-level keywords. The record-level keywords specify how SDA is to process the subfile records.

1. On the Work with Display Records display:

   a. Type 1 (Add) in the *Opt* column.

   b. Press Enter to see the Add New Record display.

2. On the Add New Record display, indicate that you want to create a subfile record and a subfile control record:

   a. Type SUBFILE in the *New record* prompt.

   b. Type SFL in the *Type* prompt.

      Note: To create a window record with a subfile, you type WDWSFL in the *Type* prompt.

   c. Press Enter to see the *Subfile control record* prompt.

   d. Type SUBFCTL in the *Subfile control record* prompt.

   The display looks like Figure 97 on page 80.

```
                            Add New Record

 File . . . . . . :   QDDSSRC            Member . . . . . . :   EXAMPLE__
    Library . . . :      QGPL            Source type  . . . :   DSPF

 Type choices, press Enter.

   New record . . . . . . . . . . . . . .   SUBFILE___    Name

   Type . . . . . . . . . . . . . . . . .   SFL__         RECORD, USRDFN
                                                          SFL,    SFLMSG
                                                          WINDOW, WDWSFL,
                                                          PULDWN, PDNSFL

   Subfile control record . . . . . . . .   SUBFCTL       Name
```

Figure 97. Add New Record Display with Subfile Control Record Prompt

> e. Press Enter to see the Select Subfile Keywords display.

3. On the Select Subfile Keywords display, indicate that you want to specify keywords, then type a description of the subfile:

> a. Type Y (Yes) in the *General keywords* prompt.

> b. Type Definition for record: SUBFILE in the *TEXT keyword* prompt.

The display now looks like Figure 98.

```
                      Select Subfile Keywords

 Subfile Record . . . . . . . :   SUBFILE

 Type choices, press Enter.

                                   Y=Yes
   General keywords  . . . . . . . .  Y
   Indicator keywords . . . . . . .  _


   TEXT keyword  . . . . . . . . .   Definition for record:  SUBFILE_____
 _____
```

Figure 98. Select Subfile Keywords Display with Keywords Selected

> c. Press Enter to see the Select General Keywords display.

4. On the Select General Keywords display:

> a. Type Y (Yes) in the *Allow blanks* prompt. The display looks like Figure 99 on page 81.

```
                    Select General Keywords

Subfile record . . . . . . . :    SUBFILE

Type choices, press Enter.

                                        Keyword    Y=Yes  Indicators/+
   Return this record
     on read next changed . . . . . . . . . .   SFLNXTCHG    _    __ __ __
   Write this record to the job log . . . . .   LOGOUT       _    __ __ __
   Write this record to the job log . . . . .   LOGINP       _
   Keep records on display
     when closing the file  . . . . . . . . .   KEEP         _

   Allow blanks . . . . . . . . . . . . . . .   CHECK(AB)    Y
   Move cursor right to left  . . . . . . . .   CHECK(RL)    _

   Change input defaults  . . . . . . . . . .   CHGINPDFT    _
     Select parameters  . . . . . . . . . . .                _
```

Figure 99. Select General Keywords Display with Keywords Selected

You have now completed selecting the subfile record keywords.

   b. Press Enter to return the Select Subfile Keywords display.

5. Press Enter on the Select Subfile Keywords display to see the Select Subfile Control Keywords display.

6. On the Select Subfile Control Keywords display:

   a. Type Y (Yes) in the *General keywords* prompt.

   b. Type Y (Yes) in the *Subfile display layout* prompt.

   c. Type Y (Yes) in the *Subfile messages* prompt.

   d. Type Y (Yes) in the *Select record keywords* prompt.

   e. Type SUBFILE CONTROL RECORD FOR EXAMPLE in the *TEXT keyword* prompt.

The display now looks like Figure 100.

```
                 Select Subfile Control Keywords

Subfile control record . . . . . . . . . :    SUBFCTL

Type choices, press Enter.

                                    Y=Yes
   General keywords  . . . . . . . .   Y
   Subfile display layout . . . . .    Y
   Subfile messages . . . . . . . .    Y

   Select record keywords . . . . .    Y

   TEXT keyword  . . . . . . . . . .   SUBFILE CONTROL RECORD FOR EXAMPLE_____
```

Figure 100. Select Subfile Control Keywords Display with Entries

   f. Press Enter to see the Define General Keywords display.

7. On the Define General Keywords display:

a. Ensure that a Y (Yes) is in the *Display subfile records* prompt to select the keyword SFLDSP. This value is required. You cannot remove the SFLDSP keyword.

b. Type Y (Yes) in the *Display control record* prompt to select the SFLDSPCTL keyword.

The following entries control when the subfile is displayed.

c. Type N50 in the *Indicators/+* column for the SFLDSP keyword. The N specifies that when indicator 50 is off, the subfile is displayed.

d. Type N50 in the *Indicators/+* column for the SFLDSPCTL keyword.

e. Type 50 in the *Indicators/+* for the SFLCLR keyword to clear the subfile when indicator 50 is on.

The display now looks like Figure 101.

```
                      Define General Keywords

Subfile control record . . . . . . . . . :    SFLCTL

Type choices, press Enter.
                                    Keyword
    Related subfile record . . . . . . .    SFLCTL      SFL_____  Name
    Subfile cursor relative record . . .    SFLCSRRRN   ____         Name
    Subfile mode . . . . . . . . . . . .    SFLMODE     ____         Name
    Program message queue field  . . . .    SFLPGMQ     ____         Name


                                                Y=Yes        Indicators/+
    Display subfile records  . . . . . .    SFLDSP       Y      N50 ___ ___
    Display control record . . . . . . .    SFLDSPCTL    Y      N50 ___ ___
    Initialize subfile fields  . . . . .    SFLINZ       _          ___ ___ ___
    Delete subfile area  . . . . . . . .    SFLDLT              ___ ___ ___
    Clear subfile records  . . . . . . .    SFLCLR             _50 ___ ___
    Indicate more records  . . . . . . .    SFLEND             ___ ___ ___
        SFLEND parameter . . . . . . . .      *MORE
    Record not active  . . . . . . . . .    SFLRNA       _

                                                             More...
    F3=Exit    F12=Cancel
```

Figure 101. Define General Keywords Display with Keywords Selected

Note: When you press Page Down (Roll Up) on the Define General Keywords display, you see the prompts that you use to specify the SFLDROP, SFLFOLD, and SFLENTER keywords.

f. Press Enter to see the Define Display Layout display.

8. On the Define Display Layout display, specify that the subfile contains 60 records and display 17 records at a time:

a. Type 60 in the *Records in subfile* prompt.

b. Type 17 in the *Records per display* prompt.

The display looks like Figure 102 on page 83.

```
                    Define Display Layout

Subfile control record . . . . . . . . . :    SUBFCTL

Type values, press Enter.

                                       Keyword  Number
    Records in subfile . . . . . . . . . .   SFLSIZ   __60
    Records per display  . . . . . . . . .   SLFPAG   __17
    Spaces between records . . . . . . . .   SFLLIN   ____
```

Figure 102. Define Display Layout Display with Keywords Selected

   c. Press Enter to see the Define Subfile Messages display.

9. On the Define Subfile Messages display, specify indicators and message text
   for the subfile:

   a. Type 60 in the *Indicators/+* column, Item not found in the *SFLMSG -
      Message Text* column, and 77 in the *Ind* column as the response indicator.

      When indicator 60 is true, the message appears and DDS returns the
      response indicator 77 to the application program.

   b. Type 61 in the *Indicators/+* column, and No stock available for this
      item in the *SFLMSG - Message Text* column.

   c. Type 62 in the *Indicators/+* column, and Partial stock available in the
      SFLMSG - Message Text column.

   d. Type 64 in the *Indicators/+* column, and No line items for this order in
      the *SFLMSG - Message Text* column.

   e. Type 65 in the *Indicators/+* column, and Invalid to change item number in
      the *SFLMSG - Message Text* column.

   The display now looks like Figure 103.

```
                    Define Subfile Messages

Subfile control record . . . . . . . . . :    SUBFCTL

Type values, press Enter.

    Indicators/+    SFLMSG - Message Text                      More  Ind
    _60  ___ ___    Item not found_____  _    77
    _61  ___ ___    No stock available for this item_____  _
    _62  ___ ___    Partial stock available_____  _
    _64  ___ ___    No line items for this order_____  _
    _65  ___ ___    Invalid to change item number_____  _
```

Figure 103. Define Subfile Messages Display with Message Entries

   f. Move the cursor to the top half of the display and press Page Down.

      Note: If you do not move the cursor back to the section you are working
               on before you press Page Down, the wrong half of the display will
               be paged.

   g. Type 68 in the *Indicators/+* column, and No lines entered in the *SFLMSG
      - Message Text* column.
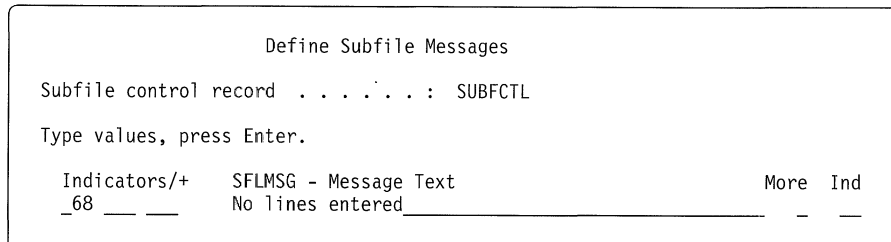
   The display looks like Figure 104 on page 84.

```
                          Define Subfile Messages

Subfile control record  . . . . . . :  SUBFCTL

Type values, press Enter.

  Indicators/+   SFLMSG - Message Text                        More  Ind
  _68 ___ ___    No lines entered_____  _  _
```

Figure 104. Define Subfile Messages Display with Additional Message Entries

    h. Press Enter to see the Select Record Keywords display.

10. On the Select Record Keywords display:

    a. Type Y (Yes) in the *Indicator keywords* prompt. The display looks like Figure 105.
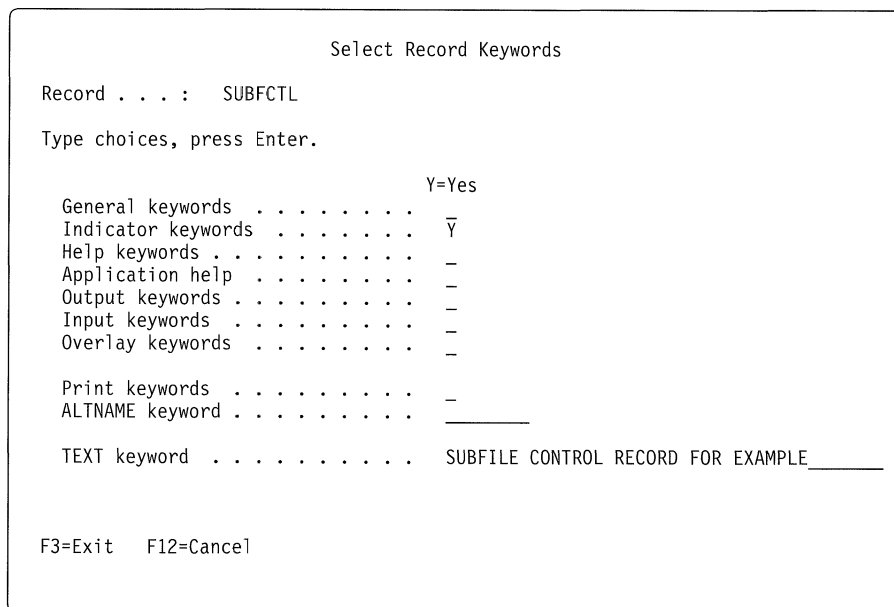
```
                          Select Record Keywords

  Record . . . :   SUBFCTL

  Type choices, press Enter.

                                       Y=Yes
    General keywords . . . . . . . .     _
    Indicator keywords . . . . . . .     Y
    Help keywords . . . . . . . . . .    _
    Application help . . . . . . . .     _
    Output keywords . . . . . . . . .    _
    Input keywords . . . . . . . . .     _
    Overlay keywords . . . . . . . .     _

    Print keywords . . . . . . . . .     _
    ALTNAME keyword . . . . . . . . .    _____

    TEXT keyword . . . . . . . . . .   SUBFILE CONTROL RECORD FOR EXAMPLE_____



  F3=Exit   F12=Cancel
```

Figure 105. Select Record Keywords Display with Indicator Keywords Selected

    b. Press Enter to see the Define Indicator Keywords display.

11. On the Define Indicator Keywords display, specify the keywords HELP and SETOF, and the function key CA13:

    a. Type HELP in the *Keyword* column, 99 in the *Resp* column, and Help key in the *Text* column.

    b. Type CA13 in the *Keyword* column, 92 in the *Resp* column, and End of order in the *Text* column.

    c. Type SETOF in the *Keyword* column, 30 in the *Resp* column, and Any error on display in the *Text* column.

    d. Type SETOF in the *Keyword* column, 50 in the *Resp* column, and Display control in the *Text* column.

Response indicators 30 and 50 are set off at the start of input operations. The display now looks like Figure 106 on page 85.

```
                          Define Indicator Keywords

     Record . . . :     SUBFCTL

     Type keywords and parameters, press Enter.
        Conditioned keywords:         CFnn CAnn CLEAR PAGEDOWN/ROLLUP PAGEUP/ROLLDOWN
                                      HOME HELP HLPRTN
        Unconditioned keywords:       INDTXT VLDCMDKEY SETOF CHANGE


     Keyword   Indicators/+ Resp Text
     HELP____  __ __ __      99  Help key_____
     CA13____  __ __ __      92  End of order_____
     SETOF___  __ __ __      30  Any error on display_____
     SETOF___  __ __ __      50  Display control_____
```

Figure 106. Define Indicator Keywords Display with Function Keys Defined

    e. Press Enter twice to return the Select Record Keywords display.

12. Press Enter twice on the Select Record Keywords display to return the Work with Display Records display.

Defining Fields and Their Attributes for the Subfile Control Record

Now select field-level keywords to define fields and attributes.

1. On the Work with Display Records display, indicate that you want to define the fields for the subfile control record:

    a. Type 12 (Design image) in the *Opt* column. The display looks like Figure 107.

```
                          Work with Display Records

     File . . . . . . :   QDDSSRC              Member . . . . . . :   EXAMPLE
        Library  . . . :   QGPL                Source type  . . . :   DSPF

     Type options, press Enter.
        1=Add                2=Edit comments      3=Copy          4=Delete
        7=Rename             8=Select keywords   12=Design image

     Opt  Order   Record      Type    Related Subfile   Date         DDS Error

      __    __10  SUBFILE___  SFL___                     09/21/92
      12    __20  SUBFCTL___  SFLCTL  SUBFILE            09/21/92
```

Figure 107. Work with Display Records Display Showing Option 12

    b. Press Enter to see the Design Image work screen.

2. Press F10 (Database) on the Design Image work screen to see the Select Database Files display.

Selecting Fields from a Database File

Now select fields from records in the CUSDATA and ORDHDRP database files. The fields that you select are the fields that you want to appear in the subfile control record.

1. On the Select Database Files display, indicate that you want to select fields from two database files:

    a. Type 1 (Display database field list) in the *Option* column.

    b. Type CUSDATA in the *Database File* column.

c. Type CUSMST in the *Record* column.

d. Type 1 (Display database field list) in the *Option* column.

e. Type ORDHDRP in the *Database File* column.

f. Type ORDERFMT in the *Record* column.
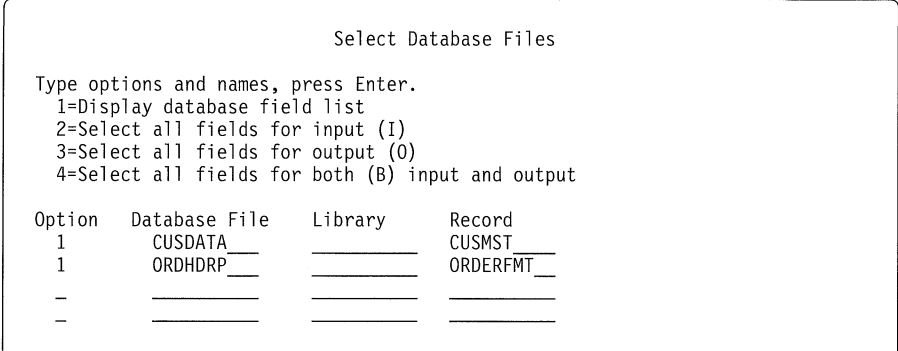
The display now looks like Figure 108.

```
                        Select Database Files

Type options and names, press Enter.
  1=Display database field list
  2=Select all fields for input (I)
  3=Select all fields for output (O)
  4=Select all fields for both (B) input and output


Option   Database File    Library       Record
  1        CUSDATA___      _____     CUSMST____
  1        ORDHDRP___      _____     ORDERFMT__

  _        _____       _____     _____
  _        _____       _____     _____
```

Figure 108. Select Database Files Display with Files Selected

g. Press Enter to see the Select Database Fields display for the record CUSMST.

2. On the Select Database Fields display, select fields from the record CUSMST:

a. Type 4 (Select for both) in the *Option* column for the CUST field.

b. Type 3 (Select for output) in the *Option* column for the NAME field.

The display looks like Figure 109.

```
                       Select Database Fields

  Record . . . :   CUSMST

Type information, press Enter.
  Number of fields to roll  . . . . . . . . . . . . . . . . .  _8
  Name of field to search for . . . . . . . . . . . . . . . .  _____

Type options, press Enter.
  1=Display extended field description
  2=Select for input (I), 3=Select for output (O), 4=Select for both (B)

Option   Field       Length   Type   Column Heading
  4      CUST           5       A     Customer Number
  3      NAME          20       A     Customer Name
  _      ADDRESS       20       A     Street Address
  _      CITY          20       A     City
  _      STATE          2       A     State
  _      ZIP          5,0       P     Zip Code
  _      SEARCH         6       A     Search Code
  _      CUTYPE         1       A     Cust Type
                                                               More...
F3=Exit   F12=Cancel
```

Figure 109. Select Database Fields Display with Fields Selected

c. Press Enter to see the Select Database Fields display for the record ORDERFMT.

d. Type 4 (Select for both) in the *Option* column for the ORDER field.

e. Type 4 (Select for both) in the *Option* column for the SHIP field.

The display now looks like Figure 110.

```
                        Select Database Fields

Record . . . :   ORDERFMT

Type information, press Enter.
  Number of fields to roll  . . . . . . . . . . . . . . . . . .    _8
  Name of field to search for . . . . . . . . . . . . . . . . .    _____

Type options, press Enter.
  1=Display extended field description
  2=Select for input (I), 3=Select for output (O), 4=Select for both (B)

Option  Field       Length   Type    Column Heading
  4     ORDER          5,0    P       Order No.
  _     ORDDAT         6,0    P       ORDER DATE
  _     CUSORD          15    A       CUSTOMER ORDER #
  _     SHPVIA          15    A       SHIPPING INSTRUCTIONS
  4     SHIP           3,0    P       QUANTITY SHIPPED
  _     ORDSTS         1,0    P       ORDER STATUS
  _     OPRNAM          10    A       OPERATOR NAME
  _     ORDAMT         8,2    P       ORDER AMOUNT
                                                                   More...
  F3=Exit    F12=Cancel
```

Figure 110. Select Database Fields Display with Fields Selected

    f. Press Page Down to see more fields.

    g. Type 4 (Select for both) in the *Option* column for the QTY field.

    h. Type 4 (Select for both) in the *Option* column for the ITEM field.

    i. Type 4 (Select for both) in the *Option* column for the PRICE field.

    j. Type 4 (Select for both) in the *Option* column for the DESCRP field.

The display now looks like Figure 111.

```
                        Select Database Fields

Record . . . :   ORDERFMT

Type information, press Enter.
  Number of fields to roll  . . . . . . . . . . . . . . . . . .    _8
  Name of field to search for . . . . . . . . . . . . . . . . .    _____

Type options, press Enter.
  1=Display extended field description
  2=Select for input (I), 3=Select for output (O), 4=Select for both (B)

Option  Field       Length   Type    Column Heading
  _     INVNUM         5,0    P       INVOICE NUMBER
  _     PRTDAT         6,0    P       PRINTED DATE
  4     QTY            3,0    P       QUANTITY ORDERED
  4     ITEM           5,0    P       ITEM NUMBER
  4     PRICE          5,2    P       ITEM PRICE
  4     DESCRP          15    A       ITEM DESCRIPTION
  _     OPNSTS         1,0    P       OPEN STATUS
  _     TOTLEN         3,0    P       TOTAL LINES
                                                                   More...
  F3=Exit    F12=Cancel
```

Figure 111. Select Database Fields Display with Fields Selected

k. Press Page Down to see more fields.

l. Type 4 (Select for both) in the *Option* column for the EXTENS field.

m. Type 4 (Select for both) in the *Option* column for the AVAIL field.

The display looks like Figure 112.

```
                              Select Database Fields

        Record . . . :    ORDERFMT

        Type information, press Enter.
          Number of fields to roll  . . . . . . . . . . . . . . . . .   _8
          Name of field to search for . . . . . . . . . . . . . . . .   _____

        Type options, press Enter.
          1=Display extended field description
          2=Select for input (I), 3=Select for output (O), 4=Select for both (B)

        Option  Field        Length   Type    Column Heading
          _     ACTMTH          2,0     P      ACCT MTH
          _     ACTYR           2,0     P      ACCT YEAR
          _     LINNUM          3,0     P      LINE NO.
          4     EXTENS          6,2     P      EXTENSION
          _     OVRAMT          8,2     P      AMOUNT OVER LIMIT
          _     TOTBAL          8,2     P      TOTAL A/R AMOUNT
          4     AVAIL           5,0     P      AVAILABLE
```

Figure 112. Select Database Fields Display with Fields Selected

n. Press Enter to return the Select Database Files display.

3. Press Enter on the Select Database Files display to see the Design Image work screen.

Designing the Display on the Design Image Work Screen

The field names you selected on the Select Database Fields display appear at the bottom of the Design Image work screen. The + at the end of the list indicates not all the fields fit on the line at the bottom.

Now design the subfile control record on the work screen:

1. Move the cursor to the top left corner. The work screen looks like Figure 113 on page 89.

```
-



1:CUST 2:NAME 3:ORDER 4:SHIP 5:QTY 6:ITEM 7:PRICE 8:DESCRP 9:EXTENS          +
```
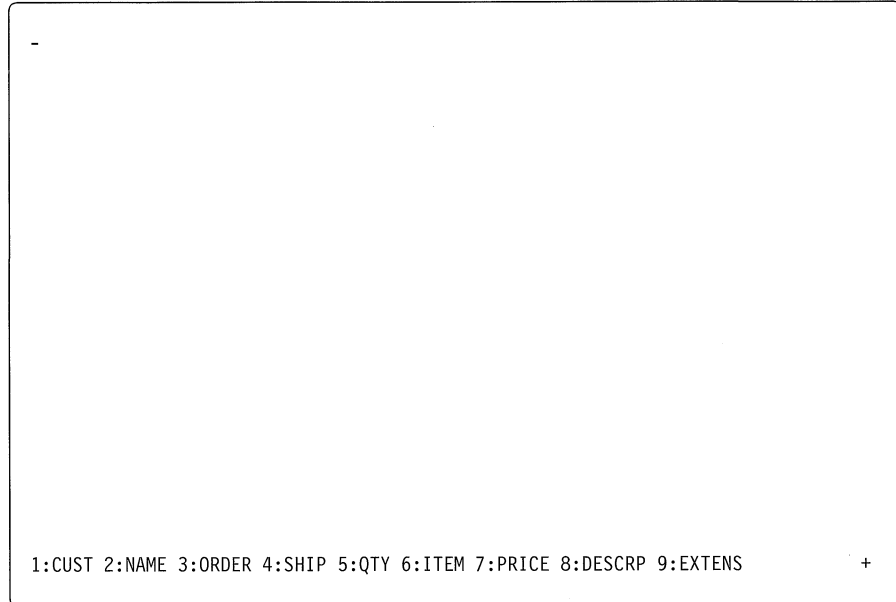
Figure 113. Design Image Work Screen with Field Names Displayed on Bottom Row

2. Press F14 (Ruler) to display the ruler where the cursor is positioned.

3. Type the title 'ORDER ENTRY' beginning at row 1, column 28.

   Notes:

   a. You can also center the title by typing the attribute ac as described on page 18.

   b. If you enclose a constant in single quotation marks, SDA treats the entire string as one constant. If you do not use the single quotation marks, SDA treats each word in the string as a separate constant.

4. Type the following work screen symbols to position the CUST, ORDER, and NAME prompts and data fields with the prompt to the left of the data field:

   a. &1L beginning at row 3, column 19.

   b. &3L beginning at row 3, column 38.

   c. &2L beginning at row 3, column 61.

5. Type the following work screen symbols to place the ITEM, QTY, SHIP, DESCRP, PRICE, and EXTENS column headings and data fields:

   a. &6C beginning at row 7, column 2.

   b. &5C beginning at row 7, column 14.

   c. &4C beginning at row 7, column 24.

   d. &8C beginning at row 7, column 30.

   e. &7C beginning at row 7, column 49.

   f. &9C beginning at row 7, column 61.

The work screen now looks like Figure 114 on page 90.

```
   ... ... 1 ... ... 2 ... ..'O R D E R   E N T R Y' ... ... 6 ... ... 7 ... ... 8
 2
 3              &1L                &3L                     &2L
 4
 5
 6
&6C        &5C        &4C  &8C                  &7C        &9C
 8
 9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
1:CUST 2:NAME 3:ORDER 4:SHIP 5:QTY 6:ITEM 7:PRICE 8:DESCRP 9:EXTENS          +
```

Figure 114. Design Image Work Screen with Symbols

6. Press Enter to place the prompts, constants, and data fields on the work screen.

7. Type &1C beginning at row 7, column 74, to position the AVAIL field. The work screen looks like Figure 115.

```
   ... ... 1 ... ... 2 ... ...O R D E R   E N T R Y ... ... 6 ... ... 7 ... ... 8
 2
Customer Number:  BBBBB  Order No.:  99999- Customer Name:   00000000000000000000
 4
   ITEM   QUANTITY  QUANTITY  ITEM                  ITEM
  NUMBER   ORDERED   SHIPPED  DESCRIPTION          PRICE    EXTENSION
  99999-     999-      999-  BBBBBBBBBBBBBBBB      99999-     999999-        &1C
 8
 9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
1:AVAIL
```

Figure 115. Design Image Work Screen with Constants, Prompts, and Fields Displayed

8. Press Enter to place the AVAIL prompt and data field on the work screen.

9. Because you want only column headings to appear in the subfile control record, you now delete the data fields. The data fields were placed in the subfile control record to show the alignment of the subfile record fields. Type d immediately before each data field to delete the data fields.

Figure 116 on page 91 shows the display.

```
 ... ... 1 ... ... 2 ... .. O R D E R   E N T R Y  ... ... 6 ... ... 7 ... ... 8
 2
 Customer Number:  BBBBB  Order No.:  99999- Customer Name:  OOOOOOOOOOOOOOOOOOOO
 4
   ITEM  QUANTITY  QUANTITY  ITEM               ITEM
 NUMBER  ORDERED   SHIPPED   DESCRIPTION        PRICE    EXTENSION  AVAILABLE
 d99999-    d999-     d999- dBBBBBBBBBBBBBBBB  d99999-   d999999-   d99999-
 8
 9
 10
 11
 12
 13
 14
 15
 16
 17
 18
 19
 20
 21
 22
 23
 24
```

Figure 116. Design Image Work Screen with Fields Marked for Deletion

10. Press F14 (Ruler) to remove the ruler and the fields from the work screen.

The completed subfile control record looks like Figure 117. The data fields are removed from the display and appear at the bottom of the work screen.

```
                         O R D E R   E N T R Y

 Customer Number:  BBBBB  Order No.:  99999- Customer Name:  OOOOOOOOOOOOOOOOOOOO

   ITEM  QUANTITY  QUANTITY  ITEM               ITEM
 NUMBER  ORDERED   SHIPPED   DESCRIPTION        PRICE    EXTENSION  AVAILABLE













 1:ITEM 2:QTY 3:SHIP 4:DESCRP 5:PRICE 6:EXTENS 7:AVAIL
```

Figure 117. Design Image Work Screen with Completed Subfile Control Record

Note: You can also use the work screen symbol &p to place only the prompt from the database field on the display; you do not have to delete the data fields. The symbol &c, however, centers every word in the prompt and the prompt uses the least amount of horizontal space, while &p positions the prompt horizontally beginning from the &p symbol. For more information, see "Using Symbols to Place a Database Field on the Work Screen" on page 166.

11. Press F12 (Cancel) to return the Work with Display Records display.

Completing a Subfile Record

Now copy the data from the database file into the defined fields on the subfile record, then edit the data column under ITEM PRICE to display with a decimal point and either a minus or a plus sign. Finally, save the DDS and create the display file.

Positioning Fields from a Database File

Now position the fields to create the subfile record.

1. On the Work with Display Records display:

   a. Type 12 (Design image) in the *Opt* column for the subfile record. (The subfile record has the type SFL.)

   b. Press Enter to see the Design Image work screen. The work screen shows the Order Entry display.

2. On the Design Image work screen:

   a. Position the cursor on row 8, column 1, and press F14 (Ruler) to display the ruler.

   b. On row 7, type the following symbols to place the data fields for ITEM, QTY, SHIP, DESCRP, PRICE, EXTENS, and AVAIL:

      1) &1 beginning at column 3.

      2) &2 beginning at column 13.

      3) &3 beginning at column 23.

      4) &4 beginning at column 31.

      5) &5 beginning at column 51.

      6) &6 beginning at column 61.

      7) &7 beginning at column 73.

   The work screen now looks like Figure 118 on page 93.

```
 1                              O R D E R   E N T R Y
 2
Customer Number:  BBBBB  Order No.:  99999- Customer Name:   OOOOOOOOOOOOOOOOOOOO
 4
 5   ITEM QUANTITY  QUANTITY  ITEM                       ITEM
   NUMBER ORDERED    SHIPPED  DESCRIPTION                PRICE   EXTENSION  AVAILABLE
7&1       &2         &3       &4                         &5      &6         &7
  ... ... 1 ... ... 2 ... ... 3 ... ... 4 ... ... 5 ... ... 6 ... ... 7 ... ... 8
 9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
 1:ITEM 2:QTY 3:SHIP 4:DESCRP 5:PRICE 6:EXTENS 7:AVAIL
```

Figure 118. Design Image Work Screen with Positional Markers Displayed

c. Press F14 (Ruler) to remove the ruler and to place the data fields on the Design Image work screen.

The fields you selected appear on the Design Image work screen. Each subfile column displays 17 records because you specified 17 in the *Records per display* prompt on the Define Display Layout display in step 8 on page 82.

d. Type an asterisk (*) in front of the first data field of the ITEM PRICE column to indicate that you want to add an edit code for the field. The underline disappears when you type the asterisk (*) because you type over the attribute byte.

The work screen looks like Figure 119.

```
                              O R D E R   E N T R Y

Customer Number:  BBBBB  Order No.:  99999- Customer Name:   OOOOOOOOOOOOOOOOOOOO

   ITEM QUANTITY  QUANTITY  ITEM                       ITEM
 NUMBER ORDERED    SHIPPED  DESCRIPTION                PRICE   EXTENSION  AVAILABLE
 99999-   999-      999-    BBBBBBBBBBBBBBB           *99999-  999999-    99999-
 99999-   999-      999-    BBBBBBBBBBBBBBB            99999-  999999-    99999-
 99999-   999-      999-    BBBBBBBBBBBBBBB            99999-  999999-    99999-
 99999-   999-      999-    BBBBBBBBBBBBBBB            99999-  999999-    99999-
 99999-   999-      999-    BBBBBBBBBBBBBBB            99999-  999999-    99999-
 99999-   999-      999-    BBBBBBBBBBBBBBB            99999-  999999-    99999-
 99999-   999-      999-    BBBBBBBBBBBBBBB            99999-  999999-    99999-
 99999-   999-      999-    BBBBBBBBBBBBBBB            99999-  999999-    99999-
 99999-   999-      999-    BBBBBBBBBBBBBBB            99999-  999999-    99999-
 99999-   999-      999-    BBBBBBBBBBBBBBB            99999-  999999-    99999-
 99999-   999-      999-    BBBBBBBBBBBBBBB            99999-  999999-    99999-
 99999-   999-      999-    BBBBBBBBBBBBBBB            99999-  999999-    99999-
 99999-   999-      999-    BBBBBBBBBBBBBBB            99999-  999999-    99999-
 99999-   999-      999-    BBBBBBBBBBBBBBB            99999-  999999-    99999-
 99999-   999-      999-    BBBBBBBBBBBBBBB            99999-  999999-    99999-
 99999-   999-      999-    BBBBBBBBBBBBBBB            99999-  999999-    99999-
 99999-   999-      999-    BBBBBBBBBBBBBBB            99999-  999999-    99999-
```

Figure 119. Design Image Work Screen with Records Displayed

e. Press Enter to see the Select Field Keywords display.

Selecting Field-Level Keywords

Now select field-level keywords for the subfile record.

1. On the Select Field Keywords display:

   a. Type Y (Yes) in the *Editing keywords* prompt. The display looks like Figure 120.

```
                              Select Field Keywords

        Field . . . . . :   PRICE            Usage . . :   B
        Length  . . . . :   5,2              Row . . . :   7    Column . . . :   51

        Type choices, press Enter.
                                             Y=Yes    For Field Type
            Display attributes . . . . . . .   _      All except Hidden
            Colors . . . . . . . . . . . . .   _      All except Hidden
            Keying options . . . . . . . . .   _      Input or Both
            Validity check . . . . . . . . .   _      Input or Both, not float
            Input keywords . . . . . . . . .   _      Input or Both
            General keywords . . . . . . . .   _      All types
            Editing keywords . . . . . . . .   Y      Numeric Output or Both
            Data base reference  . . . . . .   _      Hidden, Input, Output, Both
            Error messages . . . . . . . . .   _      Input, Output, Both
            Message ID (MSGID) . . . . . . .   _      Output or Both


            TEXT keyword . . . . . .          PRICE PER ITEM_____


        F3=Exit    F12=Cancel
```

Figure 120. Select Field Keywords Display with Editing Keywords Selected

   b. Press Enter to see the Select Editing Keywords display.

2. On the Select Editing Keywords display, change the edit code for the data field:

   a. Type J in the *Edit code* prompt to select the EDTCDE keyword. The J specifies that the field is displayed with commas, zero balances, and a minus sign when the number is negative.

   The *CR Sign* column refers to the credit sign. The display looks like Figure 121 on page 95.

   Note: This display is slightly different if you are using the System/38 environment.

```
                       Select Editing Keywords

  Field . . . . . :    PRICE            Usage . . :   B
  Length  . . . . :    5,2              Row . . . :   7   Column . . . :   51

  Edit Code Description         No Sign   CR Sign   - Sign(R)  - Sign(L)
  Commas and zero balances         1        A          J          N
  Commas                           2        B          K          O
  Zero balances                    3        C          L          P
  No commas or zero balances       4        D          M          Q
  User defined edit codes         5-9
  Date edit                        Y
  Suppress leading zeros           Z

  Type choices, press Enter.
                                         Keyword                         More
     Edit code  . . . . . . . . . . . .  EDTCDE   J   A-D, J-Q, Y, Z, 1-9
        Replace leading zeros with . . . .         -   *, $
     Edit word  . . . . . . . . . . . .  EDTWRD   _____



  F3=Exit    F12=Cancel
```

Figure 121. Select Editing Keywords Display with an Edit Code Specified

b. Press Enter twice to see the Design Image work screen.

Figure 122 shows the completed subfile record. Notice that the ITEM PRICE data column appears with the editing changes you specified.

```
                          O R D E R   E N T R Y

  Customer Number:  BBBBB  Order No.:  99999- Customer Name:  0000000000000000000

    ITEM   QUANTITY  QUANTITY  ITEM                  ITEM
   NUMBER  ORDERED   SHIPPED   DESCRIPTION           PRICE    EXTENSION  AVAILABLE
   99999-   999-      999-     BBBBBBBBBBBBBBBB      999.99-   999999-    99999-
   99999-   999-      999-     BBBBBBBBBBBBBBBB      999.99-   999999-    99999-
   99999-   999-      999-     BBBBBBBBBBBBBBBB      999.99-   999999-    99999-
   99999-   999-      999-     BBBBBBBBBBBBBBBB      999.99-   999999-    99999-
   99999-   999-      999-     BBBBBBBBBBBBBBBB      999.99-   999999-    99999-
   99999-   999-      999-     BBBBBBBBBBBBBBBB      999.99-   999999-    99999-
   99999-   999-      999-     BBBBBBBBBBBBBBBB      999.99-   999999-    99999-
   99999-   999-      999-     BBBBBBBBBBBBBBBB      999.99-   999999-    99999-
   99999-   999-      999-     BBBBBBBBBBBBBBBB      999.99-   999999-    99999-
   99999-   999-      999-     BBBBBBBBBBBBBBBB      999.99-   999999-    99999-
   99999-   999-      999-     BBBBBBBBBBBBBBBB      999.99-   999999-    99999-
   99999-   999-      999-     BBBBBBBBBBBBBBBB      999.99-   999999-    99999-
   99999-   999-      999-     BBBBBBBBBBBBBBBB      999.99-   999999-    99999-
   99999-   999-      999-     BBBBBBBBBBBBBBBB      999.99-   999999-    99999-
   99999-   999-      999-     BBBBBBBBBBBBBBBB      999.99-   999999-    99999-
   99999-   999-      999-     BBBBBBBBBBBBBBBB      999.99-   999999-    99999-
```

Figure 122. Design Image Work Screen with Completed Subfile Record

3. Press F12 (Cancel) on the Design Image work screen to return the Work with Display Records display.

Saving the Data Description Specifications and Creating a Display File

Now save the DDS that SDA created for the subfile record and subfile control record and create the display file.

1. Press F3 (Exit) or Enter on the Work with Display Records display to see the Save DDS - Create Display File display shown in Figure 123.

```
                      Save DDS - Create Display File

     Type choices, press Enter.

         Save DDS source  . . . . . . . . . . . . .    Y          Y=Yes
             Source file  . . . . . . . . . . . . .    QDDSSRC___ F4 for list
                 Library  . . . . . . . . . . . . .    QGPL_____ Name, *LIBL ...
             Member . . . . . . . . . . . . . . . .    EXAMPLE___ F4 for list
             Text . . . . . . . . . . . . . . . . .    _____


         Create display file  . . . . . . . . . .      Y          Y=Yes
             Prompt for parameters  . . . . . . . .    _          Y=Yes
             Display file . . . . . . . . . . . . .    EXAMPLE___ F4 for list
                 Library  . . . . . . . . . . . . .    QGPL_____ Name, *CURLIB
             Replace existing file  . . . . . . . .    Y          Y=Yes

         Submit create job in batch . . . . . . .      Y          Y=Yes

         Specify additional
           save or create options   . . . . . . .      _          Y=Yes

     F3=Exit    F4=Prompt    F12=Cancel
```

Figure 123. Save DDS - Create Display File with Entries

2. On the Save DDS - Create Display File display:

    a. Press Enter to:

    - Save the DDS source SDA created.

    - Re-create a display file EXAMPLE from the created DDS source.

    - Submit the making of EXAMPLE as a batch job. (If you leave the *Submit create job in batch* prompt blank, SDA creates the display file EXAMPLE interactively. If the interactive job fails, SDA displays a spooled listing.)

      SDA displays a completion message.

    b. Press Enter to return the Design Screens display.

3. Press F3 (Exit) to return the Screen Design Aid (SDA) menu.

Procedure Summary

You used the following procedure to create the example subfile in this chapter:

1. Define record-level keywords for the subfile record.

2. Select field-level keywords for the subfile control record.

3. Select fields from a database file.

4. Design the display on the Design Image work screen.

5. Place and edit fields on the subfile record.

6. Save DDS and create the display file.

Chapter 6. Testing Display Files

The example in this chapter presents some of the SDA functions that you can use to test the records in a display file. The display file can either be for a display or a menu. The testing process can be used on any type of record except for user-defined and subfile message records.

Figure 124 shows the path of SDA displays that you use to test a display file.
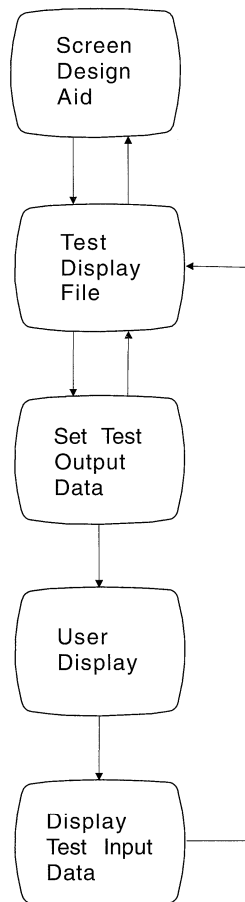
Figure 124. SDA Displays Used to Test a Display in This Chapter

As you work through the example, you become familiar with the SDA displays and functions used to test the display file. You test the display file you created in Chapter 3, "Creating Complex Displays."

To test the display file in this example, you must have authority to access the required display file CUSMASTER. CUSMASTER is located in the library QGPL.

Testing a Display File

You test display files to:

- See how they appear on the display
- Test the validity checking of input fields

- Test output fields and condition indicators
- Display the contents of the input buffer passed to the application program

You test the display file CUSMASTER by testing output and both (input and output) data fields. You also test a condition indicator.

1. On the Screen Design Aid (SDA) menu:

   a. Select option 3 (Test display files). The menu looks like Figure 125.

```
                         AS/400 Screen Design Aid (SDA)

 Select one of the following:

       1. Design screens
       2. Design menus
       3. Test display files













 Selection or command
 ===> 3_____

 F3=Exit    F4=Prompt    F9=Retrieve    F12=Cancel
                                    (C) COPYRIGHT IBM CORP. 1981, 1993.
```
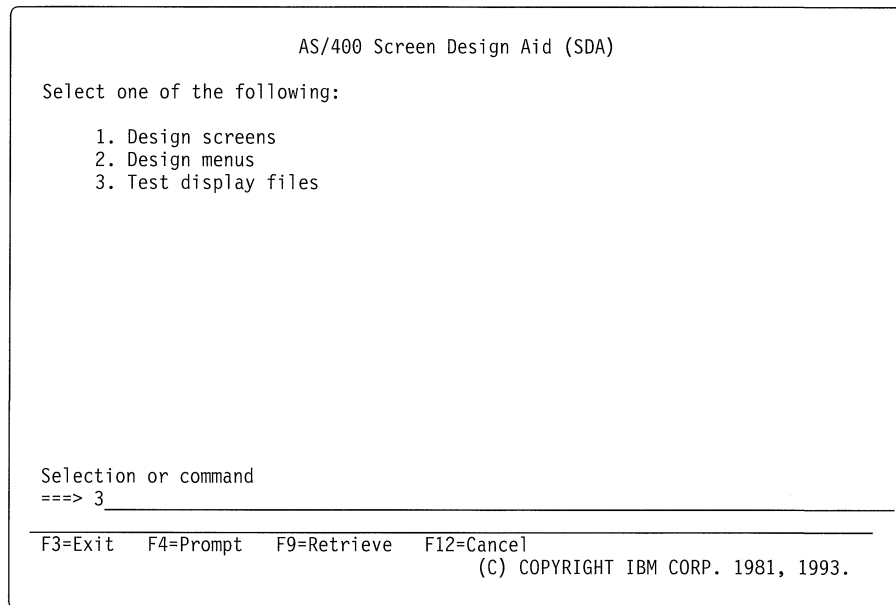
Figure 125. Screen Design Aid (SDA) Menu with Option 3 Selected

   b. Press Enter to see the Test Display File display.

2. On the Test Display File display, specify the display file that you want to test:

   a. Type CUSMASTER in the *Display file* prompt.

   b. Type QGPL in the *Library* prompt.

   c. Type CUSMAINT in the *Record to be tested* prompt.

   The display looks like Figure 126.

```
                           Test Display File

 Type choices, press Enter.

     Display file . . . . . . . . . . . . .  CUSMASTER_  Name, F4 for list
          Library  . . . . . . . . . . . . .  __QGPL____  Name, *LIBL ...

     Record to be tested  . . . . . . . . .  CUSMAINT__  Name, F4 for list

     Additional records to display  . . . .  _____  Name, F4 for list
                                             _____
```
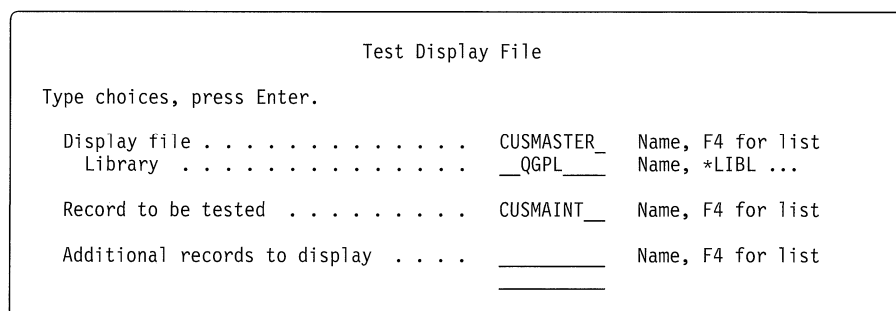
Figure 126. Test Display File Display with File and Record Selected

   d. Press Enter to see the Set Test Output Data display.

Testing Output and Both Fields

Now use sample data to test output and both (input and output) data fields, and to turn on condition indicators for the display file.

1. On the Set Test Output Data display:

   a. Type 1 in the *IN31* prompt to turn condition indicator 31 on.

   b. Type C W COURTNEY in the *NAME* prompt.

   The display now looks like Figure 127.

```
                              Set Test Output Data

   Record . . . :    CUSMAINT

   Type indicators and output field values, press Enter.

   Field          Value
   *IN32          0:
   *IN31          1:
   CUST           BBBBB:
   SEARCH         BBBBB:
   NAME           C W COURTNEY
   ADDRESS        BBBBBBBBBBBBBBBBBBBBB:
   CITY           BBBBBBBBBBBBBBBBBBBBB:
   STATE          BB:
   ZIP            99999:
   CRDLMT         99999999:
   CUTYPE         B:

                                                                      More...


   F3=Exit    F12=Cancel
```

Figure 127. Set Test Output Data Display with Data Entered to Test

   c. Press Enter to see the Customer Master File Maintenance/Inquiry display.

   The customer name appears on the display. The constant Over blinks in reverse image because condition indicator 31 is on.

2. On the Customer Master File Maintenance/Inquiry display:

   a. Type 1022 SIDNEY LANE in the *Street Address* prompt. The display looks like Figure 128.

```
                     CUSTOMER MASTER FILE MAINTENANCE/INQUIRY

   Customer Number:  BBBBB                        Search Code:   BBBBBB
     Customer Name:  C W COURTNEY
    Street Address:  1022 SIDNEY LANE
              City:  BBBBBBBBBBBBBBBBBBBBB
             State:  BB
          Zip Code:  99999


         Cust Type:  B          1-Gov, 2-School, 3-Business, 4-Pvt, 5-Other


      Credit Limit:  99999999              Over
```

Figure 128. Customer Master File Maintenance/Inquiry Display

   b. Press Enter to see the Display Test Input Data display.

Viewing Input and Both Fields and Buffer

The Display Test Input Data display lists data for each input or both (input and output) field in the file. The data that appears on the display is the data specified in the record being tested.

Now display the input fields and buffers.

1. On the Display Test Input Data display:

   a. Press Page Down to see all of the other fields. The condition indicators, input fields, address, and customer name appear. The display looks like Figure 129.

```
                         Display Test Input Data

        Record . . . :    CUSMAINT

        View indicators and input field values.

        Field         Value
        *IN12         0:
        *IN04         0:
        *IN07         0:
        *IN08         0:
        *IN10         0:
        CUST          BBBBB:
        SEARCH        BBBBB:
        NAME          C W COURTNEY
        ADDRESS       1022 SIDNEY LANE
        CITY          BBBBBBBBBBBBBBBBBBBBB:
        STATE         BB:
        ZIP           99999:
                                                              More...
        Press Enter to continue


        F3=Exit   F12=Cancel   F14=Display input buffer
```

Figure 129. Display Test Input Data Display with Fields

   b. Press F14 (Display input buffer) to see the Display Test Input Buffer display.

The Display Test Input Buffer display acts like the input buffer created for a high-level language application program. The display looks like Figure 130 on page 103.

```
                    Display Test Input Buffer

      .... ....1.... ....2.... ....3.... ....4.... ....5.... ....6.... ....7
   1  00000BBBBBC W COURTNEY        1022 SIDNEY LANE    BBBBBBBBBBBBBBBBBBBBB
   2  BBBBBBBB9999999999999B
   3
   4
   5
   6
   7
   8
   9
  10
  11
  12
  13
  14
  15
  16
                                                                    Bottom
  Press Enter to continue.

  F3=Exit   F12=Cancel
```

Figure 130. Display Test Input Buffer Display

2. Press Enter on the Display Test Input Buffer display to return the Display Test Input Data display.

3. Press F12 (Cancel) on the Display Test Input Data display to return the Test Display File display.

4. Press F12 (Cancel) on the Test Display File display to return the Screen Design Aid (SDA) menu.

Procedure Summary

You used the following procedure to test a display file:

1. Select the test display file option.

2. Select the record to be tested.

3. Test the output and both fields.

4. View the input and both fields and the input buffer.

Chapter 7. Creating Menus

A **menu** is a list of options from which the user makes a selection. Each option is a brief description of the job that is run when the user makes that selection. The system runs the job associated with the **option number** on the menu. The user only has to know when to make a selection and how to run a command. By selecting an option number, the user does not have to know the name of the command. Menus can reduce the amount of typing and the chance of error.

If you are using AS/400 SDA, see "Creating an AS/400 SDA Menu" on page 105. If you are using the System/38 environment, see "Creating a System/38 Environment Menu" on page 120.

Note: If you use SDA to change a menu that was not created by using SDA the results cannot be predicted.

Creating an AS/400 SDA Menu

An AS/400 SDA menu definition consists of two different source file members: the **DDS source member** and the **command source member**. These members are automatically created by SDA in the source file that you specify.

The DDS source member shows the user what the selected option number does, and describes what appears on the display when the menu appears. This definition includes any descriptive text associated with an option number, the placement of the option numbers, and the name and title of the menu. The menu source member also holds the online help source for the menu.

Note: In Release 1 of AS/400 environment SDA, the Design Menus function created screen format generator routine (SFGR) source. Release 1 AS/400 environment SDA menus will be converted to DDS for you by subsequent versions of SDA. You cannot, however, convert System/36 environment SDA menus to AS/400 environment SDA menus.

The command source member tells the system which commands or statements to use to run a job when the user selects an option number.

The following restrictions apply to AS/400 SDA menus:

- You cannot change the size of the menu (24 x 80).

- All menu objects are created in the object library designated on the Exit SDA Menus display.

- Menu names cannot be longer than 8 characters.

Figure 131 on page 106 shows the path of SDA displays that you use to create an AS/400 SDA menu.
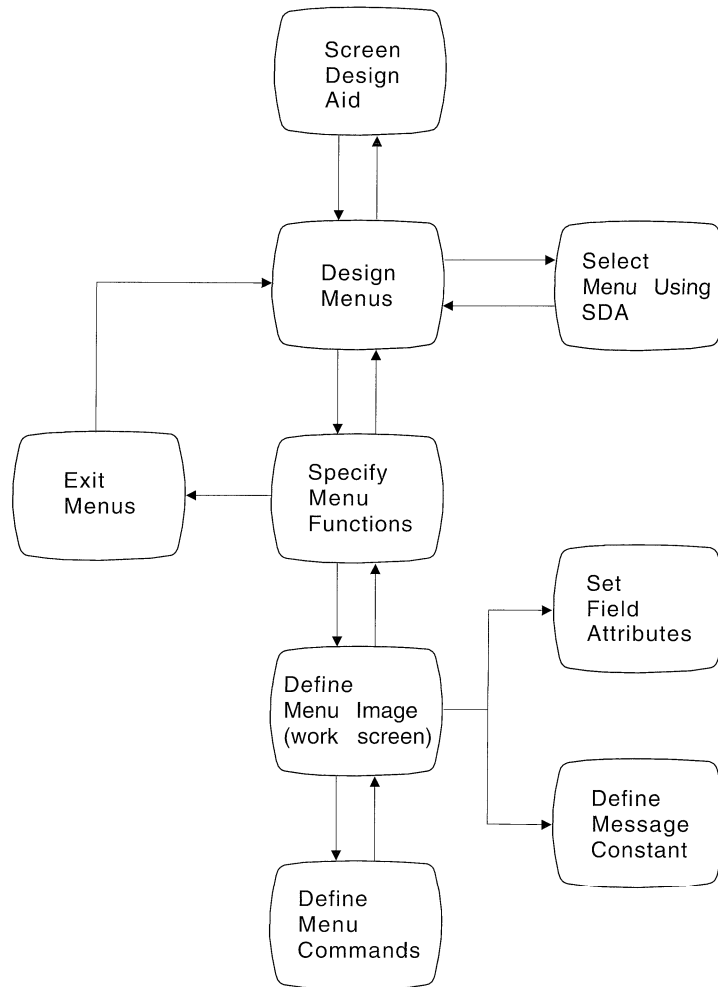
Figure 131. SDA Displays Used to Design an AS/400 Menu

In the following example, you create your menu. The sample menu you create provides library list functions.

1. On the Screen Design Aid (SDA) menu, type CRTSRCPF and press F4 (Prompt) to see the Create Source Physical File (CRTSRCPF) display.

2. On the Create Source Physical File (CRTSRCPF) display, create a source file named SRCFILE in library QGPL:

   a. Type SRCFILE in the *File* prompt.

   b. Type QGPL in the *Library* prompt.

   c. Press Enter to create the source physical file. The Screen Design Aid (SDA) menu returns.

3. On the Screen Design Aid (SDA) menu:

   a. Select option 2 (Design menus). The menu looks like Figure 132 on page 107.

```
                    AS/400 Screen Design Aid (SDA)

Select one of the following:

     1. Design screens
     2. Design menus
     3. Test display files




Selection or command
===> 2_____
_____

F3=Exit   F4=Prompt   F9=Retrieve   F12=Cancel
                                (C) COPYRIGHT IBM CORP. 1981, 1993.
```
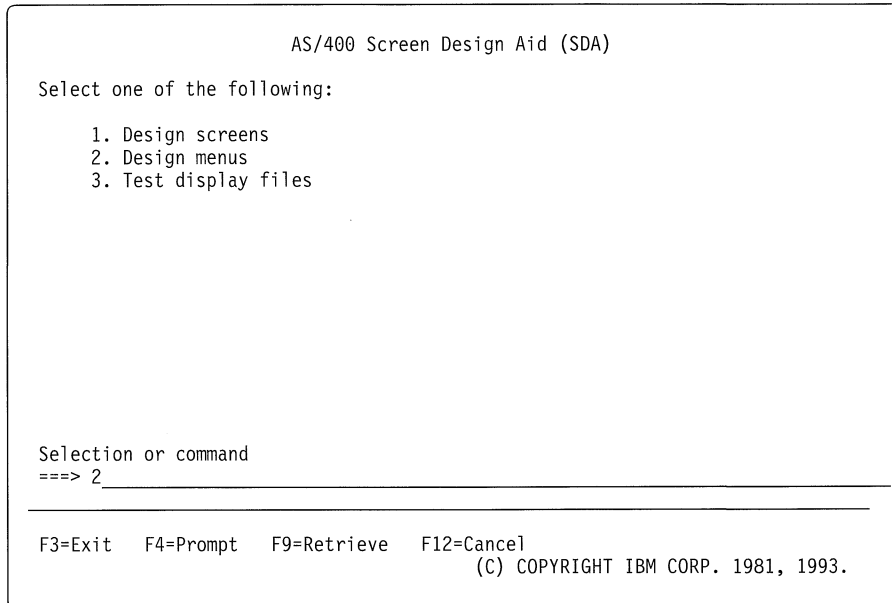
Figure 132. Screen Design Options Display with Option 2 Selected

     b. Press Enter to see the Design Menus display.

Note: You can access the Design Menus display or the Specify Menu Functions display directly by doing one of the following:

- Type STRSDA 2. Press Enter to see the Design Menus display.

- Type STRSDA 2 LIBRARY-NAME/FILE-NAME MENU-NAME. Press Enter to see the Specify Menu Function display.

- Select option 17 (Change Using SDA) from the Work with Members Using PDM display for members of type MNUCMD or MNUDDS. Press Enter to see the Specify Menu Functions display.

4. On the Design Menus display:

    a. Type SRCFILE in the *Source file* prompt.

    b. Type QGPL in the *Source library* prompt.

    c. Type LSTFUNC in the *Menu* prompt.

The display now looks like Figure 133 on page 108.

```
                        Design Menus
Type choices, press Enter.

   Source file . . . . . . .  SRCFILE___      Name, F4 for list

      Library . . . . . . . .  QGPL_____      Name, *LIBL, *CURLIB

   Menu  . . . . . . . . . .  LSTFUNC___      Name, F4 for List








   F3=Exit     F4=Prompt     F12=Cancel
```
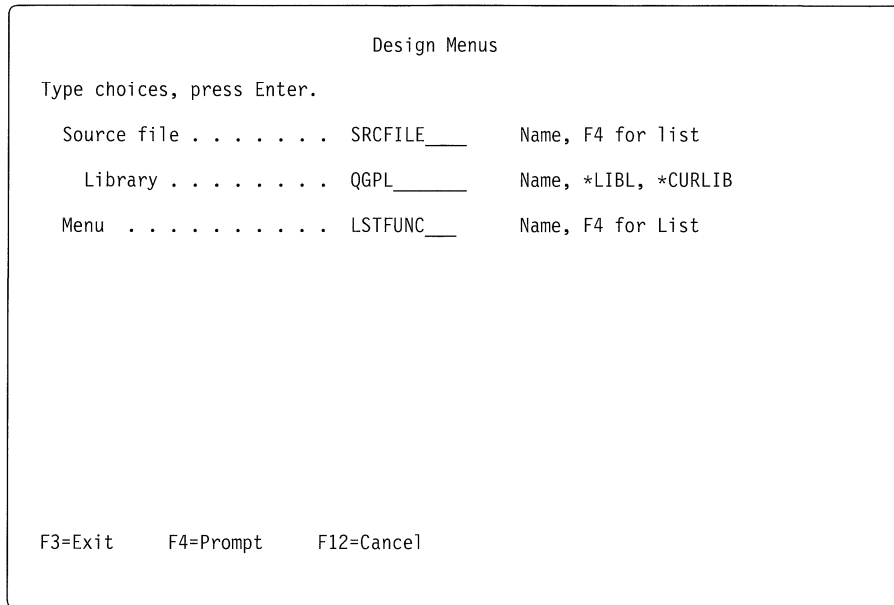
Figure 133. Design Menus Display with Entries

    d. Press Enter to see the Specify Menu Functions display.

Notes:

    1) SDA creates and looks for the specified DDS source member for the menu. The source member always has the same name as the compiled menu created by SDA, but the source member may be in a different library (see the Exit Menus display). If the source member is in a different library, specify the library in which the menu source exists, not the menu object. If the menu does not exist, SDA creates it for you.

    2) If you want to update a menu and do not remember the name of the menu, press F4 (Prompt) with the cursor in the *Menu* prompt on the Design Menus display. You see the Select Menu Using SDA display shown in Figure 134.

```
                     Select Menu Using SDA

   File:    SRCFILE          Library:   QGPL

   Position to . . . . . . .  _____      Starting character(s)
   Subset  . . . . . . . . .  *ALL_____     *ALL, name, *generic*

   Type option, press Enter.
     1=Select

   Opt    Member        Type          Text
     _     OLD          MNUDDS        This is a member which already exists
```
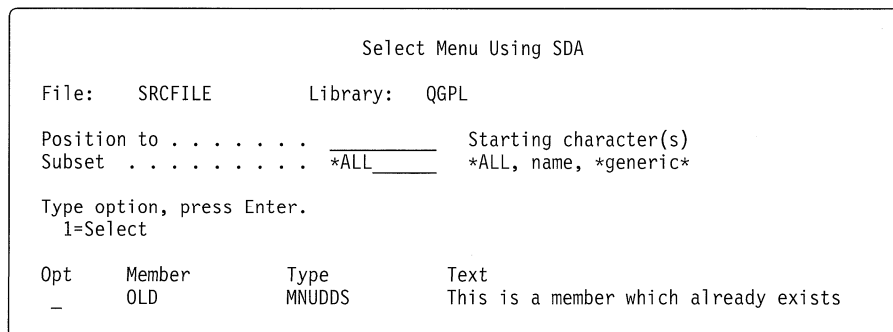
Figure 134. Select Menu Using SDA Display

The Select Menu Using SDA display lists all the menu image source members in the specified source file. You can select one of the listed menu source members or specify a new one on the Design Menus display. For each menu, SDA also creates a second member called MENU-NAMEQQ to store the source for the menu commands. These members are not listed here. The MENU-NAME variable is the name you used for the menu.

You can create a subset of the menu list by typing a generic name in the *Subset* prompt on the Select Menu Using SDA display. You can also create a subset list of menus by typing a generic name qualified with an asterisk (*). Use a generic name such as Lib1*, L*, or L*1st. When you Press F4 (Prompt), you display the LSTFUNC. (The menu must already exist for it to appear on the list.)

If you select a member from the Select Menu Using SDA display, press Enter to return the Design Menus display.

Working with Your Menu Image

Now define the menu image. Items such as the menu title, option descriptions, and highlighting attributes define the menu image.

1. On the Specify Menu Functions display:

   a. Type Y (Yes) in the *Work with menu image and commands* prompt. The display looks like Figure 135.

```
                        Specify Menu Functions

 File . . . . . . :    SRCFILE                  Menu . . . . . . . :    LSTFUNC
    Library  . . . :    QGPL

 Type choices, press Enter.

   Work with menu image and commands  . . . . . .   Y    Y=Yes, N=No

   Work with menu help  . . . . . . . . . . . . .   N    Y=Yes, N=No













 F3=Exit    F12=Cancel
 Menu LSTFUNC is new.
```
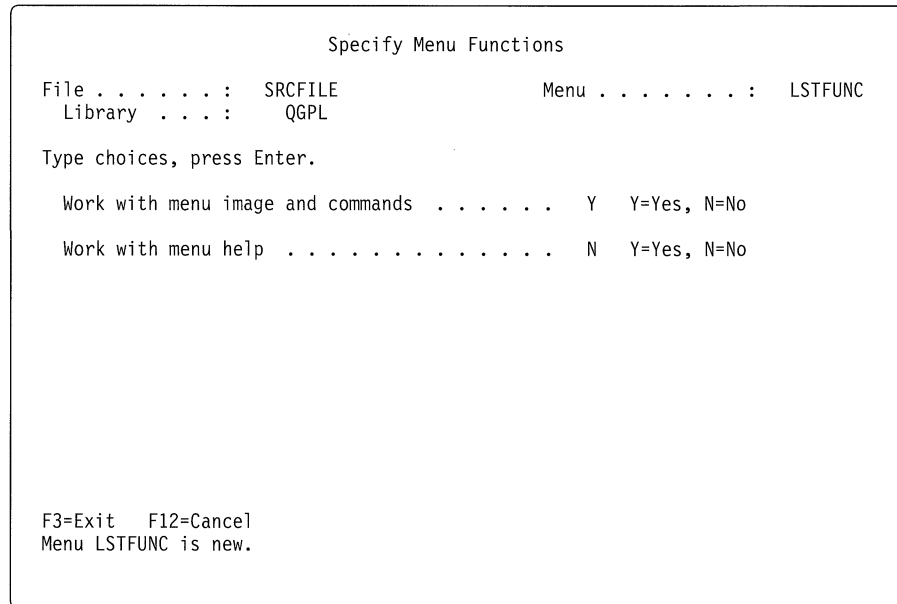
Figure 135. Specify Menu Functions Display with Work with Menu Image and Commands Selected

   b. Press Enter to see the Define Menu Image work screen shown in Figure 136 on page 110. You use this work screen to define menus.

```
LSTFUNC                       LSTFUNC Menu

Select one of the following:

   1.
   2.
   3.
   4.
   5.
   6.
   7.
   8.
   9.
  10.




Selection or command                        _
F3=Exit                  F10=Work with commands        F12=Cancel
F13=Command area         F20=Reverse                   F24=More keys
Press Help for a list of valid operations.
```
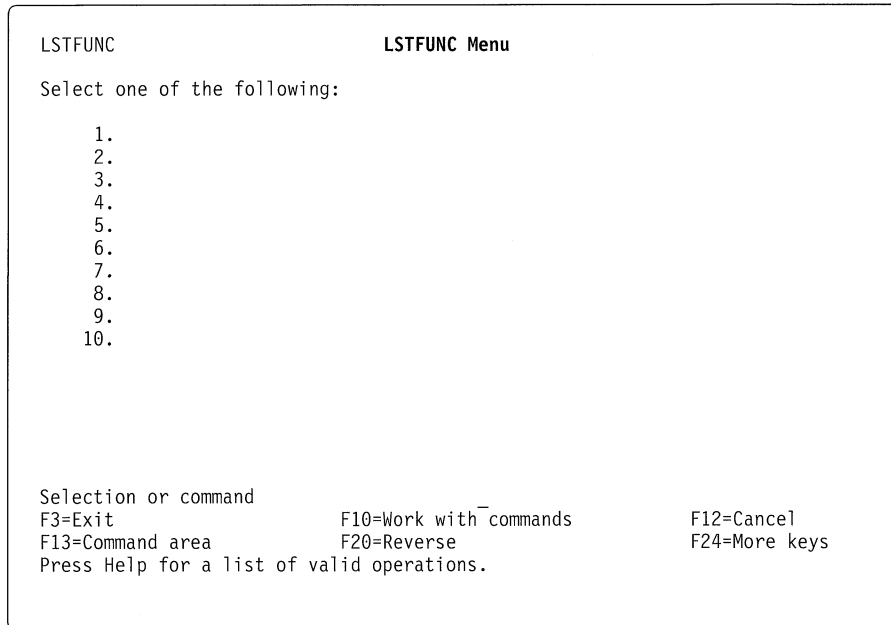
Figure 136. Define Menu Image Work Screen

The first position (row 01, column 01) of the work screen is reserved by SDA as an attribute byte. Any attempt to type in this position results in a keyboard error.

Rows 01 through 20 are a default menu outline that is consistent with IBM menu standards. You can change this area. All editing attributes and color characters are recognized in this area. For more information on the editing attributes and the color characters available on this work screen, see "Functions Common to All SDA Work Screens" on page 159.

The command line prompt is on row 21. SDA treats the command line prompt as a single constant. You can change the text of the command line prompt up to a maximum of 38 characters. To change color and attributes for this entire area, type an asterisk (*) on line 21 column 43 and press Enter to see the Set Field Attributes display. No editing attributes or color characters are recognized in this field.

Rows 22 and 23 contain either the function keys or the command area. Press F13 to alternate between these two functions.

When the command area is displayed, the command source for the options appears for one option at a time. You can use this area either to change commands or to add new commands. You can move through the commands either by using the Page Up and Page Down keys, or by using the *Position to* prompt.

When your menu is used by a user, the bottom rows will contain a one or two line command line and, optionally, function key descriptions. You can specify these with the CRTMNU command by using F4 to prompt it from the Exit Menus display. The prompt defined on line 21 will always be on the line above the command line.

Note: On the Define Menu Image work screen, you can press:

- F11 (Underline) to underline the areas of the display in which you can type text. The underlining is for your information only and does not appear on the menu that the user sees.

- F14 (Ruler) to display the ruler on the work screen. The ruler does not appear on the menu that the user sees.

2. On the Define Menu Image work screen:

   a. Type 'Display library list' as option 1.

   b. Type 'Add QGPL to library list' as option 2.

   c. Type 'Remove QGPL from library list' as option 3.

   d. Type 'Display current library' as option 4.

   e. Delete option numbers 5 through 10 by positioning the cursor to the left of the number, pressing Field Exit, and then pressing Enter.

   f. Type 90.'Sign off' in the same position that you deleted 10.
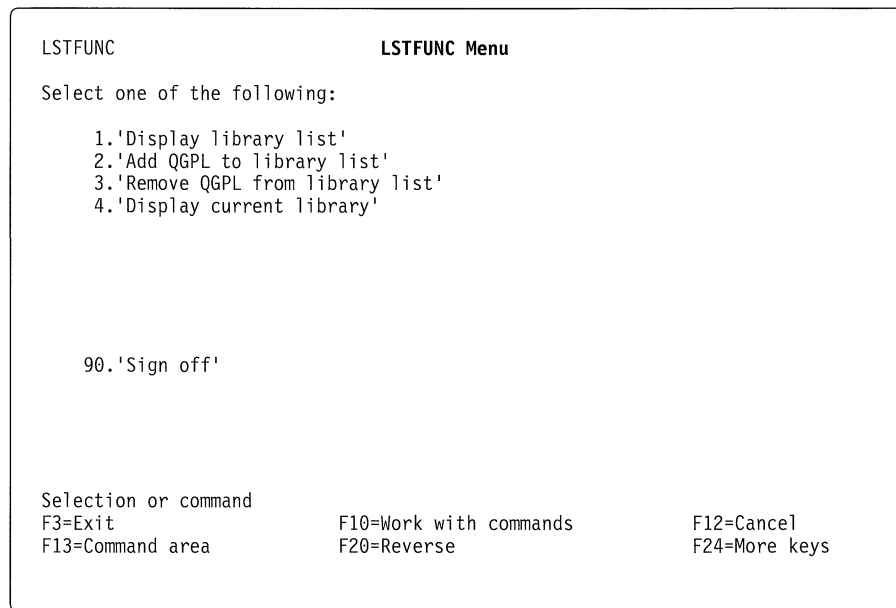
   The work screen now looks like Figure 137.

```
 LSTFUNC                        LSTFUNC Menu

 Select one of the following:

     1.'Display library list'
     2.'Add QGPL to library list'
     3.'Remove QGPL from library list'
     4.'Display current library'




    90.'Sign off'




 Selection or command
 F3=Exit                    F10=Work with commands        F12=Cancel
 F13=Command area           F20=Reverse                   F24=More keys
```

Figure 137. Define Menu Image Work Screen with Sample Menu Entered

For more information about the items that you can add to your menu, see "Adding Constants to the Work Screen" on page 160.

   g. Press Enter to remove the single quotation marks.

   h. Press F20 (Reverse) to display the attribute positions of the fields. The attribute position is the first byte to the left of the field. (The underlining is for your information only, and does not appear on the menu that the user sees.)

   Note: The menu identification in the upper-left corner has no attribute position. You must shift it to the right to change it, because the first position is protected. To shift the identification, type > to the right of it and press Enter. Type the new identification, then type < to the left of it to move it back to the first position.

   i. Type d in the attribute position of the default title to delete the title, and press Enter.

   j. Type 'Library List Management' as the new title, and press Enter to remove the single quotation marks.

k. Type `ac` in the attribute position of the title to center the title, and press Enter.

l. Type `h` in the attribute position of the title to highlight the title, and press Enter.

m. Press F20 (Reverse) to remove the reverse image.

The Define Menu Image work screen now looks like Figure 138.

```
  LSTFUNC                   Library List Management

  Select one of the following:

      1. Display library list
      2. Add QGPL to library list
      3. Remove QGPL from library list
      4. Display current library




     90. Sign off




  Selection or command                    _
  F3=Exit                  F10=Work with commands      F12=Cancel
  F13=Command area         F20=Reverse                 F24=More keys
```
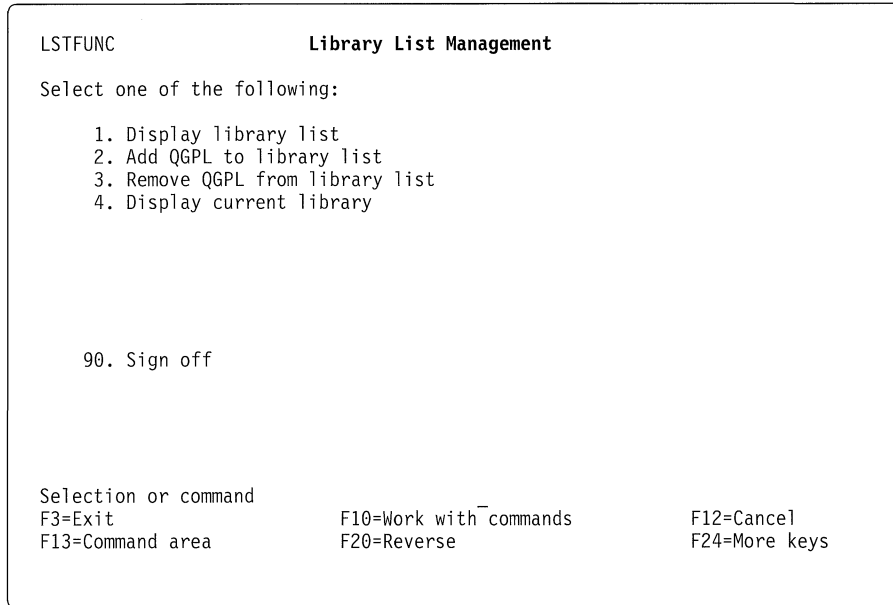
Figure 138. Define Menu Image Work Screen with Sample Menu Entered

Working with Your Menu Commands

To work with commands, press F10 (Work with commands) to see the Define Menu Commands display. See "Using the Define Menu Commands Display" on page 112 for more information. You can also press F13 (Command area) to display the command area on the Define Menu Image work screen. See "Using the Command Area" on page 114 for more information.

Using the Define Menu Commands Display

The system processes the command specified for a menu option when the user selects the menu option.

Now define menu commands:

1. Press F10 (Work with commands) on the Define Menu Image work screen to see the Define Menu Commands display.

2. On the Define Menu Commands display, define the command for each menu option:

   a. Type `DSPLIBL` in the *Command* column for 01.

   b. Type `ADDLIBLE LIB(QGPL) POSITION(*LAST)` in the *Command* column for 02.

   c. Type `RMVLIBLE` in the *Command* column for 03.

   d. Type `DSPLIB LIB(*CURLIB)` in the *Command* column for 04.

Note: You can use the Page Down and Page Up keys, or the *Position to menu option* prompt to move through the commands for your menu.

The Define Menu Commands display now looks like Figure 139.

```
                       Define Menu Commands

  Menu . . . . . . :   LSTFUNC            Position to menu option . . . . .    __

  Type commands, press Enter.

  Option    Command
    01      DSPLIBL_____

    02      ADDLIBLE LIB(QGPL) POSITION(*LAST)_____

    03      RMVLIBLE_____

    04      DSPLIB LIB(*CURLIB)_____

    05      _____

    06      _____

    07      _____

                                                                   More...
  F3=Exit       F11=Defined only options      F12=Cancel    F24=More keys
```

Figure 139. Define Menu Commands Display with Command Entries

    e. Place the cursor on one of the two lines associated with option 03, and press F4 (Prompt) to prompt for the RMVLIBLE command. You see the Remove Library List Entry display shown in Figure 140.

```
                   Remove Library List Entry (RMVLIBLE)

  Type choices, press Enter.

  Library  . . . . . . . . . . . .   _____     Name

                                                                   Bottom
  F3=Exit   F4=Prompt   F5=Refresh   F12=Cancel   F13=How to use this display
  F24=More keys
```

Figure 140. Remove Library List Entry Display

3. On the Remove Library List Entry (RMVLIBLE) display:

    a. Type QGPL in the *Library* prompt.

    b. Press Enter to see the Define Menu Commands display. The display shows the library parameter added to the RMVLIBLE command.

4. On the Define Menu Commands display, specify the command for option 90:

   a. Type 90 in the *Position to menu option* prompt, and press Enter.

   b. Type `SIGNOFF` in the *Command* column for option 90, and press Enter.

   c. Press F11 (Show all options) to display only the options for which you have defined commands.

The display looks like Figure 141.

```
                          Define Menu Commands

 Menu . . . . . . :  LSTFUNC              Position to menu option . . . . .    __

 Type commands, press Enter.

 Option    Command
   01      DSPLIBL_____
  _____
   02      ADDLIBLE LIB(QGPL) POSITION(*LAST)_____
  _____
   03      RMVLIBLE LIB(QGPL)_____
  _____
   04      DSPLIB LIB(*CURLIB)_____
  _____
   90      SIGNOFF_____
  _____




                                                                   Bottom
 F3=Exit       F11=Show all options      F12=Cancel     F24=More keys
```

Figure 141. Define Menu Commands Display in Defined Only Mode

   d. Press F12 (Cancel) to return the Define Menu Image work screen.

Using the Command Area

Now add another option to the list of options by using the command area.

On the Define Menu Image work screen:

1. Press F13 (Command area) to display the command area. The function key descriptions are replaced by a command line.

   Note: You can use system prompts (F4) on this command line.

2. Type 5.`'Change current library'` following option 4.

3. Type 5 in the *Position to* prompt and press Enter.

4. Type the command `?CHGCURLIB` on the command line as the command for option 5.

   Note: The question mark (?) before the command causes the system to prompt the command when the user selects that option. For more information about CL prompting, press F13 (How to use this display) and scroll to the bottom of the information.

The work screen now looks like in Figure 142 on page 115.

```
LSTFUNC                    Library List Management

Select one of the following:

      1. Display library list
      2. Add QGPL to library list
      3. Remove QGPL from library list
      4. Display current library
      5. Change current library




     90. Sign off




Selection or command                        _          Position to . . . . . . .   __
Option . . . .  05   ?CHGCURLIB_____
                                                                          More...
```
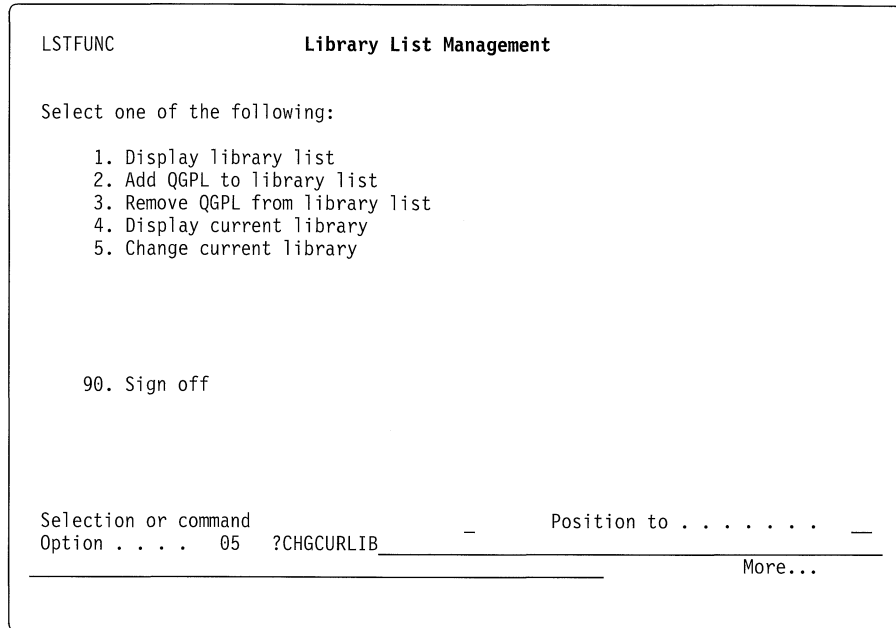
Figure 142. Command Mode of the Define Menu Image Work Screen

5. Press F13 (Command area) again to display the function keys.

6. Press F12 (Cancel) to return the Specify Menu Functions display.

> **Note:** F12 (Cancel) displays the Work with Menu Help Records display if you typed Y (Yes) in both the *Work with menu image and commands* and the *Work with menu help* prompts on the Specify Menu Functions display. If you typed Y in these prompts, press F3 (Exit) to return the Specify Menu Functions display.

Restricting Access to the Command Line and Saving the Menu

Now restrict access to the command line, then save and compile the menu image that you created:

1. Press either F3 (Exit) or F12 (Cancel) on the Specify Menu Functions display to see the Exit SDA Menus display shown in Figure 143 on page 116.

   If you typed N (No) in both the *Work with menu image and commands* and the *Work with menu help* prompts, you see the Exit Menus display when you press Enter.

```
                          Exit SDA Menus

 File . . . . . . . :    SRCFILE        DDS member . . . . . . :    LSTFUNC
    Library  . . . . :    QGPL           Commands member  . . :    LSTFUNCQQ

 Type choices, press Enter.

     Save new or updated menu source . . . .    Y          Y=Yes, N=No
       For choice Y=Yes:
         Source file . . . . . . . . . . . .    SRCFILE    Name,
                                                           F4 for list

            Library . . . . . . . . . . . .    QGPL____   Name, *LIBL, *CURLIB
         Text  . . . . . . . . . . . . . . .               _____
   _____
         Replace menu members  . . . . . . .    Y          Y=Yes. N=No

     Create menu objects . . . . . . . . . .    Y          Y=Yes, N=No
       For choice Y=Yes:
         Prompt for parameters . . . . . . .    N          Y=Yes, N=No
         Object library  . . . . . . . . . .    QGPL___    Name, *CURLIB
         Replace menu objects  . . . . . . .    Y          Y=Yes, N=No

 F3=Exit     F4=Prompt      F12=Cancel
```

Figure 143. Exit SDA Menus Display

The DDS member name is the name of your menu (LSTFUNC). The commands member has the same name as the menu with QQ at the end (LSTFUNCQQ). You cannot change either of these names at this point because the naming convention is required by the menu function of SDA.

Notes:

a. You can change the source file and the library if you specify an existing library or source file to which you have sufficient authority, and that has a record length between 92 and 132 inclusive.

   If the defaults of the source file or source library are successfully changed, and either of the source members MENU or MENUQQ exist in the new file, the existing members must have the correct type (MNUDDS for member MENU, MNUCMD for member MENUQQ). If the members do not have the correct type, SDA displays an error message.

b. You can change the text from the default. Whatever text is typed here applies to both members as well as to the created menu object.

c. Authorities will be affected when message and menu files are changed using SDA.

2. On the Exit SDA Menus display, indicate that you want to change parameters for the compiled menu:

   a. Type Y in the *Prompt for parameters* prompt.

   b. Press Enter to see the Create Menu display.

   You cannot change the menu name or menu type on the Create Menu (CRTMNU) display.

3. On the Create Menu (CRTMNU) display, suppress the command line on the menu:

   a. Type *NONE in the *Command line* prompt.

Note: If you change the value in the *Command line* prompt or the *Display function keys* prompt, SDA keeps the changes in your profile.

The display looks like Figure 144.

```
                          Create Menu (CRTMNU)

Type choices, press Enter.

Menu . . . . . . . . . . . . . . > LSTFUNC        Name
    Library  . . . . . . . . . . > QGPL           Name, *CURLIB
Menu type  . . . . . . . . . . . > *DSPF          *DSPF, *PGM
Display file . . . . . . . . . . > LSTFUNC___     Name, *MENU
    Library  . . . . . . . . . . > QGPL_____     Name, *LIBL, *CURLIB
Message file . . . . . . . . . . > LSTFUNC___     Name, *MENU
    Library  . . . . . . . . . . > QGPL_____     Name, *LIBL, *CURLIB
Command line . . . . . . . . . . > *NONE_         *LONG, *SHORT, *NONE
Display function keys  . . . . . > *YES           *NO, *YES
Current library  . . . . . . . . > *NOCHG____     Name, *NOCHG, *MNULIB...
Product library  . . . . . . . . > *NOCHG____     Name, *NOCHG, *NONE
Text 'description' . . . . . . . > *BLANK_____

_____


                                                              Bottom
 F3=Exit   F4=Prompt   F5=Refresh    F10=Additional parameters   F12=Cancel
 F13=How to use this display         F24=More keys

```

Figure 144. Create Menu Display

   b. Press Enter to compile and save the menu.

     Note: If you use the CRTMNU command or Create Menu (CRTMNU) display to create the menu, you can specify *LIBL as the library in which the display file and message file objects are stored. When you use the GO command to run the menu, the library list is searched for the display file and message file objects.

When the menu is compiled and saved, you see the Design Menus display.

   c. Press F3 (Exit) to return the Screen Design Aid (SDA) menu.

For more information about restricting access to the command line, see Appendix B, "Restricting Access to the Command Entry Line on AS/400 Menus" on page 189.

Procedure Summary

You used the following procedure to create a menu:

1. Define prompts for the menu image.

2. Define the command source for the menu.

3. Save the menu and command source.

Testing the Menu That You Created

Now test your menu. Unlike testing displays, you actually run the commands when you test the menu.

1. On the Screen Design Aid (SDA) menu:

   a. Type GO QGPL/LSTFUNC on the command line.

   b. Press Enter to see the Library List Management menu shown in Figure 145.

```
 LSTFUNC                    Library List Management

 Select one of the following:

       1. Display library list
       2. Add QGPL to library list
       3. Remove QGPL from library list
       4. Display current library
       5. Change current library



      90. Sign off




 Selection or command
      ____

 F3=Exit    F12=Cancel
 F13=User support       F16=System main menu
```
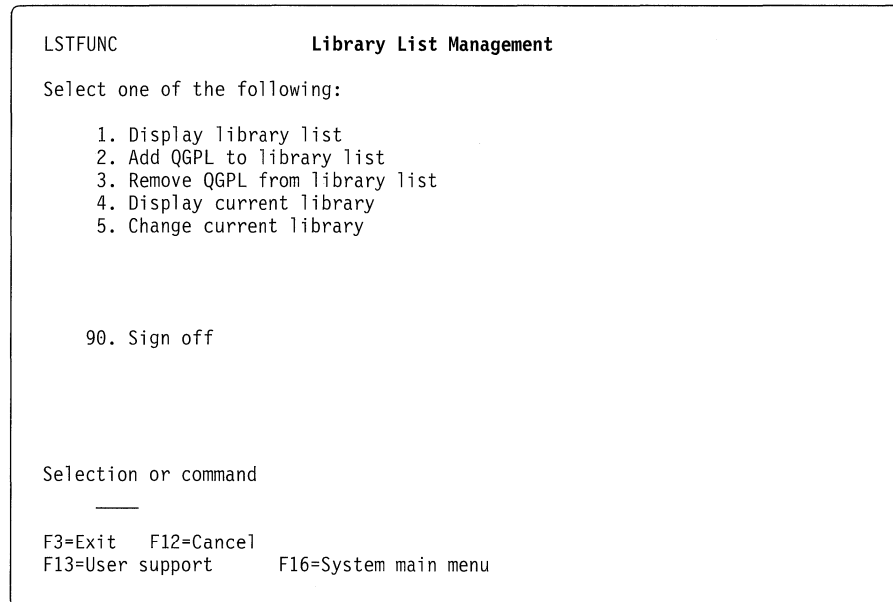
Figure 145. The Menu You Created

2. On the Library List Management menu, run option 5:

   a. Select option 5 (Change current library).

   b. Press Enter to see the Change Current Library display.

   c. Either type a new current library and press Enter, or press F3 (Exit) to leave the current library unchanged.

   d. Press F3 (Exit) to exit from the menu.

3. Repeat step 2 for each menu option you are testing.

Changing Menus

To change a menu display, select file QDDSSRC and member MENU on the Design Screens display. Use the Design Menu Image work screen to change the constants, fields, and attributes, or to add constants, as described in Chapter 2, "Creating Simple Displays" on page 11.

You can neither change the menu option numbers, nor add input, output, or both (input and output) fields on the work screen. If you do, the changes are lost when you re-create the display file using the *Design menu* option on the Screen Design Aid (SDA) menu. You cannot change the size of a menu.

Creating a Default Menu Image

You can use an existing menu image as a default for creating other menus by copying it and working with the new menu image. To do this, use the following steps:

1. Type STRPDM and press Enter to see the AS/400 Programming Development Manager (PDM) menu.

2. On the Programming Development Manager (PDM) menu:

   a. Select option 3 (Work with members).

   b. Press Enter to see the Specify Members to Work With display.

3. On the Specify Members to Work With display:

   a. Type the name of the file that contains the menu in the *File* prompt.

   b. Type the library name in the *Library* prompt.

   c. Press Enter to see the Work with Members Using PDM display.

4. On the Work with Members Using PDM display:

   a. Type 3 in the *Opt* option column next to the menu image member. (The menu image has the type MNUDDS).

   b. Press Enter to see the Copy Members display.

5. On the Copy Members display:

   a. Type a name for the member in the *New Name* column.

   b. Press Enter to see the Work with Members Using PDM display.

6. On the Work with Members Using PDM display:

   a. Type 17 (Change Using SDA) in the *Opt* column beside the new member.

   b. Press Enter to see the Specify Menu Functions display.

Deleting a Menu

If you want to delete a menu and all of its associated objects, use the system command DLTMNU:

1. Type DLTMNU on any AS/400 command line.

2. Press F4 to see the Delete Menu (DLTMNU) display.

3. On the Delete Menu (DLTMNU) display:

   a. Type the name of the menu to be deleted in the *Menu* prompt.

      Note: You can type the name of the menu or you can use a generic name. A generic name is a prefix with an asterisk (*) after the prefix. If you use a generic name, all menus that have a prefix that matches that of the generic name are deleted.

   b. Type the name of the library in the *Library* prompt.

   c. Press Enter. A message appears at the bottom of the display and the program, display file, and menu message file are deleted.

For more information about the DLTMNU command, see the *CL Reference* manual.

When you delete a menu, you should also delete the DDS source member MENU-NAME, as well as the command source member named MENU-NAMEQQ. MENU-NAME is the name of the menu you want to delete.

Deleting a Menu Source Member by Using the Programming Development Manager (PDM)

You cannot use SDA to delete the menu source. To delete menu source file members, do the following steps using the programming development manager (PDM):

1. Type STRPDM on the command line of any AS/400 display.

2. Press Enter to see the AS/400 Programming Development Manager (PDM) menu.

3. On the Programming Development Manager (PDM) menu:

   a. Select option 3 (Work with members).

   b. Press Enter to see the Specify Members to Work With display.

4. On the Specify Members to Work With display:

   a. Type the name of the file in the *File* prompt.

   b. Type the name of the library in the *Library* prompt.

   c. Type the name of the member to be deleted in the *Member* prompt.

   d. Press Enter to see the Work with Members Using PDM display.

5. On the Work with Members Using PDM display:

   a. Type 4 (Delete) in the *Opt* column for the member you want to delete. For each menu, SDA creates two source members MENU-NAME and MENU-NAMEQQ.

   b. Press Enter to delete the member.

   c. Press Enter again to confirm the deletion.

6. Press F12 (Cancel) repeatedly to return to the display on which you typed the STRPDM command.

You can also use the command line and CL commands to delete menu source file members.

Creating a System/38 Environment Menu

Figure 146 on page 121 shows the path of SDA displays that you use to create a menu in the System/38 environment.
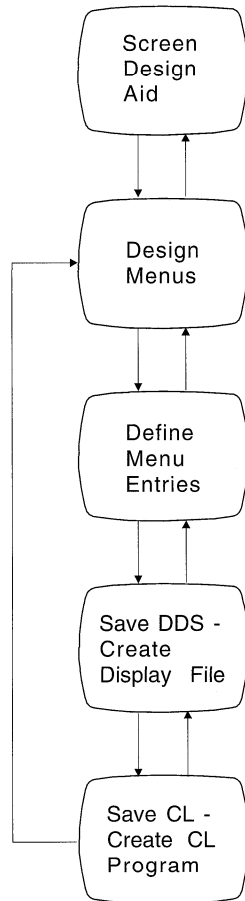
Figure 146. Displays Used to Design a Menu in System/38 Environment SDA

The sample customer menu you create in this section:

- Displays the library list
- Queries the customer master file for specific customers
- Checks the last date that the master file was saved
- Changes the master list
- Displays the AS/400 Command Entry display

To create the menu in this example, you must have access to the required source files QDDSSRC (the IBM-supplied DDS source file) and QCLSRC (the IBM-supplied CL source file) or equivalent. Both files are in the library QGPL.

To start System/38 environment SDA, type `STRSDA MODE(*S38)` on the Command Entry display. Press Enter to see the Screen Design Aid (SDA) menu.

Notes:

1. The default mode is the AS/400 environment (*STD).

2. You can only use AS/400 syntax on the command line in System/38 environment SDA. System/38 syntax is supported on the System/38 environment Command Entry display.

Now create the customer menu in the System/38 environment.

1. On the Screen Design Aid (SDA) menu:

    a. Select option 2 (Design menus). The menu looks like Figure 147.

```
                        AS/400 Screen Design Aid (SDA)

   Select one of the following:

       1. Design screens
       2. Design menus
       3. Test display files












   Selection or command
   ===> 2_____
  _____
   F1=Help   F3=Exit   F4=Prompt   F9=Retrieve   F12=Cancel
                                       (C) COPYRIGHT IBM CORP. 1981, 1993.
```

Figure 147. Screen Design Aid (SDA) Menu with Option 2 Selected

    b. Press Enter to see the Design Menus display.

2. On the Design Menus display, specify that you want to create a new menu:

    a. Type MENU as the name of a new menu member in the *Menu member* prompt. If you type a name that has already been used, SDA changes the previous menu and does not create a new menu.

    b. Type QCLSRC in the *Source file* prompt.

    c. Type QGPL in the *Library* prompt.

    d. Type CUSTOMER MENU in the *Menu title* prompt. The menu title is automatically centered on the menu.

The display looks like Figure 148 on page 123.

```
                         Design Menus

Type choices, press Enter.

     Menu member . . . . . . . . .   MENU_____     Name, F4 for Member list
     Source file . . . . . . . . .   QCLSRC____     Name, F4 for list
        Library . . . . . . . . . .  QGPL_____      Name, *LIBL, *CURLIB
     Menu title  . . . . . . . . .   CUSTOMER MENU_____

     Number of columns . . . . . .   1              1, 2   (Ignored for *DS1)
     Date and time . . . . . . . .   Y              Y=Yes  (Ignored for *DS1)
     Program or command to be run
        when Exit key pressed . . .  RETURN____     Name, F4 for Prompt
        Type  . . . . . . . . . . .  C              P=Program, L=With parameters
                                                    C=Command, E=Run time prompt
     Order number to select display sizes:
        *DS4, 27x132 . . . . . . .   _              1-4
        *DS3, 24x80 . . . . . . . .  1              1-4
        *DS2, 12x80 . . . . . . . .  _              1-4
        *DS1, 16x64 . . . . . . . .  _              1-4


  F3=Exit   F10=Save   F12=Cancel
```

Figure 148. Design Menus Display with Entries

    e. Press Enter to see the Define Menu Entries display.

Using Control Characters to Define Options and Prompts

Use the Define Menu Entries display to define the options and prompts on the menu that you are creating. The title is copied from the menu title that you typed on the Design Menus display.

Now specify the Display Library List command.

1. On the Define Menu Entries display:

    a. Type P (Prompt) in the *Cmd* column to specify the parameters for the Display Library List (DSPLIBL) command.

    Note: Instead of typing P to display the command parameter, you can position the cursor on the same line as the command and press F4 (Prompt).

    b. Type 1 in the *Menu Opt* column as the option that the operator can select from the menu.

    c. Type Display Library List in the *Menu Entry* column. This text will be displayed on the menu.

    d. Type C (Command) in the *Type* column.

    e. Type the command DSPLIBL in the *Pgm/Cmd* column.

    Option 1 runs the CL command DSPLIBL. The display looks like Figure 149 on page 124.

```
                    Define Menu Entries
CUSTOMER MENU                                    00   options of   20

Type menu entry definitions, press Enter.
   Cmd:  I=Insert  C=Copy  A=After      Type:  P=Program  L=Program with parms
         D=Delete  P=Prompt                    C=Command  E=Prompt at run time

       Menu
Cmd   Opt   Menu Entry                                 Type   Pgm/Cmd
 P    1__   Display Library List_____   C     DSPLIBL___

 _    __    _____  _   _____
 _    __    _____  _   _____
```
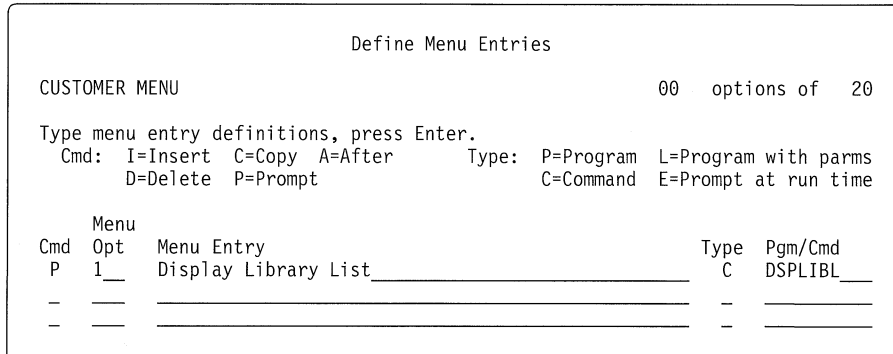
Figure 149. Define Menu Entries Display with Program DSPLIBL Entries

> f. Press Enter to see the Display Library List (DSPLIBL) display.

> Because you specified P for the DSPLIBL command, you can specify parameters for the command.

2. On the Display Library List (DSPLIBL) display:

> a. Type *LIST in the *Output* prompt. The display looks like Figure 150.

```
                Display Library List (DSPLIBL)

Type choices, press Enter.

Label   . . . . . . . . . . . .  _____
Output  . . . . . . . . . . . . *LIST          *, *LIST
```
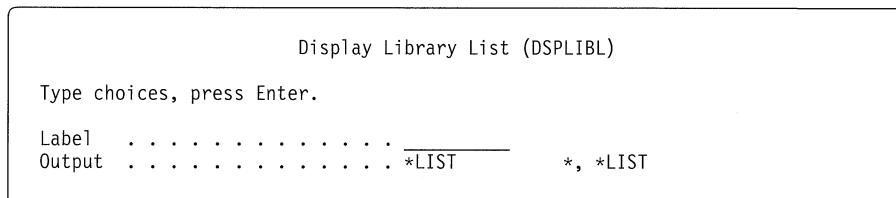
Figure 150. Display Library List Display

> b. Press Enter to return the Define Menu Entries display.

Using Control Characters
Now use control characters to copy a line on the menu.

1. On the Define Menu Entries display, copy a line and specify another menu option:

> a. Type C (Copy) in the *Cmd* column for option 1.

> b. Type A (After) in the *Cmd* column just below the C to copy the first menu option to this line.

The display looks like Figure 151 on page 125.

```
                           Define Menu Entries

CUSTOMER MENU                                          01    options of    20

Type menu entry definitions, press Enter.
  Cmd:  I=Insert  C=Copy  A=After      Type:  P=Program  L=Program with parms
        D=Delete  P=Prompt                    C=Command  E=Prompt at run time


        Menu
Cmd   Opt   Menu Entry                                    Type  Pgm/Cmd
 C    1__   Display Library List_____        C    DSPLIBL___
 A    __    _____        _    _____

 _    __    _____        _    _____
 _    __    _____        _    _____
```

Figure 151. Define Menu Entries Display with the Copy Command Selected

    c. Press Enter to copy the first row to the second row.

    d. Type P (Prompt) in the *Cmd* column for option 2 to specify parameters for the command.

    e. Type 2 in the *Menu Opt* column, Change Library List in the *Menu Entry* column, and CHGLIBL in the *Pgm/Cmd* column. This option runs the CL command DSPLIBL.

The display now looks like Figure 152.

```
                           Define Menu Entries

CUSTOMER MENU                                          01    options of    20

Type menu entry definitions, press Enter.
  Cmd:  I=Insert  C=Copy  A=After      Type:  P=Program  L=Program with parms
        D=Delete  P=Prompt                    C=Command  E=Prompt at run time


        Menu
Cmd   Opt   Menu Entry                                    Type  Pgm/Cmd
 _    1__   Display Library List_____        C    DSPLIBL___
 P    2__   Change Library List_____        C    CHGLIBL___

 _    __    _____        _    _____
 _    __    _____        _    _____
```

Figure 152. Define Menu Entries Display with Program CHGLIBL Specified

    f. Press Enter to see the Change Library List (CHGLIBL) display.

2. On the Change Library List (CHGLIBL) display:

    a. Type CUSTLIB in the *Libraries for current job* prompt.

    b. Type QGPL in the + *for more values* prompt.

The display looks like Figure 153 on page 126.

```
                    Change Library List (CHGLIBL)

Type choices, press Enter.

Label  . . . . . . . . . . . .    _____
Libraries for current job  . . .  CUSTLIB___   Name, *SAME, *NONE
                                  QTEMP_____
                                  TEXTTOOLS_

            + for more values     QGPL_____
Current library . . . . . . . .   *SAME        Name, *SAME, *CRTDFT
```
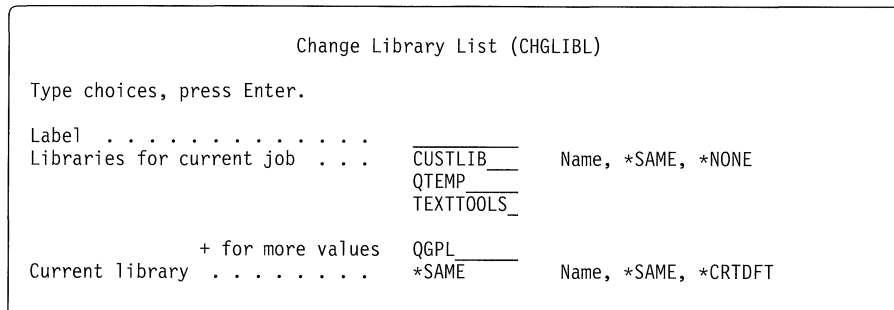
Figure 153. Change Library List Display

   c. Press Enter to return the Define Menu Entries display.

3. On the Define Menu Entries display, define the options 3 through 7:

   a. Type 3 in the *Menu Opt* column, `Customer Master File Inquiries` in the *Menu Entry* column, `E` (Prompt at run time) in the *Type* column, and `OVRPRTF` in the *Pgm/Cmd* column. This option displays the *OVRPRTF* command prompt.

   b. Type 4 in the *Menu Opt* column, `Customer Master Last Date Saved` in the *Menu Entry* column, `E` (Prompt at run time) in the *Type* column, and `DSPOBJD` in the *Pgm/Cmd* column. This option displays the *DSPOBJD* command prompt.

   c. Type 5 in the *Menu Opt* column, `Customer Master File List Program` in the *Menu Entry* column, `P` (Program) in the *Type* column, and `CUSTLIST` in the *Pgm/Cmd* column. This option runs the CUSTLIST program.

   d. Type 6 in the *Menu Opt* column, `Customer Master File Update Program` in the *Menu Entry* column, `L` (Program with parms) in the *Type* column, and `CUSTUPDT` in the *Pgm/Cmd* column.

     Note: When you specify `L`, SDA creates a parameter line on the menu (an area to type parameters).

     This option runs the CUSTUPDT program and passes a parameter that the operator types the parameter on the *Parm* line of the menu.

   e. Type 7 in the *Menu Opt* column, `Command Entry Display` in the *Menu Entry* column, `P` (Program) in the *Type* column, and `QCL` in the *Pgm/Cmd* column. This option displays the AS/400 Command Entry display, in which the operator can type commands.

The display now looks like Figure 154 on page 127.

```
                           Define Menu Entries

CUSTOMER MENU                                          02   options of   20

Type menu entry definitions, press Enter.
   Cmd:  I=Insert  C=Copy  A=After      Type:  P=Program  L=Program with parms
            D=Delete  P=Prompt                 C=Command  E=Prompt at run time


        Menu
   Cmd  Opt   Menu Entry                                   Type   Pgm/Cmd
    _    1__   Display Library List_____       C    DSPLIBL___
    _    2__   Change Library List_____        C    CHGLIBL___
    _    3__   Customer Master File Queries_____   E    OVRPRTF___
    _    4__   Customer Master Last Date Saved_____   E    DSPOBJD___
    _    5__   Customer Master File List Program_____ P    CUSTLIST__
    _    6__   Customer Master File Update Program_____ L    CUSTUPDT__
    _    7__   Command Entry Display_____ P    QCL_____

    _   ___   _____   _    _____
    _   ___   _____   _    _____
```

Figure 154. Define Menu Entries Display with Options Typed

    f. Type P (Prompt) in the *Cmd* column for option 3.

    g. Press Enter to specify parameters for the CL command OVRPRTF. You see the Override with Printer File (OVRPRTF) display.

4. On the Override with Printer File (OVRPRTF) display:

    a. Press F11 (Keywords) to see the keyword format for the display. The function key F11 (Keywords) allows you to toggle between the prompt format and the keyword format of a display.

    b. Type QSYSPRT in the *File being overridden* prompt.

    c. Type FILE in the *Overriding to printer file* prompt.

    d. Type *LIBL in the *Library* prompt.

The display looks like Figure 155.

```
                  Override with Printer File (OVRPRTF)

Type choices, press Enter.

Label  . . . . . . . . . . . . .                      _____
File being overridden  . . . . .  FILE               QSYSPRT___
Overriding to printer file . . .  TOFILE             FILE_____
  Library  . . . . . . . . . . .                       *LIBL___
Device:                           DEV
  Printer device . . . . . . . .                      _____
Printer device type  . . . . . .  DEVTYPE            _____
Form size:                        FORMSIZE
  Length--lines per page . . . .                     _____
  Width--positions per line  . .                     _____
Lines per inch . . . . . . . . .  LPI                _
Characters per inch  . . . . . .  CPI                ____
Overflow line number . . . . . . OVRFLW              _____
Fold records . . . . . . . . . .  FOLD               ____


                                                              More...
F3=Exit   F4=Prompt   F5=Refresh   F12=Cancel   F13=How to use this display
F24=More keys
```

Figure 155. Override with Printer File Display

e. Press Enter to see the Define Menu Entries display.

5. On the Define Menu Entries display, move the cursor to option 5, and press F4 (Prompt) to see the Call Program display.

6. On the Call Program display:

a. Type CUSTLIB in the *Library* prompt. The display looks like Figure 156.

```
                          Call Program (CALL)

Type choices, press Enter.


Label  . . . . . . . . . . . . .    _____
Program  . . . . . . . . . . . .  > CUSTLIST__    Name
  Library  . . . . . . . . . . .    CUSTLIB___    Name, *LIBL
Parameters . . . . . . . . . . .    _____

_____
                + for more values   _____
_____
```

Figure 156. Call Program Display

b. Press Enter to see the Define Menu Entries display.

7. On the Define Menu Entries display, do the following:

a. Type P in the *Cmd* column for option 6. The display looks like Figure 157.

```
                          Define Menu Entries

CUSTOMER MENU                                       07   options of   20

Type menu entry definitions, press Enter.
    Cmd:  I=Insert  C=Copy  A=After      Type:  P=Program  L=Program with parms
          D=Delete  P=Prompt                    C=Command  E=Prompt at run time

      Menu
Cmd   Opt   Menu Entry                                 Type   Pgm/Cmd
  _    1__  Display Library List_____    C    DSPLIBL___
  _    2__  Change Library List_____    C    CHGLIBL___
  _    3__  Customer Master File Queries_____    E    OVRPRTF___
  _    4__  Customer Master Last Date Saved_____    E    DSPOBJD___
  _    5__  Customer Master File List Program_____    P    CUSTLIST__
  P    6__  Customer Master File Update Program_____   L    CUSTUPDT__
  _    7__  Command Entry Display_____    P    QCL_____
  _   ___   _____    _    _____
  _   ___   _____    _    _____
```

Figure 157. Define Menu Entries Display with Program CUSTUPDT Specified

b. Press Enter to see the Call Program display.

8. On the Call Program display:

a. Type CUSTLIB in the *Library* prompt and the display looks like Figure 158 on page 129.

```
                        Call Program (CALL)

Type choices, press Enter.

Label  . . . . . . . . . . . . .  _____
Program  . . . . . . . . . . . . > CUSTUPDT__    Name
  Library  . . . . . . . . . . .    CUSTLIB___   Name, *LIBL
Parameters . . . . . . . . . . .  _____
_____
              + for more value   _____
_____
```

Figure 158. Call Program Display

b. Press Enter to see the Define Menu Entries display.

9. On the Define Menu Entries display:

a. Type I (Insert) in the *Cmd* column for option 3. The display looks like Figure 159.

```
                         Define Menu Entries

CUSTOMER MENU                                 07    options of   20

Type menu entry definitions, press Enter.
  Cmd:  I=Insert  C=Copy  A=After     Type:  P=Program  L=Program with parms
        D=Delete  P=Prompt                   C=Command  E=Prompt at run time


      Menu
Cmd   Opt   Menu Entry                               Type   Pgm/Cmd
  _   1__   Display Library List_____       C    DSPLIBL___
  _   2__   Change Library List_____       C    CHGLIBL___
  I   3__   Customer Master File Queries_____       E    OVRPRTF___
  _   4__   Customer Master Last Date Saved_____       E    DSPOBJD___
  _   5__   Customer Master File List Program___       P    CUSTLIST__
  _   6__   Customer Master File Update Program_       L    CUSTUPDT__
  _   7__   Command Entry Display_____       P    QCL_____
  _   __    _____       _    _____
  _   __    _____       _    _____
```

Figure 159. Define Menu Entries Display with Option 3 Selected

b. Press Enter to add the blank line.

c. Type C (Command) in the *Type* column on the new line.

d. Type QRYDTA in the *Pgm/Cmd* column on the new line.

When the operator selects option 3, the QRYDTA command runs after the operator is prompted for OVRPRTF.

e. Type P (Prompt) in the *Cmd* column to specify parameters for the QRYDTA command.

The display now looks like Figure 160 on page 130.

```
                          Define Menu Entries
  CUSTOMER MENU                                      07   options of   20

  Type menu entry definitions, press Enter.
     Cmd:   I=Insert  C=Copy  A=After      Type:   P=Program  L=Program with parms
            D=Delete  P=Prompt                     C=Command  E=Prompt at run time

          Menu
  Cmd     Opt    Menu Entry_____   Type   Pgm/Cmd
   _       1__   Display Library List_____   C    DSPLIBL___
   _       2__   Change Library List_____   C    CHGLIBL___
   _       3__   Customer Master File Queries_____   E    OVRPRTF___
   P             _____   C    QRYDTA____
   _       4__   Customer Master Last Date Saved_____   E    DSPOBJD___
   _       5__   Customer Master File List Program_____   P    CUSTLIST__
   _       6__   Customer Master File Update Program_____   L    CUSTUPDT__
   _       7__   Command Entry Display_____   P    QCL_____

   _      ___    _____   _    _____
   _      ___    _____   _    _____
```

Figure 160. Define Menu Entries Display with Entries for the QRYDTA Command

Option 3 now occupies two rows on the display because it contains the two *Pgm/Cmd* prompts OVRPRTF and QRYDTA.

   f. Press Enter to see the Query Data display.

10. On the Query Data display:

   a. Type CUSTAPP in the *Application-program name* prompt.

   b. Type CUSTLIB in the *Library name* prompt.

The display now looks like Figure 161.

```
                          Query Data (QRYDTA)

  Type choices, press Enter.

  Label  . . . . . . . . . . . . .     _____
  Application-program name:  . . .     CUSTAPP___   Name
    Library name:  . . . . . . . .     CUSTLIB__    Name, *LIBL
  Output (* *LIST *NONE):  . . . .     *____        *, *LIST, *NONE
  Printer page width options:
    Primary printer width(50-198):    132          50-198
    Second printer width(50-198):     *REST        50-198, *REST
  Number of records to Query:  . .    *ALL_____    1-2147483647, *ALL
```

Figure 161. Query Data Display

   c. Press Enter to return the Define Menu Entries display.

11. On the Define Menu Entries display, copy option 3 below option 6, and delete the original option 3.

   a. Type C (Copy) in the *Cmd* column for option 3.

   b. Type A (After) in the *Cmd* column for option 6.

The display now looks like Figure 162 on page 131.

```
                        Define Menu Entries

CUSTOMER MENU                                    07   options of    20

Type menu entry definitions, press Enter.
  Cmd:  I=Insert  C=Copy  A=After      Type:  P=Program  L=Program with parms
        D=Delete  P=Prompt                    C=Command  E=Prompt at run time

       Menu
Cmd    Opt   Menu Entry                                 Type   Pgm/Cmd
  _    1__   Display Library List_____   C     DSPLIBL___
  _    2__   Change Library List_____   C     CHGLIBL___
  C    3__   Customer Master File Queries_____   E     OVRPRTF___
  _          _____   C     QRYDTA____
  _    4__   Customer Master Last Date Saved_____   E     DSPOBJD___
  _    5__   Customer Master File List Program_____   P     CUSTLIST__
  A    6__   Customer Master File Update Program_____  L     CUSTUPDT__
  _    7__   Command Entry Display_____   P     QCL_____
  _    __    _____   _     _____
  _    __    _____   _     _____
```

Figure 162. Define Menu Entries Display with Copy Command

   c. Press Enter to copy option 3.

   d. To delete both lines for the original option 3, type D (Delete) in the *Cmd* column. The display looks like Figure 163.

```
                        Define Menu Entries

CUSTOMER MENU                                    07   options of    20

Type menu entry definitions, press Enter.
  Cmd:  I=Insert  C=Copy  A=After      Type:  P=Program  L=Program with parms
        D=Delete  P=Prompt                    C=Command  E=Prompt at run time

       Menu
Cmd    Opt   Menu Entry                                 Type   Pgm/Cmd
  _    1__   Display Library List_____   C     DSPLIBL___
  _    2__   Change Library List_____   C     CHGLIBL___
  D    3__   Customer Master File Queries_____   E     OVRPRTF___
  _          _____   C     QRYDTA____
  _    4__   Customer Master Last Date Saved_____   E     DSPOBJD___
  _    5__   Customer Master File List Program_____   P     CUSTLIST__
  _    6__   Customer Master File Update Program_____  L     CUSTUPDT__
  _    3__   Customer Master File Queries_____   E     OVRPRTF___
  _          _____   C     QRYDTA____
  _    7__   Command Entry Display_____   P     QCL_____
  _    __    _____   _     _____
  _    __    _____   _     _____
```

Figure 163. Define Menu Entries Display with Delete Command

   e. Press Enter to delete the option.

   f. Renumber the menu options so that your display matches Figure 164 on page 132.

```
                         Define Menu Entries

CUSTOMER MENU                                     07   options of   20

Type menu entry definitions, press Enter.
  Cmd:  I=Insert  C=Copy  A=After      Type:  P=Program  L=Program with parms
        D=Delete  P=Prompt                    C=Command  E=Prompt at run time

       Menu
Cmd    Opt   Menu Entry                                 Type  Pgm/Cmd
  _    1__   Display Library List_____      C   DSPLIBL___
  _    2__   Change Library List_____       C   CHGLIBL___
  _    3__   Customer Master Last Date Saved_____   E   DSPOBJD___
  _    4__   Customer Master File List Program_____  P   CUSTLIST__
  _    5__   Customer Master File Update Program_____ L   CUSTUPDT__
  _    6__   Customer Master File Queries_____  E   OVRPRTF___
             _____   C   QRYDTA____
  _    7__   Command Entry Display_____  P   QCL_____
  _    __    _____   _   _____
  _    __    _____   _   _____
```

Figure 164. Define Menu Entries Display with Menu Options Reordered

g. Press Enter to process the menu definition.

h. Press F10 (Save) to see the Save DDS - Create Display File display.

Saving the Generated DDS and Creating the Display File

You use the Save DDS - Create Display File display to save the source statements, create a display file, save the CL statements, and create a CL program. The member name appears on the display, which looks like Figure 165.

```
                    Save DDS - Create Display File

Type choices, press Enter.

   Save DDS source  . . . . . . . . . . . .  Y          Y=Yes
      Source file  . . . . . . . . . . . .   QDDSSRC___  F4 for list
         Library  . . . . . . . . . . . .    QGPL_____  Name, *LIBL ...
      Member . . . . . . . . . . . . . . .   MENU_____  F4 for list
      Text _____

   Create display file  . . . . . . . . . .  Y          Y=Yes
      Prompt for parameters  . . . . . . . .  _          Y=Yes
      Display file . . . . . . . . . . . . .  MENU_____  F4 for list
         Library  . . . . . . . . . . . . .   QGPL_____  Name, *CURLIB
      Replace existing file  . . . . . . . .  _          Y=Yes

   Submit create job in batch . . . . . . .  Y          Y=Yes

   Specify additional
      save or create options   . . . . . . .  _          Y=Yes

F3=Exit   F4=Prompt   F12=Cancel
```

Figure 165. Save DDS - Create Display File Display with Defaults

1. On the Save DDS - Create Display File display:

   a. Press Enter to save the generated DDS and create the display file.

      A completion message appears.

   b. Press Enter to clear the message and to see the Save CL - Create CL Program display.

The Save CL - Create CL Program display shows the member name. The display looks like Figure 166.

```
                    Save CL - Create CL Program

   Type choices, press Enter.

        Save CL source . . . . . . . . . . . . .   Y          Y=Yes
           Source file  . . . . . . . . . . . . .   QCLSRC____  F4 for list
              Library  . . . . . . . . . . . . . .   QGPL_____  Name, *LIBL ...
           Member . . . . . . . . . . . . . . . .   MENU_____  F4 for list
           Text _____
   _____


        Create CL program  . . . . . . . . . . .   Y          Y=Yes
           Prompt for parameters  . . . . . . . .   _          Y=Yes
           CL program . . . . . . . . . . . . . .   MENU_____  F4 for list
              Library  . . . . . . . . . . . . . .   QGPL_____  Name, *CURLIB
           Replace existing file  . . . . . . . .   _          Y=Yes

        Submit create job in batch . . . . . . .   _          Y=Yes

        Specify additional
           save or create options . . . . . . . .   Y          Y=Yes

   F3=Exit   F4=Prompt   F12=Cancel
```

Figure 166. Save CL - Create CL Program Display

2. On the Save CL - Create CL Program display:

   a. Press Enter to save the generated CL and create a CL program.

      A completion message appears.

   b. Press Enter to return the Design Menus display.

3. Press F12 (Cancel) to return the Screen Design Aid (SDA) menu.

Procedure Summary

You used the following procedure to create a menu:

1. Define options and prompts for the menu.

2. Specify commands and command parameters for the prompts.

3. Use control characters to prompt for a command and to copy and insert a line on the menu.

4. Define additional menu options by repeating steps 1 to 3.

5. Save DDS source and create the display file.

6. Save the CL source and create a CL program.
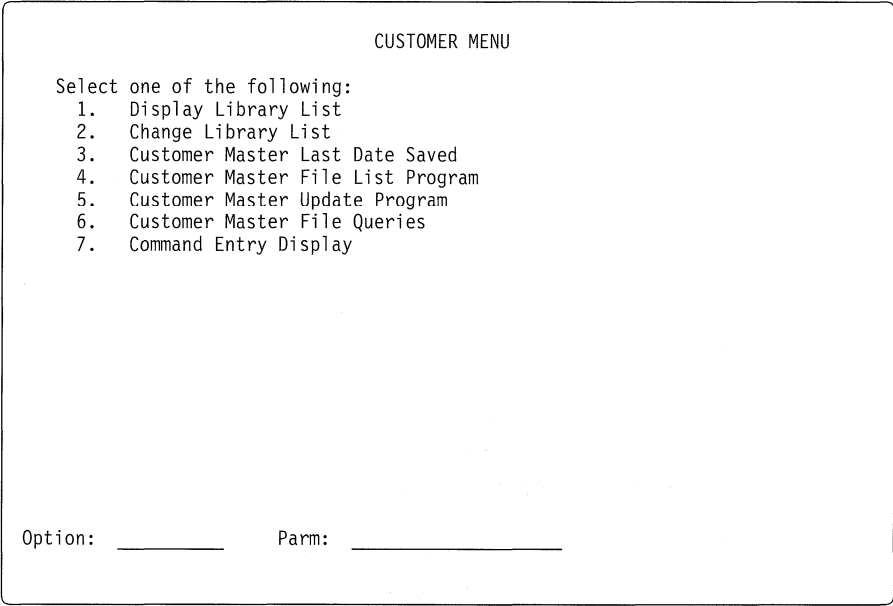
Testing the Menu That You Created

Exit from SDA to test the menu that you created:

1. Press F3 (Exit) to exit from SDA.

2. Type either CALL MENU.QGPL on the System/38 environment Command Entry display, or type CALL QGPL/MENU on the AS/400 Command Entry display.

Note: You must create the CL program before you can use or select CALL MENU.

3. Press Enter to see the Customer Menu shown in Figure 167.

```
                          CUSTOMER MENU

     Select one of the following:
        1.   Display Library List
        2.   Change Library List
        3.   Customer Master Last Date Saved
        4.   Customer Master File List Program
        5.   Customer Master Update Program
        6.   Customer Master File Queries
        7.   Command Entry Display









     Option:  _____       Parm:  _____
```

Figure 167. The Menu That You Created

4. On the Customer Menu menu:

   a. Select either option 1 (Display Library List) or option 7 (Command Entry Display). (Type the option number in the *Option* prompt.)

      Note: You must type the same value that you typed when you created the menu. For example, if you label an option 001, type 001 to select that option.

   b. Press Enter to see either the prompt for the Display Library List (DSPLIBL) command or the prompt for the System/38 Command Entry display.

5. Press the exit key to return the menu.

6. Press F1 to exit the menu.

Chapter 8. Creating Online Help Information

You can specify online help information for the AS/400 displays and menus that you create. The online help information describes either all, or a portion of, a display or menu that a user sees when running an application program.

Creating Online Help Information for a Display

You can define areas within the display called **help areas**. Each help area is defined by a specification in the application format called an **H specification**. Help areas provide information that can be kept on the system separate from the application program. You can add online help information to an existing application program by changing existing displays and creating the help displays.

When the user presses Help on a display, the online help information that you created for the display appears. The user can page through the various help displays by using the Page Up and Page Down keys. The user leaves the help function by pressing Enter, and returns the display where the Help key was pressed. The display is unchanged.

Note: This function is available in AS/400 SDA only.

You can write help information at both the file and the record level. File-level help information is more general and defines the default help for the file. File-level help information is specified directly on the Select Help Keywords display. File-level help information appears when the user presses Help and the cursor is outside all of the defined help areas. You can define only one file-level help display.

Record-level help information is more specific. Record-level help information is specified on displays, and is associated with a field or a set of fields on a display. When the user presses Help and the cursor is in a defined help area, the user sees the record-level help information. You can define more than one set of help displays for a record.

Figure 168 on page 136 shows the path of SDA displays that you use to create online help information for displays.
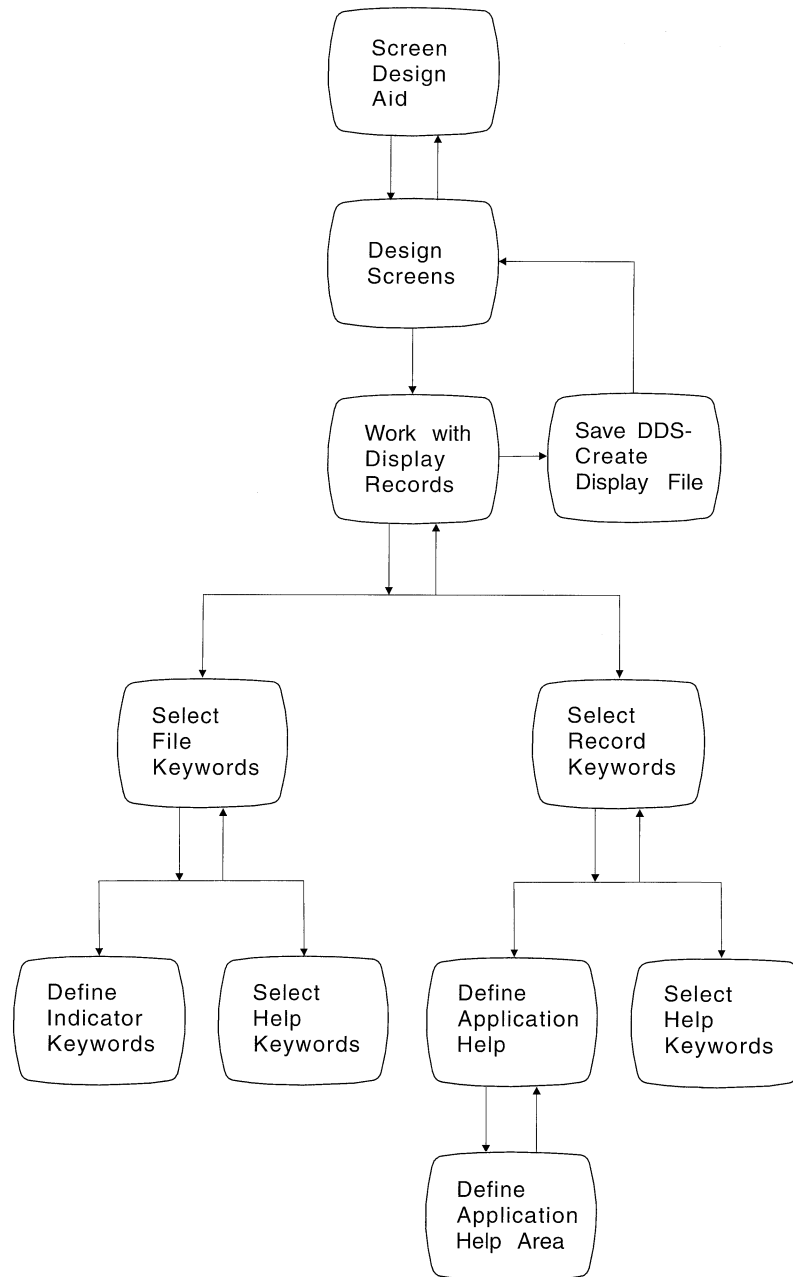
Figure 168. SDA Displays Used to Create Online Help Information for Displays

Defining Online Help Information

In this example, you define help information for the Customer Inquiry display that you created in Chapter 2, "Creating Simple Displays." You define both file-level and record-level help information. File-level help information appears whenever the user presses Help in an area of the Customer Inquiry display that is not defined as a help area. Record-level help information appears when the user presses Help on the `Accts Rec Balance` field, the `Credit Limit` field, or the `Adjustment` field.

Defining General Help

Now specify the record containing the file-level or general help information.

1. On the Screen Design Aid (SDA) menu:

    a. Select option 1 (Design screens).

    b. Press Enter to see the Design Screens display.

2. On the Design Screens display:

    a. Type QDDSSRC in the *Source file* prompt.

    b. Type QGPL in the *Library* prompt.

    c. Type CUSMASTER in the *Source Member* prompt.

    The display now looks like Figure 169.

```
                              Design Screens

Type choices, press Enter.

    Source file . . . . . . .    QDDSSRC___   Name, F4 for list

        Library . . . . . . . .  QGPL_____   Name, *LIBL, *CURLIB

    Source Member . . . . . .    CUSMASTER_   Name, F4 for list

```

Figure 169. Design Screens Display

    d. Press Enter to see the Work with Display Records display.

3. Press F14 (File-level keywords) to see the Select File Keywords display.

4. On the Select File Keywords display, indicate that you want to specify indicator and help keywords:

    a. Type Y (Yes) in the *Indicator keywords* prompt.

    Note: If you are creating application help, the HELP keyword must be specified at either the file or the record level. If you specify file-level application help, the HELP keyword must be specified at the file level.

    b. Type Y (Yes) in the *Help keywords* prompt.

    The display looks like Figure 170.

```
                          Select File Keywords

Member . . . :   CUSMASTER

Type choices, press Enter.

                                         Y=Yes
General keywords  . . . . . . . . .       _
Indicator keywords  . . . . . . . .       Y
Print keywords  . . . . . . . . . .       _
Help keywords . . . . . . . . . . .       Y
Display sizes . . . . . . . . . . .       _
Alternate keywords  . . . . . . . .       _
Window borders  . . . . . . . . . .       _
```

Figure 170. Select File Keywords Display with Help Keywords Selected

c. Press Enter to see the Define Indicator Keywords display.

5. On the Define Indicator Keywords display:

    a. Type HELP in the *Conditioned keywords* prompt.

    b. Press Enter to see the Select Help Keywords display.

6. On the Select Help Keywords display, specify the record that contains the help information:

    a. Type Y (Yes) in the *Help text in record* prompt to select the HLPRCD keyword. The HLPRCD keyword indicates that the help information is in a record.

    b. Type GENINQ in the *Record or document* prompt.

    > **Note:** Documents are created using the OfficeVision/400* word processing function.

    c. Type CUSMASTER in the *File* prompt.

    d. Type QGPL in the *Library* prompt.

    You have now defined the HLPRCD file-level keyword. The display looks like Figure 171.

```
                         Select Help Keywords

   Member . . . :    CUSMASTER

   Type choices, press Enter.
                                   Keyword
      Help text in record  . . . . HLPRCD    Y           Y=Yes
      -- OR --
      Help text in document  . . . HLPDOC    _           Y=Yes
         Indicators . . . . . . . .          ___  ___
         Record or document . . . .          GENINQ____  Name
         File . . . . . . . . . . .          CUSMASTER_  Name
            Library  . . . . . . . .            QGPL_____  Name, *LIBL, *CURLIB
         HLPDOC label . . . . . . .          _____  Name
         HLPDOC folder  . . . . . .







   F3=Exit    F9=Select HLPPNLGRP keyword
   F12=Cancel
```
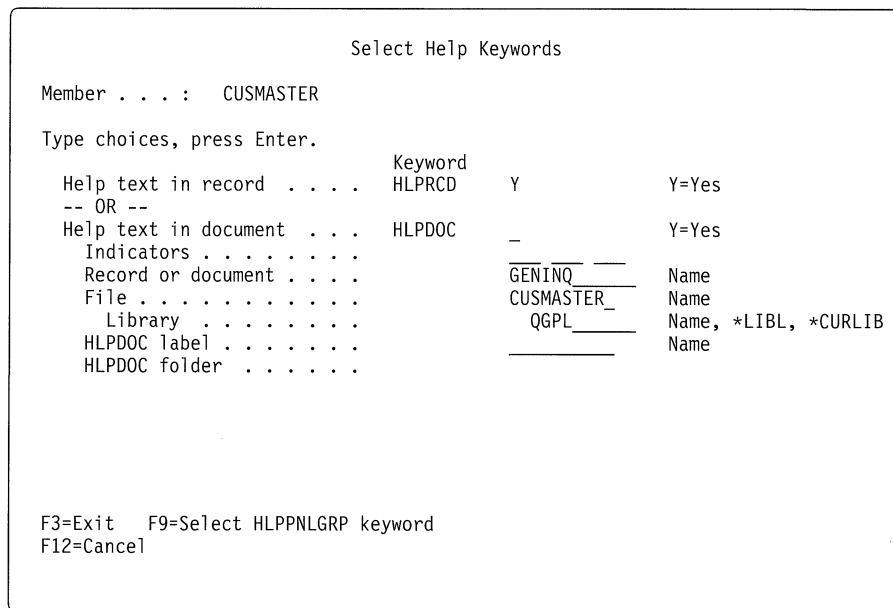
Figure 171. Select Help Keywords Display with Record Selected

    e. Press Enter to return the Select File Keywords display.

7. Press Enter on the Select File Keywords display to return the Work with Display Records display.

> **Note:** You can specify that your online help information is in a UIM panel group by pressing F9 (Select HLPPNLGRP keyword). You can only specify one type of help.

Defining Help Areas for Specific Fields

Now define help areas for the `Accts Rec Balance`, `Credit Limit`, and `Adjustment` fields. These fields appear on the New Customer Inquiry display shown in Figure 21 on page 23. The `Accts Rec Balance` field is one help area. The `Credit Limit` and `Adjustment` fields together are the second help area. When the user presses Help and the cursor is in either of the help areas, the help information that you specify appears on the display.

The two help areas that you define are:

- Row 11, columns 5 to 35 for the `Accts Rec Balance` field

- Row 13, column 10 to row 15, column 35 for the `Credit Limit` and `Adjustment` fields

Specify the record that contains the record-level help information.

1. On the Work with Display Records display:

    a. Type 8 (Select keywords) in the *Opt* column for the record `INQUIRY`.

    b. Press Enter to see the Select Record Keywords display.

2. On the Select Record Keywords display, indicate that you want to specify help for the application:

    a. Type `Y` (Yes) in the *Application help* prompt. The display looks like Figure 172.

```
                           Select Record Keywords

    Record . . . :   INQUIRY

    Type choices, press Enter.

                                              Y=Yes
        General keywords  . . . . . . . .  _
        Indicator keywords  . . . . . . .  _
        Application help  . . . . . . . .  Y
        Help keywords . . . . . . . . . .  _
        Output keywords . . . . . . . . .  _
        Input keywords  . . . . . . . . .  _
        Overlay keywords  . . . . . . . .  _

        Print Keywords  . . . . . . . . .  _
```

Figure 172. Select Record Keywords Display with Application Help Selected

    b. Press Enter to see the Define Application Help display.

3. On the Define Application Help display, specify that the help information is in a record:

    a. Type 2 in the *Next help number* prompt. You can page through existing specifications by typing the next help number.

        Note: If you want to exit from the help displays, clear the *Next help number* prompt and press Enter.

    b. Type `Y` (Yes) in the *Help text in record* prompt.

    c. Type `HPACBAL` in the *Record or document* prompt for the record with which the HLPRCD keyword will be associated.

    d. Type `CUSMASTER` in the *File* prompt.

e. Type QGPL in the *Library* prompt.

f. Type Y (Yes) in the *Define help area* prompt.

The display now looks like Figure 173.

```
                          Define Application Help

Record  . . . :   INQUIRY
Help number  . . . . . . . . :           1  of   1
  Next help number . . . . . .           2__              Number

Type choices, press Enter.        Keyword
  Help text in record  . . . .    HLPRCD     Y              Y=Yes
  -- OR --
  Help text in document  . . .    HLPDOC     _              Y=Yes
    Indicators . . . . . . . .
    Record or document . . . .               HPACBAL___     Name
    File . . . . . . . . . . .               CUSMASTER_     Name
      Library  . . . . . . . .               QGPL_____     Name, *LIBL, *CUR
    HLPDOC label . . . . . . .               _____       Name
    HLPDOC folder  . . . . . .
  _____
  Help boundary  . . . . . . . .  HLPBDY     _              Y=Yes
    Indicators . . . . . . . .
  Define help area . . . . . .    HLPARA     Y              Y=Yes
                                                                   Bott
F3=Exit   F9=Select HLPPNLGRP keyword   F12=Cancel
```

Figure 173. Define Application Help Display with Entries for the Accts Rec Balance Field

g. Press Enter to see the Define Help Area display.

Note: You can specify that your help is in a UIM panel group by pressing F9 (Select HLPPNLGRP keyword). You can only specify one type of help.

4. On the Define Help Area display, specify the help area for the *Accts Rec Balance* field:

a. Type 11 and 5 as the initial coordinates in the *Row/column boundaries* prompt.

b. Type 11 and 35 as the final coordinates in the *Row/column boundaries* prompt.

The display looks like Figure 174 on page 141.

```
                      Define Help Area

Record  . . . . . . . :   INQUIRY
Keyword . . . . . . . :   HLPARA
Help number . . . . . :   1  of    1        Display Size   Roll
                                            _____ +    _    +, -
Type choices, press Enter.

   Row/column boundaries . . . . . . .    From  11  _5       Number
                                          To    11  _35      Number
   -OR-
   Entire record is one area . . . . .    *RCD  _            Y=Yes
   -OR-
   Secondary help only . . . . . . . .    *NONE _            Y=Yes
   -OR-
   Help for field                                           Y=Yes
      Field . . . . . . . . . . . . . .   *FLD  _____    Name
      Choice  . . . . . . . . . . . . .         _            1-99
   -OR-
   Help for constant
      Identifer . . . . . . . . . . . .   *CNST ___          1-999

F3=Exit    F12=Cancel
```

Figure 174. Define Help Area Display with Boundaries Selected

The *RCD parameter in the *Entire record is one area* prompt specifies that the help area is defined as the entire record. The *NONE parameter in the *Secondary help only* prompt specifies that the help is not displayed until the user presses Page Down (Roll Up) after pressing F1 (Help). The *FLD parameter in the *Help for field* prompt specifies that the help is displayed for the identified field. The *CNST parameter in the *Help for constant* prompt specifies that the help is displayed for the identified constant.

    c. Press Enter to return to the Define Application Help display for help number 1.

    d. Press Enter to see the Define Application Help display for help number 2.

Now specify the record that contains the help information for the *Credit Limit* and *Adjustment* fields.

5. On the Define Application Help display:

    a. Type Y (Yes) in the *Help text in record* prompt.

    b. Type HPCRLT in the *Record or document* prompt as the record with which the HLPRCD keyword will be associated.

    c. Type CUSMASTER in the *File* prompt.

    d. Type QGPL in the *Library* prompt.

    e. Type Y (Yes) in the *Help boundary* prompt.

    f. Type Y (Yes) in the *Define help area* prompt.

You are now finished creating H specifications for the record INQUIRY. The display looks like Figure 175 on page 142.

```
                        Define Application Help

Record  . . . :   INQUIRY
Help number . . . . . . . . :           2  of   2
    Next help number . . . . . .        _2            Number

Type choices, press Enter.      Keyword
    Help text in record  . . . .  HLPRCD    Y           Y=Yes
    -- OR --
    Help text in document  . . .  HLPDOC    _           Y=Yes
        Indicators . . . . . . . .
        Record or document . . . .          HPCRLT___   Name
        File . . . . . . . . . . .          CUSMASTER_  Name
            Library  . . . . . . .           QGPL_____  Name, *LIBL, *CUR
        HLPDOC label . . . . . . .          _____    Name
        HLPDOC folder  . . . . . .
    _____                      _____
    Help boundary  . . . . . . .   HLPBDY    Y           Y=Yes
        Indicators . . . . . . . .
    Define help area . . . . . .    HLPARA    Y           Y=Yes
                                                                      Bott
F3=Exit   F9=Select HLPPNLGRP keyword    F12=Cancel
```

Figure 175. Define Application Help Display with Entries for the Credit Limit and Adjustment Fields

> g. Press Enter to see the Define Help Area display.

6. On the Define Help Area display, specify the help area for the `Credit Limit` and `Adjustment` fields.

   a. Type 13 and 10 as the initial coordinates in the *Row/column boundaries* prompt.

   b. Type 15 and 35 as the final coordinates in the *Row/column boundaries* prompt.

The display now looks like Figure 176.

```
                            Define Help Area

Record  . . . . . . . :   INQUIRY
Keyword . . . . . . . :   HLPARA
Help number . . . . . :   2  of   2            Display Size   Roll
                                               _____  +     _   +, -
Type choices, press Enter.

    Row/column boundaries . . . . . . .   From   13 _10      Number
                                          To     15 _35      Number
    -OR-
    Entire record is one area . . . . .   *RCD   _           Y=Yes
    -OR-
    Secondary help only . . . . . . . .   *NONE  _           Y=Yes
    -OR-
    Help for field                                           Y=Yes
        Field . . . . . . . . . . . . .   *FLD   _____    Name
        Choice  . . . . . . . . . . . .          _           1-99
    -OR-
    Help for constant
        Identifer . . . . . . . . . . .   *CNST  ___         1-999

F3=Exit   F12=Cancel
```

Figure 176. Define Help Area Display with Boundaries Displayed

> c. Press Enter to return to the Define Application Help display for help record 2.

   d. Clear the next help number prompt and press Enter to return to the Select
      Record Keywords display.

7. Press Enter to return the Work with Display Records display.

Defining File-Level Help Information

Now create the general online help information that the user sees after pressing
Help on the Customer Inquiry display.

1. On the Work with Display Records display:

   a. Type 1 (Add) in the *Opt* column.

   b. Press Enter to see the Add New Records display.

2. On the Add New Records display, specify the new record:

   a. Type GENINQ in the *New record* prompt.

   b. Press Enter to see the Design Image work screen for the new record.

3. Type the following general online help information on the Design Image work
   screen:

   ```
   'CUSTOMER INQUIRY'

   'To view the customer record, enter a valid customer number.'
   'The name, balance, credit limit, and adjustment fields will
   be shown.'

   'Press Enter to go back to the application program.'
   ```

   Notes:

   a. You can enclose all the help information in single quotation marks so that
      all the help information is created as a single field for editing purposes.

   b. You can type the attribute ac to center the title of the help information. You
      can also specify highlighting attributes for the help information because it is
      created as a field.

The work screen now looks like Figure 177.

```
'CUSTOMER INQUIRY'

'To view the customer record, enter a valid customer number.'
'The name, balance, credit limit, and adjustment fields will
be shown.'

'Press Enter to go back to the application program.'
```
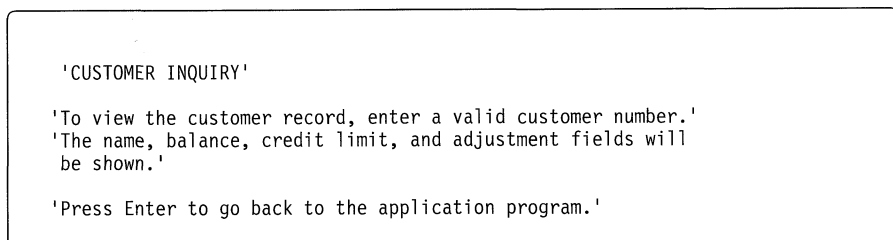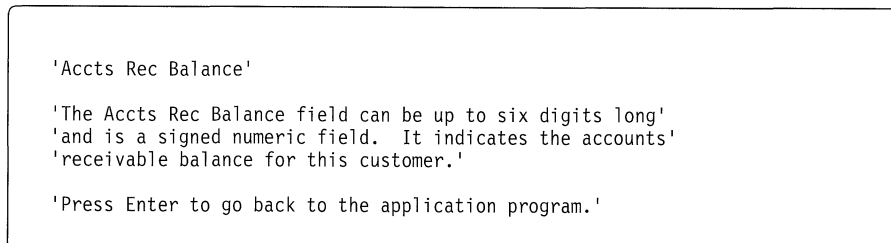
Figure 177. Work Screen with General Online Help Information Displayed

4. Press Enter to remove the single quotation marks.

5. Press F12 (Cancel) on the Design Image work screen to see the Work with
   Display Records display.

Defining Record-Level Help Information

The fields for which you supply specific online help information are the `Accts Rec Balance`, `Credit Limit`, and `Adjustment` fields.

1. On the Work with Display Records display:

    a. Type 1 (Add) in the *Opt* column to create a new record.

    b. Press Enter to see the Add New Record display.

2. On the Add New Record display, specify the record that contains the help information:

    a. Type `HPACBAL` in the *New record* prompt.

    b. Press Enter to see the Design Image work screen.

3. On the Design Image work screen:

    a. Type the following help information for the *Accts Rec Balance* field:

    ```
    'Accts Rec Balance'

    'The Accts Rec Balance field can be up to six digits long'
    'and is a signed numeric field.  It indicates the accounts'
    'receivable balance for this customer.'

    'Press Enter to go back to the application program.'
    ```

    The work screen now looks like Figure 178.

```
'Accts Rec Balance'

'The Accts Rec Balance field can be up to six digits long'
'and is a signed numeric field.  It indicates the accounts'
'receivable balance for this customer.'

'Press Enter to go back to the application program.'
```

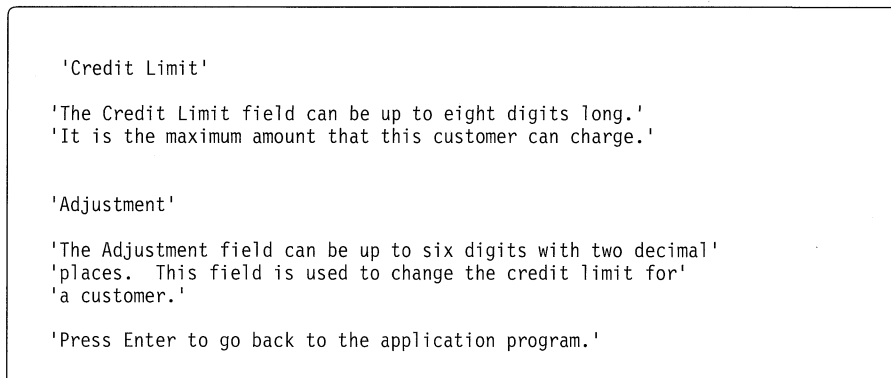*Figure 178. Work Screen with Online Help Information Displayed*

    b. Press Enter to remove the single quotation marks.

    c. Press F12 (Cancel) to see the Work with Display Records display.

4. On the Work with Display Records display:

    a. Type 8 (Select keywords) in the *Opt* column for the record `HPACBAL`.

    b. Press Enter to see the Select Record Keywords display.

5. On the Select Record Keywords display:

    a. Type Y (Yes) in the *Help keywords* prompt. The display looks like Figure 179 on page 145.

```
                        Select Record Keywords

Record . . . :   HPACBAL

Type choices, press Enter.
                                            Y=Yes
    General keywords  . . . . . . . .  _
    Indicator keywords  . . . . . . .  _
    Application help  . . . . . . . .  _
    Help keywords . . . . . . . . . .  Y
    Output keywords . . . . . . . . .  _
```
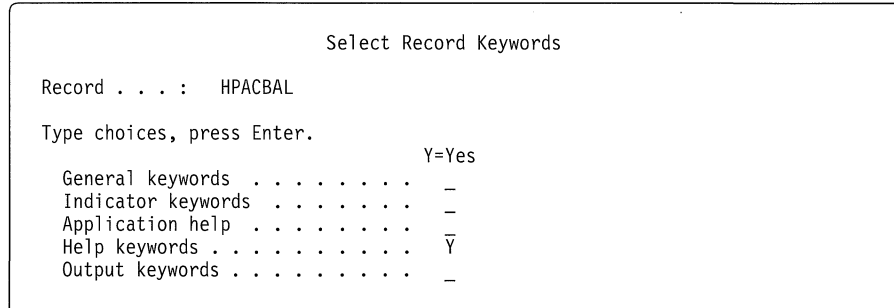
Figure 179. Select Record Keywords Display with Help keywords Selected

    b. Press Enter to see the Define Help Keywords display.

6. On the Define Help Keywords display:

    a. Type INQ in the *Help group name* prompt.

    b. Type 1 in the *Help sequence number* prompt.

       The value in the *Help sequence number* prompt determines the order in which help for the records appears in secondary help. If the user presses Page Down while viewing the help information for the Credit Limit field, the user sees the help information for the Accts Rec Balance field.

The display looks like Figure 180.

```
                        Define Help Keywords

Record . . . :   HPACBAL

Type choices, press Enter.
                                    Keyword
    Clear previous help text records  . .  HLPCLR    _            Y=Yes
        Indicators  . . . . . . . . . . . .         __ __ __

    Sequence of help text records:        HLPSEQ
        Help group name . . . . . . . . . .          INQ_____  Name
        Help sequence number  . . . . . . .          1_           0-99
```
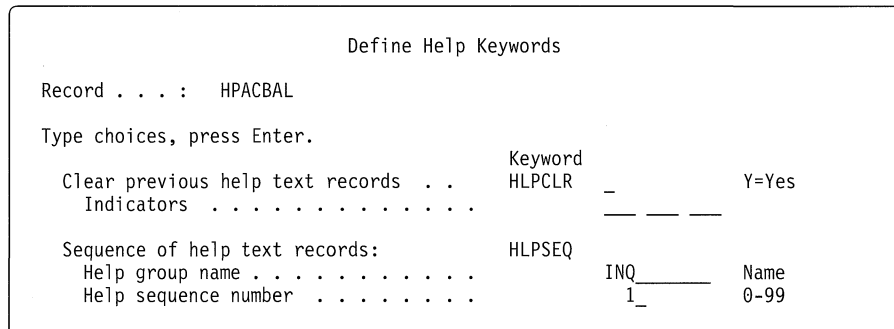
Figure 180. Define Help Keywords Display with Help Sequence Displayed

    c. Press Enter to see the Select Record Keywords display.

7. Press Enter on the Select Record Keywords display to return the Work with Display Records display.

8. On the Work with Display Records display:

    a. Type 1 (Add) in the *Opt* column to add a new record to contain the help information for the Credit Limit and Adjustment fields.

    b. Press Enter to see the Add New Record display.

9. On the Add New Record display, specify the name of the new record:

    a. Type HPCRLT in the *New record* prompt.

    b. Press Enter to see the Design Image work screen.

10. On the Design Image work screen:

    a. Type the following help information for the help area:

```
        'Credit Limit'

        'The Credit Limit field can be up to eight digits long.'
        'It is the maximum amount that this customer can charge.'


        'Adjustment'

        'The Adjustment field can be up to six digits with two decimal'
        'places.  This field is used to change the credit limit for'
        'a customer.'

        'Press Enter to go back to the application program.'
```

The work screen now looks like Figure 181.

```
    'Credit Limit'

   'The Credit Limit field can be up to eight digits long.'
   'It is the maximum amount that this customer can charge.'


   'Adjustment'

   'The Adjustment field can be up to six digits with two decimal'
   'places.  This field is used to change the credit limit for'
   'a customer.'

   'Press Enter to go back to the application program.'
```

Figure 181. Work Screen with Online Help Information Displayed

    b. Press Enter to remove the single quotation marks.

    c. Press F12 (Cancel) to return the Work with Display Records display.

11. On the Work with Display Records display:

    a. Type 8 (Select keywords) in the *Opt* column for the record HPCRLT.

    b. Press Enter to see the Select Record Keywords display.

12. On the Select Record Keywords display, indicate that you want to specify a help keyword:

    a. Type Y (Yes) in the *Help keywords* prompt. The display looks like Figure 182 on page 147.

```
                    Select Record Keywords

Record . . . :   HPCRLT

Type choices, press Enter.
                                         Y=Yes
   General keywords . . . . . . . .   _
   Indicator keywords . . . . . . .   _
   Help keywords . . . . . . . . . .   Y
   Application help . . . . . . . .   _
   Output keywords . . . . . . . . .   _
```

Figure 182. Select Record Keywords Display with Help Keywords Selected

    b. Press Enter to see the Define Help Keywords display.

13. On the Define Help Keywords display:

    a. Type INQ in the *Help group name* prompt.

    b. Type 2 in the *Help sequence number* prompt.

    The display looks like Figure 183.

```
                     Define Help Keywords

Record . . . :   HPACBAL

Type choices, press Enter.
                                   Keyword
   Clear previous help text records  . .   HLPCLR   _            Y=Yes
      Indicators . . . . . . . . . . . . .           __  __  __

   Sequence of help text records:        HLPSEQ
      Help group name . . . . . . . . . .          INQ_____   Name
      Help sequence number . . . . . . .           2_           0-99
```

Figure 183. Define Help Keywords Display with Help Sequence Selected

    c. Press Enter to see the Select Record Keywords display.

14. Press Enter on the Select Record Keywords display to return the Work with Display Records display.

15. Press either F3 (Exit) or Enter on the Work with Display Records display to see the Save DDS - Create Display File display.

The display looks like Figure 184 on page 148.

```
                    Save DDS - Create Display File

Type choices, press Enter.

     Save DDS source  . . . . . . . . . . . .   Y            Y=Yes
       Source file  . . . . . . . . . . . . .   QDDSSRC___   F4 for list
         Library  . . . . . . . . . . . . . .   QGPL_____    Name, *LIBL ...
       Member . . . . . . . . . . . . . . . .   CUSMASTER_   F4 for list
       Text . . . . . . . . . . . . . . . . .   _____


     Create display file  . . . . . . . . . .   Y            Y=Yes
       Prompt for parameters  . . . . . . . .   _            Y=Yes
       Display file . . . . . . . . . . . . .   CUSMASTER_   F4 for list
         Library  . . . . . . . . . . . . . .   QGPL_____   Name, *CURLIB
       Replace existing file  . . . . . . . .   _            Y=Yes

     Submit create job in batch . . . . . . .   Y            Y=Yes

     Specify additional
       save or create options   . . . . . . .   _            Y=Yes

 F3=Exit   F4=Prompt   F12=Cancel
```

Figure 184. Save DDS - Create Display File Display with Default Entries

16. On the Save DDS - Create Display File display:

   a. Press Enter to:

      - Save the DDS source SDA created

      - Create the display file CUSMASTER from the DDS source

      - Submit the making of CUSMASTER as a batch job (If you leave the *Submit create job in batch* prompt blank, SDA creates the display file CUSMASTER interactively.)

        SDA displays a completion message.

   b. Press Enter to return the Design Screens display.

Procedure Summary

You used the following procedure to create help information for a display:

1. Select file-level keywords.

2. Define help areas for specific fields.

3. Define the file-level help information.

4. Define the record-level help information.

5. Save the DDS and create the display file.

Creating Online Help Information for a Menu

In this example, you create online help information for the menu that you created in "Creating an AS/400 SDA Menu" on page 105.

Figure 185 on page 149 shows the path of SDA displays that you use to create online help information for a menu.
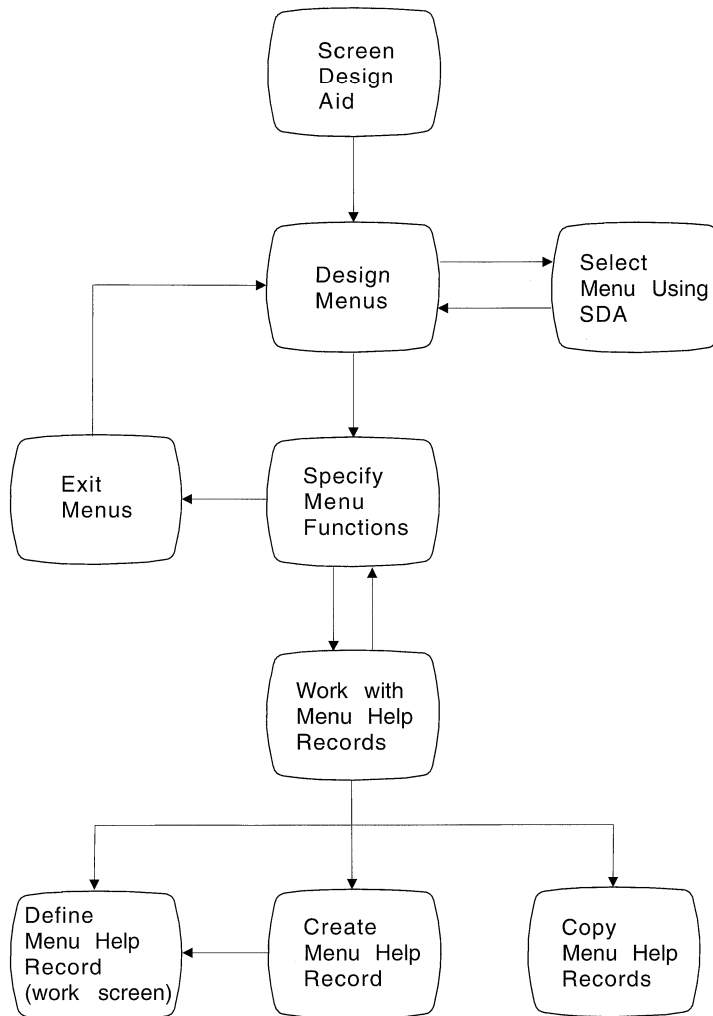
Figure 185. SDA Displays Used to Design Online Help Information for a Menu

Now create online help information for options 1 through 3 of the LIBLST menu in the library QGPL.

1. On the Screen Design Aid (SDA) menu:

    a. Select option 2 (Design menus).

    b. Press Enter to see the Design Menus display.

2. On the Design Menus display:

    a. Type SRCFILE in the *Source file* prompt.

    b. Type QGPL in the *Library* prompt.

    c. Type LIBLST in the *Menu* prompt.

    The display looks like Figure 186 on page 150.

```
                          Design Menus
  Type choices, press Enter.

    Source file . . . . . . . .   SRCFILE___    Name, F4 for list

      Library . . . . . . . . .   QGPL_____    Name, *LIBL, *CURLIB

    Menu  . . . . . . . . . . .   LIBLST__      Name, F4 for list
```

Figure 186. Design Menus Display with Entries

d. Press Enter to see the Specify Menu Functions display.

3. On the Specify Menu Functions display, indicate that you want to work with help information for the menu:

a. Type Y (Yes) in the *Work with menu help* prompt and the display looks like Figure 187.

```
                        Specify Menu Functions

  File . . . . . . :   SRCFILE                 Menu . . . . . . . :   LIBLST
    Library . . . :   QGPL

  Type choices, press Enter.

    Work with menu image and commands  . . . . . .   N   Y=Yes, N=No

    Work with menu help  . . . . . . . . . . . .   Y   Y=Yes, N=No
```

Figure 187. Specify Menu Functions Display with Entries

b. Press Enter to see the Work with Menu Help Records display.

Creating a New Help Record

Create the record that contains the help information.

1. On the Work with Menu Help Records display:

a. Type 1 (Create) in the *Opt* column. The display looks like Figure 188.

```
                     Work with Menu Help Records

  File . . . . . . :   SRCFILE               Menu . . . . . . . :   LIBLST
    Library  . . . :   QGPL

  Type options (and Range), press Enter.
    1=Create          3=Copy          4=Delete          12=Update

  Opt   Range     Text
  1_    __ - __
```

Figure 188. Work with Menu Help Records Display with Entries

b. Press Enter to see the Create Menu Help Record display.

2. On the Create Menu Help Record display, specify the menu options for which you want to create help information:

   a. Type 1 in the *From menu option* prompt.

   b. Type 3 in the *To menu option* prompt.

   The display now looks like Figure 189.

```
                            Create Menu Help Record

 File . . . . . . :   SRCFILE             Menu . . . . . . . :   LIBLST
    Library  . . . :   QGPL

 Type choices, press Enter.

   Create help for option  . . . . . . . . . . . . . .    __    01-99

   -OR-

   Create help for option range (range xx-yy)
     From menu option  . . . . . . . . . . . . . . . . .  1_    00-99
     To menu option  . . . . . . . . . . . . . . . . . .  3_    01-99

   -OR-

   Create general help (range 00-00) . . . . . . . . .    N    Y=Yes, N=No




 F3=Exit     F5=Refresh     F9=Display image     F12=Cancel
```

Figure 189. Create Menu Help Record Display with Entries

   c. Press Enter to see the Define Menu Help Record work screen shown in Figure 190.

```
 HELP                   Help for Menu Options 01 - 03












 F3=Exit                     F10=Display commands           F12=Cancel
 F13=Command area            F20=Reverse                    F24=More keys
 Press Help for a list of valid operations.
```

Figure 190. Define Menu Help Record Work Screen

You use this display to create the menu help information that the user will see.

The first position (row 01, column 01) of the work screen is reserved by SDA as an attribute byte. Any attempt to type in this position results in a keyboard error.

The title on line 1 is an SDA supplied default that you can either enhance or replace.

Rows 01 through 20 are input capable fields. All editing attributes and color characters are recognized in this area. For more information on the editing attributes and the color characters, see "Functions Common to All SDA Work Screens" on page 159.

Lines 22 and 23 show the function keys that you can use on the work screen. These function keys do not become part of the help record that you are creating.

3. On the Define Menu Help Record work screen:

a. Press F20 (Reverse) to display the attribute position of the title.

b. Type d in the attribute position of the default title and press Enter to delete the title.

c. Type the following text for the menu help information:

```
                        'Library List Management Help for 01 - 03'

   'Help for options:'

        '1. Use this option to display all libraries currently on your
            library list.'


        '2. Use this option to add library QGPL to the bottom of
            the library list. Once on the library list all commands
            and programs in it can be immediately accessed and run.'


        '3. Use this option to remove library QGPL from the library
            list. This will prevent any commands and programs in it
            from being immediately accessible or operable.'
```

The work screen now looks like Figure 191 on page 153.

```
HELP                'Library List Management Help for 01 - 03'

'Help for options:'

     '1. Use this option to display all libraries currently on your
         library list.'


     '2. Use this option to add library QGPL to the bottom of
         the library list. Once on the library list all commands
         and programs in it can be immediately accessed and run.'


     '3. Use this option to remove library QGPL from the library
         list. This will prevent any commands and programs in it
         from being immediately accessible or operable.'




F3=Exit                F10=Display commands        F12=Cancel
F13=Command area        F20=Reverse                 F24=More keys
```

Figure 191. Define Menu Help Record Work Screen with Help Information

Note: If you type information on the work screen and press F12 (Cancel) before pressing Enter, the information that you type is lost.

d. Press Enter to remove the single quotation marks.

e. Type h in the attribute position of your new title, and press Enter to high-light the title.

f. Press F12 (Cancel) to return the Work with Menu Help Records display.

Copying an Existing Help Record

You can copy a help record to use as help information for options on the menu. Copy the help record you just created, and specify that the help information is for option 1 only.

1. On the Work with Menu Help Records display:

   a. Type 3 (Copy) in the *Opt* column next to the help record that you just created.

   b. Press Enter to see the Copy Menu Help Records display.

2. On the Copy Menu Help Records display, specify that the new help information is for option 1 only:

   a. Type 01 - 01 in the *New Range* column. The display looks like Figure 192 on page 154.

```
                         Copy Menu Help Records

 File . . . . . . :     SRCFILE                Menu . . . . . . . :    LIBLST
     Library  . . . :      QGPL

 To specify a new menu option range, type New Range, press Enter.
 Press F12 to return to change your choices.

 Range        New Range     Text
 01 - 03      01 - 01       Help for Menu Options 01 - 03














                                                                       Bottom
 F3=Exit      F5=Refresh     F12=Cancel
```

Figure 192. Copy Menu Help Records Display

b. Press Enter to copy the record and return the Work with Menu Help Records display.

Note: If you specify a new range that is the same as an existing range, you see the Confirm Copy of Help Record display.

Updating the Copied Help Record

Now modify the help record that you just copied.

1. On the Work with Menu Help Records display:

   a. Type 12 (Update) in the *Opt* column.

   b. Type `Help for Menu Option 01` in the *Text* column.

   The display now looks like Figure 193.

```
                      Work with Menu Help Records

 File . . . . . . :     SRCFILE                Menu . . . . . . . :    LIBLST
     Library  . . . :      QGPL

 Type options (and Range), press Enter.
    1=Create         3=Copy          4=Delete             12=Update

 Opt    Range      Text
         -
 12     01 - 01    Help for Menu Option 01_____
        01 - 03    Help for Menu Options 01 - 03_____
```

Figure 193. Work with Menu Help Records Display

Note: The records on this display are sorted by the *Range* option.

c. Press Enter to see the Define Menu Help Record work screen.

2. On the Define Menu Help Record work screen, modify the record:

   a. Press F20 (Reverse) to determine the location of the attribute positions.

   b. Type d in the attribute positions of the title, option 2 help, and option 3 help.

   c. Press Enter to delete the information.

   d. Type a new title and highlight it.

   e. Press Enter to save your changes.

   f. Press F12 (Cancel) to return the Work with Menu Help Records display.

Deleting a Help Record

Delete the help for option 1 that you created in the previous sections.

1. On the Work with Menu Help Records display:

   a. Type 4 (Delete) in the *Opt* column next to the option 1 help.

   b. Press Enter to see the Confirm Delete of Help Records display shown in Figure 194.

```
                     Confirm Delete of Help Records
     File . . . . . . :   SRCFILE              Menu . . . . . . . :   LIBLST
       Library  . . . :   QGPL

     Press Enter to confirm your choices for 4=Delete.
     Press F12 to return to change your choices.

     Range       Text
     01 - 01     Help for Menu Option 01




                                                                      Bottom
     F12=Cancel
```

Figure 194. Confirm Delete of Help Records Display

2. Press Enter to delete the help record for option 1 and return the Work with Menu Help Records display.

   Note: If you do not want to delete all of the listed choices, press F12 (Cancel) to return the Work with Menu Help Records display.

3. Press F3 (Exit) or F12 (Cancel) to return the Specify Menu Functions display.

Saving and Compiling Your Help Records

Now save and compile the help record that you created.

1. Press either F3 (Exit) or F12 (Cancel) on the Specify Menu Functions display to see the Exit Menus display shown in Figure 195 on page 156.

Note: If you type N (No) in the *Work with menu image and commands* and the *Work with menu help* prompts on the Specify Menu Functions display and press Enter, you see the Exit Menus display.

```
                            Exit Menus

  File . . . . . . :    SRCFILE          DDS member . . . . . :    LIBLST
    Library  . . . :      QGPL           Commands member  . . :    LIBLSTQQ

  Type choices, press Enter.

  Save new or updated menu source  . . . .   Y          Y=Yes, N=No
     Source file  . . . . . . . . . . . . .  SRCFILE___  Name
                                                        F4 for list
        Library  . . . . . . . . . . . . . . QGPL_____  Name, *LIBL, *CURLIB
        Text . . . . . . . . . . . . . . . . _____

     Replace menu members . . . . . . . . .  Y          Y=Yes. N=No

  Create menu objects  . . . . . . . . . .   Y          Y=Yes, N=No
     For choice Y=Yes:
        Prompt for parameters  . . . . . . . N          Y=Yes, N=No
        Object library . . . . . . . . . . . QGPL_____  Name, *CURLIB
        Replace menu objects . . . . . . . . Y          Y=Yes, N=No


  F3=Exit     F4=Prompt      F12=Cancel
```

Figure 195. Exit Menus Display

2. Press Enter to compile the menu source and return the Design Menus display. See "Restricting Access to the Command Line and Saving the Menu" on page 115 for more information about the Exit Menus display.

3. Press F3 (Exit) to return the Screen Design Aid (SDA) menu.

Using Your Help Records

Use the help records that you just created:

1. Type GO QGPL/LIBLST and press Enter to see your new menu.

2. To see the help you specified, select one of the menu options and press Help.

   Note: If you created general help, you can see it by typing 0 as your option, or by leaving the *Selection or command* line blank and pressing Help.

Procedure Summary

You used the following steps to create online help information for a menu:

1. Select options to create or change help information.

2. Define the menu help source and options.

3. Save the menu help source.

4. Compile the menu to create the menu objects.

Creating an Online Help Information Document

You can use documents created by the OfficeVision/400 word processing function to contain the online help information for your displays.

To use documents for online help information, specify them in the DDS source for your application display. When you create your document, use help information labels to mark the specific location in the document where the information is located.

To create an online help document:

- Create a document to contain the help information source.

- Place a help information label instruction at the beginning of the document for general information about the application display.

- Type general information about the display for which you are creating information. This information appears when the Help key is pressed and the cursor is not on one of the help areas defined in the DDS for the display.

- Do the following for each individual prompt in the display for which you are writing the help information:

  - Insert a help information label instruction with a label name that describes the prompt (for example, CUSTNBR, NAME, ADDR, and STATE).

  - Type the help information for the prompt immediately following the information label.

  - If you want, insert help information label instructions for the table of contents and index.

The resolved document is your online help information document. Refer to the *Guide to Programming Displays* for more information about creating online help information and to the *Office Services Concepts and Programmer's Guide* for information about using documents in applications.

Chapter 9. Work Screen Reference Information

This chapter describes the functions available on the three SDA work screens: Design Image, Define Menu Image, and Define Menu Help Record.

The chapter is divided as follows:

- "Functions Common to All SDA Work Screens"
- "Functions Unique to the Design Image Work Screen" on page 165

Functions Common to All SDA Work Screens

The following sections describe the functions which all SDA work screens have in common.

Displaying Online Help Information for the Work Screen

To view the online help information that describes how to use the work screen:

1. Press Help while using any work screen.

2. Press the Page Down or Page Up keys to scroll through the online help information.

3. Press F3 (Exit) to return the work screen.

Adding Message Constants

Use one of the following to add message constants for a display:

- Type +MMM, where the MMM is the length of the constant.
- Type +M(nnn), where nnn is the length of the constant.

To change a message field, type a question mark (?) in the attribute position of the field.

Press Enter to add or change the message constant on the Define Message Constant display shown in Figure 196.

```
                         Define Message Constant

     Length  . . . . :   nnnnnn
     Row . . . . . . :   nn
     Column  . . . . :   nnn

     Type choices, press Enter.

       Message file . . . . . . . . . . .   _____      Name, F4 for list

          Library . . . . . . . . . . . .  *LIBL_____    Name, *LIBL, *CURLIB

       Message identifier . . . . . . . .  *LIST__       Message ID, *LIST
```

Figure 196. Define Message Constant Display

SDA prompts you for a message file, library, and identifier.

Making Multiple Changes

You can make multiple changes on the work screen simultaneously to save time. For example, you can select a field to move, another field to delete, add a constant on the work screen, and then complete these actions simultaneously when you press Enter. The results of some changes can be unpredictable, such as moving a block of fields and deleting a field within the block at the same time.

Adding Constants to the Work Screen

A constant is a value that does not change and is used in processing the application program. Only a value is required for each constant. You do not need operators for constants.

A constant can consist of more than one word. If you enclose the words with single quotation marks, SDA creates a single constant that contains all the words. If you type the words without enclosing them in single quotation marks, SDA creates a constant for every single word. Do not enclose a constant in single quotation marks when you change it. To change a constant that contains two or more words into two or more single constants, type a double quotation mark between the words and a single quotation mark at either end. For example, 'two"three' would become the constants two and three. To type a constant that contains an apostrophe, type the constant without the apostrophe, then change the constant to contain the apostrophe.

Constants can contain the symbols &, +, ?, <, >, –, or = only if they are enclosed by single quotation marks when typed on the work screen.

The *DATE, *TIME, *USER, and *SYSNAME constants are special output constants. You can specify edit values for them:

- *DATE is a 6-digit edited number. The default form is DD/DD/DD (month/day/year).
- *TIME is an 8-digit edited number. The form is TT:TT:TT (hours:minutes:seconds).
- *USER is a 10-character field. The form is UUUUUUUUUU.
- *SYSNAME is an 8-character field. The form is SSSSSSSS.

Centering Fields

To center a field, type ac in the attribute position of the field. If the name of the field begins with a C, for example, Customer List, the field is centered if you type a alone in the attribute position.

Tabbing from One Field to Another

To tab forward to the attribute position of a field, press F18 (Tab). To tab backward to the attribute position of a previous field, press F19 (Back Tab).

Deleting Fields

To delete fields from the work screen, either blank out the entire field position starting from the attribute position or type D (or d) in the position just before the field.

Multiple deletions can be combined with other operations. On the Design Image work screen, deleted named fields are added to the list of field names displayed on the bottom row.

Moving Fields

To move more than one field, type a minus sign (-) in the upper left corner of the block of fields, type a minus sign (-) in the lower right corner of the block, and type an equals sign (=) in the upper left corner of the receiving location. The work screen now looks like Figure 197.

```
 ... ... 1 ... ... 2 ... ... 3 ... ... 4 ... ... 5 ... ... 6 ... ... 7 ... ... 8
 1                  CUSTOMER MASTER FILE MAINTENANCE/INQUIRY
 2
 3-Customer Number:  BBBBB
 4   Customer Name:  BBBBBBBBBBBBBBBBBBBBB
 5  Street Address:  BBBBBBBBBBBBBBBBBBBBB
 6            City:  BBBBBBBBBBBBBBBBBBBBB
 7           State:  BB
 8        Zip Code:  99999-           -
 9
10=
11
12
13
14
15
16
```

Figure 197. Design Image Work Screen with Block Selected for Moving

When you press Enter, the position of the first minus sign (–) is moved to the position of the equals sign (=). All the characters in between are also moved. If any fields completely or partially overlap, a field that overlaps is not moved.

Note: The results are unpredictable for fields that overlap.

The work screen now looks like Figure 198 on page 162.

```
    ... ... 1 ... ... 2 ... ... 3 ... ... 4 ... ... 5 ... ... 6 ... ... 7 ... ... 8
 1                    CUSTOMER MASTER FILE MAINTENANCE/INQUIRY
 2
 3
 4
 5
 6
 7
 8
 9
10 Customer Number:  BBBBB
11   Customer Name:  BBBBBBBBBBBBBBBBBBBB
12  Street Address:  BBBBBBBBBBBBBBBBBBBB
13            City:  BBBBBBBBBBBBBBBBBBBB
14           State:  BB
15        Zip Code:  99999
16
```

Figure 198. Design Image Work Screen after Block Move

Note: Do not use the Del/Ins key to move fields on a work screen. Use only the minus sign (−) and the equals sign (=) to move fields or constants. Do not use the Del/Ins key to make fields longer or shorter. You will alter the starting position of the fields and the results cannot be predicted.

If the first minus sign is to the right of the second minus sign, as in Figure 199, the boundary of the block wraps beyond the right side of the screen to mark the lower right corner. Fields entirely within the boundary or whose beginning and end are both within the boundary are moved. You can also use this method to copy or delete blocks.

```
    ... ... 1 ... ... 2 ... ... 3 ... ... 4 ... ... 5 ... ... 6 ... ... 7 ... ... 8
 1                    CUSTOMER MASTER FILE MAINTENANCE/INQUIRY
 2                                    -
 3 Customer Number:  BBBBB
 4   Customer Name:  BBBBBBBBBBBBBBBBBBBB
 5  Street Address:  BBBBBBBBBBBBBBBBBBBB
 6            City:  BBBBBBBBBBBBBBBBBBBB
 7           State:  BB
 8        Zip Code:  99999-
 9                                 -
10=
11
12
13
14
15
16
```

Figure 199. Design Image Work Screen with Block Selected for Moving

Refer to "Moving a Field on the Design Image Work Screen" on page 51 to move a single field.

Copying Fields

To copy a single field, type a minus sign (−) in the first position preceding the field to be moved. Then type two equals signs (==) in the first position of the receiving location.

To copy more than one field, type a minus sign (–) in the upper left corner of the block, type a minus sign (–) in the lower right corner of the block, and type two equals signs (==) in the upper left corner of the receiving location.

When you press Enter, the position of the first minus sign (–) is copied to the position of the two equals signs (==). All the characters in between are also copied. If any fields completely or partially overlap, a field that overlaps is not copied.

Changing the Length of a Constant

To change the length of a constant:

1. Type a single quotation mark (') where you want the field to begin.

2. Type a single quotation mark (') where you want the field to end.

3. Press Enter.

Displaying Attribute Positions

To display the attribute position of a field, press F20 (Reverse). SDA highlights the field to show the start and end of constants which contain leading or trailing blanks. To turn off the highlighting, press F20 (Reverse) again.

Specifying Display Attributes

To specify display attributes, type one of the codes shown in Figure 200 in the attribute position of a field.

Figure 200. Display Attribute Codes

Type	Display Attribute Requested	Valid Work Screens
B or b	Blink	All
S or s	Column separators	Design Image
H or h	Highlight	All
R or r	Reverse image	All
U or u	Underline	All
N or n	Nondisplay	Design Image

Note: On the Select Border Display Attributes display, you specify Y (Yes) for the display attribute you want for the window border.

To remove a display attribute from a field, type a minus sign (–) in the attribute position, the display attribute to be deleted over the first character, and press Enter. If you type –A or –a, all attributes for the field are deleted.

You can use either uppercase or lowercase attribute codes; however, if the first letter of the field is the same as the attribute code that you are using, the attribute code must be in the opposite case. For example, if the field name is Allowance and you want to remove all its attributes, type –a instead of –A in the attribute position.

On the Design Image work screen, if you specify a display attribute by using the CHGINPDFT keyword, you cannot delete it on the work screen. To delete the attribute:

1. Type an asterisk (*) in the attribute position of the field.

2. Press Enter to see the Select Field Keywords display.

3. Type Y (Yes) in the *Input keywords* prompt.

4. Delete the display attribute specified at the field level. The CHGINPDFT specification at the field level overrides specifications at higher levels. If the attributes to be deleted are not specified at the field level, override the attributes specified at the record and file levels by defining CHGINPDFT at the field level.

Specifying Color

To request a color, type C in the attribute position, followed by the first letter of the color name. See Figure 201 for the allowed colors. You can use any combination of uppercase and lowercase characters.

Figure 201. Color Codes

You Type	Color Requested
CB	Blue
CG	Green
CP	Pink
CR	Red
CT	Turquoise
CW	White
CY	Yellow

Notes:

1. The Design Image work screen allows you to specify more than one color for each field. If you specify more than one color, SDA creates COLOR keywords in the order specified. You must specify condition indicators for each color. If you do not, the DDS compile fails. For more information on specifying COLOR indicators, see "Specifying COLOR Keywords" on page 170.

2. On the Select Border Color display, you specify Y (Yes) for the color you want for the window border.

To remove color from a field, type a minus sign (–) in the attribute position of the field, and type the color code over the first two characters of the field. For example, to remove a blue color from a field, type –CB. If you type –CA, all colors specified for that field are removed. The field color defaults to the color determined by the display attributes for that field.

Functions Unique to the Design Image Work Screen

The following sections describe the Design Image Work Screen functions that are unique to this particular work screen.

Manipulating Database Fields on the Work Screen

When you select fields from the Select Database Fields display, SDA lists the field names on the bottom row of the work screen. Fields selected from a database are *referenced* fields. Unless you specify single-field mode on the Condition Work Screen display, the names are displayed in multiple-field mode.

Multiple-Field Mode

In multiple-field mode, up to nine fields appear on the bottom row of the work screen. Multiple-field mode is shown in Figure 202. Any fields that you delete from the work screen also appear on the bottom row. A plus sign (+) shows that more than 9 fields are available for you to place on the work screen. To see the additional fields, press Page Up or Page Down.

```
1:FIELD1 2:FIELD2 3:FIELD3 4:FIELD4 5:FIELD5 6:FIELD6 7:FIELD7 8:FIELD8 9:FIELD9
```

Figure 202. Multiple-Field Mode

Single-Field Mode

In single-field mode, only one database field appears at a time on the bottom row of the work screen. Figure 203 shows single-field mode. Any user-defined field that you delete from the work screen also appears on the bottom of the work screen.

```
Fieldname_ LENGTH: nn,nn COLHDG:ttttttttttttttttttttttttttttttttttttttttttttttttt
```

Figure 203. Single-Field Mode

In single-field mode, you see:

- `Fieldname`.

- `LENGTH: nn,nn` of the field as defined in the database, where `nn,nn` refers to the length and and number of decimal places of the field.

- `COLHDG:` as the column heading for the field. The heading is truncated to fit the display. If the heading is defined so that it can be displayed on separate lines, the parts will be alternately highlighted. If the field is a user-defined field that was deleted, SDA displays `TEXT` instead of `COLHDG`.

You can switch between multiple- and single-field mode by pressing F6 (Condition) on the work screen. When you see the Condition Work Screen display, type Y (Yes) in the *Display in single-field mode* prompt and press Enter. The fields are now displayed in single-field mode. For more information, see "Working with the Condition Work Screen Display" on page 174.

To return to multiple-field mode, press F6 (Condition) to see the Condition Work Screen display. Blank out the Y (Yes) in the *Display in single-field mode* prompt and press Enter. The fields are displayed in multiple-field mode again.

Note: To delete all fields on the bottom row, press F6 (Condition) on the work screen and type Y (Yes) in the *Delete all fields on the bottom line* prompt of the Condition Work Screen display.

Using Symbols to Place a Database Field on the Work Screen

Use the work screen symbols to position a data field, prompt, column heading, or constant from the bottom row of the work screen to where you want it to appear on the display. Figure 204 shows the symbols that you can use. The n is the number of the field.

Figure 204. Symbols Used to Position Fields on Work Screen

Single-Field Mode	Multiple-Field Mode	Meaning
&	&n	Place the database field and its associated attributes in this position.
&L or &l	&nL or &nl	Place the database field in this position with the column heading to the left of the data field with a colon (:) following the column heading. The column heading and the data field are separated by two blanks.
&R or &r	&nR or &nr	Place the database field in this position, with the column heading to the right of the data field. The column heading and the data field are separated by two blanks.
&C or &c	&nC or &nc	Place the database field in this position with the column heading above the data field. The column heading is left-aligned with alphabetic fields and right-aligned with numeric fields.
&P or &p	&nP or &np	Place only the column heading from the database field in this position. Use the column heading for the prompt.

In multiple-field mode, position the fields on the work screen as follows:

1. Type the work screen symbol where you want the field or prompt to be positioned, and type the number of the field or prompt.

2. Continue to position the fields until you have positioned all the displayed fields. You do not have to position all the fields at one time.

3. Press Enter. The entries are processed, and the next group of fields appears on the bottom row of the work screen.

In single-field mode, position the field on the work screen as follows:

1. Type the work screen symbol where the field or prompt is to be positioned.

2. Press Enter. The entry is processed, and the next field appears on the bottom row of the work screen.

Displaying/Nondisplaying Additional Records

Press F21 (Display additional records) to display additional records with the primary record (current record). Press F21 again to display only the primary record.

Use F21 to determine which fields on the display belong to the primary record. Only the fields of the primary record can be changed.

Displaying Field Name, Length, and Text Description

To see the name, length, and text descriptions of each named field on the work screen:

1. Type a question mark (?) in front of the field.

2. Press Enter.

If you type a question mark (?) in front of more than one field and then press Enter, only the last field that SDA finds appears on the bottom row of the work screen.

Changing a Field Name

You can use one of two methods to change a field name:

1. Position the field name on the bottom row of the work screen by using the instructions in "Displaying Field Name, Length, and Text Description."

2. Type the new field name where the existing field name appears.

3. Press Enter.

Another way of changing a field name is to:

1. Press F4 (Prompt) on the work screen to see the Work With Fields display.

2. Rename the desired field by typing over the existing name in the *Field* prompt. The new name cannot be the same as that of an existing field.

3. Press Enter to return the work screen.

Changing the Length of an Unreferenced Named Field

To change the length of an unreferenced named field:

1. Position the field length on the bottom row of the work screen by using the instructions in "Displaying Field Name, Length, and Text Description."

2. Type the new field length where the existing field length appears.

3. Press Enter.

Changing the Length of a Referenced Named Field

To change the length of a referenced named field (a database field):

1. Type an asterisk (*) in the attribute position of the field. Press Enter to see the Select Field Keywords display.

2. Type Y (Yes) in the *Database reference* prompt. Press Enter to see the Define Database Reference display.

3. Type the new field length in the *New field length* prompt. Press Enter twice to return the work screen.

Viewing Field Names Using the Page Keys

When more fields are available to be selected, a plus sign (+) is displayed in the lower right corner. To see the hidden names, press Page Down and the next group of names is displayed on the bottom row. In single-field mode, the next field name, length, and description appear on the bottom row.

Displaying Field Name Lists Using the F11 Key

Press F11 (Nondisplay selected fields) to switch back and forth between two field lists that are displayed on the bottom row of the work screen:

- The first list contains the database field names that you selected from the data-base file. This highlighted list changes:

  - When you place a database field on the work screen. The field name is removed from the first list.

  - When you remove a database field or a user-defined field from the work screen. The field name is added to the first list.

- The second list contains the field names that you originally selected from a database file. This list is not highlighted and does not change unless you select more database fields.

Scanning for a Field Name

If you are using single-field mode, you can scan for a field name that has not been placed on the work screen. Type the entire field name on the bottom row of the work screen, and press Enter. The field name, length, and description appear on the bottom row.

Adding Fields to the Work Screen

To add fields or constants to the work screen:

1. Type a plus sign (+) one position before where the field is to be located on the work screen. The + is the leading attribute byte.

2. Type one of the characters shown in Figure 205 on page 168 after the +. These characters determine the field type.

Figure 205. Characters and Field Types for User-Defined Fields

Character	Field Type
3	Numeric input field
6	Numeric output field
9	Numeric both field (input and output)
I or i	Alphabetic input field
O or o	Alphabetic output field
B or b	Alphabetic both field (input and output)
M or m	MSGCON field

Use optional parentheses following a field definition to indicate the length or the number of decimal positions. Type +9(7,2) to define the field as a numeric both field with a length of 7 and a decimal position count of 2. Type +iiii to define the field as an alphabetic input field with a length of 4. Type +B(9) to define the field as an alphabetic both field with a length of 9.

You can type a decimal point and commas in a numeric field. Only the digits 3, 6, and 9 are valid. All other numbers default to a numeric both field (9).

Numeric fields can be defined as either single (E) or double (D) precision floating-point form on the work screen. You can then retrieve these fields from a database and display them on the work screen. SDA does not allow you to define floating-point fields for a 16 x 64 display size.

Note: You can only specify the 16 x 64 display size in the System/38 environment.

You can specify the data type in either uppercase or lowercase letters.Figure 206 shows some of the numeric fields that you can define.

Figure 206. Numeric Field Types

You type	SDA displays
+3(5,4)E	−3.3333E−333
+33.333d	−33.333D−333
+9(5,4)D	−9.9999D−999
+6(4,3)e	−6.666E−666

Embedded blanks are not allowed in a character field because blanks are used as field delimiters. If you type a character other than I, O, B, or M, the character defaults to an alphabetic both field (B).

A blank position at the end of a user-defined field indicates the end of the field. When you press Enter, SDA:

- Aligns the fields after the plus sign (+)

- Determines the field type and length according to the contents of the field

- Creates an edit word for numerics (if specified) for output and both fields

- Defaults to a field usage of B (both) or 9 (numeric) if a usage character is not typed in the first position

- Assigns a field name (FLDxxx), starting with FLD001 or with the next highest value if previous field names were assigned.

To add a numeric field with a decimal position while the ruler is displayed, make sure the decimal point does not coincide with a dot that is part of the ruler. If it does coincide, remove the ruler before you add the field. Otherwise, SDA issues an error message because it cannot distinguish between control information and the dots of the ruler.

Deleting Multiple Fields

To delete more than one field, type two minus signs (--) in the upper-left corner of the block of fields and type two minus signs (--) in the lower-right corner of the block. When you press Enter, the work screen is displayed with dots marking the boundary of the block to be deleted, as long as there are no DBCS constants on the display. Press Enter to delete the block or F12 to cancel the deletion.

If any fields completely or partially overlap, the field that overlaps is not deleted.

Changing Field Types

You can change the field type of a previously selected, and displayed, field on the work screen. To change character fields, type I (input), O (output), or B (both) in the first position of the field. To change numeric fields, type 3 (input), 6 (output), or 9 (both) in the first position of the field.

Specifying COLOR Keywords

Use the Select Colors display shown in Figure 207 to specify color for constant, input, output, both, and message fields.

```
                              Select Colors

Constant  . . . :    tttttttttttttttttttttttttttttttttttttttttttttttttttttttttttt
Length  . . . . :    nnnnn            Row . . . : XX    Column . . . : XXX

Type choices, press Enter.

                                     Keyword   Order    Indicators/+
                                               (1-7)
     Colors:                         COLOR
       Blue . . . . . . . . . . . . . . . .   BLU     _       __ __ __
       Green  . . . . . . . . . . . . . .    GRN     _       __ __ __
       Pink . . . . . . . . . . . . . . . .   PNK     _       __ __ __
       Red  . . . . . . . . . . . . . . .    RED     _       __ __ __
       Turquoise  . . . . . . . . . . .     TRQ     _       __ __ __
       White  . . . . . . . . . . . . . .    WHT     _       __ __ __
       Yellow . . . . . . . . . . . . . .    YLW     _       __ __ __
```
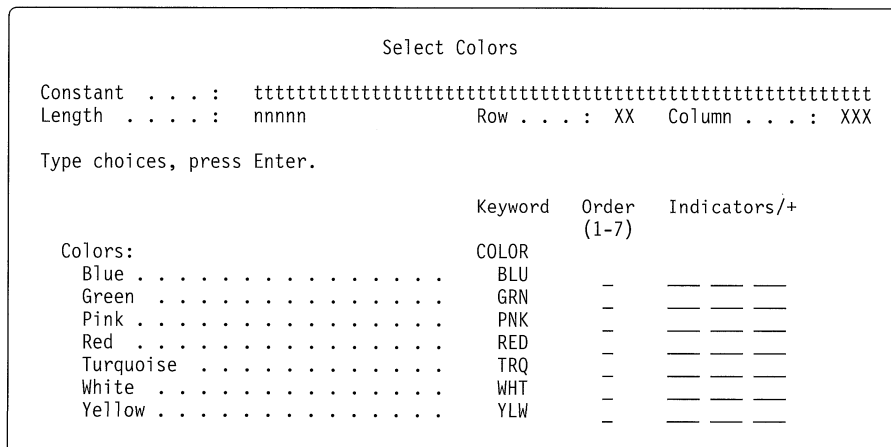
Figure 207. Select Colors Display

To select a color, type an order number from 1 to 7. When the display file is used, the order of color is determined by the order of the indicators selected, if the indicators are on. If all indicators are on or off, the order is determined by the order of the color in the source DDS. The first color that you specify is the first color used.

Displaying Attributes without Specifying Color

Display files created for noncolor display stations can be used with color display stations. If the COLOR keyword is not specified in the DDS that is used to create the display file, the column separators, high intensity, blink, underline, and reverse image attributes produce the colors and attributes as indicated in Figure 208 on page 171. To determine the color and display attributes, scan this table from top to bottom and from left to right until you arrive at the line satisfying all your conditions.

Figure 208. Displaying Color Attributes without Specifying COLOR Keyword					
Display Attribute					**Color Produced on a Color Display Station**
CS	HI	BL	UL	RI	
No	No	No	No	No	Green
No	No	No	No	Yes	Green, reverse image
No	No	No	Yes	No	Green, underlined
No	No	No	Yes	Yes	Green, underlined, reverse image
No	No	Yes	No	No	Red
No	No	Yes	No	Yes	Red, reverse image
No	No	Yes	Yes	No	Red, underlined
No	No	Yes	Yes	Yes	Red, underlined, reverse image
No	Yes	Yes	No	No	Red, blinking
No	Yes	Yes	No	Yes	Red, blinking, reverse image
No	Yes	Yes	Yes	No	Red, blinking, underlined
No	Yes	No	No	No	White
No	Yes	No	No	Yes	White, reverse image
No	Yes	No	Yes	No	White, underlined
Yes	No	No	No	No	Turquoise, column separators
Yes	No	No	No	Yes	Turquoise, reverse image, column separators
Yes	No	No	Yes	No	Turquoise, underlined, column separators
Yes	No	No	Yes	Yes	Turquoise, underlined, reverse image column separators
Yes	No	Yes	No	No	Pink
Yes	No	Yes	No	Yes	Pink, reverse image
Yes	No	Yes	Yes	No	Pink, underlined
Yes	No	Yes	Yes	Yes	Pink, underlined, reverse image
Yes	Yes	No	No	No	Yellow, column separators
Yes	Yes	No	No	Yes	Yellow, reverse image, column separators
Yes	Yes	No	Yes	No	Yellow, underlined, column separators
Yes	Yes	Yes	No	No	Blue
Yes	Yes	Yes	No	Yes	Blue, reverse image
Yes	Yes	Yes	Yes	No	Blue, underlined
No	Yes	Yes	Yes	Yes	Nondisplay on all terminals
No	Yes	No	Yes	Yes	Nondisplay on all terminals
Yes	Yes	Yes	Yes	Yes	Nondisplay on all terminals

Displaying Attributes with Color Specified

Use Figure 209 on page 172 to determine the display attributes allowed for a given color. If you specify a display attribute that is not allowed for a given color, the attribute is ignored. For example, if you specify condition indicators for a field with the color green, only the following attribute combinations are allowed:

- Reverse image only
- Underline only
- Reverse image and underline

If you specify column separators, highlighting, or blinking with the color green, those attributes are ignored. In the following table, CS, HI, BL, UL, and RI refer to column separators, highlighting, blinking, underlining, and reverse image, respectively.

Figure 209. Displaying Color Attributes by Specifying COLOR Keyword					
Color Desired	**CS[1]**	**HI**	**BL**	**UL[2]**	**RI**
Green				X	X
Green, reverse image				X	X
Green, underlined					
Green, underlined, reverse image					
Red		X	X	X	X
Red, reverse image		X	X	X	X
Red, underlined		X	X	X	X
Red, underlined, reverse image			X		
Red, blinking			X		
Red, blinking, reverse image			X		
Red, blinking, underlined			X		
White		X		X	X
White, reverse image		X			
White, underlined		X			
Turquoise, column separators	X			X	
Turquoise, reverse image, column separators	X			X	
Turquoise, underlined, column separators	X				
Turquoise, underlined, reverse image, column separators	X				
Pink	X		X	X	X
Pink, reverse image	X		X	X	X
Pink, underlined	X		X		
Pink, underlined, reverse image	X		X		
Yellow, column separators	X	X		X	X
Yellow, reverse image, column separators	X	X			
Yellow, underlined, column separators	X	X			
Blue	X	X	X	X	X
Blue, reverse image	X	X	X		
Blue, underlined	X	X	X		
Nondisplay	X	X	X	X	X
Nondisplay	X	X	X	X	X
Nondisplay		X		X	X
[1] Column separators are blue. They do not appear if the color display station is set to reduce line spacing.					
[2] Underlining for a turquoise or yellow field appears as broken underlines.					

Notes:

1. Although some display attributes are ignored when colors are specified, they are still inserted into the DDS source file. If the explicitly defined color is removed, or if conditioning for it is not satisfied, a default color is used from the display attribute chart in Figure 208 on page 171.

2. COLOR keywords are ignored on noncolor displays.

For guidelines on using color displays, see the specific guide for the color display station that you are using.

Entering System Commands

You can enter AS/400 system commands from the SDA Design Image Work Screen. Press F22=System command to display a window in which you can type an AS/400 system command, as shown in Figure 210.

```
... ... 1 ... ... 2 ... ... 3 ... ... 4 ... ... 5 ... ... 6 ... ... 7 ... ... 8
.....................................................................
:                           System Command                           :
:                                                                     :
:  ===> _____      :
:  F4=Prompt   F9=Retrieve   F12=Cancel                               :
:  (C) COPYRIGHT IBM CORP. 1981, 1993.                                :
:.....................................................................:
8
9
10 Customer Number:   BBBBB
11   Customer Name:   BBBBBBBBBBBBBBBBBBBBB
12  Street Address:   BBBBBBBBBBBBBBBBBBBBB
13            City:   BBBBBBBBBBBBBBBBBBBBB
14           State:   BB
15        Zip Code:   99999
16
```

Figure 210. Entering System Commands

Depending on the cursor location, the System Command window may appear in the top portion or in the bottom portion of the display. You cannot enter data on the SDA work screen while the System Command window is displayed.

The field on the System Command window is:

===>. Enter a system command. For help in selecting a system command, press F4=Prompt without typing anything in the window. For help in entering a system command, type the command in the window and press F4=Prompt. To see more information on a system command, type the command and press the Help key.

System/36 and System/38 commands cannot be entered here but you can set the Attention key to show the Command Entry display.

Note: System commands such as SIGNOFF (in the AS/400 system) end the SDA session abnormally. When you reaccess the aborted member, the Recover SDA Session display is displayed.

Working with the Condition Work Screen Display

The Condition Work Screen display specifies condition indicators for fields and their attributes to control the fields and constants that are displayed on the work screen. You can also use this display to:

- Specify selected database fields as reference fields
- Specify single-field or multiple-field mode
- Request a condition indicator setting for a field

To see the Condition Work Screen display shown in Figure 211, press F6 (Condition) on the Design Image work screen. SDA displays the record name that you typed on the Design Screens or on the Work With Records display.

```
                           Condition Work Screen

         Record . . . :   XXXXXXXXXX

         Type choices, press Enter.

             Activate indicators . . . . . . . . . . . . .  _            Y=Yes
             Indicators to be turned ON  . . . . . . . . .  _ _ _ _ _ _  01-99
                                                            _ _ _ _ _ _
                                                            _ _ _ _ _ _
                                                            _ _ _ _ _ _
             Indicators to condition all new               _ _ _ _ _ _
               fields and attributes . . . . . . . . . . .  __ __ __

             Show indicator setting for field  . . . . . .  _____     Name
             Delete all fields on bottom line  . . . . . .  _            Y=Yes
             Reference database fields . . . . . . . . . .  Y            Y=Yes
             Display in single-field mode  . . . . . . . .  _            Y=Yes


         F3=Exit   F12=Cancel
```

Figure 211. Condition Work Screen

Use the following prompts on the Condition Work Screen display to control fields and constants that are displayed on the work screen:

- Type Y (Yes) in the *Activate indicators* prompt to turn on the indicators. Type the condition indicator for the field or constant in the *Indicators to be turned ON* prompt. An indicator is any two-digit number between 01 and 99. You can specify up to 30 indicators for each display.

  When you turn on condition indicators, the following appear:

  - All unconditioned fields and constants
  - All conditioned fields and constants that match the condition setting
  - All conditioned attributes that match the condition setting

  If you type Y (Yes) in the *Activate indicators* prompt without including the indicator in the *Indicators to be turned ON* list, no conditioning of the indicator will be specified.

If you type anything other than Y (Yes) in the *Activate indicators* prompt, all conditioned and unconditioned fields and constants that can be displayed appear on the work screen. All indicator conditioning is ignored.

- In the *Indicators to condition all new fields and attributes* prompt, type the condition indicators to be used for:

  - New fields or constants that you are adding to the work screen.
  - New attributes for the new or existing fields.

- Type the name in the *Show indicator setting for field* prompt to request a condition indicator setting associated with a field. Those indicators appear in the *Indicators to be turned on* prompt. You can use the displayed indicators to condition the work screen.

- Type Y (Yes) in the *Delete all fields on bottom line* prompt to delete all fields from the bottom row of the Design Image work screen.

- Use the default value Y (Yes) to reference all database fields to be placed on the work screen. SDA creates a REFFLD keyword if you add the field to your record on the work screen.

  Set the *Reference database fields* prompt to blank if you do not want to generate the REFFLD keyword for all new database fields on the work screen. All keywords will be explicitly copied to the field on the work screen.

- Type Y (Yes) in the *Display in single-field mode* prompt to display fields in single-field mode. Leave the prompt blank to display fields in multiple-field mode. Multiple-field mode allows up to nine fields to be displayed on the bottom row of the work screen at one time.

Chapter 10. Keyword Reference Information

This chapter shows the data description source (DDS) listings as well as DDS keyword and parameter organization. The fields for these examples are shown in "Selecting Fields from a Database File" on page 85 on the Select Database Fields display.

Data Description Source for CUSDATA

Figure 212 shows the data description source for CUSDATA.

```
A            R CUSMST                TEXT('Customer Master Record')
A              CUST         5        CHECK(MF)
A                                    COLHDG('Customer' 'Number')
A              NAME        20        COLHDG('Customer' 'Name')
A              ADDRESS     20        COLHDG('Street Address')
A              CITY        20        COLHDG('City')
A              STATE        2        CHECK(MF)
A                                    COLHDG('State')
A              ZIP          5  0     CHECK(MF)
A                                    COLHDG('Zip' 'Code')
A              SEARCH       6
A                                    COLHDG('Search' 'Code')
A                                    TEXT('Customer Number Search Code')
A              CUTYPE       1        RANGE('1' '5')
A                                    COLHDG('Cust' 'Type')
A                                    TEXT('Customer Type')
A              ARBAL        8  2     COLHDG('Accts Rec' 'Balance')
A                                    EDTCDE(J)
A              ORDBAL       8  2     COLHDG('A/R Amt in' 'Order File')
A                                    EDTCDE(J)
A              LSTAMT       8  2     COLHDG('Last' 'Amount' 'Paid')
A              LSTDAT       6  0     COLHDG('Last' 'Date' 'Paid')
A                                    EDTCDE(Y)
A                                    TEXT('Last Date Paid in A/R')
A              CRDLMT       8  2     COLHDG('Credit' 'Limit')
A                                    TEXT('Customer Credit Limit')
A              SLSYR       10  2     COLHDG('Sales' 'This' 'Year')
A                                    TEXT('Customer Sales This Year')
A              SLSLYR      10  2     COLHDG('Sales' 'Last' 'Year')
A                                    TEXT('Customer Sales Last Year')
```

Figure 212. Data Description Source for CUSDATA

Data Description Source for ORDHDRP

Figure 213 on page 178 shows the data description source for ORDHDRP.

```
A              R ORDERFMT                      TEXT('PHYSICAL FILE FOR ORDERS')
A                ORDER        5  0             COLHDG('Order' 'No.')
A                ORDDAT       6  0             EDTCDE(Y)
A                                              COLHDG('ORDER' 'DATE')
A                                              TEXT('DATE ORDER WAS ENTERED')
A                CUSORD      15                COLHDG('CUSTOMER ORDER')
A                                              TEXT('CUSTOMER ORDER NUMBER')
A                SHIPVIA     15                COLHDG('SHIPPING' 'INSTRUCTIONS')
A                SHIP         3  0             COLHDG('QUANTITY' 'SHIPPED')
A                ORDSTS       1  0             COLHDG('ORDER' 'STATUS')
A                                              TEXT('ORDER STATUS 1PCS 2CNT 3CHK 4-
A                                              RDY 5PRT 6PCK 7INV 9C')
A                OPRNAM      10                COLHDG('OPERATOR' 'NAME')
A                                              TEXT('OPERATOR NAME WHO ENTERED -
A                                              THE ORDER')
A                ORDAMT       8  2             COLHDG('ORDER' 'AMOUNT')
A                                              TEXT('TOTAL DOLLAR AMOUNT -
A                                              ORDER')
A                INVNUM       5  0             COLHDG('INVOICE' 'NUMBER')
A                PRTDAT       6  0             COLHDG('PRINTED' 'DATE')
A                                              EDTCDE(Y)
A                                              TEXT('DATE ORDER WAS PRINTED')
A                QTY          3  0             COLHDG('QUANTITY' 'ORDERED')
A                                              TEXT('NUMBER OF ITEMS ORDERED')
A                ITEM         5  0             COLHDG('ITEM' 'NUMBER')
A                                              TEXT('ITEM NUMBER OF THIS PART')
A                PRICE        5  2             COLHDG('ITEM' 'PRICE')
A                                              TEXT('PRICE PER ITEM')
A                DESCRP      15                COLHDG('ITEM' 'DESCRIPTION')
A                                              TEXT('DESCRIPTION OF ITEM ORDERED')
A                OPNSTS       1  0             COLHDG('OPEN' 'STATUS')
A                                              TEXT('ORDER OPEN STATUS 1=OPEN, 2=-
A                                              CLOSED, 3=CANCELLED')
A                TOTLEN       3  0             COLHDG('TOTAL' 'LINES')
A                                              TEXT('TOTAL LINE ITEMS IN THE ORDER-
A                                              ')
A                ACTMNT       2  0             COLHDG('ACCT' 'MTH')
A                                              TEXT('ACCOUNTING MONTH OF SALE')
A                ACTYR        2  0             COLHDG('ACCT' 'YEAR')
A                                              TEXT('ACCOUNTING YEAR OF SALE')
A                LINNUM       3  0             COLHDG('LINE' 'NO.')
A                                              TEXT('LINE NUMBER OF LINE ORDER')
A                EXTENS       6  2             COLHDG('EXTENSION')
A                                              TEXT('EXTENSION AMOUNT OF QTYORD X-
A                                               PRICE')
A                OVRAMT       8  2             COLHDG('AMOUNT' 'OVER' 'LIMIT')
A                                              TEXT('AMOUNT OVER CREDIT LIMIT')
A                TOTBAL       8  2             COLHDG('TOTAL A/R' 'AMOUNT')
A                                              TEXT(' TOTAL A/R AMOUNT - SUM OF AR-
A                                              BAL + ORDBAL')
A                AVAIL        5  0             COLHDG('AVAILABLE')
A                                              TEXT('NET INVENTORY AVAILABLE = -
A                                              NET ON HAND - ALLOC')
```

Figure 213. Data Description Source for ORDHDRP

DDS Keyword and Parameter Organization

Figure 214 shows the DDS keywords and parameters that can be used with SDA displays. The file, record, subfile record, subfile control record, field and system columns show which keywords can be used. The numbers refer to the SDA displays on which you can select the keyword. The numbers are matched with the corresponding display in Figure 215 on page 184.

The keywords can be used in AS/400 SDA, the System/38 environment, or in both as indicated in the last column of the table. For more information about keywords, see the *DDS Reference*.

Figure 214 (Page 1 of 6). DDS Keywords						
DDS Keywords and Parameters	**File Level**	**Record Level**	**Subfile Control Record**	**Subfile Record**	**Field Level**	**System Used**
KBD SHIFT					FdL4	Both
ALARM		RL7				Both
ALTHELP	FL7					AS/400
ALIAS					FdL7	Both
ALTNAME		RL1				AS/400
ALTPAGEDWN	FL7					AS/400
ALTPAGEUP	FL7					AS/400
ALWGPH	FL1	RL7				Both
ALWROL		RL2				Both
ASSUME		RL2				Both
DSPRL	FL1					AS/400
BLANKS					FdL6	Both
BLINK		RL7				Both
BLKFOLD					FdL7	Both
CA01–CA24 CF01–CF24	FL2	RL3				Both
CHANGE		RL3	SR3		FdL6	Both
CHCACCEL					FdL15	AS/400
CHCAVAIL					FdL14	AS/400
CHCCTL					FdL15	AS/400
CHCSLT					FdL14	AS/400
CHCUNAVAIL					FdL14	AS/400
CHECK(AB)	FL1	RL8		SR2		Both
CHECK(ER)					FdL5	Both
CHECK(FE)					FdL4	Both
CHECK(LC)					FdL4	Both
CHECK(ME)					FdL4	Both
CHECK(MF)					FdL4	Both

DDS Keywords and Parameters	File Level	Record Level	Subfile Control Record	Subfile Record	Field Level	System Used
CHECK(M10)					FdL5	Both
CHECK(M10F)					FdL5	AS/400
CHECK(M11)					FdL5	Both
CHECK(M11F)					FdL5	AS/400
CHECK(RB)					FdL4	Both
CHECK(RL)	FL1	RL8		SR2	FdL4	Both
CHECK(RLTB)	FL1					Both
CHECK(RZ)					FdL4	Both
CHECK(VN)					FdL5	Both
CHECK(VNE)					FdL5	AS/400
CHGINPDFT	FL1	RL2		SR2	FdL6	Both
CHKMSGID					FdL5	AS/400
CHOICE					FdL14	AS/400
CHRID					FdL7	Both
CLEAR	FL2	RL3				Both
CLRL(*ALL)		RL7				AS/400
CLRL(*END)		RL7				AS/400
CLRL(*NO) (##)		RL7				Both
CNTFLD					FdL7	AS/400
COLOR(BLU) (GRN) (PNK) (RED) (TRQ) (WHT) (YLW)		RL14			FdL3	Both
COMP(EQ)					FdL5	Both
COMP(GE)					FdL5	Both
COMP(GT)					FdL5	Both
COMP(LE)					FdL5	Both
COMP(LT)					FdL5	Both
COMP(NE)					FdL5	Both
COMP(NG)					FdL5	Both
COMP(NL)					FdL5	Both
CSRLOC		RL7				Both
*CURLIB						AS/400
DATE						Both
DFT					FdL7	Both

Figure 214 (Page 2 of 6). DDS Keywords

DDS Keywords and Parameters	File Level	Record Level	Subfile Control Record	Subfile Record	Field Level	System Used
DFTVAL					FdL7	AS/400
DLTCHK					FdL10	Both
DLTEDT					FdL10	Both
DSPATR(BL)		RL15			FdL2	Both
DSPATR(CS)		RL15			FdL2	Both
DSPATR(HI)		RL15			FdL2	Both
DSPATR(MDT)					FdL2	Both
DSPATR(ND)		RL15			FdL2	Both
DSPATR(OID)					FdL2	Both
DSPATR(PC)					FdL2	Both
DSPATR(PR)					FdL2	Both
DSPATR(RI)		RL15			FdL2	Both
DSPATR(SP)					FdL2	Both
DSPATR(UL)		RL15			FdL2	Both
DSPMOD		RL7				Both
DSPMOD(Supported-Size)		RL7				Both
DSPSIZ	FL5					Both
DUP					FdL6	Both
EDTCDE					FdL8	Both
EDTWRD					FdL8	Both
ERASE		RL9				Both
ERASEINP(*ALL)		RL9				Both
ERASEINP(*MDTON)		RL9				Both
ERRMSG					FdL11	Both
ERRMSGID					FdL11	Both
ERRSFL	FL1					AS/400
FLTFIXDEC					FdL9	Both
FLTPCN						Both
FRCDTA		RL7				Both
GETRETAIN		RL8				Both
HELP	FL2	RL3				Both
HLPARA		RL6				AS/400
HLPBDY		RL5				AS/400
HLPCLR		RL4				AS/400
HLPCMDKEY		RL4				AS/400
HLPID					FdL7	AS/400
HLPDOC	FL4	RL5				AS/400

Figure 214 (Page 3 of 6). DDS Keywords

DDS Keywords and Parameters	File Level	Record Level	Subfile Control Record	Subfile Record	Field Level	System Used
			Subfile Control Record	**Subfile Record**	**Field Level**	**System Used**
HLPRCD	FL4	RL5				AS/400
HLPRTN	FL2	RL3				AS/400
HLPSEQ		RL4				AS/400
HOME	FL2	RL3				Both
IGCALTTYP					FdL7	Both
IGCCNV	FL6					Both
INDARA	FL1					Both
INDTXT	FL2	RL3		SR3	FdL7	Both
INVITE	FL2	RL7				Both
INZINP		RL9				Both
INZRCD		RL2				Both
KEEP		RL2		SR3		Both
LOCK		RL7				Both
LOGINP		RL8		SR3		Both
LOGOUT		RL7		SR3		Both
MDTOFF(*ALL)		RL9				Both
MDTOFF(*UNPR)		RL9				Both
MSGALARM	FL1	RL7				AS/400
MSGCON						Both
MSGID					FdL13	AS/400
MSGLOC	FL5					Both
MULCHCFLD					FdL14	AS/400
OPENPRT	FL3					Both
OVERLAY		RL9				Both
OVRATR					FdL7	Both
OVRATR		RL9				AS/400
OVRDTA					FdL7	Both
OVRDTA		RL8				AS/400
PAGEDOWN	FL2	RL3				AS/400
PAGEUP	FL2	RL3				AS/400
PASSRCD	FL1					Both
PRINT	FL2, FL3					Both
PRINT		RL11				AS/400
PRINT(*PGM)	FL3					AS/400
PROTECT		RL9				Both
PULLDOWN		RL2				AS/400

Figure 214 (Page 4 of 6). DDS Keywords

Figure 214 (Page 5 of 6). DDS Keywords

DDS Keywords and Parameters	File Level	Record Level	Subfile Control Record	Subfile Record	Field Level	System Used
PUTOVR		RL9				Both
PUTRETAIN		RL9			FdL8	Both
RANGE					FdL5	Both
REF	FL1					Both
RETLCKSTS		RL8				AS/400
REFFLD					FdL10	Both
RETCMDKEY		RL2				AS/400
RETKEY		RL2				AS/400
RMVWDW		RL2				AS/400
ROLLDOWN	FL2	RL3				Both
ROLLUP	FL2	RL3				Both
RTGAID		RL10				System/38
RTGCON		RL10				System/38
RTGDEV		RL10				System/38
RTGDEVCLS		RL10				System/38
RTGFIRST		RL10				System/38
RTGFLD					FdL6	System/38
RTGFMT		RL10				System/38
RTGPOS		RL10				System/38
RTNCSRLOC		RL2				AS/400
RTNDTA		RL8				Both
SETOF		RL3		SR3		Both
SFL						Both
SFLCLR			SC2			Both
SFLCSRRRN			SC2			AS/400
SFLCTL			SC2			Both
SFLDLT			SC2			Both
SFLDROP			SC2			Both
SFLDSP			SC2			Both
SFLDSPCTL			SC2			Both
SFLEND			SC2			Both
SFLEND(*MORE)			SC2			AS/400
SFLEND(*PLUS)			SC2			AS/400
SFLENTER			SC2			Both
SFLFOLD			SC2			AS/400
SFLINZ			SC2			Both
SFLLIN			SC3			Both

DDS Keywords and Parameters	File Level	Record Level	Subfile Control Record	Subfile Record	Field Level	System Used
SFLMODE			SC2			AS/400
SFLMSG			SC4			Both
SFLMSGID			SC4			Both
SFLMSGKEY				SR4		Both
SFLMSGRCD				SR4		Both
SFLNXTCHG				SR2		Both
SFLPAG			SC3			Both
SFLPGMQ			SC2	SR4		Both
SFLRCDNBR					FdL12	Both
SFLRNA			SC2			Both
SFLROLVAL					FdL12	Both
SFLSIZ			SC3			Both
SLNO(*VAR) (##)		RL7				Both
SNGCHCFLD					FdL14	AS/400
SYSNAME						AS/400
TEXT		RL1	SC1	SR1	FdL1	Both
TIME						Both
UNLOCK(*ERASE)		RL8				Both
UNLOCK(*MDTOFF)		RL8				Both
USER						AS/400
USRDFN						Both
USRDSPMGT	FL1					AS/400
USRRSTDSP		RL2				AS/400
VALUES					FdL5	Both
VLDCMDKEY	FL2	RL3				Both
WDWBORDER	FL1	RL2				AS/400
WINDOW		RL2				AS/400

Figure 214 (Page 6 of 6). DDS Keywords

Figure 215 (Page 1 of 2). Legend for DDS Keywords and Parameters

	Number	Display Title
File Level		
	FL1	Select General Keywords
	FL2	Define Indicator Keywords
	FL3	Define Print Keywords
	FL4	Select Help Keywords
	FL5	Select Display Sizes
	FL6	Define IGC Conversion
	FL7	Define Alternate Keywords
	FL8	Define Window Border Parameters
	FL9	Define Choice Keywords

Figure 215 (Page 2 of 2). Legend for DDS Keywords and Parameters

	Number	Display Title
Record Level		
	RL1	Select Record Keywords
	RL2	Select General Keywords
	RL3	Define Indicator Keywords
	RL4	Define Help Keywords
	RL5	Define Application Help
	RL6	Define Application Help Area
	RL7	Select Output Keywords
	RL8	Select Input Keywords
	RL9	Select Overlay Keywords
	RL10	Define Routing Keywords
	RL11	Define Print Keywords
	RL12	Define Window Parameters
	RL13	Define Window Border Parameters
	RL14	Select Border Color
	RL15	Select Border Display Attributes
	RL16	Select Border Characters
	RL17	Select Pull-Down Record Keywords
Subfile Control		
	SC1	Select Subfile Control Keywords
	SC2	Define General Keywords
	SC3	Define Display Layout
	SC4	Define Subfile Messages
Subfile Record		
	SR1	Select Subfile Keywords
	SR2	Select General Keywords
	SR3	Define Indicator Keywords
	SR4	Define Message Record
Field Level		
	FdL1	Select Field Keywords
	FdL2	Select Display Attributes
	FdL3	Select Colors
	FdL4	Select Keying Options
	FdL5	Define Validity Check Keywords
	FdL6	Select Input Keywords
	FdL7	Select General Keywords
	FdL8	Select Editing Keywords
	FdL9	Edit Floating Point Field
	FdL10	Define Database Reference
	FdL11	Define Error Messages
	FdL12	Select Subfile Keywords
	FdL13	Define Message IDs
	FdL14	Select Choice Keywords
	RL17	Define Choice Keywords

Appendix A. Recovering from an Interrupted Screen Design Aid Session

If your session is interrupted while you are working, SDA helps you to recover your work. An SDA session can be interrupted for various reasons, including the following:

- A newly created or updated source member is put in a library with insufficient space to contain that source member

- You are signed off your display station by the system operator

- Your display station is turned off

- A system failure occurs

- An electrical failure occurs

SDA helps you to recover most of the work from an interrupted session.

Figure 216 shows the display that appears for AS/400 SDA and System/38 environment SDA.

```
                         Recover SDA Session

    Member . . . . :    NEWMEN
    File . . . . . . :   QMENUSRC
      Library  . . :      USERLIB


    The previous SDA session for the member shown
      abnormally ended.

    Select one of the following:

          1. Recover changes made in the previous SDA session
          2. Discard changes and start a new session




    Selection
       1
    F3=Exit    F12=Cancel
```

Figure 216. Recover SDA Session Display

Use either of the following options to recover from an interrupted session:

- Select option 1 (Recover changes made in the previous SDA session) to resume the work that you were doing.

- Select option 2 (Discard changes and start a new session) to discard the changes that you made at the time of the interrupted session and start a new session. A record of the interrupted work is not saved.

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Appendix B. Restricting Access to the Command Entry Line on AS/400 Menus

You can restrict users from using the command entry line on active AS/400 menus.

To restrict access to the command entry line:

1. Create or adapt your menu.

2. Press F3 (Exit) to save the menu. You see the Specify Menu Functions display.

3. Press F3 (Exit) to see the Exit SDA Menus display.

4. On the Exit SDA Menus display:

   a. Type Y in the *Prompt for parameters* prompt.

   b. Press Enter to see the Create Menu (CRTMNU) display shown in Figure 217.

```
                          Create Menu (CRTMNU)

 Type choices, press Enter.

 Menu . . . . . . . . . . . . . . . > LIBLST        Name
      Library . . . . . . . . . . . >   QGPL        Name, *CURLIB
 Menu type . . . . . . . . . . . . . > *DSPF        *DSPF, *PGM
 Display file . . . . . . . . . . . > LIBLST____    Name, *MENU
      Library . . . . . . . . . . . >   QGPL_____  Name, *LIBL, *CURLIB
 Message file . . . . . . . . . . . > LIBLST____    Name, *MENU
      Library . . . . . . . . . . . >   QGPL_____  Name, *LIBL, *CURLIB
 Command line . . . . . . . . . . . > *LONG_        *LONG, *SHORT, *NONE
 Display function keys . . . . . > *YES          *NO, *YES
 Current library . . . . . . . . > *NOCHG____    Name, *NOCHG, *MNULIB...
 Product library . . . . . . . . > *NOCHG___     Name, *NOCHG, *NONE
 Text 'description' . . . . . . . > *BLANK_____

 _____



                                                                Bottom
 F3=Exit   F4=Prompt   F5=Refresh   F10=Additional parameters   F12=Cancel
 F13=How to use this display        F24=More keys
```

Figure 217. Create Menu Display Showing Default Values

5. On the Create Menu (CRTMNU) display:

   a. Type *NONE in the *Command line* prompt.

   b. Press Enter to compile and save the menu.

When you restrict the user from using the command line, F3 (Exit), F12 (Cancel), F13 (User support) and F16 (System main menu) are the only function keys that are available on the menu. You can prevent these function keys from appearing on the menu by typing *NO in the *Display function keys* prompt on the Create Menu (CRTMNU) display.

After you save and compile your menu, you should edit the user profile by using the CL commands CRTUSRPRF (for new users) or CHGUSRPRF (for existing users). Type the name of the menu that you created in the *Initial Menu* prompt.

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Type the name of the library where the menu is stored. When the user signs on to the system, the menu that you named in the *Initial Menu* prompt appears and the user is restricted from access to the command entry line.

If you change the value in the *Limit Capabilities* prompt to *YES, the user will be unable to use any of the CL commands interactively, and the function keys F13 (User support) and F16 (System main menu) will no longer be available.

For more information on CL commands, see the *CL Reference* manual.

Appendix C. Using Double-Byte Character Set Characters

You can use double-byte character set (DBCS) characters for input data, output data, and online help information.

When you use bracketed-DBCS characters (data types J, O, and E), ensure that the number of characters between the shift-out and shift-in characters is even; otherwise, the rightmost DBCS character is truncated.

The first byte of a bracketed-DBCS field is protected and contains a shift-out character. The first DBCS character starts after the shift-out character; therefore, the attribute byte is two positions to the left of the DBCS character.

You can specify more than one line of DBCS characters, but you cannot split a DBCS character across lines.

If you have the DBCS character function on your system, are signed on to a DBCS display, and have a DBCS source file you can:

- Use DBCS constants on work screens
- Specify the keyboard shift attributes (J, O, E, and G)
- Specify the field-level keyword IGCALTTYP
- Specify the file-level keyword IGCCNV

Notes:

1. SDA work screens do not support the shift-out and shift-in key.

2. Selection and Command prompts and the command lines on work screens support the shift-out and shift-in key.

3. SBCS displays will support the selection of DBCS keywords.

4. Graphic data (type G) strings do not use shift-out and shift-in characters.

5. You can work on a DBCS source file using non-DBCS displays, but the DBCS data is not displayed the same as on a DBCS-capable display. Shift-out and shift-in characters of a DBCS field other than a DBCS-graphic are no longer protected. If any of these characters are removed, they cannot be replaced using an SBCS display. Unpredictable results can occur in the DDS source when you exit SDA with the save option, so you must follow the DBCS rules when changing DBCS data on an SBCS display.

Defining DBCS Constants on a Work Screen

See Figure 218 on page 192 for an explanation of the symbols used in this example. To define bracketed-DBCS data on an SDA work screen, do the following:

1. Type:

   ```
   '@cccccc@cc@cc@cccc'
   ```

   Note: You can define the same constant without single quotation marks by typing nonblank characters:

   ```
   @xxxxxx@xx@xx@xxxx
   ```

2. Press Enter and the constant is displayed as:

`*(_____)cc(__)cccc*`

   Note: DBCS constants are prefilled with underline characters by SDA.

3. Type DBCS characters between the shift-out and shift-in characters as follows:

`*(K1K2K3)AB(K4)CDEF*.`

4. Press Enter.

You can expand an existing DBCS constant by typing an at sign (@) where you want new shift-out and shift-in characters. For example, to expand the DBCS portion of the mixed constant `*ABC(K1K2K3)DEF*`:

1. Type an at sign (@) over the B and the E to delimit the expanded DBCS portion.

2. Type single quotation marks on both sides of the constant. The constant looks like:

`'A@C(K1K2K3)D@F'.`

3. Press Enter and the DBCS string expands as follows:

`*A(__K1K2K3__)F*`

Figure 218. DBCS Symbols

Symbol	Definition
@	Represents both shift-out and shift-in characters
c	Represents any character including blanks
x	Represents any nonblank character
*	Represents the field attribute
(	Represents the shift-out character
)	Represents the shift-in character
Kn	Represents a double-byte character where *n* is a numeric value
A B ...	Represent single-byte characters

Specifying Input Attributes

The four types of input fields are:

J (DBCS-only)

   Double-byte character string only. The character string starts with a shift-out (SO) character and ends with a shift-in (SI) character.

O (DBCS-open)

   Both double-byte and single-byte character string. You can type both alphanumeric-Katakana (A/N/K) and DBCS data.

E (DBCS-either)

Either double-byte or single-byte character string. You can type either A/N/K or DBCS data, but not both.

G (DBCS-graphic)

Double-byte character string only. The character string does not contain shift-out (SO) and shift-in (SI) characters.

To specify your input attributes, use the Select Keying Options display and type J, O, E, or G as the keyboard shift attribute in the BOTH and INPUT fields.

Specifying the Field-Level Keyword IGCALTTYP

To specify the field-level keyword IGCALTTYP, select the keyword on the Select General Keywords display.

Specifying the File-Level Keyword IGCCNV

To specify the file-level keyword IGCCNV, select the keyword and define parameters on the Define IGC Conversion display.

Considerations for the Work Screen

If you define message constants that contain DBCS characters, you must ensure that DBCS characters are not split and that shift-in characters are not truncated.

Appendix D. Screen Flow Diagrams

This appendix contains diagrams that show the general flow of SDA screens.

Screen Flow Diagram - Design Screens
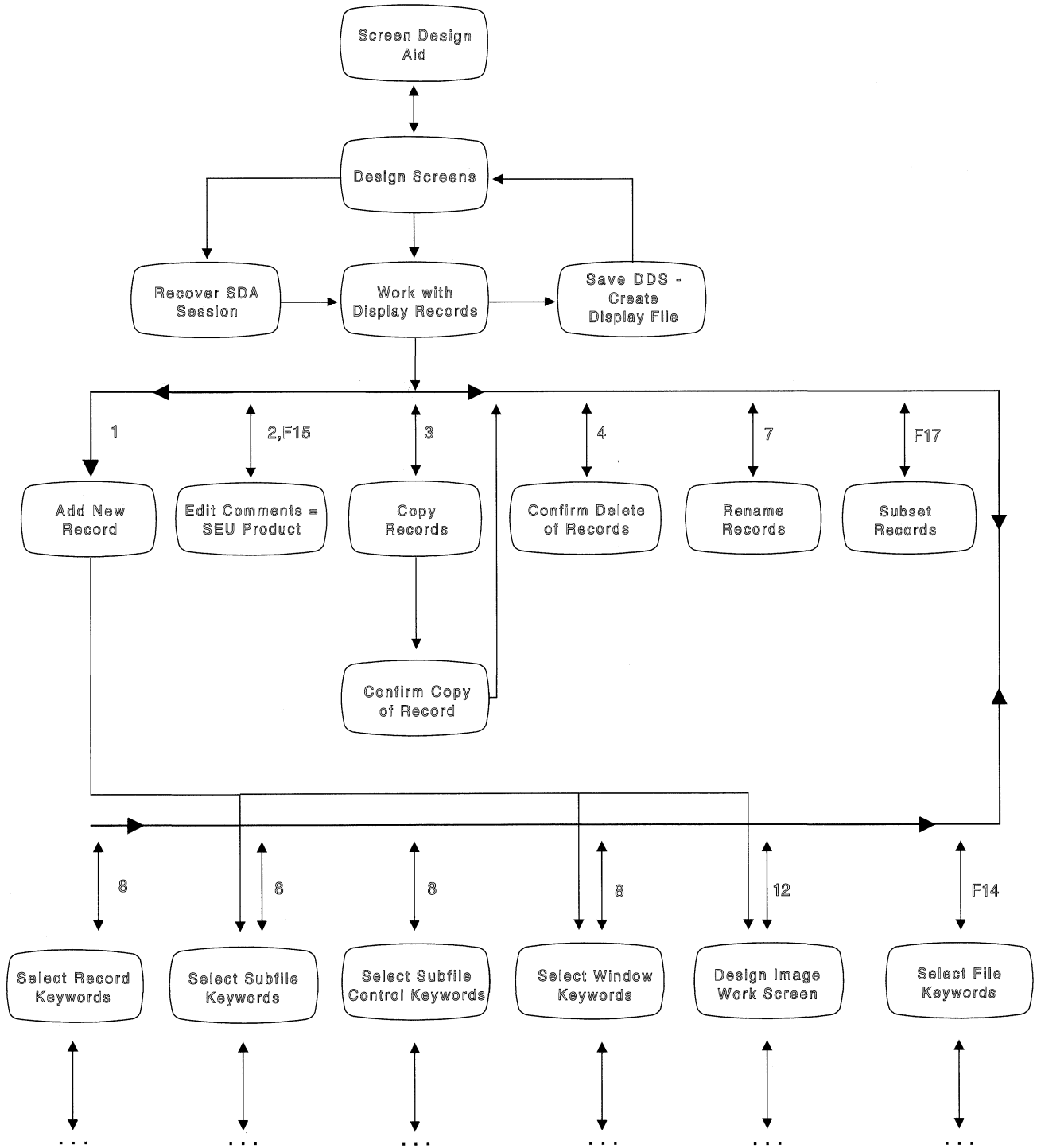
Screen Flow Diagram - File-Level Keywords
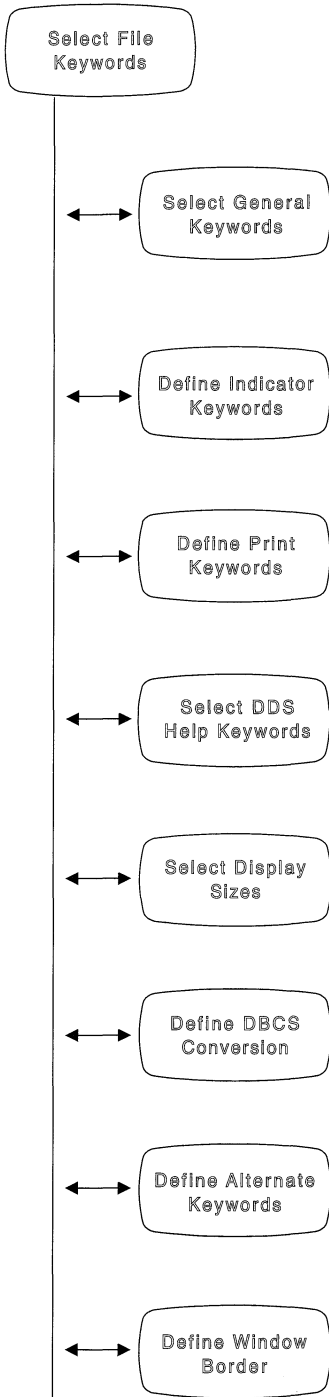
Screen Flow Diagram - Record-Level Keywords

RECORD/USRDFN

```
Select Record
Keywords
  │
  │←→  Select General
  │      Keywords
  │
  │←→  Define Indicator
  │      Keywords
  │
  │←→  Define Help
  │      Keywords
  │
  │←→  Define
  │    Application Help
  │
  │←→  Select Output
  │      Keywords
  │
  │←→  Select Input
  │      Keywords
  │
  │←→  Select Overlay
  │      Keywords
  │
  │←→  Select Routing
  │    Keywords  *S38
  │
  │←→  Define Print
         Keywords
```

SFL/SFLMSG

```
Select Subfile
Keywords
  │
  │←→  Select General
  │      Keywords
  │
  │←→  Define Indicator
  │      Keywords
  │
  │←→  Define Message
         Record
```

SFLCTL

```
Select Subfile
Control Keywords
  │
  │←→  Define General
  │      Keywords
  │
  │←→  Define Display
  │      Layout
  │
  │←→  Define Subfile
  │      Messages
  │
  │←→  Select Record
         Keywords
           ↕
          □ □ □
```

Screen Flow Diagram - Field-Level Keywords

```
                              ┌─────────────────┐
                              │  Select Field   │
                              │   Keywords      │
                              └────────┬────────┘
                                       │
                              ┌────────┴────────┐
                       ◄──►   │ Select Display  │
                              │   Attributes    │
                              └─────────────────┘

                              ┌─────────────────┐
                       ◄──►   │  Select Colors  │
                              └─────────────────┘

                              ┌─────────────────┐
                       ◄──►   │ Select Keying   │
                              │    Options      │
                              └─────────────────┘

                              ┌─────────────────┐
                       ◄──►   │ Define Validity │
                              │ Check Keywords  │
                              └─────────────────┘

                              ┌─────────────────┐
                       ◄──►   │  Select Input   │
                              │   Keywords      │
                              └─────────────────┘

                              ┌─────────────────┐
                       ◄──►   │ Select General  │
                              │   Keywords      │
                              └─────────────────┘

                              ┌─────────────────┐
                       ◄──►   │ Select Editing  │
                              │   Keywords      │
                              └─────────────────┘

                              ┌─────────────────┐
                       ◄──►   │ Define Database │
                              │   Reference     │
                              └─────────────────┘

                              ┌─────────────────┐
                       ◄──►   │ Select Subfile  │
                              │   Keywords      │
                              └─────────────────┘

                              ┌─────────────────┐
                       ◄──►   │  Define Error   │
                              │   Messages      │
                              └─────────────────┘

  ┌──────────────┐  ┌──────────────┐  ◄──► ◄──► ┌─────────────────┐
  │  Work with   │  │  Work with   │           │ Define Message  │
  │  Message ID  │◄►│  Message ID  │           │      ID         │
  │Keyword Order │  │   Keyword    │◄─────────►└─────────────────┘
  └──────────────┘  └──────┬───────┘
                           │
                    ┌──────┴───────┐
                    │Confirm Delete │
                    │of Message IDs │
                    └──────────────┘
```

Screen Flow Diagram - Design Image Work Screen
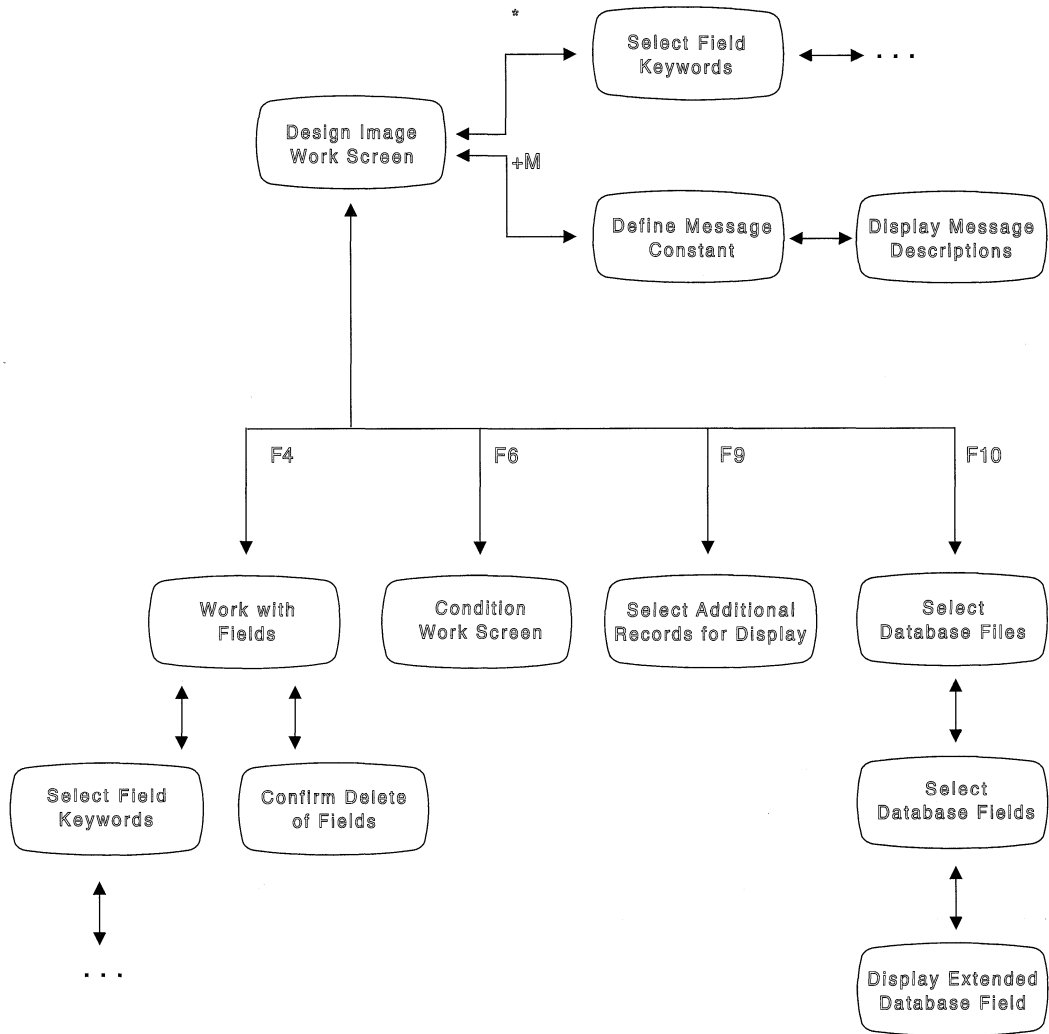
Screen Flow Diagram - Design Menus (AS/400 Environment)

```
                        ┌──────────────┐
                        │ Screen Design│
                        │     Aid      │
                        └──────┬───────┘
                               ↕
                        ┌──────────────┐
         ┌──────────────┤ Design Menus │◄──────────────────┐
         │              └──────┬───────┘                   │
         ▼                     ▼                            │
  ┌─────────────┐      ┌──────────────┐           ┌──────────────┐
  │ Recover SDA │─────►│ Specify Menu │──────────►│   Exit SDA   │
  │   Session   │      │  Functions   │           │    Menus     │
  └─────────────┘      └──────┬───────┘           └──────────────┘
                              │
                    ┌─────────┘
                    ▼
           ┌──────────────────┐                  ┌──────────────────┐
           │ Define Menu Image│                  │    Work with     │
           │   Work Screen    │                  │ Menu Help Records│
           └──────────────────┘                  └──────────────────┘
```

```
         │          F10      ↕  *        ↕   +M
         ▼                   ▼            ▼
  ┌──────────────┐   ┌──────────────┐   ┌──────────────┐
  │    Define    │   │     Set      │   │    Define    │
  │ Menu Commands│   │Field Attributes│ │Message Constants│
  └──────────────┘   └──────────────┘   └──────────────┘
```

```
   ↕ F9          ↕ 1           ↕ 12          ↕ 4               ↕ 3
┌──────────┐ F9 ┌──────────┐  ┌──────────────┐  ┌──────────────┐  ┌──────────────┐
│ Display  │◄─►│ Create Menu│►│ Define Menu Help│ │Confirm Delete│  │  Copy Menu   │
│Menu Image│    │Help Record│  │Record Work Screen│ │of Help Records│ │ Help Records │
└──────────┘    └──────────┘  └──────────────┘  └──────────────┘  └──────────────┘
      ↑    F9
      └──────────────────────┘
                 ▼            ▼            ▼                        ▼
          ┌──────────────┐ ┌──────────┐ ┌──────────────┐   ┌──────────────┐
          │ Display Menu │ │ Set Field│ │Define Message│   │ Confirm Copy │
          │   Commands   │ │Attributes│ │  Constants   │   │of Help Record│
          └──────────────┘ └──────────┘ └──────────────┘   └──────────────┘
```

Screen Flow Diagram - Design Menus (System/38 Environment)
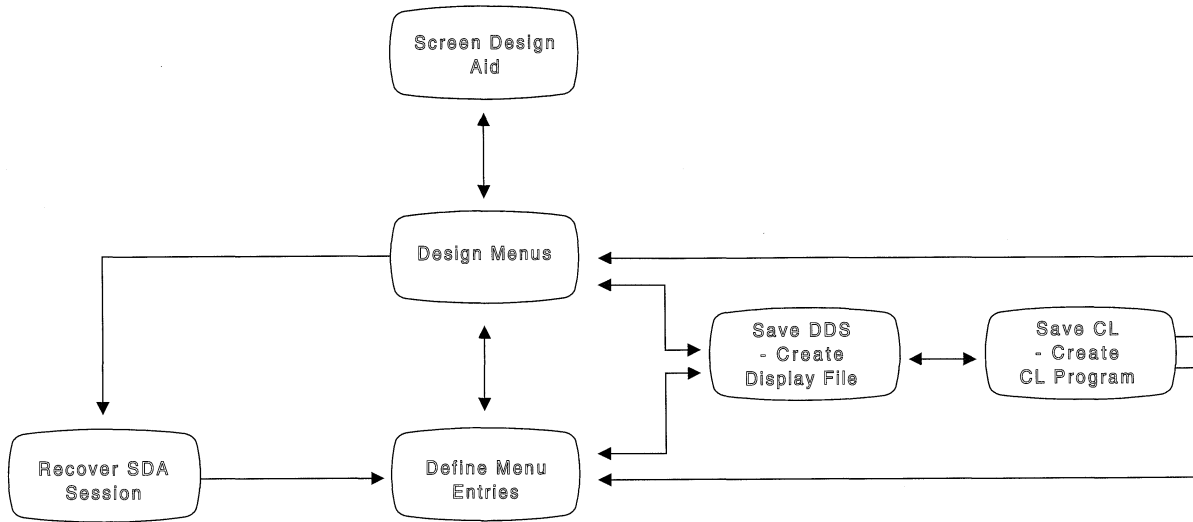
Screen Flow Diagram - Test Display Files
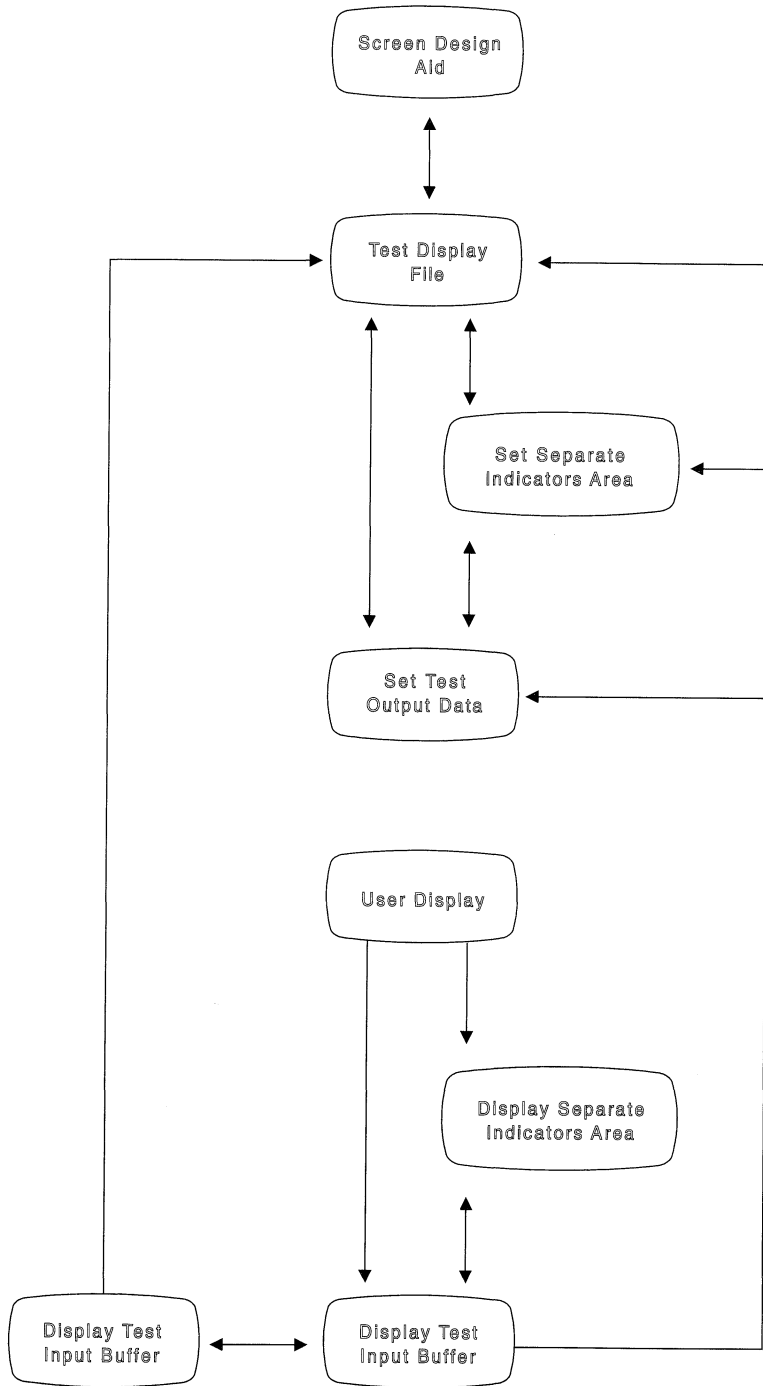
Appendix E. Differences between System/38 SDA and AS/400 System/38 Environment SDA

Following is a summary of the functional differences between System/38 SDA and AS/400 System/38 environment SDA:

- You type option selections on the command line on main options displays when you use AS/400 System/38 environment SDA.

- Windows and associated keywords WINDOW, WDWBORDER, RMVWDW, and USRRSTDSP are not supported in AS/400 System/38 environment SDA.

- DBCS is supported in AS/400 System/38 environment SDA when designing screens only; however, DBCS is not supported in menu function. DBCS-graphic (data type G) is not supported in AS/400 System/38 environment SDA.

- Cursor sensitive help is available in AS/400 System/38 environment SDA.

- The SFLEND parameters *MORE and *PLUS, and SFLDROP option indicators, are not supported in AS/400 System/38 environment SDA.

- The keywords RTNCSRLOC, SFLCSRRRN, and SFLMODE are not supported in AS/400 System/38 environment SDA.

- SDA uses User Interface Standard (UIS) interface command keys in AS/400 System/38 environment SDA.

Appendix F. Problem Analysis

If a problem occurs while you are using SDA, the cause may not be obvious. The problem may be caused by an error in the application, in system operation, or in SDA. The problem analysis procedure in this appendix helps you isolate the cause of the problem and shows you how to solve it. If you need to call for service, this procedure also tells you what information to collect for the service representative.

How to Use This Procedure

This procedure is arranged in a sequence of questions that can be answered with either Yes or No. Based on the answer, you are directed to another question or to a recommendation for action.

Start at question 1 and follow the question-and-answer sequence, answering each question to which you are directed. If the problem is a condition that requires more detailed procedures, you are referred to those procedures.

MAP 0100

When an SDA problem occurs, use the following series of questions to determine the cause:

001

Did you receive a message indicating an error condition that prevented you from continuing the job?
Yes   No

002

– Go to Step 004

003

– Take the actions indicated by the message and save any automatic printouts of main or auxiliary storage that are printed as a result of the message. If the action requires operator action, call the system operator. If the action requires you to call for help, see "Contacting Your Service Representative" on page 211.

– When you examine a message for indicated actions, check the following:

  • **Second-level message text that describes the message in more detail**. To see the second-level message text, display the message by using the Display Message command (DSPMSG), position the cursor under the message, and press Help.

  • **Other messages referred to in the second-level message text**. The information in these messages could help solve the problem.

– If you still cannot solve your problem after fully examining the message, see"Contacting Your Service Representative" on page 211 .

– When you have checked this possibility, go to Step 004

004

Are other system users having problems communicating with the system?
Yes   No

005

– Go to Step 007.

006

– Call the system operator and describe the problem.

– When you have checked this possibility, go to Step 007.

007

(Step **007** continues)

007 (continued)

Is this the first time you have ever run the job?
Yes   No

> **008**
>
> – You have a system problem. Call the system operator and describe the problem.
>
> – When you have checked this possibility, go to Step 010.

009

– Go to Step 010.

010

Are you having a nonprogramming problem, such as spooled output that is not produced or a device that is not working?
Yes   No

> **011**
>
> – Go to Step 013.

012

– You have a system problem. Call the system operator.

– Go to Step 013.

013

Have changes been made to the system since the last time that the command used to run SDA was used successfully?
Yes   No

> **014**
>
> – Go to Step 016 on page 208.

015

– Consider what has been changed. For example:

• Has the library list (*LIBL) been changed?

• Have device file, source file, or field attributes been changed in the data descriptions?

• Have any changes been applied to the Application Development Tools or to the OS/400 operating system?

– When you have checked this possibility, go to Step 016 on page 208.

MAP 0100 (continued)

```
┌─────┐
│ 016 │
└─────┘
```

Was the command used to run SDA found?
Yes No
│   │
│   ┌─────┐
│   │ 017 │
│   └─────┘
│
│   Is the current release of the Application Development Tools being used?
│
│   – When you have checked the possibility, go to Step 019.
│
```
┌─────┐
│ 018 │
└─────┘
```

– Go to Step 019.

```
┌─────┐
│ 019 │
└─────┘
```

Is this the current release of the Application Development Tools program?
To verify the release number, type GO LICPGM **on the command line of the**
AS/400 Main Menu and press Enter. Choose option 10 (Display installed
licensed programs) on the Work with Licensed Programs display. On the
Display Installed Licensed Programs display, move forward to the ADT
program. The current release number appears in the *Installed Release*
column.
Yes No
│   │
│   ┌─────┐
│   │ 020 │
│   └─────┘
│
│   – Do one of the following:
│
│   • Install the current release of the Application Development Tools.
│   • Install all current program changes for the Application Development
│   Tools.
│   • Retry the command to start SDA.
│
│   – See the *Licensed Programs and New Release Installation Guide* for a
│   description of how to install the Application Development Tools, and make
│   program changes.
│
│   – When you have checked this possibility, go to Step 022.
│
```
┌─────┐
│ 021 │
└─────┘
```

– Go to Step 022.

```
┌─────┐
│ 022 │
└─────┘
```

Have all IBM-supplied program changes you received for the current release
of the Application Development Tools been installed?
Yes No
│   │
│   ┌─────┐
│   │ 023 │
│   └─────┘
│   (Step **023** continues)

023 (continued)

– Install the program changes that have not yet been applied and retry the command to start SDA. See the *Licensed Programs and New Release Installation Guide* for a description of how to install program changes.

– When you have checked this possibility, go to Step 025.

| 024 |

– Go to Step 025.

| 025 |

Other than program changes supplied by IBM, have any other modifications to the Application Development Tools or to the OS/400 operating system been made?
Yes No

| 026 |

– Go to Step 028.

| 027 |

– If the Application Development Tools have been changed:

  • Install the current release of the Application Development Tools.

  • Install all current IBM program changes for the Application Development Tools.

  • Retry the command to start SDA.

  If the OS/400 operating system has been changed:

  • Reinstall the current release of the OS/400 operating system.

  • Install all current IBM program changes for the OS/400 operating system.

  • Try to create the display file.

– See the *Licensed Programs and New Release Installation Guide* for a description of how to install the Application Development Tools, the OS/400 operating system, and program changes.

– When you have checked this possibility, go to Step 028.

| 028 |

Did SDA have a function check? Did the Dump SDA Work Spaces display appear?

MAP 0100 (continued)

```
                        Dump SDA Work Spaces

 Cause of dump:
    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

 Type title (optional).

    _____

 Select one of the following:

       1. APAR: Dump all data areas
       2. Dump main control block
       3. Dump physical slots (internal format)
       4. Dump selected slots (internal format)
       5. Dump selected database fields
       6. Dump original DDS source
       7. Dump generated DDS source
       8. Dump DDS Work Area (DDSI Tables)

 Selection

 F3=Exit    F12=Cancel
```

Figure 219. Dump SDA Work Spaces Display

Yes   No
```
 │    │
 │   ┌─────┐
 │   │ 029 │
 │   └─────┘
 │
 │    – Go to Step 031.
 │
┌─────┐
│ 030 │
└─────┘
```

– A function check is an error indication of an abnormal SDA termination. When a function check occurs, the SDA dump display appears. Select option 1 (APAR: Dump all data areas).

– If you encounter a problem while using option 1, select either option 2 (Dump main control block) or 8 (Dump DDS Work Area (DDSI Tables)).

– When you have checked this possibility, go to Step 031.

```
┌─────┐
│ 031 │
└─────┘
```

Did SDA generate incorrect DDS?
Yes   No
```
 │    │
 │   ┌─────┐
 │   │ 032 │
 │   └─────┘
 │
 │    – Go to Step 036 on page 211.
 │
┌─────┐
│ 033 │
└─────┘
```
(Step **033** continues)

033 (continued)

Did you use SDA to design a display file?
Yes No

> **034**
>
> - SDA drops incorrect file-level keywords. SDA also drops incorrect record-level keywords and fields for formats that you selected. SDA does not drop any record-level keywords and fields for unselected formats. Use SDA to correct any errors that the DDS listing identifies in the DDS source.
> - When you have checked this possibility, go to Step 036.

035

- SDA does not perform all relational-type checking between keywords. Circumvent the problem either by not using the keywords in error or by entering the keywords using the source entry utility (SEU).
- When you have checked this possibility, go to Step 036.

036

- If you have a problem that requires additional assistance, go to "Contacting Your Service Representative."

Contacting Your Service Representative

This section describes the procedure to follow when you require assistance from the service representative.

When you require additional assistance:

1. Cancel the failing job and print the job log. Sign off the workstation and choose the *LIST FOR THE OUTPUT parameter. For example:

   ```
   SIGNOFF LOG(*LIST)
   ```

   Call the system operator to verify that the job was printed.

2. Examine the job log and any other available information on the job.

If you cannot solve a problem by using the procedures listed in this section, you may want to contact a service representative. Before doing so, complete the tasks listed below:

1. Obtain a printout of either the main or auxiliary storage at the time of the failure.

2. Obtain a diskette copy of the user display format source members or menu source members. If the problem occurred while the SDA Environment function was being used, include a diskette copy of the user's display format display file.

Bibliography

The manuals below are listed with their full title and base order number. When these manuals are referred to in text, a shortened version of the title is used.

For more information, refer to the following IBM AS/400 publications:

- *Application Development Tools: Screen Design Aid User's Guide and Reference for the System/36 Environment*, SC09-1418
  Short title *SDA User's Guide/Reference for the System/36 Environment*

- *Application Development Tools: Source Entry Utility User's Guide and Reference*, SC09-1338
  Short title *SEU User's Guide and Reference*

- *Application Development by Example*, SC41-9852
  Short title *Application Development by Example*

- *Database Guide*, SC41-9659
  Short title *Database Guide*

- *Data Description Specifications Reference*, SC41-9620
  Short title *DDS Reference*

- *Data Management Guide*, SC41-9658
  Short title *Data Management Guide*

- *Guide to Programming Application and Help Displays*, SC41-0011
  Short title *Guide to Programming Displays*

- *Licensed Programs and New Release Installation Guide*, SC41-9878
  Short title *Licensed Programs and New Release Installation Guide*

- *Office Services Concepts and Programmer's Guide*, SC41-9758
  Short title *Office Services Concepts and Programmer's Guide*

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  Short title *Using OfficeVision/400 Word Processing*

- *Programming: Concepts and Programmer's Guide for the System/36 Environment*, SC41-9663
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- *Programming: System Reference for the System/36 Environment*, SC41-9662
  Short title *System Reference for the System/36 Environment*

- *Publications Guide*, GC41-9678
  Short title *Publications Guide*

- *System Concepts*, GC41-9802.
  Short title *System Concepts*

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