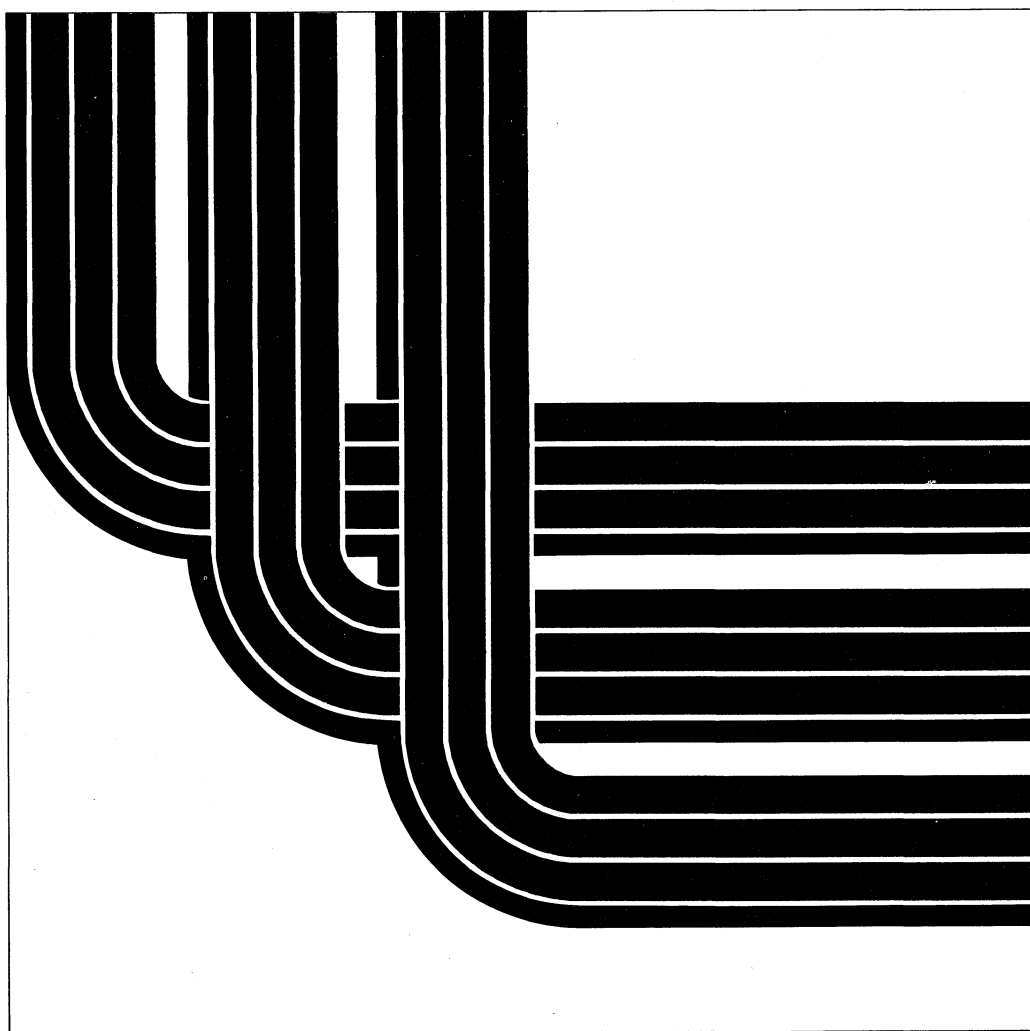


IBM Application System/400™

SC09-1381-00

**Application Development Tools:
Data File Utility
User's Guide and Reference**

Version 2



Application Development



IBM Application System/400™

SC09-1381-00

**Application Development Tools:
Data File Utility
User's Guide and Reference**

Version 2

Note!

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X Data File Utility (DFU)

About This Manual

The **Data File Utility** (DFU), which is part of the Application Development Tools package, is used to create programs to maintain data files. This manual is designed to help you learn to use DFU on the Application System/400[®] (AS/400[®]) system.

This manual contains information on:

- Starting DFU
- DFU options, function keys, commands, and messages
- Creating, changing, running, and deleting DFU programs
- Using DFU in the System/36 environment.

Use this manual to create programs to maintain data files.

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

For a list of related publications, see the “Bibliography” on page 249.

This manual observes the following text highlighting conventions:

Convention	Meaning
ALL CAPS	Words and commands you enter.
Bold type	Important words or phrases and the first occurrence of terms unique to DFU.
<i>Italics</i>	Titles of manuals and prompts on displays.
Monospace type	Words that appear on a display.
Double quotation marks (“”)	Titles of topics or sections in a manual.

Who Should Use This Manual

This manual is intended for application programmers, system programmers, and work-station users who use DFU in an AS/400 environment.

Before using this manual, you must know how to use your work station and have a general knowledge of the AS/400 system. For general information on the AS/400 system, refer to the *System Operator's Guide*, SC41-8082.

Chapter 1. Introducing DFU

The Data File Utility (DFU) is a program generator that helps you create programs to enter data, update files, and make file inquiries. You do not need a programming language to use DFU. You create the program by responding to a series of displays. DFU creates the program based on your responses.

DFU provides you with a quick way of updating a file using a temporary program. You do not have to define a DFU program first. DFU also allows you to create database maintenance programs faster than you could by using programming languages (for example, RPG).

DFU programs can perform several jobs. For example, a single DFU program can allow you to enter new records into a file, update fields within existing records, or perform file inquiry tasks.

DFU creates data entry programs from definitions based on the descriptions of existing database files. DFU uses the descriptions to build your program. After you have defined a program, you can recall and run that program as often as required.

Creating a Program

To create a DFU program for data entry, select the record formats and fields you want to use. DFU creates as many data entry displays as you request; for example, if you use two record formats, DFU creates two different data entry displays. You can switch between the two formats while you are running your program.

To help you create your program, DFU:

- Reviews available database record formats
- Reviews field specifications for a record
- Reviews definition status
- Shows help text to explain the fields in a definition display.

DFU also allows you to print a summary of the defined program that shows all your selected fields and record formats.

Running a Program

While running a DFU program, you can:

- Change, delete, or display a record in a file.
- Add new records to a file by typing data into the displayed fields.
- Change or view records in a file by typing an approximate key value and then using the page keys to locate the desired record.
- Select new record formats (or types, if the file is RPG-defined).
- Retrieve the next or previous record for any record format or type.

- Automatically duplicate one or more fields. This is useful when a data file contains a field that is the same in each record and you do not want to retype the field each time.
- Print the program-specified fields of the current database record when in Display mode.
- Show the status of the DFU program that is running.
- Present the total number of additions, deletions, and changes processed during the current DFU session.
- Print an audit report listing the changes made to a data file.
- Automatically generate key values or Relative Record Numbers (RRN).
- Accumulate the sum of additions and subtractions in a specific field in a record.
- Add a positive or negative integer to the field for each new consecutive record.
- Update records while rolling through the file.
- Change the key value during Change mode while running the DFU program.
- Initialize fields with a default value.
- Hide fields on the data entry display when you specify both Output only and Non-display for the fields.
- See field values displayed in different forms by using an edit word when an edit code does not give the desired editing.
- Validate data entered into fields.

When to Use a Programming Language

If a programming language (such as RPG or COBOL) is available, you may decide whether you can create and update your data entry program more efficiently with DFU than with the programming language.

Use a programming language if your data entry application requires any of the following:

- Computations on selected fields
- Data checking based on information contained elsewhere in a database file, such as cross referencing fields from other files
- Validation of the relationship between multiple field entries
- Complex formatting requirements.

Describing a File

DFU programs can operate on RPG II, Data Description Specifications (DDS), and Interactive Data Definition Utility (IDDU)-described data files. Use DFU to define data entry displays based on the data descriptions of these files.

Usually, data attributes of a file (such as the names and lengths of records and fields) are specified in application programs themselves. In RPG, this is done in input or output specifications. This method of describing data is called **program-described data**. Data attributes can also be defined externally through DDS or IDDU. These definitions are not in the application programs themselves, but in file descriptions independent of the program. This is called **externally described data**.

RPG II-Described Files

DFU determines what a file looks like based on file descriptions. In a program-described file, you provide the file description for two RPG II specifications: the F specification and the I specification. DFU uses F and I specifications in a complete RPG II program but ignores the other specifications. The use of RPG II-described data files by DFU programs is allowed only within the System/36 environment. See Appendix D, "Using DFU in the System/36 Environment," for more information on using RPG II file descriptions.

DDS-Described Files

Data description specifications (DDS) provide a method of describing data files externally rather than within a program. External file descriptions are associated with the data files themselves; you do not have to specify the location of the description for DFU. A sample DDS file description is shown in Figure 6 on page 13. For more information on DDS-described files, see the *DDS Reference manual*.

IDDU-Described Files

IDDU is an interactive data definition utility that is part of the Operating System/400* (OS/400)* operating system. IDDU provides you with another method for describing the files and data stored on your system. IDDU file descriptions are linked to your file in a similar manner to DDS file descriptions. A sample IDDU file definition is shown in Figure 65 on page 48. For more information on IDDU-described files, see the *IDDU User's Guide*.

DFU Function Keys

Use the function keys to request various DFU functions. DFU functions have different assignments, depending on whether you are defining or running a DFU program.

Note: If you define your program for a System/36 environment, you must use the System/36 function keys shown in "System/36 Style Run-Time Function Keys" on page 199 when you run that program.

Definition Function Keys

Definition function keys allow you to perform functions while defining a DFU program. These keys are described in Figure 1.

Note: Some of the keys shown in Figure 1 are functional only on certain displays.

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

Function Key	Name of Function Key	Description
Enter	Enter	Submits information on the display for processing.
F1	Help	Explains the prompt or field on which the cursor is positioned when you press Help. If your cursor is not positioned in a specific area when you press Help, a general description about the display appears.
Page Down (Roll Up)	Page Down (Roll Up)	Moves forward to show additional information for this display.
Page Up (Roll Down)	Page Up (Roll Down)	Moves backward to show additional information for this display.
Print	Print	Prints information currently shown on this display.
Sys Req	System Request	Interrupts the job you are currently working on, and shows a menu from which you can do various tasks.
F3	Exit	Takes you to the Exit DFU Program Definition display if you are either at the Define General Information display or further into the DFU definition prompting sequence. You may have to press F3 more than once to get to the Exit DFU Program Definition display. If you press F3, the field values on the current display are not saved.
F4	List/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 values again.

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

Function Key	Name of Function Key	Description
F9	Retrieve	Retrieves your last commands entered on the display.
F12	Cancel	Cancels the current task and returns you to the display where the task started. If you press this key after changing any prompts, they are reset to their previous values.
F14	Display definition	Shows the DFU definition defined so far. Any parts of the program not defined are displayed with default values.
F15	Print	Prints a copy of the complete DFU definition.
F17	Fast path	Completes the DFU definition for the current record format with default values.
F20	Renumber	Renumbers the sequence numbers that are already correctly entered. F20 changes the numbering to use an increment of 10, but the order of fields is not changed. (This is done to make room for insertions.)
F21	Select all	Selects all record formats, types, or fields (depending on the display you are using).

Run-Time Function Keys

Run-time function keys allow you to perform functions while running your DFU program. These keys are described in Figure 2.

Note: While you are running a program, not all the function keys available can be shown on one display; only the function keys you use most often appear. To see definitions for all available function keys, place your cursor on either one of the function key lines at the bottom of your display and press Help. Detailed definitions of all the function keys appear in numerical order.

Figure 2 (Page 1 of 3). Run-Time Function Keys

Function Key	Name of Function Key	Description
Enter	Enter	Submits information on the display for processing.
F1	Help	Explains the prompt or field on which the cursor is positioned when you press Help. If your cursor is not positioned in a specific area when you press Help, a general description about the display appears.

Figure 2 (Page 2 of 3). Run-Time Function Keys

Function Key	Name of Function Key	Description
Page Down (Roll Up)	Page Down (Roll Up)	Moves forward to show additional messages for this display, when your cursor is positioned on a message. Records will be updated when you Roll Up if you specified Y (Yes) for the <i>Allow updates on roll</i> prompt on the Define General Information display when the program was defined.
Page Up (Roll Down)	Page Up (Roll Down)	Moves backward to show additional messages for this display, when your cursor is positioned on a message. Records will be updated when you Roll Down if you specified Y (Yes) for the <i>Allow updates on roll</i> prompt on the Define General Information display when the program was defined.
Print	Print	Prints information currently shown on this display.
Sys Req	System Request	Interrupts the job you are currently working on and shows a menu from which you can do various tasks.
F3	Exit	Returns to the End Data Entry display without saving field values for the currently displayed record.
F5	Refresh	Discards input and displays the original values again.
F6	Select record type/format	Allows you to select a type or format for processing from a list of available record types or formats. DFU returns to the data entry display from which this key was pressed. (The list includes only available record formats for DDS-described files or IDDU-described files, or available record types for RPG II-described data files.)
F9	Insert	Changes to Insert mode, which allows you to insert records anywhere in the file. If the file is processed sequentially, insert mode is identical to entry mode, that is, records are added at the end of the file.
F10	Entry	Changes to Entry mode, which allows you to add new records for the first time.
F11	Change	Changes to Change mode, which allows you to change existing records.
F12	Cancel	Cancels the current task and returns you to the display where the task started. If you press this key after changing any prompts, they are reset to their previous value.
F14	Record advance	Places default values into any unfilled fields in the record, and processes the record.

Figure 2 (Page 3 of 3). Run-Time Function Keys

Function Key	Name of Function Key	Description
F15	Print record	Prints the record on your defined printer. This function is active only for a display job.
F17	Display and print accumulators	Shows the Display Batch Accumulators display, prints the current accumulator totals, adds the batch accumulators to the total accumulators , and resets them to zero. A batch accumulator is an accumulator in which subtotals for a field are stored. A total accumulator is a storage area where final totals for a field are kept. Note: Accumulators are printed (on the audit report) only if the audit report is specified and the accumulators are defined during the program definition.
F18	Auto-increment from last change	Turns automatic-increment on from the last record changed. When on if you are entering records in Entry mode or returning to Entry mode from Change mode, DFU presents the last record changed or added, plus the increment value.
F19	Auto-increment from the end of file	Turns automatic-increment on from the end of the file. When on if you are entering records in Entry mode or returning to Entry mode from Change mode, DFU presents the last record in the file, plus the increment value. Note: You can use either F18 or F19, but not both at one time. If you turn on one automatic-increment key and then turn on the other, the original key is turned off.
F20	Automatic record advance	Switches the automatic record advance on and off. When on, the contents of a display are processed as soon as data is entered into the last field on the display. It is unnecessary to press Enter.
F21	Status	Displays the status of data entry including the current data file, library, format or type, and active functions (mode, automatic duplication , automatic record advance, and auto-increment). Automatic duplication is a DFU option that allows information from a previous record to be automatically copied into the current record.
F22	Automatic duplication	Switches the automatic duplicating function on and off. When on, fields you designated for automatic duplication are filled with values from the previous record. When off, the fields remain blank.
F23	Delete	Deletes the displayed record from the file.

Starting the Data File Utility

To start DFU, sign on at a work station by responding to the sign-on prompt. The display you see after entering your password depends on your authorization for the work station and on the data processing procedures available for your computer system. You can request DFU from the Command Entry display by typing the command for the AS/400 Data File Utility (DFU) menu (STRDFU) or by typing a command with parameters on the command line to access a specific DFU function.

Note: This manual shows you how to define, change, and run DFU programs by accessing DFU through the STRDFU command. If authorized, however, you can also run existing programs directly by using the CHGDTA or DSPDTA commands, or run a temporary program by using the UPDDTA command.

DFU Commands

DFU supports the following six commands:

Command	Description
STRDFU	Start the Data File Utility
CHGDTA	Change records in an existing data file
DSPDTA	Display records from an existing data file
UPDDTA	Create and run a temporary AS/400 DFU program to update an existing data file
DLTDFUPGM	Delete an AS/400 DFU program
CRTDFUDSPF	Create a DFU display file.

For more information on these commands, refer to Appendix C, "Control Language Commands in the Data File Utility" on page 185.

Using the STRDFU Command

Use the Start DFU (STRDFU) command to request the AS/400 Data File Utility (DFU) menu. You must have user authority to use the STRDFU command. You can specify a single option, or an option plus a suboption, to show a specific DFU prompt. For example, the Display a Data File display appears when you type the following command, selecting option 1 (Run a DFU program) plus suboption 2 (Display a data file):

```
STRDFU (1 2)
```

If you do not specify any options, the AS/400 DFU menu appears as shown in Figure 3 on page 9.

For a description of the syntax diagram and parameter values for the STRDFU command, refer to Appendix C, "Control Language Commands in the Data File Utility" on page 185.

AS/400 Data File Utility (DFU) Menu

The AS/400 DFU menu allows you to select options to run, create, change, or delete a DFU program, or run a temporary program.

```
AS/400 Data File Utility (DFU)

Select one of the following:

    1. Run a DFU program
    2. Create a DFU program
    3. Change a DFU program
    4. Delete a DFU program
    5. Update data using temporary program

Selection or command
===> _____

F3=Exit  F4=Prompt  F9=Retrieve  F12=Cancel

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```

Figure 3. AS/400 Data File Utility (DFU) Menu

For each option, DFU begins a prompting sequence of displays that takes you through all the necessary steps. Chapters 2 through 6 of this manual provide detailed descriptions and an example of each of the options.

Following is a brief description of each option:

1. *Run a DFU program.* This option allows you to select and run an existing DFU program. For more information, see Chapter 4, "Running a DFU Program."
2. *Create a DFU program.* This option allows you to define a new DFU program. For more information, see Chapter 2, "Creating a DFU Program."
3. *Change a DFU program.* This option allows you to change an existing DFU program. For more information, see Chapter 3, "Changing a DFU Program."
4. *Delete a DFU program.* This option allows you to delete an existing DFU program. For more information, see Chapter 7, "Deleting a DFU Program."
5. *Update data using temporary program.* This option allows you to change or add data to a file without having to predefine a DFU program. For more information, see Chapter 5, "Updating Data Using a Temporary Program."

Distributed Data Management Support

DFU supports the AS/400 DDM files on DFU program definition and operation.

Distributed Data Management (DDM) accesses data files that reside on remote IBM systems, allowing you to retrieve, add, update, or delete records in a file on another system. In addition, a remote system can access your system's database for record retrieval. See the *DDM Guide* for a more detailed description of DDM.

Chapter 2. Creating a DFU Program

This chapter shows you how to create a Data File Utility (DFU) program to add, change, and delete records in both indexed data files and nonindexed data files. The chapter also describes the characteristics of the DFU program and the data entry displays used to access data files.

You create DFU programs by specifying formats and fields through the create option of the AS/400 DFU menu.

The data file used in this example is called QORDFILE which is in a user-defined library called MYLIB.

Note: Make sure the library and data file exist before trying the example. You can create the library by using the Create Library (CRTLIB) command. Copy the data files called QORDHDR, QORDDTL, and QORDFILE supplied with AS/400 DFU, from the QGPL library to MYLIB using the Create Duplicate Object (CRTDUPOBJ) command.

Data Entry Display Example

When you create your DFU program, you can choose either an AS/400 System or a System/36 data entry style from the Define General Information/Indexed File display. The example in this chapter creates a program that uses the AS/400 data entry style. Figure 4 shows the data entry display that appears when you run your program.

ORDER MAINTENANCE RECORDS			Mode : ENTRY		
Format : ORDHDR__			File : QORDFILE		
CUSTOMER NUMBER	ORDER NUMBER (NUMERIC CODE)	ORDER STATUS	ORDER AMOUNT	TOTAL LINES	INVOICE NUMBER
_____	____0_	0_	_____.00_	_0_	____0_
	ORDER DATE 91/07/01		SHIP VIA _____		
F3=Exit	F5=Refresh	F6=Select format			
F9=Insert	F10=Entry	F11=Change			

Figure 4. Data Entry Display in Entry Mode

Note: A display style similar to Figure 215 on page 201 appears if you have requested a System/36 data entry style on the Define General Information/Indexed File display.

The data entry display shown in Figure 4 on page 11 is in Entry mode which is the default mode when you run your program against an empty file member. See Chapter 4, "Running a DFU Program" on page 75, for additional information about running a DFU program and using the data entry display.

Procedure for Creating a DFU Program

The following example shows how to create a DFU program for an indexed data file that is described by an external DDS file specification. DFU determines whether you have an indexed or a nonindexed data file, and presents the appropriate displays. You use the same procedure for creating a program for either type of data file; however, DFU may present an additional display (Select Field for Record Number) for a nonindexed file.

The program you are going to create is based on the application defined in Figure 5. The application allows an operator to enter and change data within a data file.

HB HARDWARE COMPANY 123 Main Street Anywhere					
Sold To:					
<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: auto;"> Smith Inc. 3630 King St. Boston, Mass. </div>					
Order Number	Date	Order Status	Invoice Number	Customer Number	Ship Via
120	07/01/91	1	525	60	BOAT
Line	Order Quantity	Part Number	Part Description	Unit Amount	Total Amount
1	2	45	SCREWDRIVER	5.25	10.50
2	10	53	1 OZ HAMMER	12.10	121.00
3	3	101	ELECTRIC SAW	52.00	156.00
4	12	325	.5" SCREWS(100)	2.15	25.80
TOTAL AMOUNT					313.30

Figure 5. Order Maintenance Application

Figure 6 on page 13 shows the DDS file description of the formats and fields that appear in this example for an indexed data file.

```

MEMBER: QORDFILE
... .. 2 ... .. 3 ... .. 4 ... .. 5 ... .. 6 ... .. 7 ... .. 8 ... .. 9 ... .. 0
R ORDHDR          PFILE(ORDHDRPF)
                  TEXT('Order Header Record')
K ORDER
R ORDDTL          PFILE(ORDDTLPF)
                  TEXT('Order Detail Record')
K ORDER

***** END OF SOURCE *****

MEMBER: QORDHDR
... .. 2 ... .. 3 ... .. 4 ... .. 5 ... .. 6 ... .. 7 ... .. 8 ... .. 9 ... .. 0
R ORDHDR          TEXT('Order Header Record')
CUST              5      COLHDG('CUSTOMER' 'NUMBER')
                  TEXT('Customer number')
                  CHECK(ME)
ORDER             5P 0   COLHDG('ORDER' 'NUMBER')
                  TEXT('Order number')
                  CHECK(ME)
ORDDAT           6P 0   COLHDG('ORDER' 'DATE')
                  TEXT('Date order was entered')
                  EDTWRD(' / / ')
SHPVIA           15     COLHDG('SHIP' 'VIA')
                  TEXT('Ship via')
                  VALUES('BOAT' 'TRAIN' 'TRUCK')
ORDSTS           1P 0   COLHDG('ORDER' 'STATUS')
                  TEXT('Order status: -
1=Open 2=Closed 3=Cancelled')
                  VALUES(1 2 3)
ORDAMT           11P 2  COLHDG('ORDER' 'AMOUNT')
                  TEXT('Order amount')
                  EDTCDE(A)
TOTLIN           3P 0   COLHDG('TOTAL' 'LINES')
                  TEXT('Total items in order')
INVNUM           5P 0   COLHDG('INVOICE' 'NUMBER')
                  TEXT('Invoice number')
K ORDER

***** END OF SOURCE *****

```

Figure 6 (Part 1 of 2). DDS File Description Example

```

MEMBER: QORDDTL
... .. 2 ... .. 3 ... .. 4 ... .. 5 ... .. 6 ... .. 7 ... .. 8 ... .. 9 ... .. 0
R ORDDTL          TEXT('Order Detail Record')
ORDER            5P 0    COLHDG('ORDER' 'NUMBER')
                  TEXT('Order number')
                  CHECK(ME)
QTYORD           3P 0    COLHDG('ORDER' 'QUANTITY')
                  TEXT('Order quantity')
                  RANGE(1 999)
PARTNO           6P 0    COLHDG('PART' 'NUMBER')
                  TEXT('Part number')
PARTDESC         15      COLHDG('PART' 'DESCRIPTION')
                  TEXT('Part description')
UNITAMT          7P 2    COLHDG('UNIT' 'AMOUNT')
                  TEXT('Unit amount')
                  EDTCDE(J)
TOTAMT           10P 2   COLHDG('TOTAL' 'AMOUNT')
                  TEXT('Total amount')
                  EDTCDE(N)
K ORDER
* * * * * E N D   O F   S O U R C E * * * * *

```

Figure 6 (Part 2 of 2). DDS File Description Example

When you enter the STRDFU (Start DFU) command, DFU displays a menu from which you select an option to create a DFU program. DFU then begins a prompting sequence through which you define the program.

Note: You can review program or data file details at any time while you are creating your DFU program. Function keys are provided for this purpose. When you are finished reviewing the details, press F3 (Exit) to return to the definition display.

The rest of this chapter describes the displays that appear when you create a DFU program and shows the entries to type into each display for the sample program.

Perform the following steps to start DFU program definition:

1. Sign on to the system.
2. Type STRDFU.
3. Press Enter. The AS/400 DFU menu appears, as shown in Figure 7 on page 15.

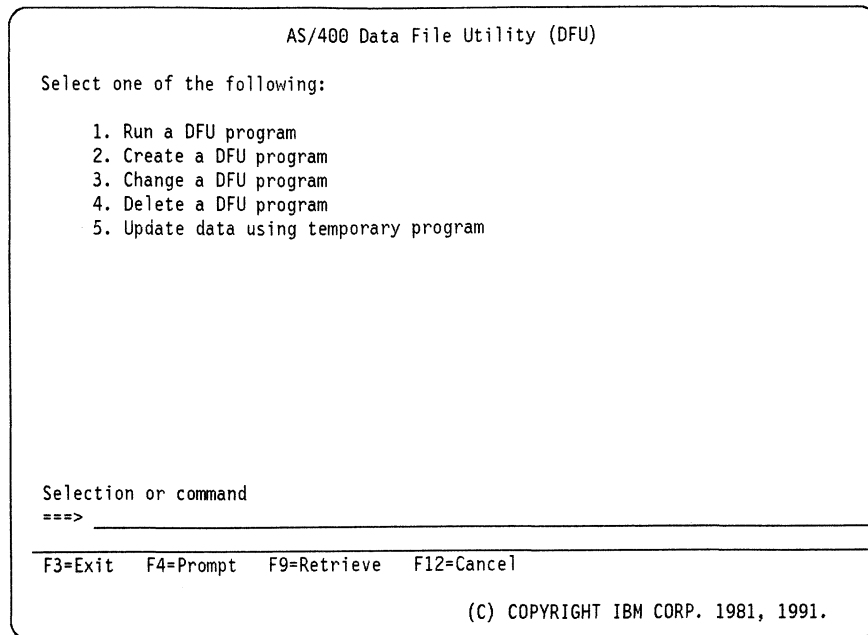


Figure 7. AS/400 Data File Utility (DFU) Menu

4. Type 2 (Create a DFU program) on the command line, as shown in Figure 8.

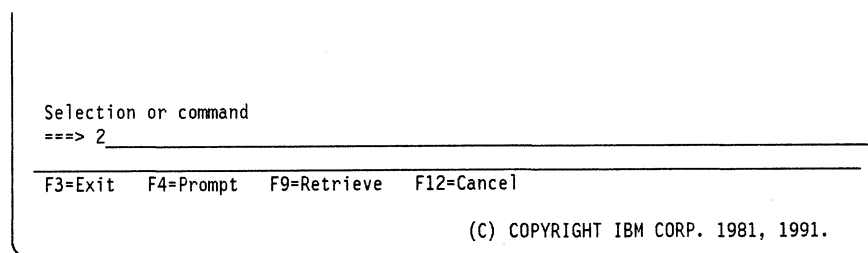


Figure 8. AS/400 Data File Utility (DFU) Menu with Option 2 Specified

5. Press Enter.

Create a DFU Program Display

The Create a DFU Program display appears as shown in Figure 9 on page 16.

This display requests the name of the DFU program you want to define and the data file on which the program is to run.

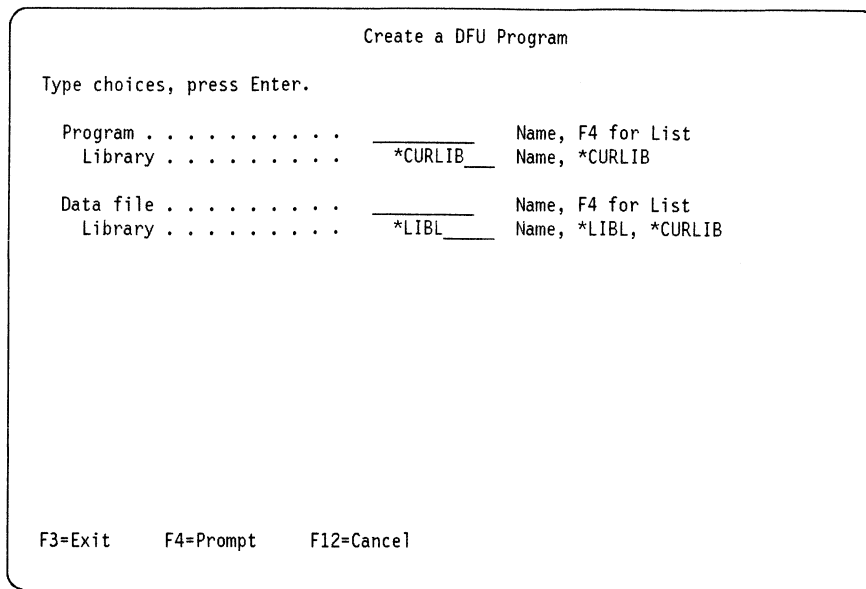


Figure 9. Create a DFU Program Display

Note: This example assumes you are the first user of DFU and shows the default values you would see if values had never been entered. If you or another user used DFU before, the defaults for the prompts might be different.

In this example, we create a DFU program (ORDMNT) to add and update sales orders.

1. Type ORDMNT into the *Program* prompt, and MYLIB over the defaults in both *Library* prompts. Leave the *Data file* prompt blank. Your display appears as in Figure 10.

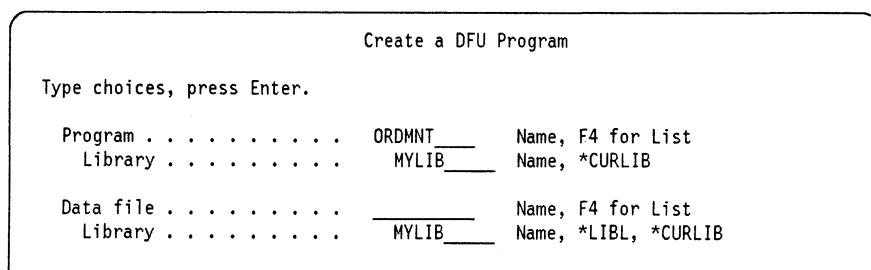


Figure 10. Create a DFU Program Display with Example Entries

2. Move your cursor to the *Data file* prompt and press F4 (Prompt) to select the data file for your DFU Program.

Select File Display

The Select File display appears as in Figure 11. DFU displays a list of data files from the specified library. You can then select the file you want to use for your program from the displayed list.

```

                                     Select File

Library . . . . . : MYLIB
Position to . . . . . _____

Type option, press Enter.
1=Select

Opt   File      Type      Description
-    QORDDTL   PF-DTA
-    QORDFILE  LF
-    QORDHDR   PF-DTA

F5=Refresh      F12=Cancel

Bottom
```

Figure 11. Select File Display

1. Type 1 (Select) in the *Opt* column next to the QORDFILE field to select the file for the sample ORDMNT program. Your display appears as in Figure 12.

```

                                     Select File

Library . . . . . : MYLIB
Position to . . . . . _____

Type option, press Enter.
1=Select

Opt   File      Type      Description
1    QORDDTL   PF-DTA
1    QORDFILE  LF
-    QORDHDR   PF-DTA
```

Figure 12. Select File Display with QORDFILE Selected

2. Press Enter to return to the Create a DFU Program display. The selected file QORDFILE appears in the data file prompt as shown in Figure 13 on page 18.

```

                                Create a DFU Program

Type choices, press Enter.

Program . . . . .   ORDMNT____   Name, F4 for List
Library . . . . .   MYLIB____   Name, *CURLIB

Data file . . . . .   QORDFILE__   Name, F4 for List
Library . . . . .   MYLIB____   Name, *LIBL, *CURLIB

```

Figure 13. Create a DFU Program Display with Data File Specified

3. Press Enter. The Define General Information/Indexed File display appears, as shown in Figure 14.

Note: If your data file is **nonindexed**, the Define General Information/Nonindexed File display appears.

Define General Information/Indexed File Display

This display allows you to specify what the general characteristics of your program will be.

DFU will remember all the Yes and No values you specify every time you save a program, and will use these values in your next DFU session.

Note: The default values the first time you use DFU are shown in Figure 14.

```

                                Define General Information/Indexed File

Type choices, press Enter.

Job title . . . . .   ORDMNT_____
Display format . . . . .   2           1=Single, 2=Multiple
                                       3=Maximum, 4=Row oriented

Audit report . . . . .   Y           Y=Yes, N=No
S/36 style . . . . .   N           Y=Yes, N=No
Suppress errors . . . . .   N       Y=Yes, N=No
Edit numerics . . . . .   N       Y=Yes, N=No
Allow updates on roll . . . . .   Y   Y=Yes, N=No
Keys:
Generate . . . . .   N           Y=Yes, N=No
Changes allowed . . . . .   Y     Y=Yes, N=No

F3=Exit      F12=Cancel      F14=Display definition

```

Figure 14. Define General Information/Indexed File Display

1. Change the default job title to ORDER MAINTENANCE RECORDS by typing over the default entry.
2. Change the display format to row oriented by typing 4 in the *Display format* prompt, and type Y (Yes) in the *Edit numerics* prompt. Your display appears as in Figure 15 on page 19.

```

Define General Information/Indexed File

Type choices, press Enter.

Job title . . . . . ORDER MAINTENANCE RECORDS
Display format . . . . . 4          1=Single, 2=Multiple
                                   3=Maximum, 4=Row oriented

Audit report . . . . . Y          Y=Yes, N=No
S/36 style . . . . . N          Y=Yes, N=No
Suppress errors . . . . . N      Y=Yes, N=No
Edit numerics . . . . . Y       Y=Yes, N=No

```

Figure 15. Define General Information/Indexed File Display with Example Entries

3. Press Enter. The Define Audit Control display appears because you specified Y in the *Audit report* prompt. If you had specified N you would go directly to the Work with Record Formats display.

Define Audit Control Display

The audit report is a printed list of changes made to a data file when you run your DFU program. This display allows you to define the scope of information you want reported on the listing.

1. Leave the default values for the sample ORDMNT program. Your display appears as in Figure 16.

```

Define Audit Control

Type choices, press Enter.

Print additions . . . . . Y          Y=Yes, N=No
Print changes . . . . . Y          Y=Yes, N=No
Print deletions . . . . . Y        Y=Yes, N=No
Printer:
  Line width . . . . . 132         60-198
  Column spacing . . . . . 1       0-9

```

Figure 16. Define Audit Control Display

2. Press Enter. The Work with Record Formats display appears as in Figure 17 on page 20.

Work with Record Formats Display

The Work with Record Formats display appears if your data file is a DDS- or IDDU-described file. This display lists the various record formats in your file specification. You can work with one or more formats for processing. If you select more than one record format, DFU presents a new Select and Sequence Fields display and repeats the field definition sequence for each record format you select from this display.

Note: Make sure you have defined record ID codes for each selected record when using multiple record formats for IDDU or RPG II. ID codes allow DFU to differentiate between the record formats on a record-by-record basis.

```

Work with Record Formats

File . . . : QORDFILE          Library . . . . : MYLIB

Type options, press Enter. Press F21 to select all.
  2=Specify  4=Delete

Opt  Format      Multiple
      Records   Defined  Description
-   ORDHDR      N        N    Order Header Record
-   ORDDTL      N        N    Order Detail Record

F3=Exit          F5=Refresh      F12=Cancel      Bottom
F14=Display definition  F21=Select all

```

Figure 17. Work with Record Formats Display

1. Type 2 (Specify) next to the ORDHDR format and the ORDDTL format and type Y in the *Multiple Records* prompt for the ORDDTL format to select it for multiple record processing by the sample ORDMNT program. Your display appears as in Figure 18.

```

Work with Record Formats

File . . . : QORDFILE          Library . . . . : MYLIB

Type options, press Enter. Press F21 to select all.
  2=Specify  4=Delete

Opt  Format      Multiple
      Records   Defined  Description
2   ORDHDR      N        N    Order Header Record
2   ORDDTL      Y        N    Order Detail Record

```

Figure 18. Work with Record Formats Display with Both Formats Selected

2. Press Enter. The Select and Sequence Fields display appears, as shown in Figure 19 on page 21.

Select and Sequence Fields Display

This display allows you to select the fields and the field order that your DFU program uses for each selected record format. Your field selections appear on the data entry display when you run the program. The displayed information is from the applicable DDS- or IDDU-file descriptions. This display reappears for each selected record format when you finish the definition sequence for the current record format.

```

Select and Sequence Fields
File . . . . . : QORDFILE      Library . . . . . : MYLIB
Record format . . . . . : ORDHDR

Select fields and their sequence or press F21 to select all; press Enter.

Sequence  Field      Attr   Length  Type      Description
-----  -
1_____ CUST          5      CHAR    Customer number
2_____ ORDER        KEY     5,0     PACK    Order number
3_____ ORDDAT          6,0     PACK    Date order was entered
4_____ SHPVIA          15      CHAR    Ship via
5_____ ORDSTS          1,0     PACK    Order status: 1=Open 2=Close
6_____ ORDAMT          11,2    PACK    Order amount
7_____ TOTLIN          3,0     PACK    Total items in order
8_____ INVNUM          5,0     PACK    Invoice number

F3=Exit      F5=Refresh      F12=Cancel      Bottom
F20=Renumbr  F21=Select all  F14=Display definition

```

Figure 19. Select and Sequence Fields Display

1. Type the sequence numbers shown in Figure 20 for the sample ORDMNT program.

```

Select and Sequence Fields
File . . . . . : QORDFILE      Library . . . . . : MYLIB
Record format . . . . . : ORDHDR

Select fields and their sequence or press F21 to select all; press Enter.

Sequence  Field      Attr   Length  Type      Description
1_____ CUST          5      CHAR    Customer number
2_____ ORDER        KEY     5,0     PACK    Order number
7_____ ORDDAT          6,0     PACK    Date order was entered
8_____ SHPVIA          15      CHAR    Ship via
3_____ ORDSTS          1,0     PACK    Order status: 1=Open 2=Close
4_____ ORDAMT          11,2    PACK    Order amount
5_____ TOTLIN          3,0     PACK    Total items in order
6_____ INVNUM          5,0     PACK    Invoice number

F3=Exit      F5=Refresh      F12=Cancel      Bottom
F20=Renumbr  F21=Select all  F14=Display definition

```

Figure 20. Select and Sequence Fields Display with Fields Selected

2. Press Enter. The display reappears with your selected fields right-justified in order of your selection, and a message appears on the last line of the display asking you for confirmation. Your display appears as in Figure 21 on page 22.

```

Select and Sequence Fields

File . . . . . : QORDFILE      Library . . . . . : MYLIB
Record format . . . . . : ORDHDR

Select fields and their sequence or press F21 to select all; press Enter.

Sequence  Field      Attr  Length  Type      Description
-----  -
   1  CUST          5  CHAR      Customer number
   2  ORDER        KEY   5,0  PACK      Order number
   3  ORDSTS          1,0  PACK      Order status: 1=Open 2=Close
   4  ORDAMT       11,2  PACK      Order amount
   5  TOTLIN          3,0  PACK      Total items in order
   6  INVNUM          5,0  PACK      Invoice number
   7  ORDDAT          6,0  PACK      Date order was entered
   8  SHPVIA         15  CHAR      Ship via

Bottom
F3=Exit      F5=Refresh   F12=Cancel   F14=Display definition
F17=Fast path F20=Renumber F21=Select all
Press Enter to confirm or F17 to confirm with defaults.

```

Figure 21. Select and Sequence Fields Display for Confirmation

3. Press Enter to confirm your choices for the sample ORDMNT program. The Work with Fields display appears.

Work with Fields Display

The Work with Fields display appears when you press Enter from the Select and Sequence Fields display. From here you can select the fields that need extended definition and extended validation, and specify alternate headings to appear on the data entry display. If you do not require extended definitions, press Enter. If there are record formats still to be processed (based on selections made on the Work with Record Formats display), the Select and Sequence Fields display for the next record format appears. Otherwise, the Exit DFU Program definition display appears.

Note: If you do not select extended definition, the validation **keywords** from your DDS file description will be used. A DDS keyword is a name that identifies a function.

The display appears as in Figure 22 on page 23.


```

Work with Fields

File . . . . . : QORDFILE      Library . . . . . : MYLIB
Record format . . . . . : ORDHDR

Type options, press Enter. Press F21 to select all.
2=Specify extended definition
4=Delete extended definition

Opt  Field      Extended
      Definition  Heading
-   CUST        N      CUSTOMER_____
-   ORDER       N      ORDER_____
-   ORDSTS      N      ORDER_____
-   ORDAMT      N      ORDER_____
-   TOTLIN      N      TOTAL_____
-   INVNUM      N      INVOICE_____
-   ORDDAT      N      ORDER_____
-   SHPVIA      N      SHIP_____

F3=Exit          F5=Refresh      F12=Cancel
F14=Display definition  F21=Select all

Bottom

```

Figure 22. Work with Fields Display

Now that you have selected the fields you want to include in the program, you can specify extended field definitions for them. The following steps show you how to specify an extended field definition:

1. Type 2 (Specify) next to the ORDER, ORDAMT, ORDDAT and SHPVIA fields to select them for extended definitions. Your display appears as in Figure 23.

```

Work with Fields

File . . . . . : QORDFILE      Library . . . . . : MYLIB
Record format . . . . . : ORDHDR

Type options, press Enter. Press F21 to select all.
2=Specify for extended definition
4=Delete extended definition

Opt  Field      Extended
      Definition  Heading
-   CUST        N      CUSTOMER_____
2   ORDER       N      ORDER_____
-   ORDSTS      N      ORDER_____
2   ORDAMT      N      ORDER_____
-   TOTLIN      N      TOTAL_____
-   INVNUM      N      INVOICE_____
2   ORDDAT      N      ORDER_____
2   SHPVIA      N      SHIP_____

F3=Exit          F5=Refresh      F12=Cancel
F14=Display definition  F21=Select all

```

Figure 23. Work with Fields Display with Selected Fields

2. Press Enter to continue to the Specify Extended Field Definition display.

Specify Extended Field Definition Display for Numeric Fields

Two extended definition displays exist; one for alphanumeric fields and one for numeric fields. In this example, the Specify Extended Field Definition display for numeric fields appears first because the first field selected for extended definition is the numeric ORDER field. Your display appears as in Figure 24.

```

Specify Extended Field Definition
Field . . . . . : ORDER      Record format . . . . . : ORDHDR
Type choices, press Enter.
Auto duplicate . . . . . N      Y=Yes, N=No
Accumulate . . . . . N      Y=Yes, N=No
Extended field
  heading . . . . . ORDER_____
                   NUMBER_____
Heading location . . . . . *ABOVE_  *ABOVE, *BEFORE
Initial value . . . . . _____
Auto-increment . . . . . _____
Validity checks . . . . . _      2=Change, 4=Delete

F3=Exit      F12=Cancel      F14=Display definition      More...

```

Figure 24. Specify Extended Field Definition Display for a Numeric Field

1. Press Page Down (Roll Up) to go to the second part of the Specify Extended Field Definition display. Your display appears as in Figure 25.

```

Specify Extended Field Definition
Field . . . . . : ORDER      Record format . . . . . : ORDHDR
Type choices, press Enter.
Begin on new line . . . . . N      Y=Yes, N=No
Field exit required . . . . . Y      Y=Yes, N=No
Output only . . . . . N      Y=Yes, N=No
Non-display . . . . . N      Y=Yes, N=No
Default spacing . . . . . Y      Y=Yes, N=No
For choice N=No:
  Number of spaces . . . . . 01      0-40
Edit code . . . . . L      Blank, 1-4, A-D, J-M, . . .
Edit word . . . . . _____

F3=Exit      F12=Cancel      F14=Display definition      Bottom

```

Figure 25. Second Screen of Specify Extended Field Definition Display

Note: The edit code (L) is specified here because it is the default for DFU. Edit code L means that a decimal point will be inserted in the correct place if decimal positions are indicated in the field description, negative numeric fields are indicated with a minus sign to the right of the last digit in the field, and unnecessary leading zeros are blanked out.

2. Press Page Up (Roll Down) to go back to the first screen of the Specify Extended Field Definition display.
3. Type (NUMERIC CODE) in the *Extended field heading* prompt on the line below ORDER NUMBER.
4. Type 10 in the *Auto-increment* prompt and press Field Exit to have the order numbers automatically increased by 10 for each new order when you are in Entry or Insert mode.
5. Type 2 (Change) in the *Validity checks* prompt to change the validity checks that have been specified in the DDS file description.

Your display appears as in Figure 26.

```

Specify Extended Field Definition
Field . . . . . : ORDER      Record format . . . . . : ORDHDR
Type choices, press Enter.
Auto duplicate . . . . . N          Y=Yes, N=No
Accumulate . . . . . N          Y=Yes, N=No
Extended field
  heading . . . . . ORDER
                        NUMBER
                        (NUMERIC CODE)
Heading location . . . . . *ABOVE_  *ABOVE, *BEFORE
Initial value . . . . .
Auto-increment . . . . . 10
Validity checks . . . . . 2          2=Change, 4=Delete

F3=Exit  F12=Cancel  F14=Display definition
More...

```

Figure 26. Specify Extended Field Definition Display with Prompts Changed

6. Press Enter and the Specify Validity Checks display appears because you specified 2 (Change) in the *Validity checks* prompt.

The display appears as in Figure 27 on page 26.

Specify Validity Checks Display for Numeric Fields

```

Specify Validity Checks
Field . . . . . : ORDER      Record format . . . . . : ORDHDR
Type choices, press Enter.
Mandatory entry . . . . . Y      Y=Yes, N=No
Mandatory fill . . . . . N      Y=Yes, N=No
Mod 10 check . . . . . N      Y=Yes, N=No
Mod 11 check . . . . . N      Y=Yes, N=No
Immediate check for
Mod 10 or Mod 11 . . . . . N      Y=Yes, N=No
Relational operator . . . . . _      EQ, NE, LE, NG, . . .
List of values . . . . . _____
_____
_____
_____
_____
1 to 20 list values

F3=Exit      F12=Cancel      F14=Display definition

```

Figure 27. Specify Validity Checks Display

1. Type RG (Range) in the *Relational operator* prompt.
2. Type 0 3000 in the *List of values* prompt to specify that the values for the order number must be in the range between 0 and 3000.

The screen appears as in Figure 28.

```

Specify Validity Checks
Field . . . . . : ORDER      Record format . . . . . : ORDHDR
Type choices, press Enter.
Mandatory entry . . . . . Y      Y=Yes, N=No
Mandatory fill . . . . . N      Y=Yes, N=No
Mod 10 check . . . . . N      Y=Yes, N=No
Mod 11 check . . . . . N      Y=Yes, N=No
Immediate check for
Mod 10 or Mod 11 . . . . . N      Y=Yes, N=No
Relational operator . . . . . RG      EQ, NE, LE, NG, . . .
List of values . . . . . 0 3000_____
_____
_____
_____
_____
1 to 20 list values

```

Figure 28. Specify Validity Checks Display with a Relational Operator Specified

3. Press Enter to go to the Specify Extended Field Definition display for numeric fields.

This display appears next because you selected the numeric ORDAMT field for an extended definition on the Work with Fields display.

Your display appears as in Figure 29.

```

Specify Extended Field Definition
Field . . . . . : ORDAMT      Record format . . . . . : ORDHDR
Type choices, press Enter.
Auto duplicate . . . . . N      Y=Yes, N=No
Accumulate . . . . . N      Y=Yes, N=No
Extended field
  heading . . . . . ORDER_____
  AMOUNT_____
Heading location . . . . . *ABOVE_  *ABOVE, *BEFORE
Initial value . . . . . _____
Auto-increment . . . . . _____
Validity checks . . . . . _      2=Change, 4=Delete

F3=Exit      F12=Cancel      F14=Display definition      More...

```

Figure 29. Specify Extended Field Definition Display for a Numeric Field

4. Press Page Down (Roll Up) to go the second part of the Specify Extended Field Definition display. Your display appears as in Figure 30.

```

Specify Extended Field Definition
Field . . . . . : ORDAMT      Record format . . . . . : ORDHDR
Type choices, press Enter.
Begin on new line . . . . . N      Y=Yes, N=No
Field exit required . . . . . Y      Y=Yes, N=No
Output only . . . . . N      Y=Yes, N=No
Non-display . . . . . N      Y=Yes, N=No
Default spacing . . . . . Y      Y=Yes, N=No
For choice N=No:
  Number of spaces . . . . . 01      0-40
Edit code . . . . . A      Blank, 1-4, A-D, J-M, . . .
Edit word . . . . . _____

F3=Exit      F12=Cancel      F14=Display definition      Bottom

```

Figure 30. Second Screen of Specify Extended Field Definition Display

Note: The edit code A appears in the *Edit code* prompt because it was specified in the DDS file description. By using edit code A the values

entered in the ORDAMT field will be displayed with commas and decimal places where necessary. Negative numeric values are shown with a CR symbol to the right of the last digit. Any leading zeros are blanked out.

5. Press Page Up (Roll Down) to go back to the first screen of the Specify Extended Field Definition display.
6. Type Y (Yes) over the default value in the *Accumulate* prompt to select the accumulate function for the ORDAMT field.

The accumulate function maintains a running total of the values you type for a specified field when you run your program. The accumulator total appears at the end of your data entry session and prints on the audit report if you request that report.

Your display appears as in Figure 31.

```

Specify Extended Field Definition
Field . . . . . : ORDAMT      Record format . . . . . : ORDHDR
Type choices, press Enter.
Auto duplicate . . . . . N      Y=Yes, N=No
Accumulate . . . . . Y      Y=Yes, N=No
Extended field
  heading . . . . . ORDER_____
                          AMOUNT_____
Heading location . . . . . *ABOVE_  *ABOVE, *BEFORE
Initial value . . . . . _____
Auto-increment . . . . . _____
Validity checks . . . . . _      2=Change, 4=Delete

F3=Exit      F12=Cancel      F14=Display definition      More...
  
```

Figure 31. Specify Extended Field Definition Display with Accumulate Specified

7. Press Enter to go to the Specify Extended Field Definition display for numeric fields.

This display appears next because you specified an Extended Field Definition for the numeric field ORDDAT on the Work with Fields display. Your display appears as in Figure 32 on page 29.

```

Specify Extended Field Definition
Field . . . . . : ORDDAT      Record format . . . . . : ORDHDR
Type choices, press Enter.
Auto duplicate . . . . . N      Y=Yes, N=No
Accumulate . . . . . N      Y=Yes, N=No
Extended field
  heading . . . . . ORDER_____
                           DATE_____
Heading location . . . . . *ABOVE_  *ABOVE, *BEFORE
Initial value . . . . . _____
Auto-increment . . . . . _____
Validity checks . . . . . _      2=Change, 4=Delete

F3=Exit      F12=Cancel      F14=Display definition      More...

```

Figure 32. Specify Extended Field Definition Display for an Alphanumeric Field

- Press Page Down (Roll Up) to go to the second part of the Specify Extended Field Definition display. Your display appears as in Figure 33.

```

Specify Extended Field Definition
Field . . . . . : ORDDAT      Record format . . . . . : ORDHDR
Type choices, press Enter.
Begin on new line . . . . . N      Y=Yes, N=No
Field exit required . . . . . Y      Y=Yes, N=No
Output only . . . . . N      Y=Yes, N=No
Non-display . . . . . N      Y=Yes, N=No
Default spacing . . . . . Y      Y=Yes, N=No
  For choice N=No:
    Number of spaces . . . . . 01      0-40
Edit code . . . . . '      Blank, 1-4, A-D, J-M, . . .
Edit word . . . . . / / ' _____

F3=Exit      F12=Cancel      F14=Display definition      Bottom

```

Figure 33. Second Screen of Extended Field Definition Display

Note: The edit word that you see on this display was specified in the DDS file description.

- Press Page Up (Roll Down) to go back to the first screen of the Specify Extended Field Definition display.

- Type *DATE in the *Initial value* prompt to specify an initial date value for this field. The system date will automatically be entered in this field when you enter new records. Your display appears as in Figure 34 on page 30.

```

Specify Extended Field Definition
Field . . . . . : ORDDAT      Record format . . . . . : ORDHDR
Type choices, press Enter.
Auto duplicate . . . . . N          Y=Yes, N=No
Allow lowercase . . . . . N        Y=Yes, N=No
Extended field
  heading . . . . . ORDER_____
                             DATE_____
Heading location . . . . . *ABOVE_  *ABOVE, *BEFORE
Initial value . . . . . *DATE_____
Auto-increment . . . . . _____
Validity checks . . . . . _         2=Change, 4=Delete

```

Figure 34. Specify Extended Field Definition Display with Initial Value Specified

- Press Enter to go to the Specify Extended Field Definition display for the alphanumeric SHPVIA field.

Specify Extended Field Definition Display for Alphanumeric Fields

This display appears next because you specified the alphanumeric SHPVIA field for an extended definition. Your display appears as in Figure 35.

```

Specify Extended Field Definition
Field . . . . . : SHPVIA      Record format . . . . . : ORDHDR
Type choices, press Enter.
Auto-duplicate . . . . . N          Y=Yes, N=No
Allow lowercase . . . . . N        Y=Yes, N=No
Extended field
  heading . . . . . SHIP_____
                             VIA_____
Heading location . . . . . *ABOVE_  *ABOVE, *BEFORE
Initial value . . . . . _____
Validity checks . . . . . _         2=Change, 4=Delete

More...

F3=Exit      F12=Cancel      F14=Display definition

```

Figure 35. Specify Extended Field Definition Display for Alphanumeric Fields

- Press Page Down (Roll Up) to go to the second part of the Specify Extended Field Definition display. Your display appears as in Figure 36 on page 31.


```

Specify Extended Field Definition
Field . . . . . : SHPVIA      Record format . . . . . : ORDHDR

Type choices, press Enter.

Begin on new line . . . . . N      Y=Yes, N=No
Field exit required . . . . . Y      Y=Yes, N=No
Output only . . . . . N      Y=Yes, N=No
Non-display . . . . . N      Y=Yes, N=No
Default spacing . . . . . Y      Y=Yes, N=No
  For choice N=No:
    Number of spaces . . . . . 01    0-40
Alphabetic characters
  only . . . . . N      Y=Yes, N=No

Bottom

F3=Exit      F12=Cancel      F14=Display definition

```

Figure 36. Second Part of Extended Field Definition Display

2. Press Page Up (Roll Down) to go back to the first screen of the Specify Extended Field Definition display.
3. Type 2 (Change) in the *Validity checks* prompt. The display appears as in Figure 37.

```

Specify Extended Field Definition
Field . . . . . : SHPVIA      Record format . . . . . : ORDHDR

Type choices, press Enter.

Auto-duplicate . . . . . N      Y=Yes, N=No
Allow lowercase . . . . . N      Y=Yes, N=No
Extended field
  heading . . . . . SHIP_____
                   VIA_____

Heading location . . . . . *ABOVE_  *ABOVE, *BEFORE
Initial value . . . . .
Validity checks . . . . . 2      2=Change, 4=Delete

```

Figure 37. Specify Extended Field Definition Display with Change Validity Checks Specified

4. Press Enter and the Specify Validity Checks display appears as shown in Figure 38 on page 32.

Specify Validity Checks Display for Alphanumeric Fields

```

Specify Validity Checks
Field . . . . . : SHPVIA      Record format . . . . . : ORDHDR
Type choices, press Enter.
Mandatory entry . . . . . N          Y=Yes, N=No
Mandatory fill . . . . . N          Y=Yes, N=No
Name check . . . . . N             Y=Yes, N=No
Extended name check . . . . . N    Y=Yes, N=No
Allow blanks . . . . . N           Y=Yes, N=No
Relational operator . . . . . LS    EQ, NE, LE, NG, . . .
List of values . . . . . 'BOAT' 'TRAIN' 'TRUCK' _____
_____
_____
_____
1 to 20 list values

F3=Exit      F12=Cancel      F14=Display definition

```

Figure 38. Specify Validity Checks Display for SHPVIA Field

Note: The list of values appears on this display because it was specified in the DDS file description.

1. Type 'PLANE' in the *List of values* prompt to add it to the list of values. The display appears as in Figure 39.

```

Specify Validity Checks
Field . . . . . : SHPVIA      Record format . . . . . : ORDHDR
Type choices, press Enter.
Mandatory entry . . . . . N          Y=Yes, N=No
Mandatory fill . . . . . N          Y=Yes, N=No
Name check . . . . . N             Y=Yes, N=No
Extended name check . . . . . N    Y=Yes, N=No
Allow blanks . . . . . N           Y=Yes, N=No
Relational operator . . . . . LS    EQ, NE, LE, NG, . . .
List of values . . . . . 'BOAT' 'TRAIN' 'TRUCK' 'PLANE' _____
_____
_____
_____
1 to 20 list values

```

Figure 39. Specify Validity Checks Display with a List of Values Specified

Note: You must specify two or more values when using the LS relational operator. The values you specify in the *List of values* prompt should each be separated by a blank. You must enclose character strings in single apostrophes.

2. Press Enter to continue to the Work with Fields display.

This display appears because you have finished with all the extended field definitions that you wanted to specify. Your display appears as in Figure 40 on page 33.

```

Work with Fields
File . . . . . : QORDFILE      Library . . . . . : MYLIB
Record format . . . . . : ORDHDR

Type options, press Enter. Press F21 to select all.
  2=Specify extended definition
  4=Delete extended definition

Opt  Field      Extended
     Field      Definition  Heading
-   CUST        N          CUSTOMER_____
-   ORDER       Y          ORDER_____
-   ORDSTS      N          ORDER_____
-   ORDAMT      Y          ORDER_____
-   TOTLIN      N          TOTAL_____
-   INVNUM      N          INVOICE_____
-   ORDDAT      Y          ORDER_____
-   SHPVIA      Y          SHIP_____

F3=Exit          F5=Refresh      F12=Cancel
F14=Display definition  F21=Select all

Bottom

```

Figure 40. Work with Fields Display After Specifying Extended Field Definitions

You have now finished defining the program information for the ORDHDR record format. Since you specified two record formats, the next step is to repeat the definition process for the second record format (ORDDTL).

Definition Process for Second Record Format

The following steps take you through the definition process for the ORDDTL record format:

1. Press Enter to continue to the Select and Sequence Fields display for the ORDDTL record format. The display appears as in Figure 41 on page 34.

```

                                Select and Sequence Fields
File . . . . . : QORDFILE      Library . . . . : MYLIB
Record format . . . . . : ORDDTL

Select fields and their sequence or press F21 to select all; press Enter.

Sequence  Field      Attr   Length  Type      Description
-----  -
ORDER    KEY      5,0    PACK    Order number
QTYORD   3,0      PACK    Order quantity
PARTNO   6,0      PACK    Part number
PARTDESC 15       CHAR    Part description
UNITAMT  7,2      PACK    Unit amount
TOTAMT  10,2     PACK    Total amount

                                Bottom
F3=Exit      F5=Refresh    F12=Cancel    F14=Display definition
F20=Renumber F21=Select all

```

Figure 41. Select and Sequence Fields Display for ORDDTL Record Format

2. Press F21 to select all the fields. The display reappears with the selected fields right-justified in numerical order, and a message appears on the last line of the display asking you for confirmation. Your display appears as in Figure 42.

```

                                Select and Sequence Fields
File . . . . . : QORDFILE      Library . . . . : MYLIB
Record format . . . . . : ORDDTL

Select fields and their sequence or press F21 to select all; press Enter.

Sequence  Field      Attr   Length  Type      Description
-----  -
 1 ORDER    KEY      5,0    PACK    Order number
 2 QTYORD   3,0      PACK    Order quantity
 3 PARTNO   6,0      PACK    Part number
 4 PARTDESC 15       CHAR    Part description
 5 UNITAMT  7,2      PACK    Unit amount
 6 TOTAMT  10,2     PACK    Total amount

                                Bottom
F3=Exit      F5=Refresh    F12=Cancel    F14=Display definition
F20=Renumber F21=Select all
Press Enter to confirm or F17 to confirm with defaults.

```

Figure 42. Select and Sequence Fields Display for Confirmation

3. Press Enter to confirm your choices. The Work with Fields display appears as in Figure 43 on page 35.

```

Work with Fields
File . . . . . : QORDFILE      Library . . . . . : MYLIB
Record format . . . . . : ORDDTL

Type options, press Enter. Press F21 to select all.
2=Specify extended definition
4=Delete extended definition

Opt  Field      Extended
      Field      Definition  Heading
-   ORDER      N          ORDER_____
-   QTYORD     N          ORDER_____
-   PARTNO     N          PART_____
-   PARTDESC   N          PART_____
-   UNITAMT    N          UNIT_____
-   TOTAMT    N          TOTAL_____

F3=Exit          F5=Refresh      F12=Cancel
F14=Display definition  F21=Select all

Bottom

```

Figure 43. Work with Fields Display

4. Type 2 (Specify) next to the ORDER field to select it for an extended definition. Your display appears as in Figure 44.

```

Work with Fields
File . . . . . : QORDFILE      Library . . . . . : MYLIB
Record format . . . . . : ORDDTL

Type options, press Enter. Press F21 to select all.
2=Specify extended definition
4=Delete extended definition

Opt  Field      Extended
      Field      Definition  Heading
2   ORDER      N          ORDER_____
-   QTYORD     N          ORDER_____
-   PARTNO     N          PART_____
-   PARTDESC   N          PART_____
-   UNITAMT    N          UNIT_____
-   TOTAMT    N          TOTAL_____

F3=Exit          F5=Refresh      F12=Cancel
F14=Display definition  F21=Select all

Bottom

```

Figure 44. Work with Fields Display with ORDER field Selected

5. Press Enter to continue to the Specify Extended Field Definition display. The Specify Extended Field Definition display for numeric fields appears as shown in Figure 45 on page 36 because you selected the numeric ORDER field for an extended definition.

```

Specify Extended Field Definition
Field . . . . . : ORDER      Record format . . . . . : ORDDTL
Type choices, press Enter.
Auto duplicate . . . . . N      Y=Yes, N=No
Accumulate . . . . . N      Y=Yes, N=No
Extended field
  heading . . . . . ORDER_____
                    NUMBER_____
Heading location . . . . . *ABOVE_  *ABOVE, *BEFORE
Initial value . . . . . _____
Auto-increment . . . . . _____
Validity checks . . . . . _      2=Change, 4=Delete

F3=Exit      F12=Cancel      F14=Display definition      More...

```

Figure 45. Specify Extended Field Definition Display for a Numeric Field

6. Press Page Down (Roll Up) to go to the second part of the Specify Extended Field Definition display. Your display appears as in Figure 46.

```

Specify Extended Field Definition
Field . . . . . : ORDER      Record format . . . . . : ORDDTL
Type choices, press Enter.
Begin on new line . . . . . N      Y=Yes, N=No
Field exit required . . . . . Y      Y=Yes, N=No
Output only . . . . . N      Y=Yes, N=No
Non-display . . . . . N      Y=Yes, N=No
Default spacing . . . . . Y      Y=Yes, N=No
  For choice N=No:
    Number of spaces . . . . . 01      0-40
Edit code . . . . . L      Blank, 1-4, A-D, J-M, . . .
Edit word . . . . . _____

F3=Exit      F12=Cancel      F14=Display definition      Bottom

```

Figure 46. Second Part of Specify Extended Field Definition Display

7. Press Page Up (Roll Down) to go back to the first screen of the Specify Extended Field Definition display.
8. Type Y (Yes) in the *Auto-duplicate* prompt to have this field automatically duplicated when you are in data entry mode.
The screen appears as in Figure 47 on page 37.

```

                                Specify Extended Field Definition
Field . . . . . : ORDER          Record format . . . . . : ORDDTL

Type choices, press Enter.

Auto duplicate . . . . . Y          Y=Yes, N=No
Accumulate . . . . . N          Y=Yes, N=No
Extended field
  heading . . . . . ORDER_____
                          NUMBER_____

Heading location . . . . . *ABOVE_  *ABOVE, *BEFORE
Initial value . . . . . _____
Auto-increment . . . . . _____
Validity checks . . . . . -        2=Change, 4=Delete

F3=Exit      F12=Cancel      F14=Display definition      More...

```

Figure 47. Specify Extended Field Definition Display with Auto-duplicate Selected

9. Press Enter to return to the Work with Fields display. Your display appears as in Figure 48.

```

                                Work with Fields
File . . . . . : QORDFILE      Library . . . . . : MYLIB
Record format . . . . . : ORDDTL

Type options, press Enter. Press F21 to select all.
2=Specify extended definition
4=Delete extended definition

Opt  Field      Extended
     ORDER      Definition  Heading
-    ORDER      Y          ORDER_____
-    QTYORD     N          ORDER_____
-    PARTNO     N          PART_____
-    PARTDESC   N          PART_____
-    UNITAMT    N          UNIT_____
-    TOTAMT     N          TOTAL_____

F3=Exit      F5=Refresh      F12=Cancel      Bottom
F14=Display definition  F21=Select all

```

Figure 48. Work with Fields Display

10. Press F14 (Display definition) to go to the Display DFU Program Summary display to review the DFU program definition for this example. The display appears as shown in Figure 49 on page 38.

Display DFU Program Summary Display

```

                                Display DFU Program Summary

Program . . . . . : ORDMNT
Library . . . . . : MYLIB
Data file . . . . . : QORDFILE
Library . . . . . : MYLIB
Job title . . . . . : ORDER MAINTENANCE RECORDS
Display format . . . . . : Row oriented
Allow updates on roll . . . . . : Y
Keys:
  Generate . . . . . : N
  Key changes allowed . . . . . : Y

                                                                    More...

Press Enter to continue.

F3=Exit      F12=Cancel      F15=Print
  
```

Figure 49. Display DFU Program Summary Display for an Indexed File

1. Press Page Down (Roll Up) to see the remaining information for the Display DFU Program Summary display. The display appears as shown in Figure 50.

```

                                Display DFU Program Summary

Program . . . . . : ORDMNT
Library . . . . . : MYLIB
Data file . . . . . : QORDFILE
Library . . . . . : MYLIB
Audit report . . . . . : Y
  Print additions . . . . . : Y
  Print changes . . . . . : Y
  Print deletions . . . . . : Y
Printer:
  Line width . . . . . : 132
  Column spacing . . . . . : 1
S/36 style . . . . . : N
Suppress data
  errors . . . . . : N
  Edit numerics . . . . . : Y

                                                                    Bottom

Press Enter to continue.

F3=Exit      F12=Cancel      F15=Print
  
```

Figure 50. Display DFU Program Summary Display for an Indexed File

2. Press Enter. The Display DFU Program Detail display appears as in Figure 51 on page 39.

Display DFU Program Detail Display

This display allows you to review the details of the record formats and fields defined so far for your DFU program.

Display DFU Program Detail						
Program :			ORDMNT		Library : MYLIB	
Format/Field	Attr	Extended Definition	Length	Type	Description/Heading	
ORDHDR					Order Header Record	
CUST		N	5	CHAR	CUSTOMER	
ORDER	KEY	Y	5,0	PACK	ORDER	
ORDSTS		N	1,0	PACK	ORDER	
ORDAMT		Y	11,2	PACK	ORDER	
TOTLIN		N	3,0	PACK	TOTAL	
INVNUM		N	5,0	PACK	INVOICE	
ORDDAT		Y	6,0	PACK	ORDER	
SHPVIA		Y	15	CHAR	SHIP	
ORDDTL	MLT				Order Detail Record	
ORDER	KEY	Y	5,0	PACK	ORDER	
						More...
Press Enter to continue.						
F3=Exit		F12=Cancel		F15=Print		

Figure 51. Display DFU Program Detail Display

1. Press Page Down (Roll Up) to see the rest of the information on the Display Program Detail display. The display appears as in Figure 52.

Display DFU Program Detail						
Program :			ORDMNT		Library : MYLIB	
Format/Field	Attr	Extended Definition	Length	Type	Description/Heading	
QTYORD		N	3,0	PACK	ORDER	
PARTNO		N	6,0	PACK	PART	
PARTDESC		N	15	CHAR	PART	
UNITAMT		N	7,2	PACK	UNIT	
TOTAMT		N	10,2	PACK	TOTAL	
						Bottom
Press Enter to continue.						
F3=Exit		F12=Cancel		F15=Print		

Figure 52. Display DFU Program Detail Display

2. Press Enter. The Display Data File Detail display appears as shown in Figure 53 on page 40.

Display Data File Detail Display

This display allows you to review the details of all the record formats and fields defined by the DDS or IDDU specifications for this data file.

Display Data File Detail						
File . . . :			QORDFILE	Library :		MYLIB
Format/Field	Start	Length	Type	Attr	Description	
ORDHDR					Order Header Record	
CUST	1	5	CHAR		Customer Number	
ORDER	6	5,0	PACK	KEY	Order Number	
ORDDAT	9	6,0	PACK		Date Order Was Entered	
SHPVIA	13	15	CHAR		Ship Via	
ORDSTS	28	1,0	PACK		Order Status: 1=Open 2=close	
ORDAMT	29	11,2	PACK		Order Amount	
TOTLIN	35	3,0	PACK		Total Items in Order	
INVNUM	37	5,0	PACK		Invoice Number	
ORDDTL					Order Detail Record	
ORDER	1	5,0	PACK	KEY	Order Number	

Press Enter to continue. More...

F3=Exit F12=Cancel F15=Print

Figure 53. Display Data File Detail Display

1. Press Page Down (Roll Up) to see the remaining information on the Display Data File Detail display. The display appears as in Figure 54.

Display Data File Detail						
File . . . :			QORDFILE	Library :		MYLIB
Format/Field	Start	Length	Type	Attr	Description	
QTYORD	4	3,0	PACK		Order Quantity	
PARTNO	6	6,0	PACK		Part Number	
PARTDESC	10	15	CHAR		Part Description	
UNITAMT	25	7,2	PACK		Unit Amount	
TOTAMT	29	10,2	PACK		Total Amount	

Press Enter to continue. Bottom

F3=Exit F12=Cancel F15=Print

Figure 54. Display Data File Detail Display

You are finished reviewing the program definition and file details.

- Press Enter to return to the Work with Fields display.
Your display appears as in Figure 55.

```

                                Work with Fields
File . . . . . : QORDFILE      Library . . . . . : MYLIB
Record format . . . . . : ORDDTL

Type options, press Enter. Press F21 to select all.
 2=Specify extended definition
 4=Delete extended definition

Opt  Field          Extended Definition  Heading
-   ORDER           Y             ORDER_____
-   QTYORD          N             ORDER_____
-   PARTNO          N             PART_____
-   PARTDESC       N             PART_____
-   UNITAMT        N             UNIT_____
-   TOTAMT         N             TOTAL_____

F3=Exit          F5=Refresh      F12=Cancel      Bottom
F14=Display definition  F21=Select all

```

Figure 55. Work with Fields Display

- Press Enter to continue to the Exit DFU Program Definition display. The display appears as in Figure 56 on page 42.

Exit DFU Program Definition Display

The Exit DFU Program Definition display allows you to save, to run, or to save and then run your newly defined DFU program. In this example, you save the ORDMNT program and work on records in the QORDFILE file while running the program.

```

Exit DFU Program Definition

Type choices, press Enter.

Save program . . . . . Y          Y=Yes, N=No
Run program . . . . . Y          Y=Yes, N=No
  For choice Y=Yes:
    Type of run . . . . . 1      1=Change, 2=Display
Modify program . . . . . N          Y=Yes, N=No
Save DDS source . . . . . N        Y=Yes, N=No

For Save program Y=Yes:
Program . . . . . ORDMNT_____ Name
Library . . . . . MYLIB_____ Name, *CURLIB, . . .
Authority . . . . . *LIBCRTAUT Name, *LIBCRTAUT, . . .
Text . . . . . ORDER MAINTENANCE RECORDS_____

For Save DDS source Y=Yes:
Source file . . . . . _____ Name
Library . . . . . *CURLIB_____ Name, *CURLIB, . . .
Source member . . . . . ORDMNT_____ Name

F3=Exit      F14=Display definition      F17=Fast path

```

Figure 56. Exit DFU Program Definition Display

Note: If you want to run the program automatically, press F17 (Fast path). When you press F17 (Fast path), you do not see any other displays before running the program. To choose a specific member, other than the first in the file, press Enter. A display appears prompting you for program, file and member information.

1. Press Enter to save your program and continue to the Change a Data File display. Your display appears as in Figure 57 on page 43.

Change a Data File Display

This display gives you the opportunity to specify the name of the program you want to use for working on a data file. You can use the default data file specified by the program, or specify a different data file by entering the new file name in the *Data file* prompt of this display.

```

Change a Data File

Type choices, press Enter.

Program . . . . . ORDNT__ Name, F4 for List
Library . . . . . MYLIB__ Name, *LIBL, *CURLIB

Data file . . . . . QORDFILE__ Name, *SAME, F4 for List

Library . . . . . MYLIB__ Name, *LIBL, *CURLIB
Member . . . . . *FIRST__ Name, *FIRST, F4 for List

F3=Exit    F4=Prompt    F12=Cancel
The DFU program was saved successfully.

```

Figure 57. Change a Data File Display

1. Press Enter to accept the defaults on this display.
The first data entry display appears as in Figure 58.

```

ORDER MAINTENANCE RECORDS          Mode . . . . : ENTRY
Format . . . . : ORDHDR__          File . . . . : QORDFILE

CUSTOMER  ORDER      ORDER  ORDER      TOTAL  INVOICE
NUMBER    NUMBER      STATUS AMOUNT      LINES  NUMBER
          (NUMERIC CODE)
          _0_         0_         .00_     _0_     _0_

          ORDER      SHIP
          DATE       VIA
          91/07/01

F3=Exit          F5=Refresh          F6=Select format
F9=Insert        F10=Entry           F11=Change

```

Figure 58. Data Entry Display in Entry Mode

This data entry display is in Entry mode and has the AS/400 display style. Entry mode is the default mode when you add records to a file for the first time (when the file has no records).

2. Type the information shown in Figure 59 on page 44 into the data entry display to create a new record for this example.

```

ORDER MAINTENANCE RECORDS                               Mode . . . . . : ENTRY
Format . . . . . : ORDHDR                               File . . . . . : QORDFILE

CUSTOMER  ORDER  ORDER  ORDER  TOTAL  INVOICE
NUMBER    NUMBER  STATUS  AMOUNT  LINES  NUMBER
          (NUMERIC CODE)
60      _120_    1_    _313.30_  _4_    _525_

          ORDER          SHIP
          DATE          VIA
          91/07/01      BOAT_____

F3=Exit          F5=Refresh          F6=Select format
F9=Insert        F10=Entry           F11=Change

```

Figure 59. Data Entry Display with Example Record Information

3. Press Enter to process the new record. DFU adds the record to the QORDFILE data file and clears the display so you may continue adding records.
4. Press F6 (Select format) to go to the Select Record Format display. The display appears as in Figure 60.

```

                                Select Record Format

Type option, press Enter.
1=Select

Opt  Format      Description
-   ORDHDR      Order Header Record
-   ORDDTL      Order Detail Record

F3=Exit          F5=Refresh          F12=Cancel          Bottom

```

Figure 60. Select Record Format Display

5. Type 1 beside the ORDDTL format to select it. Your display appears as in Figure 61 on page 45.

```

                                Select Record Format

Type option, press Enter.
1=Select

Opt  Format      Description
 1   ORDHDR     Order Header Record
 1   ORDDTL     Order Detail Record

                                Bottom

F3=Exit      F5=Refresh      F12=Cancel

```

Figure 61. Select Record Format Display with ORDDTL Selected

- Press Enter. The Data Entry Display appears for the ORDDTL record format. You can now enter multiple records on this display because you specified Y (Yes) in the Multiple Records prompt on the Work with Record Formats display. The display appears as in Figure 62.

```

ORDER MAINTENANCE RECORDS                      Mode . . . . . : ENTRY
Format . . . . . : ORDDTL__                     File . . . . . : QORDFILE

ORDER  ORDER  PART  PART  UNIT  TOTAL
NUMBER QUANTITY NUMBER DESCRIPTION AMOUNT AMOUNT
 0_    0_    0_    _____  _____.00_  _____0.00
 0_    0_    0_    _____  _____.00_  _____0.00
 0_    0_    0_    _____  _____.00_  _____0.00
 0_    0_    0_    _____  _____.00_  _____0.00
 0_    0_    0_    _____  _____.00_  _____0.00
 0_    0_    0_    _____  _____.00_  _____0.00
 0_    0_    0_    _____  _____.00_  _____0.00
 0_    0_    0_    _____  _____.00_  _____0.00
 0_    0_    0_    _____  _____.00_  _____0.00
 0_    0_    0_    _____  _____.00_  _____0.00
 0_    0_    0_    _____  _____.00_  _____0.00
 0_    0_    0_    _____  _____.00_  _____0.00
 0_    0_    0_    _____  _____.00_  _____0.00
 0_    0_    0_    _____  _____.00_  _____0.00
 0_    0_    0_    _____  _____.00_  _____0.00
 0_    0_    0_    _____  _____.00_  _____0.00
 0_    0_    0_    _____  _____.00_  _____0.00
 0_    0_    0_    _____  _____.00_  _____0.00

F3=Exit      F5=Refresh      F6=Select format
F9=Insert    F10=Entry       F11=Change

```

Figure 62. Data Entry Display for ORDDTL Record Format

- Add 4 records to the record format by typing in the data that appears in Figure 63 on page 46.

ORDER MAINTENANCE RECORDS				Mode :	ENTRY
Format : ORDDL_				File :	QORDFILE
ORDER NUMBER	ORDER QUANTITY	PART NUMBER	PART DESCRIPTION	UNIT AMOUNT	TOTAL AMOUNT
120	2	45	SCREWDRIVER	5.25	10.50
120	10	53	1 OZ HAMMER	12.10	121.00
120	3	101	ELECTRIC SAW	52.00	156.00
120	12	325	.5" SCREWS(100)	2.15	25.00
0	0	0		.00	.00
0	0	0		.00	.00
0	0	0		.00	.00
0	0	0		.00	.00
0	0	0		.00	.00
0	0	0		.00	.00
0	0	0		.00	.00
0	0	0		.00	.00
0	0	0		.00	.00
0	0	0		.00	.00
0	0	0		.00	.00
0	0	0		.00	.00
0	0	0		.00	.00

F3=Exit F5=Refresh F6=Select format
F9=Insert F10=Entry F11=Change

Figure 63. Data Entry Display with New Records

- Press Enter. DFU adds the records to the QORDFILE data file and clears the display.
- Press F3 (Exit) to leave the data entry session. The End Data Entry display appears as in Figure 64.

End Data Entry	
Number of records processed	
Added :	5
Changed :	0
Deleted :	0
Type choice, press Enter.	
End data entry	Y Y=Yes, N=No
F3=Exit F12=Cancel	
All records added, changed, or deleted will be printed.	

Figure 64. End Data Entry Display

- Leave the default of Y (Yes) in the End data entry prompt.
- Press Enter to end the session.

The Display Batch Accumulators display appears, followed by the Display Total Accumulators display. DFU presents the accumulator totals when you exit DFU (if you defined accumulator fields). For this example, you defined the program to keep an accumulator total for the ORDAMT field. If no fields were defined as accumulator fields, the AS/400 Data File Utility (DFU) menu appears directly.

12. Press Enter to continue to the Display Total Accumulators display.
13. Press Enter again to end the session.

The AS/400 Data File Utility (DFU) menu appears. The audit report is printed. See "Audit Report" on page 90 for a sample audit report. From the DFU Menu, you can perform another DFU operation or exit the utility.

Creating a DFU Program for a Nonindexed File

You use the same method to create a DFU program for a nonindexed (direct or sequential) file as you use for an indexed file. When using a nonindexed file, you can request an additional display that allows you to define a field in which to store a record number. In addition to the new display related only to nonindexed data files, this example shows you how to use the fast path for defining a DFU program quickly. See "Procedure for Creating a DFU Program" on page 12 for an overview of how to access DFU.

This example uses an IDDU described file called ORDIDDU for a program called ORDPGM. The program is similar to the one you created for an indexed file.

Note: If you want to try the example shown in this section you must first create the IDDU file.

Figure 65 on page 48 shows the IDDU file description of the formats and fields that are used in the nonindexed data file for this example.

```

5738SS1 V2R1M0 910524      Data Dictionary Information
Input parameters
  Data dictionary . . . . . : MYLIB
  Definition . . . . . : ORDIDDU
  Creation date . . . . . : 07/01/91
  Definition type . . . . . : *FILE
  File information . . . . . : *BASIC
  Record format information . . . . . : *BASIC
  Field information . . . . . : *BASIC
File Information
  File . . . . . : ORDIDDU
  Number of record formats. . . . . : 2
  Type of file . . . . . : Physical
  Last changed . . . . . : 07/01/91
  Changed by . . . . . : SMITH
  Created . . . . . : 07/01/91
  Created by . . . . . : SMITH
Record Format Information
  Record format . . . . . : ORDDTL2
  Number of fields . . . . . : 7
  Record length . . . . . : 35
  Last changed . . . . . : 07/01/91
  Changed by . . . . . : SMITH
  Created . . . . . : 07/01/91
  Created by . . . . . : SMITH
  Format text . . . . . : ORDER DETAIL
Field Level Information
  Data   Field   Buffer   Buffer   Field
  Type  Length Length Position Usage   Column Heading
RCDTYPE CHAR      1       1       1     Both   RECORD
                                         TYPE
  Field text . . . . . : RECORD TYPE
ORDER    PACKED   5 0     3       2     Both   ORDER
                                         NUMBER
  Field text . . . . . : ORDER NUMBER
QTYORD   PACKED   3 0     2       5     Both   QUANTITY
                                         ORDERED
  Field text . . . . . : QUANTITY ORDERED
PARTNO   PACKED   6 0     4       7     Both   PART
                                         NUMBER
  Field text . . . . . : PART NUMBER
PARTDESC CHAR     15     15     11     Both   PART
                                         DESCRIPTION
  Field text . . . . . : PART DESCRIPTION
UNITAMT  PACKED   7 2     4       26     Both   UNIT
                                         AMOUNT
  Field text . . . . . : UNIT AMOUNT
TOTAMT   PACKED  10 2     6       30     Both   TOTAL
                                         AMOUNT
  Field text . . . . . : TOTAL AMOUNT

```

Figure 65 (Part 1 of 2). IDDU File Description Example

```

5738SS1 V2R1M0 910524      Data Dictionary Information
File . . . : ORDIDDU      Data Dictionary . . . . . : MYLIB
Record Format Information
Record format . . . . . : QORDHDR2
Number of fields . . . . . : 9
Record length . . . . . : 40
Last changed . . . . . : 07/01/91
Changed by . . . . . : SMITH
Created . . . . . : 07/01/91
Created by . . . . . : SMITH
Format text . . . . . : ORDER HEADER
Field Level Information
Field      Data      Field Buffer      Buffer      Field
Type      Type      Length Length      Position  Usage      Column Heading
RCDTYPE   CHAR      1          1          1          Both      RECORD
                                                TYPE
Field text . . . . . : RECORD TYPE
CUST      CHAR      5          5          2          Both      CUSTOMER
                                                NUMBER
Field text . . . . . : CUSTOMER NUMBER
ORDER     PACKED   5 0        3          7          Both      ORDER
                                                NUMBER
Field text . . . . . : ORDER NUMBER
ORDDAT    PACKED   6 0        4          10         Both      ORDER
                                                DATE
Field text . . . . . : ORDER DATE
SHPVIA    CHAR     15         15         14         Both      SHIPPING
                                                INSTRUCTIONS
Field text . . . . . : SHIPPING INSTRUCTIONS
ORDSTS    PACKED   1 0        1          29         Both      ORDER
                                                STATUS
Field text . . . . . : ORDER STATUS
ORDAMT    PACKED  11 2        6          30         Both      ORDER
                                                AMOUNT
Field text . . . . . : ORDER AMOUNT
TOTLIN    PACKED   3 0        2          36         Both      TOTAL
                                                LINES
Field text . . . . . : TOTAL LINES
INVNUM    PACKED   5 0        3          38         Both      INVOICE
                                                NUMBER
Field text . . . . . : INVOICE NUMBER

```

Figure 65 (Part 2 of 2). IDDU File Description Example

Create a DFU Program Display

1. Select option 2 (Create a DFU program) from the AS/400 Data File Utility (DFU) menu.
2. Press Enter. The Create a DFU Program display appears.

This display requests the name of the DFU program you want to define and its data file. Your display appears as in Figure 66 on page 50.

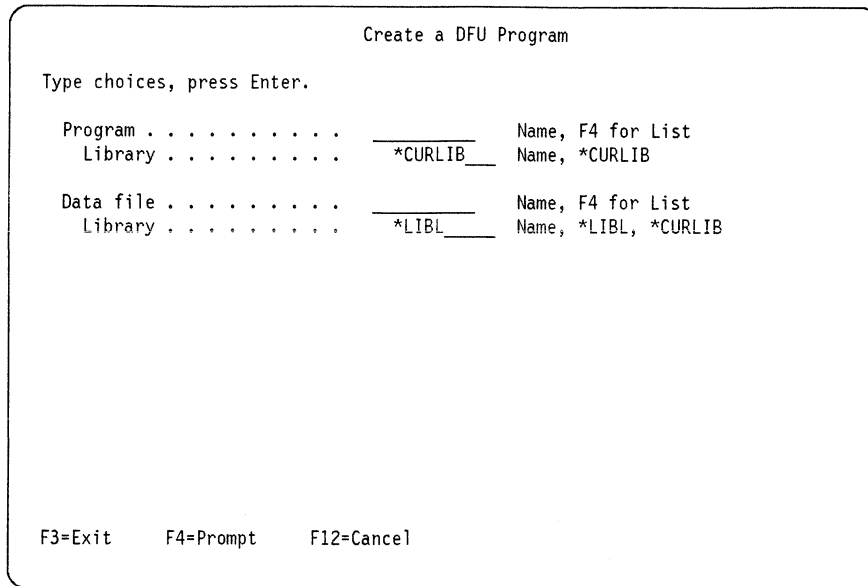


Figure 66. Create a DFU Program Display

3. Type the name of the sample program (ORDPGM) and the library name MYLIB for both *Library* prompts.
4. Type the name of the IDDU-described (ORDIDDU) file in the *Data file* prompt. Your display appears as in Figure 67.

Note: This file must be linked to an IDDU file definition for DFU to run using this type of definition. Before you can link, you must create an IDDU file definition.

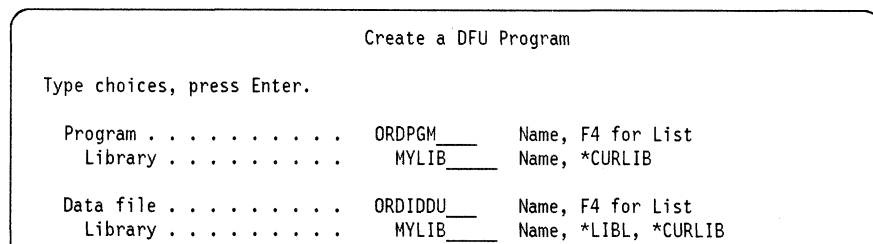


Figure 67. Create a DFU Program Display with Example Entries

5. Press Enter. The Define General Information/Nonindexed File display appears as in Figure 68 on page 51.

Define General Information/Nonindexed File Display

This display allows you to define the format of your data entry display.

```

Define General Information/Nonindexed File

Type choices, press Enter.

Job title . . . . . ORDPGM
Display format . . . . . 2          1=Single  2=Multiple
                                   3=Maximum, 4=Row oriented

Audit report . . . . . Y          Y=Yes, N=No
S/36 style . . . . . N          Y=Yes, N=No
Suppress errors . . . . . N      Y=Yes, N=No
Edit numerics . . . . . N      Y=Yes, N=No
Allow updates on roll . . . . . Y  Y=Yes, N=No
Record numbers:
  Generate . . . . . N          Y=Yes, N=No
  Store in a field . . . . . N   Y=Yes, N=No
  Heading . . . . . *RECNR_____

Processing . . . . . 2          1=Direct
                                   2=Sequential

F3=Exit    F12=Cancel    F14=Display definition

```

Figure 68. Define General Information/Nonindexed File Display

1. Type over the default entries for the *Job title*, *Store in a field*, and *Heading* prompts. Your display appears as in Figure 69.

```

Define General Information/Nonindexed File

Type choices, press Enter.

Job title . . . . . ORDER MAINTENANCE RECORDS_____
Display format . . . . . 2          1=Single  2=Multiple
                                   3=Maximum, 4=Row oriented

Audit report . . . . . Y          Y=Yes, N=No
S/36 style . . . . . N          Y=Yes, N=No
Suppress errors . . . . . N      Y=Yes, N=No
Edit numerics . . . . . N      Y=Yes, N=No
Allow updates on roll . . . . . Y  Y=Yes, N=No
Record numbers:
  Generate . . . . . N          Y=Yes, N=No
  Store in a field . . . . . Y   Y=Yes, N=No
  Heading . . . . . ORDER NUMBER_____

Processing . . . . . 2          1=Direct
                                   2=Sequential

F3=Exit    F12=Cancel    F14=Display definition

```

Figure 69. Define General Information/Nonindexed File Display with Example Entries

2. Press Enter to continue to the Define Audit Control display for the sample ORDPGM program. This display appears when you leave the default value Y (Yes) in the *Audit report* prompt.

Define Audit Control Display

The audit report is a printed list of changes made to a data file when you run the DFU program. You can define the scope of information you want reported on the listing from this display.

1. Leave the default values for the sample ORDPGM program. Your display appears as in Figure 70.

```
Define Audit Control

Type choices, press Enter.

Print additions . . . . . Y           Y=Yes, N=No
Print changes . . . . . Y           Y=Yes, N=No
Print deletions . . . . . Y         Y=Yes, N=No
Printer:
Line width . . . . . 132          60-198
Column spacing . . . . . 1         0-9

F3=Exit      F12=Cancel      F14=Display definition
```

Figure 70. Define Audit Control Display

2. Press Enter to continue to the Select Field for Record Number display.

Select Field for Record Number Display

The Select Field for Record Number display appears after you press Enter from the Define Audit Control display or the Define General Information/Nonindexed File display (if you did not select an audit report). DFU presents a list of all fields that qualify for storing a record number. Qualifying fields occur in the same position in all record formats in the file and have the same length and data type. The length of the field cannot exceed eight characters. Select the field you want to use for the record number from the displayed list. Your display appears as in Figure 71 on page 53.

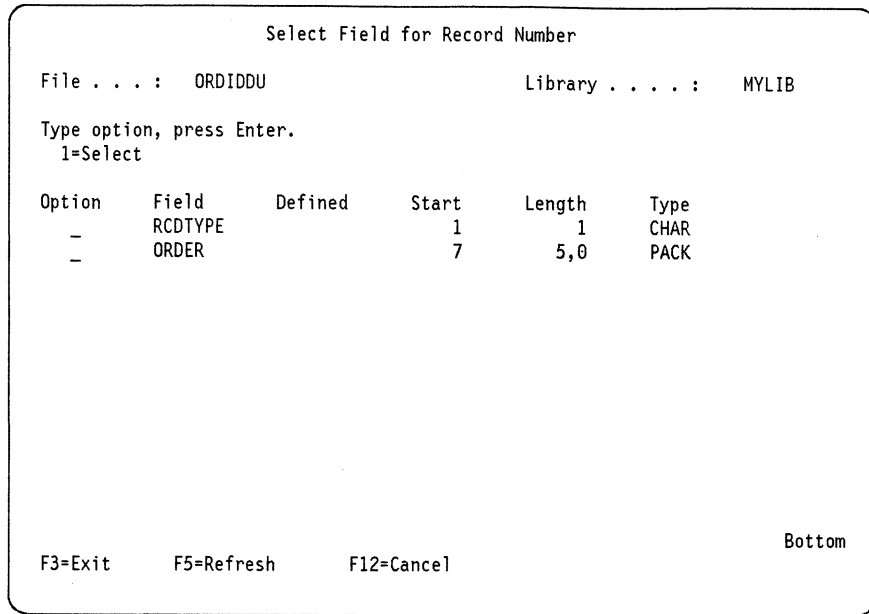


Figure 71. Select Field for Record Number Display

1. Type 1 (Select) next to the ORDER field to select it for storing the record number in this example. Your display appears as in Figure 72.

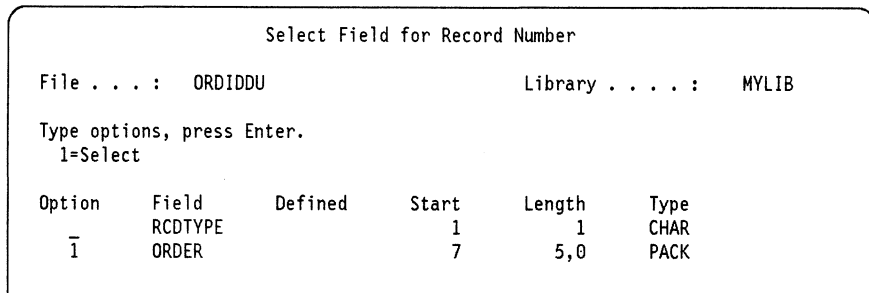


Figure 72. Select Field for Record Number Display with Specified Field

2. Press Enter to continue to the Work with Record Formats display. Your display appears as in Figure 73 on page 54.

Work with Record Formats Display

This display lists the various record formats defined in the DDS- or IDDU-described file specification. You can work with one or more formats for processing. If you select multiple record formats, DFU presents a separate field definition display for each record format selected as you proceed through program definition.

Note: Make sure that you have defined record ID codes for each selected record when using multiple-record formats for IDDU. ID codes allow DFU to differentiate between the record formats on a record-by-record basis.

```

Work with Record Formats

File . . . :  ORDIDDU                      Library . . . . :  MYLIB

Type options, press Enter.  Press F21 to select all.
  2=Specify  4=Delete

Opt  Format      Defined  Description
-   ORDHDR2      N        ORDER HEADER
-   ORDDTL2      N        ORDER DETAIL

Bottom

F3=Exit          F5=Refresh      F12=Cancel
F14=Display definition  F21=Select all

```

Figure 73. Work with Record Formats Display

1. Type 2 (Specify) next to the ORDDTL2 format to select it for processing by the sample ORDPGM program. Your display appears as in Figure 74.

```

Work with Record Formats

File . . . :  ORDIDDU                      Library . . . . :  MYLIB

Type options, press Enter.  Press F21 to select all.
  2=Specify  4=Delete

Opt  Format      Defined  Description
-   ORDHDR2      N        ORDER HEADER
2   ORDDTL2      N        ORDER DETAIL

```

Figure 74. Work with Record Formats Display with a Selected Format

2. Press Enter to continue to the Select and Sequence Fields display as shown in Figure 75 on page 55.

Select and Sequence Fields Display

This display allows you to select the fields and the field order that your DFU program uses for the data entry display. The displayed information is from the applicable DDS or IDDU file descriptions. The display reappears for each selected record format when you finish the definition sequence for the current record format.


```

Select and Sequence Fields
File . . . . . : ORDIDDU      Library . . . . . : MYLIB
Record format . . . . . : ORDDL2

Select fields and their sequence or press F21 to select all; press Enter.

Sequence  Field      Attr   Length  Type      Description
-----  -
1         RCDTYPE
2         ORDER      RRN     5,0     PACK     ORDER NUMBER
3         QTYORD     3,0     PACK     QUANTITY ORDERED
4         PARTNO     6,0     PACK     PART NUMBER
5         PARTDESC   15      CHAR     PART DESCRIPTION
6         UNITAMT    7,2     PACK     UNIT AMOUNT
7         TOTAMT    10,2    PACK     TOTAL AMOUNT

F3=Exit          F5=Refresh      F12=Cancel      F14=Display definition
F20=Renumber     F21=Select all

Bottom

```

Figure 75. Select and Sequence Fields Display

1. Press F21 to select all the fields. The display reappears with the selected fields in descending numerical order, and a message appears on the last line of the display asking you for confirmation. Your display appears as in Figure 76.

```

Select and Sequence Fields
File . . . . . : ORDIDDU      Library . . . . . : MYLIB
Record format . . . . . : ORDHDR2

Select fields and their sequence or press F21 to select all; press Enter.

Sequence  Field      Attr   Length  Type      Description
-----  -
1         RCDTYPE
2         ORDER      RRN     5,0     PACK     ORDER NUMBER
3         QTYORD     3,0     PACK     QUANTITY ORDERED
4         PARTNO     6,0     PACK     PART NUMBER
5         PARTDESC   15      CHAR     PART DESCRIPTION
6         UNITAMT    7,2     PACK     UNIT AMOUNT
7         TOTAMT    10,2    PACK     TOTAL AMOUNT

F3=Exit          F5=Refresh      F12=Cancel      F14=Display definition
F17=Fast path    F20=Renumber    F21=Select all
Press Enter to confirm or F17 to confirm with defaults.

Bottom

```

Figure 76. Select and Sequence Fields Display for Confirmation

2. Press F17 (Fast path) to use defaults for the remaining definition displays for the sample ORDPGM program. None of these fields have extended definitions or special features such as automatic duplication.

The Exit DFU Program Definition display appears.

Note: If you select more than one record format for processing, the Select and Sequence Fields display appears again for the next format.

Exit DFU Program Definition Display

The Exit DFU Program Definition display allows you to save, to run, or to save and then run your newly defined DFU program. You can also return to the definition to make additional modifications to your program. Your display appears as in Figure 77.

```
Exit DFU Program Definition

Type choices, press Enter.

Save program . . . . . Y          Y=Yes, N=No
Run program . . . . . Y          Y=Yes, N=No
  For choice Y=Yes:
    Type of run . . . . . 1      1=Change, 2=Display
Modify program . . . . . N          Y=Yes, N=No
Save DDS source . . . . . N        Y=Yes, N=No

For Save program Y=Yes:
Program . . . . . ORDPGM      Name
Library . . . . . MYLIB      Name, *CURLIB, . . .
Authority . . . . . *LIBCRTAUT Name, *LIBCRTAUT, . . .
Text . . . . . ORDER MAINTENANCE RECORDS
For Save DDS source Y=Yes:
Source file . . . . .      Name
Library . . . . . *CURLIB   Name, *CURLIB, . . .
Source member . . . . . ORDPGM   Name

F3=Exit      F14=Display definition      F17=Fast path
```

Figure 77. Exit DFU Program Definition Display

Note: If you want to automatically run the program press F17 (Fast path). When you press F17 (Fast path), you do not see any other displays before running the program. To choose a specific member, other than the first in the file, press Enter. A display appears prompting you for program, file, and member information.

1. Press Enter to save your program and continue to the Change a Data File display.

Your display appears as in Figure 78 on page 57. For more information on the Change a Data File display, see "Change a Data File Display" on page 42.

```

Change a Data File

Type choices, press Enter.

Program . . . . . ORDPGM__ Name, F4 for List
Library . . . . . MYLIB__ Name, *LIBL, *CURLIB

Data file . . . . . ORDIDDU__ Name, *SAME, F4 for List

Library . . . . . MYLIB__ Name, *LIBL, *CURLIB
Member . . . . . *FIRST__ Name, *FIRST, F4 for List

F3=Exit   F4=Prompt   F12=Cancel
The DFU program was saved successfully.

```

Figure 78. Change a Data File Display

2. Press Enter.

The first data entry display appears. Because this example assumes there are no records in the file, the display appears in Entry mode. Your display appears as in Figure 79.

```

ORDER MAINTENANCE RECORDS          Mode . . . . : ENTRY
Format . . . . : ORDDTL2__         File . . . . : ORDIDDU

RECORD TYPE:      -

QUANTITY ORDERED:  ____
PART NUMBER:      ____
PART DESCRIPTION:  _____
UNIT AMOUNT:      _____
TOTAL AMOUNT:     _____

F3=Exit           F5=Refresh          F6=Select format
F9=Insert         F10=Entry              F11=Change

```

Figure 79. Data Entry Display

From this display you can add new records to the ORDIDDU data file.

3. Press F3 (Exit) to continue to the End Data Entry display.
4. Press Enter to return to the AS/400 Data File Utility menu.

From the AS/400 Data File Utility (DFU) menu, you can create or run another program, or change an existing DFU program as described in Chapter 3, “Changing a DFU Program” on page 59.

Chapter 3. Changing a DFU Program

The Data File Utility (DFU) provides an easy way to change existing DFU programs. You can save the changed program (thus deleting the original version), or rename the changed program and preserve the original program.

Do not delete a DFU program before trying to change it using the OCL procedures ENTER, UPDATE, or INQUIRY from the System/36 environment. DFU bases the change on the program object itself. In order to change the program, leave the *Name of DFU program* prompt blank, and specify the name of the program you want to change in the *Name of DFU specification source member* prompt. Refer to the *System Reference for the System/36 Environment* for further information.

This chapter shows how to make a simple change to the ORDMNT program created in Chapter 2, "Creating a DFU Program" on page 11. The QORDFILE used by the sample program is an indexed DDS-described file.

Procedure for Changing a DFU Program

You use the same procedure to change a DFU program that you used to create a program. You can see a list of available programs by moving your cursor to the *Program* prompt and pressing F4 when using the Change a DFU Program display. Program and file lists provide an easy way for you to find and select programs and files to be used by DFU.

The rest of this chapter discusses the displays you use to make a simple change to the ORDMNT program. The example shows the entries to type into each display to produce the changed sample program.

Perform the following steps to change a DFU program:

1. Sign on to the system.
2. Type STRDFU.
3. Press Enter. The AS/400 Data File Utility (DFU) menu appears. Your display appears as in Figure 80 on page 60.

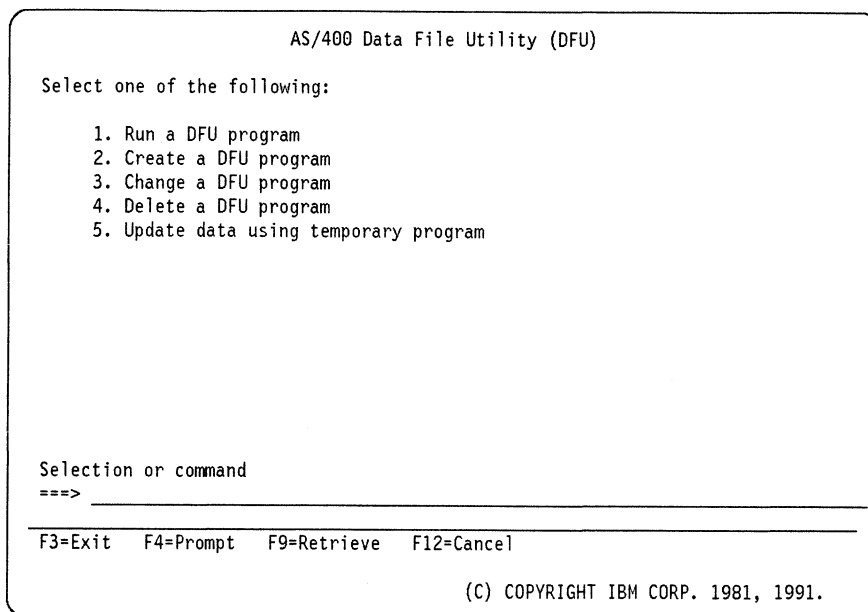


Figure 80. AS/400 Data File Utility (DFU) Menu

4. Select option 3 (Change a DFU program) as in Figure 81.

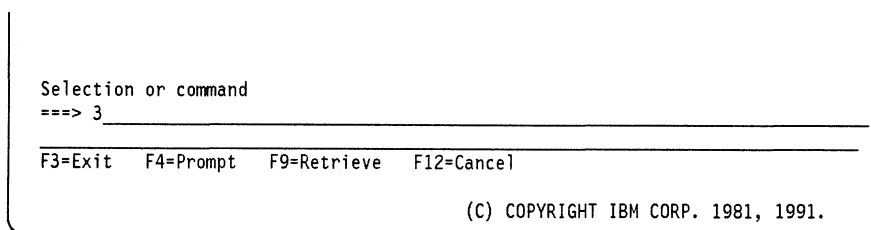


Figure 81. AS/400 Data File Utility (DFU) Menu with Option 3 Specified

5. Press Enter. The Change a DFU Program display appears.

Change a DFU Program Display

The Change a DFU Program display allows you to specify the name of the existing DFU program you want to change. You can also specify a different data file for the changed program by typing the new data file name on this display. If you specify a different data file for your program, you must consider the following conditions:

- If the original data file was indexed, the new data file must also be indexed.
- If the original data file was nonindexed, the new data file must be nonindexed.
- Record formats and fields in the file must have the same names and attributes as in the original file.
- If you are in the System/36 environment, and if you are changing a program that you originally defined using an RPG II file description and you have since converted the RPG II file description to an IDDU file description that is

linked to the new file, DFU attempts to match your record types to the IDDU record formats.

Note: If you change a migrated System/36 DFU program on the AS/400 system, you lose all of your System/36 tailored displays.

The entries in the *Program*, *Library*, and *Data file* prompts default to the values you previously specified in the last program you created. The display appears as in Figure 82.

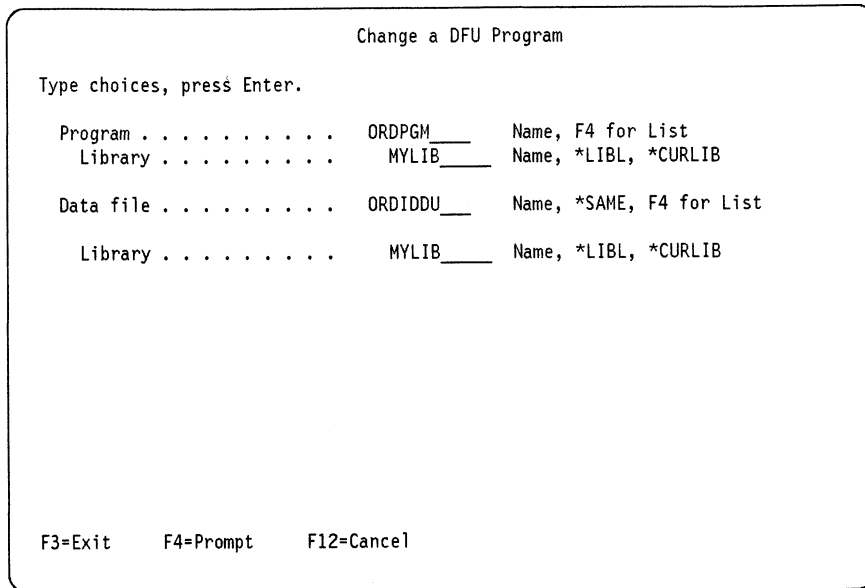


Figure 82. Change a DFU Program Display

In this example, the data file you want to use is called QORDFILE.

1. Type QORDFILE in the *Data file* prompt to change the name of the data file.
2. Move your cursor to the *Program* prompt and blank out the default name. Your display appears as in Figure 83.

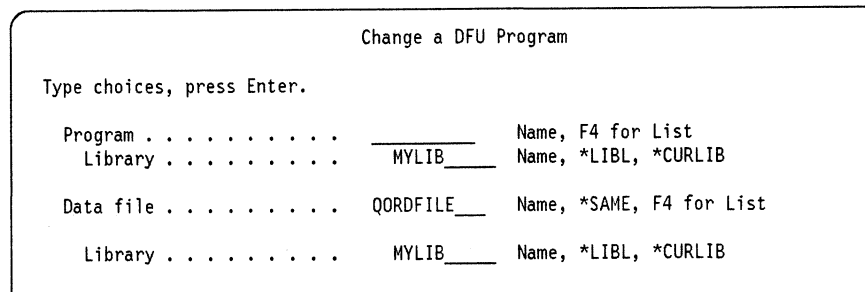


Figure 83. Change a DFU Program Display with Blank Program Name

3. Press F4 with your cursor still in the *Program* prompt. The Select Program display appears, showing the list of programs available in the MYLIB library.

Select Program Display

Your display appears similar to Figure 84. Your MYLIB library may contain different programs.

```

                                Select Program

Library . . . . . : MYLIB
Position to . . . . . _____
Type option, press Enter.
  1=Select

Opt   Program      Description
-     ORDMNT       ORDER MAINTENANCE RECORDS
-     ORDPGM       ORDER MAINTENANCE RECORDS

F5=Refresh      F12=Cancel

Bottom
```

Figure 84. Select Program Display

1. Type 1 (Select) in the *Opt* column next to the ORDMNT program to select the ORDER MAINTENANCE RECORDS program for this example. Your display appears as in Figure 85.

```

                                Select Program

Library . . . . . : MYLIB
Position to . . . . . _____
Type option, press Enter.
  1=Select

Opt   Program      Description
1     ORDMNT       ORDER MAINTENANCE RECORDS
-     ORDPGM       ORDER MAINTENANCE RECORDS
```

Figure 85. Select Program Display with ORDMNT Selected

2. Press Enter to return to the Change a DFU Program display with the selected program. The ORDMNT program name appears on the display. Your display appears as in Figure 86 on page 63.

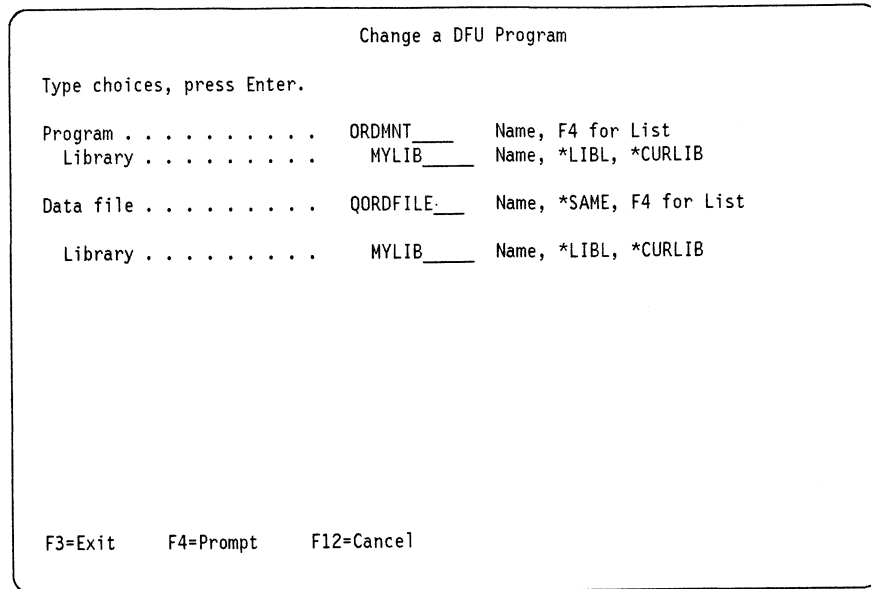


Figure 86. Change a DFU Program Display with Specified Program

3. Press Enter. The Define General Information/Indexed File display appears. The information shown is based on the values you specified when you created your program. For this example, leave the default values that appear. Your display appears as in Figure 87.

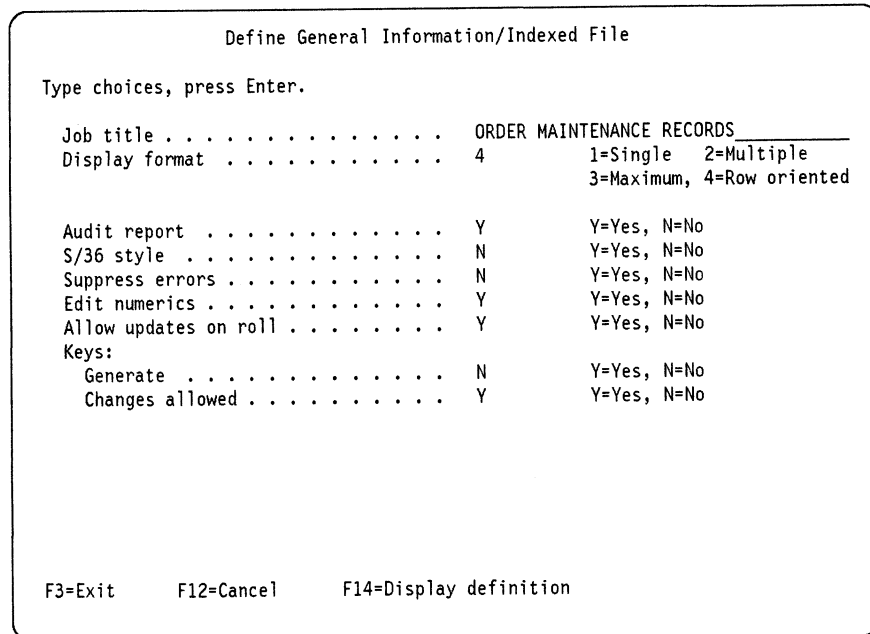


Figure 87. Define General Information/Indexed File Display with Example Entries

4. Press Enter. The Define Audit Control display appears. The information shown is based on the values you specified when you created your program. For this example, leave the default values that appear. Your display appears as in Figure 88 on page 64.

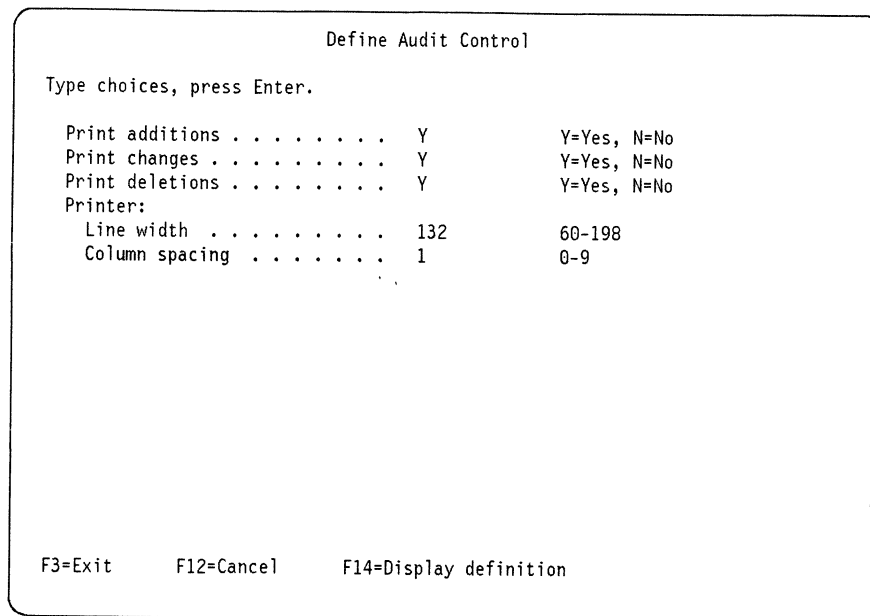


Figure 88. Define Audit Control Display

5. Press Enter. The Work with Record Formats display appears as in Figure 89 on page 65.

Work with Record Formats Display

This display appears if your data file is a DDS- or IDDU-described file. For this example, the display lists the various record formats available in the DDS-described file, QORDFILE. This example uses the same record format as the original program. Even if you want to use the same record format as the original program, you must select the format again to change the program.

You can work with one or more formats for processing. If you select more than one record format, DFU presents a new Select and Sequence Fields display and repeats the field definition sequence for each record format you select from this display.

The *Defined* prompt shows that the ORDHDR format and the ORDDTL format have previously been defined for this program.

```

Work with Record Formats

File . . . : QORDFILE . . . . . Library . . . . . : MYLIB

Type options, press Enter. Press F21 to select all.
  2=Specify  4=Delete

Opt  Format      Multiple
   -  ORDHDR      N      Y      Order Header Record
   -  ORDDTL      Y      Y      Order Detail Record

Bottom

F3=Exit      F5=Refresh      F12=Cancel
F14=Display definition  F21=Select all

```

Figure 89. Work with Record Formats Display

1. Type 2 (Specify) next to the ORDHDR format to select it for processing by the sample ORDMNT program. Your display appears as in Figure 90.

```

Work with Record Formats

File . . . : QORDFILE . . . . . Library . . . . . : MYLIB

Type options, press Enter. Press F21 to select all.
  2=Specify  4=Delete

Opt  Format      Multiple
  2   ORDHDR      N      Y      Order Header Record
   -  ORDDTL      Y      Y      Order Detail Record

```

Figure 90. Work with Record Formats Display with ORDHDR Selected

2. Press Enter. The Select and Sequence Fields display appears.

For this example, it is not necessary to change anything on the Select and Sequence Fields display. DFU rennumbers the field sequence numbers starting at 10 and increasing in units of 10. It has not changed the sequence of the fields. Renumbering in this fashion just makes it easier for you to insert new fields without manually renumbering subsequent fields. Your display appears as in Figure 91 on page 66.

```

                                Select and Sequence Fields

File . . . . . : QORDFILE      Library . . . . . : MYLIB
Record format . . . . . : ORDHDR

Select fields and their sequence or press F21 to select all; press Enter.

Sequence  Field      Attr   Length  Type      Description
___10    CUST                5    CHAR      Customer number
___20    ORDER            KEY    5,0    PACK      Order number
___30    ORDSTS                1,0    PACK      Order status: 1=Open 2=Close
___40    ORDAMT                11,2   PACK      Order amount
___50    TOTLIN                3,0    PACK      Total items in order
___60    INVNUM                5,0    PACK      Invoice number
___70    ORDDAT                6,0    PACK      Date order was entered
___80    SHPVIA                15    CHAR      Ship via

                                                                Bottom
F3=Exit      F5=Refresh      F12=Cancel      F14=Display definition
F20=Renumbr  F21=Select all

```

Figure 91. Select and Sequence Fields Display with Fields Renumbered

3. Leave the default entries and press Enter.
4. Press Enter again to confirm and to continue to the Work with Fields display.

Work with Fields Display

Currently, the ORDER, ORDAMT, ORDDAT and SHPVIA fields have extended definitions. The presence of an extended definition is designated by a Y in the *Extended Definition* prompt. Your display appears as in Figure 92.

```

                                Work with Fields

File . . . . . : QORDFILE      Library . . . . . : MYLIB
Record format . . . . . : ORDHDR

Type options, press Enter. Press F21 to select all.
 2=Specify extended definition
 4=Delete extended definition

Opt  Field      Extended  Heading
-   CUST        N        CUSTOMER_____
-   ORDER       Y        ORDER_____
-   ORDSTS      N        ORDER_____
-   ORDAMT      Y        ORDER_____
-   TOTLIN      N        TOTAL_____
-   INVNUM      N        INVOICE_____
-   ORDDAT      Y        ORDER_____
-   SHPVIA      Y        SHIP_____

                                                                Bottom
F3=Exit      F5=Refresh      F12=Cancel
F14=Display definition  F21=Select all

```

Figure 92. Work with Fields Display

1. Type 2 (Specify extended definition) in the *Opt* column next to the ORDER field to change the extended definition you defined when you created this DFU program. Your display appears as in Figure 93 on page 67.

```

Work with Fields

File . . . . . : QORDFILE      Library . . . . . : MYLIB
Record format . . . . . : ORDHDR

Type options, press Enter.  Press F21 to select all.
  2=Specify extended definition
  4=Delete extended definition

Opt  Field      Extended  Heading
   -  CUST        N         CUSTOMER_____
  2  ORDER        Y         ORDER_____
   -  ORDSTS       N         ORDER_____
   -  ORDAMT       Y         ORDER_____
   -  TOTLIN       N         TOTAL_____
   -  INVNUM       N         INVOICE_____
   -  ORDDAT       Y         ORDER_____
   -  SHPVIA       Y         SHIP_____

F3=Exit      F5=Refresh      F12=Cancel
F14=Display definition  F21=Select all

Bottom

```

Figure 93. Work with Fields Display with Selection to Specify a Definition

2. Press Enter to continue to the Specify Extended Field Definition display where you can change the extended definition for the ORDER field. The display appears as in Figure 94.

```

Specify Extended Field Definition

Field . . . . . : ORDER      Record format . . . . . : ORDHDR

Type choices, press Enter.

Auto-duplicate . . . . . N      Y=Yes, N=No
Accumulate . . . . . N      Y=Yes, N=No
Extended field
  heading . . . . . ORDER_____
                          NUMBER_____
                          (NUMERIC CODE)_____
Heading location . . . . . *ABOVE_  *ABOVE, *BEFORE
Initial value . . . . . _____
Auto-increment . . . . . ____10
Validity checks . . . . . -      2=Change, 4=Delete

F3=Exit  F12=Cancel  F14=Display definition

More...

```

Figure 94. Specify Extended Field Definition Display for ORDER Field

- Remove the (NUMERIC CODE) from the *Extended field heading* prompt. The display appears as in Figure 95 on page 68.

```

Specify Extended Field Definition
Field . . . . . : ORDER      Record format . . . . . : ORDHDR
Type choices, press Enter.
Auto-duplicate . . . . . N      Y=Yes, N=No
Accumulate . . . . . N      Y=Yes, N=No
Extended field
  heading . . . . . ORDER_____
                          NUMBER_____
Heading location . . . . . *ABOVE_  *ABOVE, *BEFORE
Initial value . . . . . _____
Auto-increment . . . . . 10
Validity checks . . . . . _      2=Change, 4=Delete

F3=Exit  F12=Cancel  F14=Display definition  More...

```

Figure 95. Specify Extended Field Definition Display for ORDER Field

- Press Enter to return to the Work with Fields display.
- Type 2 (Specify extended definition) in the *Opt* column next to the SHPVIA field to change the extended definition. The display appears as in Figure 96.

```

Work with Fields
File . . . . . : QORDFILE  Library . . . . . : MYLIB
Record format . . . . . : ORDHDR
Type options, press Enter. Press F21 to select all.
  2=Specify extended definition
  4>Delete extended definition

Opt  Field      Extended  Heading
   -  CUST        N         CUSTOMER_____
   -  ORDER       Y         ORDER_____
   -  ORDSTS      N         ORDER_____
   -  ORDAMT      Y         ORDER_____
   -  TOTLIN      N         TOTAL_____
   -  INVNUM      N         INVOICE_____
   -  ORDDAT      Y         ORDER_____
   2  SHPVIA     Y         SHIP_____

F3=Exit      F5=Refresh      F12=Cancel
F14=Display definition  F21=Select all

Bottom

```

Figure 96. Work with Fields Display with Selection to Specify a Definition

- Press Enter. The Specify Extended Field Definition display appears as in Figure 97 on page 69.

```

Specify Extended Field Definition
Field . . . . . : SHPVIA      Record format . . . . . : ORDHDR
Type choices, press Enter.
Auto-duplicate . . . . . N      Y=Yes, N=No
Allow lowercase . . . . . N      Y=Yes, N=No
Extended field
  heading . . . . . SHIP _____
  VIA _____
Heading location . . . . . *ABOVE_  *ABOVE, *BEFORE
Initial value . . . . .
Validity checks . . . . . _      2=Change, 4=Delete

F3=Exit  F12=Cancel  F14=Display definition      More...

```

Figure 97. Specify Extended Field Definition Display for SHPVIA Field

7. Type 2 (Change) in the *Validity checks* prompt to change the validity checks that are specified for this field.
8. Press Enter. The Specify Validity Checks display appears as in Figure 98.

```

Specify Validity Checks
Field . . . . . : SHPVIA      Record format . . . . . : ORDHDR
Type choices, press Enter.
Mandatory entry . . . . . N      Y=Yes, N=No
Mandatory fill . . . . . N      Y=Yes, N=No
Name check . . . . . N      Y=Yes, N=No
Extended name check . . . . . N      Y=Yes, N=No
Allow blanks . . . . . N      Y=Yes, N=No
Relational operator . . . . . LS      EQ, NE, LE, NG, . . .
  List of values . . . . . 'BOAT' 'TRAIN' 'TRUCK' 'PLANE' _____
_____
_____
_____
1 to 20 list values

F3=Exit  F12=Cancel  F14=Display definition

```

Figure 98. Specify Validity Checks Display for SHPVIA Field

9. Type 'CAR' in the *List of values* Prompt after 'PLANE'. Be sure to leave a space separating the two list values. The display appears as in Figure 99 on page 70.

```

Specify Validity Checks
Field . . . . . : SHPVIA      Record format . . . . . : ORDHDR
Type choices, press Enter.

Mandatory entry . . . . . N      Y=Yes, N=No
Mandatory fill . . . . . N      Y=Yes, N=No
Name check . . . . . N          Y=Yes, N=No
Extended name check . . . . . N Y=Yes, N=No
Allow blanks . . . . . N        Y=Yes, N=No
Relational operator . . . . . LS EQ, NE, LE, NG, . . .
List of values . . . . . 'BOAT' 'TRAIN' 'TRUCK' 'PLANE' 'CAR'__

_____
_____ 1 to 20 list values

F3=Exit  F12=Cancel  F14=Display definition

```

Figure 99. Specify Validity Checks Display for SHPVIA Field

10. Press Enter to return to the Work with Fields display.
11. Press Enter again to continue to the Exit DFU Program Definition display. The display appears as in Figure 100.

Exit DFU Program Definition Display

```

Exit DFU Program Definition
Type choices, press Enter.

Save program . . . . . Y      Y=Yes, N=No
Run program . . . . . Y      Y=Yes, N=No
For choice Y=Yes:
Type of run . . . . . 1      1=Change, 2=Display
Modify program . . . . . N      Y=Yes, N=No
Save DDS source . . . . . N      Y=Yes, N=No

For Save program Y=Yes:
Program . . . . . ORDMNT__ Name
Library . . . . . MYLIB__ Name, *CURLIB, . . .
Authority . . . . . *CHANGE__ Name, *LIBCRTAUT, . . .
Text . . . . . ORDER MAINTENANCE RECORDS_____

For Save DDS source Y=Yes:
Source file . . . . . _____ Name
Library . . . . . *CURLIB__ Name, *CURLIB, . . .
Source member . . . . . ORDMNT__ Name

F3=Exit  F14=Display definition  F17=Fast path

```

Figure 100. Exit DFU Program Definition Display

1. Type 2 (Display) over the default setting in the *Type of run* prompt. This example saves the ORDMNT program and then runs the program in Display mode. This gives you a chance to check the data entry display you have just

changed. Display mode allows you to look at records in the QORDFILE file, but not change them.

2. Press Enter. The Exit DFU Program Definition display reappears and prompts you to confirm that you want to replace the original program with the changed version. Your display appears as in Figure 101.

```

Exit DFU Program Definition

Type choices, press Enter.

Save program . . . . . Y          Y=Yes, N=No
Run program . . . . . Y          Y=Yes, N=No
  For choice Y=Yes:
    Type of run . . . . . 2       1=Change, 2=Display
Modify program . . . . . N          Y=Yes, N=No
Save DDS source . . . . . N        Y=Yes, N=No

For Save program Y=Yes:
Program . . . . . ORDMNT_____ Name
Library . . . . . MYLIB_____ Name, *CURLIB, . . .
Authority . . . . . *CHANGE_____ Name, *LIBCRTAUT, . . .
Text . . . . . ORDER MAINTENANCE RECORDS_____

For Save DDS source Y=Yes:
Source file . . . . . _____ Name
Library . . . . . *CURLIB_____ Name, *CURLIB, . . .
Source member . . . . . ORDMNT_____ Name

F3=Exit      F14=Display definition    F17=Fast path
ORDMNT already exists. Press Enter or F17 to replace it.

```

Figure 101. Exit DFU Program Definition Display with Display Option Chosen

3. Press Enter to confirm that you want to replace the program with the changed version. The Display a Data File display appears.

Display a Data File Display

The Display a Data File display allows you to specify the data file you want to look at. See Chapter 4, "Running a DFU Program" for additional information about running DFU programs. When displayed from the Exit DFU Program Definition display, as for this example, this display contains default entries based on the information you specified on that display. Your display appears as in Figure 102 on page 72.

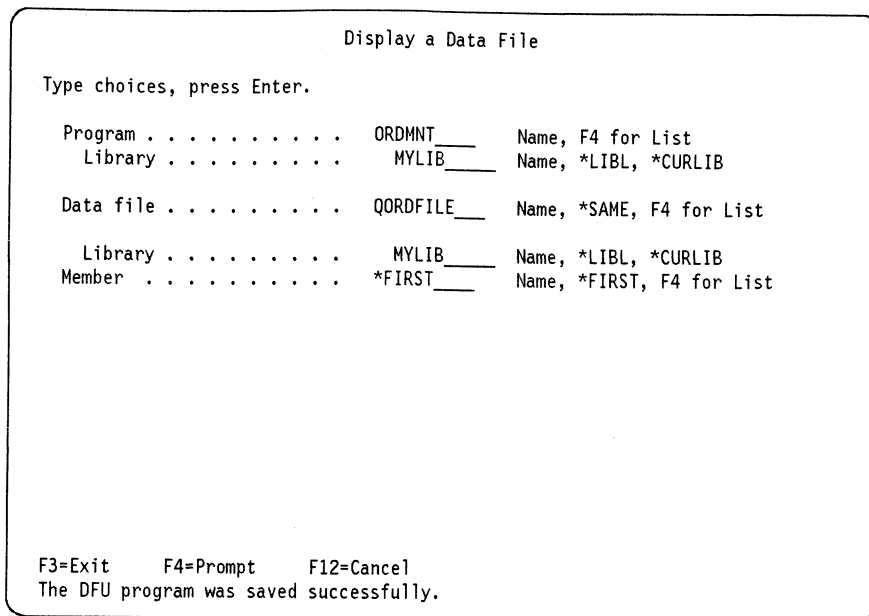


Figure 102. Display a Data File Display

1. Press Enter. Your data entry display appears as in Figure 103.

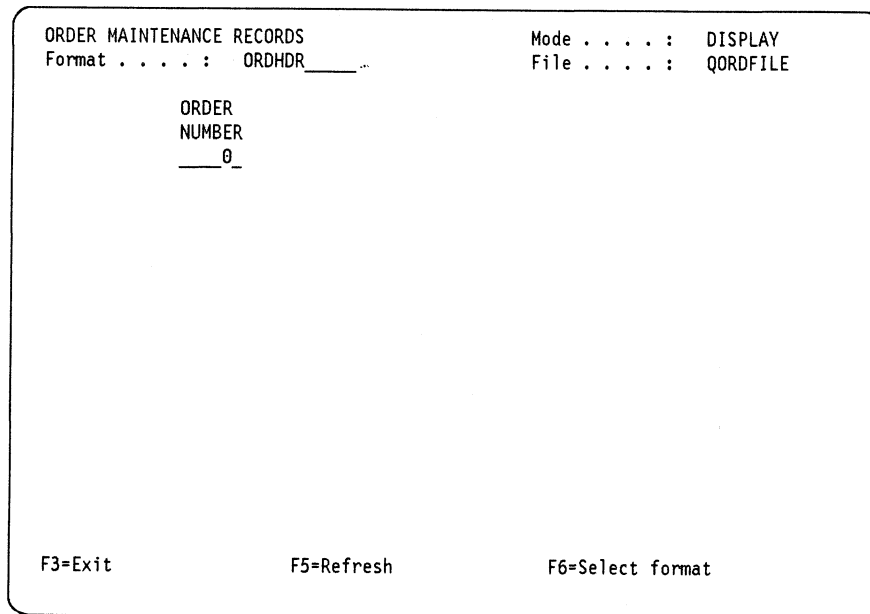


Figure 103. Data Entry Display in Display Mode

2. Press Page Down (Roll Up) to view the records that you have added. Note that the ORDER NUMBER field no longer appears with an extended field heading as it did on the original data entry display. The change that was made to the SHPVIA field is not a visible one on the data entry screen, but you can now enter the extra value (CAR) in the SHPVIA field when you are entering data.

3. Press F3 (Exit) to go to the End Data Display. Your display appears as in Figure 104 on page 73.

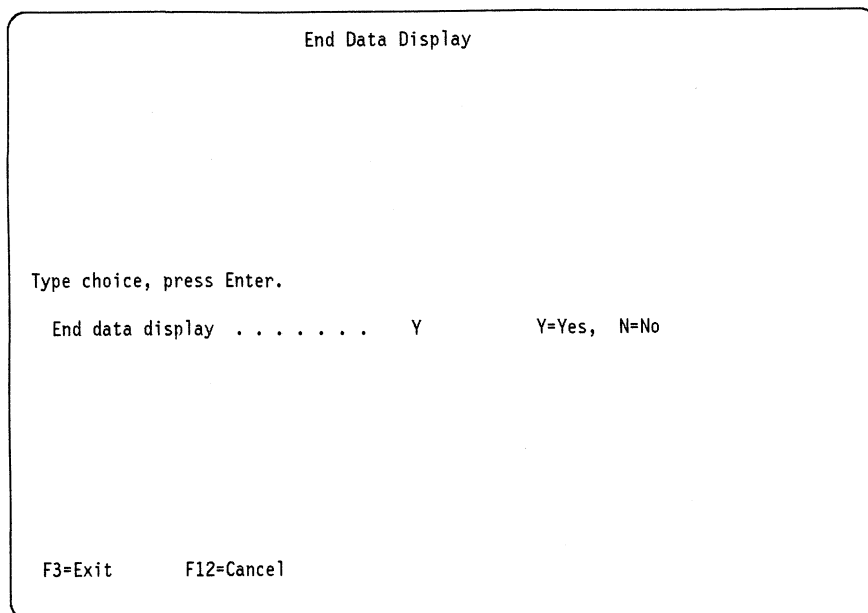


Figure 104. End Data Display

Note: The audit control information does not appear on the End Data Display because you cannot make changes to the data file.

4. Press Enter to end this DFU session and to return to the AS/400 Data File Utility (DFU) menu.

Chapter 4. Running a DFU Program

This chapter shows how to run an existing Data File Utility (DFU) program. The example shows how to add new records to the QORDFILE file using the ORDMNT program you created in Chapter 2, "Creating a DFU Program" on page 11, and changed in Chapter 3, "Changing a DFU Program" on page 59.

You can perform the following functions from a data entry display (see "Run-Time Function Keys" on page 5 for a complete list of run-time function keys):

- Add new records
- Change existing records
- Delete records
- Refresh the display with the original values
- Automatically duplicate fields from previously displayed records
- Change modes to Insert, Change, or Entry
- Print records from the Display mode
- Display accumulator totals for added, changed, and deleted records
- Check the run status
- Page through records
- Update records on roll
- Change keys in Change mode
- Auto-increment values on the record
- Validate data entered with one or more edit/check algorithms.

Procedure for Running a DFU Program

Perform the following steps to run a DFU program:

1. Sign on to the system.
2. Type STRDFU.
3. Press Enter. The AS/400 Data File Utility (DFU) menu appears. Your display appears as in Figure 105 on page 76.

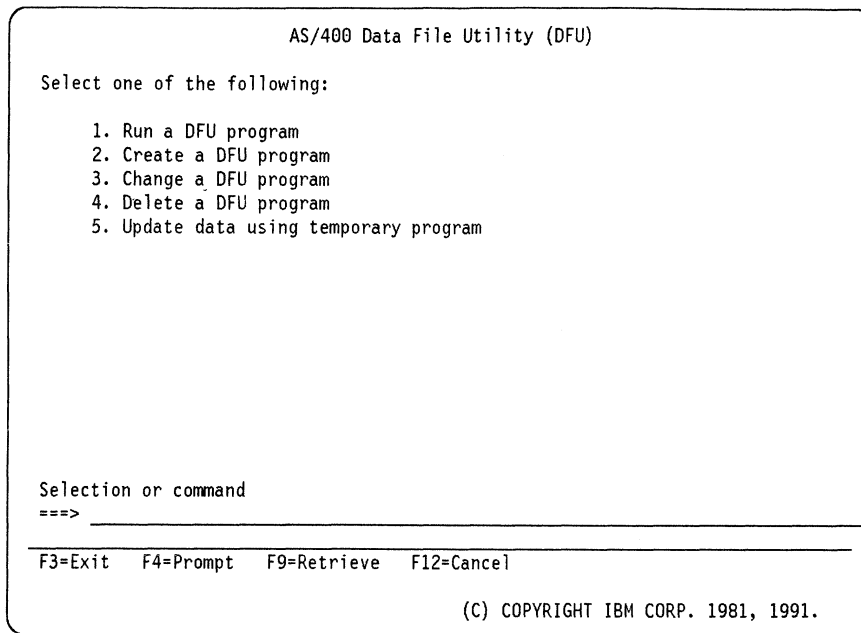


Figure 105. AS/400 Data File Utility (DFU) Menu

4. Select option 1 (Run a DFU program) from the AS/400 Data File Utility (DFU) menu. Your display appears as in Figure 106.

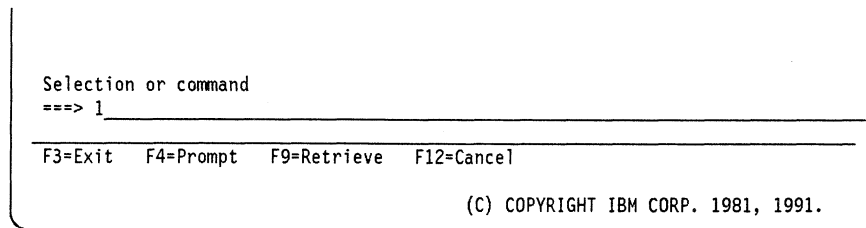


Figure 106. AS/400 Data File Utility (DFU) Menu with Option 1 Specified

5. Press Enter. The Run a DFU Program display appears as in Figure 107 on page 77.

Run a DFU Program Menu

This display allows you to select the type of activity you want to perform on a data file using an existing DFU program. You can either change a data file, or display records of a data file.

The DFU program runs in one of four modes: Entry, Change, Insert, or Display. The initial mode of data entry depends on your selection from the Run a DFU Program menu. You can change the mode using an associated function key. The initial mode for option 1 (Change a data file) is Change, provided records exist in the file that can be changed. Otherwise, Entry is the initial mode. Entry mode allows you to add records to a data file. From Display mode, you can only look at data file records, you cannot change them.

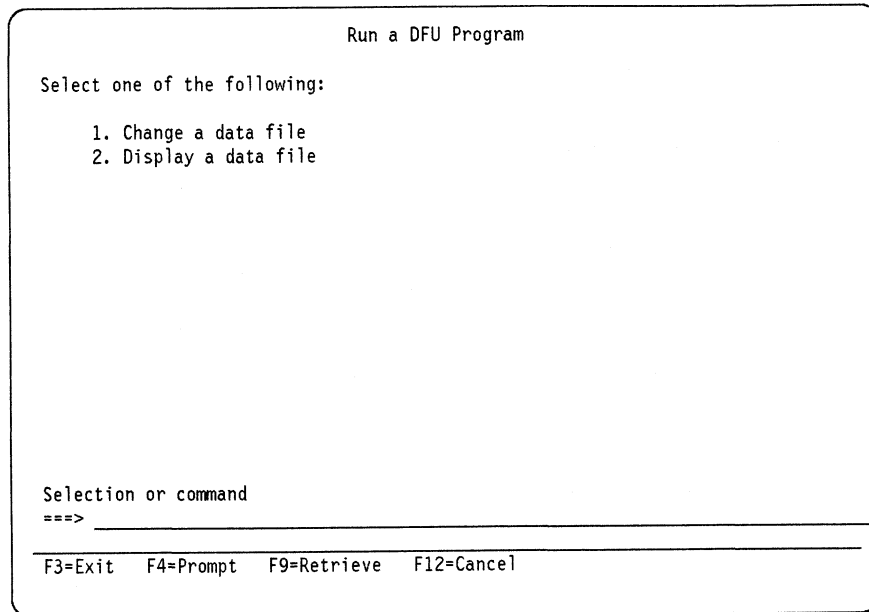


Figure 107. Run a DFU Program Menu

1. Type 1 (Change a data file) on the command line.
2. Press Enter. The Change a Data File display appears as in Figure 108.

Change a Data File Display

Note: If you specify a different data file, you must make sure that the data file meets the conditions discussed in “Change a DFU Program Display” on page 60.

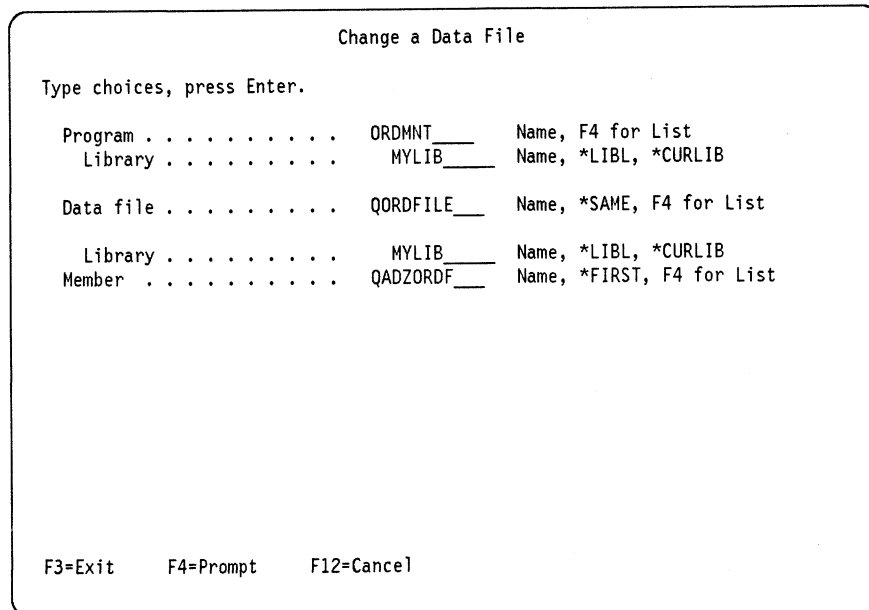


Figure 108. Change a Data File Display

1. Move your cursor to the *Member* prompt and press F4 to display a list of available members for the QORDFILE data file. The Select Data File Member display appears.

Select Data File Member Display

Your display appears as in Figure 109.

```

                                     Select Data File Member
File . . . . : QORDFILE                Library . . . . . : MYLIB
Position to . . . . . _____
Type option, press Enter.
  1=Select
Opt   Member      Description
-     QADZORDF
                                           Bottom
F5=Refresh      F12=Cancel
```

Figure 109. Select Data File Member Display

1. Press F12 (Cancel) to return to the Change a Data File display without processing any selections. You do not need to select a member for this example. DFU already uses the QADZORDF member by default, as shown on Figure 108 on page 77, and you do not have to select it again. Your display appears as in Figure 110 on page 79.

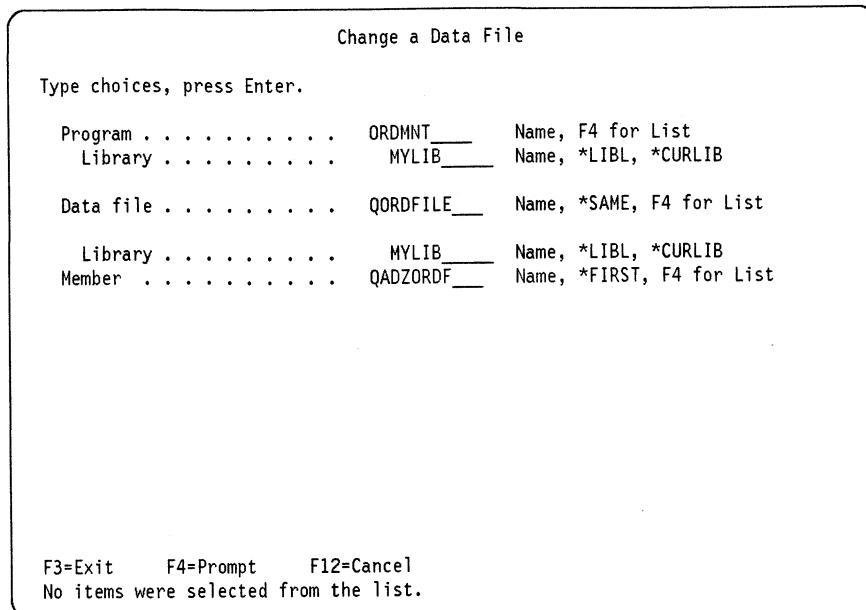


Figure 110. Change a Data File Display

2. Press Enter to continue to the first data entry display. The key field ORDER NUMBER appears, allowing you to type a key value to retrieve the specified database record you want to work with. Your display appears as in Figure 111.

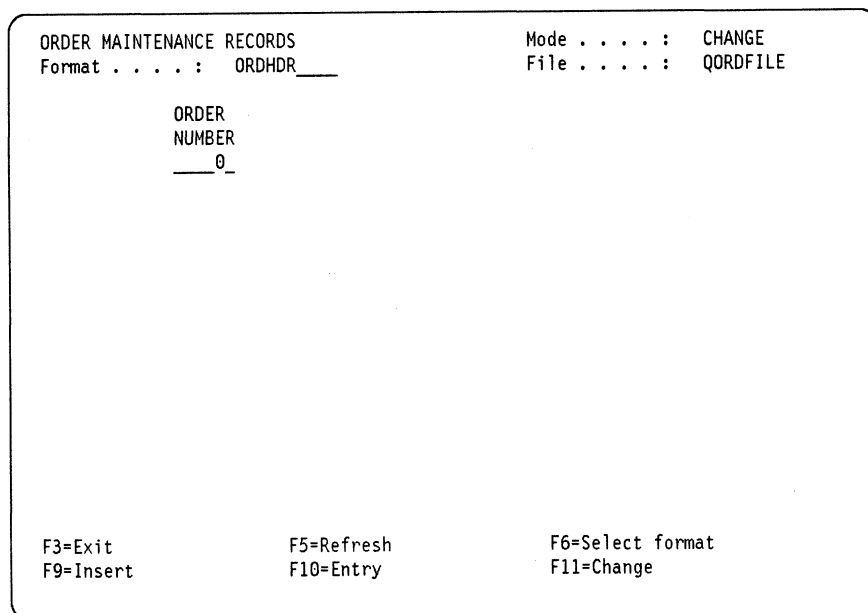


Figure 111. Data Entry Display in Change Mode

This data entry display is in Change mode because you added a record to QORDFILE in Chapter 2, "Creating a DFU Program" on page 11. The data file is no longer empty.

3. Press F10 (Entry) to move into Entry mode to add new records.

- Type the information shown in Figure 112 on page 80 into the data entry display to create a new record for this example.

```

ORDER MAINTENANCE RECORDS                               Mode . . . . . :  ENTRY
Format . . . . . :  ORDHDR__                           File . . . . . :  QORDFILE

CUSTOMER  ORDER  ORDER  ORDER  TOTAL  INVOICE  ORDER
NUMBER   NUMBER STATUS AMOUNT  LINES  NUMBER  DATE
  __30   __110   2_   _____300.00  __2  __200  91/07/01

                                SHIP
                                VIA
                                TRUCK_____

F3=Exit          F5=Refresh          F6=Select format
F9=Insert        F10=Entry           F11=Change
  
```

Figure 112. Data Entry Display in Entry Mode

- Press Enter to process the new record. DFU adds the record to the QORDFILE data file and clears off the display so you can add information for another new record.

Your display appears as in Figure 113.

```

ORDER MAINTENANCE RECORDS                               Mode . . . . . :  ENTRY
Format . . . . . :  ORDHDR__                           File . . . . . :  QORDFILE

CUSTOMER  ORDER  ORDER  ORDER  TOTAL  INVOICE  ORDER
NUMBER   NUMBER STATUS AMOUNT  LINES  NUMBER  DATE
  _____  __0_   0_   _____00_  __0_  __0_  91/07/01

                                SHIP
                                VIA
                                _____

F3=Exit          F5=Refresh          F6=Select format
F9=Insert        F10=Entry           F11=Change
  
```

Figure 113. Data Entry Display in Entry Mode

- Press F6 to go to the Select Record Format Display.

Select Record Format Display

This display allows you to select a new record format for your data entry display. DFU shows two available record formats for the sample QORDFILE data file. The ORDHDR format and the ORDDTL format were selected when you created the example ORDMNT program. Your display appears as in Figure 114.

```

                                Select Record Format

Type option, press Enter.
 1=Select

Opt  Format      Description
-   ORDHDR      Order Header Record
-   ORDDTL      Order Detail Record

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

Figure 114. Select Record Format Display

1. Type 1 beside the ORDDTL format to select it. Your display appears as in Figure 115.

```

                                Select Record Format

Type option, press Enter.
 1=Select

Opt  Format      Description
1   ORDHDR      Order Header Record
1   ORDDTL      Order Detail Record

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

Figure 115. Select Record Format Display with ORDDTL Selected

- Press Enter. The Data Entry Display appears for the ORDDTL record format. You can now enter new records for this records format. To add new records, type the information shown in Figure 116 on page 82.

```

ORDER MAINTENANCE RECORDS                               Mode . . . . . :  ENTRY
Format . . . . . :  ORDDTL_____                       File . . . . . :  QORDFILE

ORDER  ORDER  PART  PART  UNIT  TOTAL
NUMBER QUANTITY NUMBER DESCRIPTION AMOUNT AMOUNT
____  _____  _____  _____  _____  _____
 110     10     44     PLIERS         3.00       30.00
 110     1     66     ELECTRIC DRILL_ 35.00       35.00
 0       0       0       _____  _____  _____
 0       0       0       _____  _____  _____
 0       0       0       _____  _____  _____
 0       0       0       _____  _____  _____
 0       0       0       _____  _____  _____
 0       0       0       _____  _____  _____
 0       0       0       _____  _____  _____
 0       0       0       _____  _____  _____
 0       0       0       _____  _____  _____
 0       0       0       _____  _____  _____
 0       0       0       _____  _____  _____
 0       0       0       _____  _____  _____
 0       0       0       _____  _____  _____
 0       0       0       _____  _____  _____
 0       0       0       _____  _____  _____
 0       0       0       _____  _____  _____

F3=Exit             F5=Refresh         F6=Select format
F9=Insert           F10=Entry          F11=Change

```

Figure 116. Data Entry Display for ORDDTL Record Format

- Press Enter to process the new records.
- Press F11 (Change) to go into Change mode. Type 110 in the Order Number prompt and press Enter to retrieve the record. Your display appears as in Figure 117.

```

ORDER MAINTENANCE RECORDS                               Mode . . . . . :  CHANGE
Format . . . . . :  ORDDTL_____                       File . . . . . :  QORDFILE

ORDER  ORDER  PART  PART  UNIT  TOTAL
NUMBER QUANTITY NUMBER DESCRIPTION AMOUNT AMOUNT
____  _____  _____  _____  _____  _____
 110     10     44     PLIERS         3.00       30.00

F3=Exit             F5=Refresh         F6=Select format
F9=Insert           F10=Entry          F11=Change

```

Figure 117. Data Entry Display with Record Displayed

5. Press F23 (Delete) to delete the record. Your display appears as in Figure 118 on page 83.

```

ORDER MAINTENANCE RECORDS
Format . . . . : ORDDTL__
Mode . . . . : CHANGE
File . . . . : QORDFILE

ORDER  ORDER  PART  PART  UNIT  TOTAL
NUMBER QUANTITY NUMBER DESCRIPTION AMOUNT AMOUNT
__110__  __10__  __44__  PLIERS_____  __3.00__  __30.00

F3=Exit          F5=Refresh      F6=Select format
F9=Insert        F10=Entry       F11=Change
Press F23 to confirm record deletion request.

```

Figure 118. Data Entry Display for Delete Confirmation

6. Press F23 to confirm the deletion of the record. DFU will display a message confirming that the record was deleted.
7. Press F10 to return to Entry mode.
8. Press F6 to return to the Select Record Format Display. Type 1 (Select) beside the ORDHDR record format. Your display appears as in Figure 119.

```

                                Select Record Format

Type option, press Enter.
 1=Select

Opt  Format      Description
 1  ORDHDR      Order Header Record
 _  ORDDTL      Order Detail Record

F3=Exit          F5=Refresh      F12=Cancel
Bottom

```

Figure 119. Select Record Format Display with ORDHDR Selected

9. Press Enter. The data entry display for the ORDHDR record format appears.
10. Press F17 (Display and print accumulators). The Display Batch Accumulators display appears.

Display Batch Accumulators Display

The Display Batch Accumulators display shows a running total of the value for designated accumulator fields since you last requested to look at this display. (The previous subtotal is added to a total accumulator each time you access this display.)

For example, in the ORDMNT program, you specified the ORDAMT field as an accumulator field when you defined the program. The Display Batch Accumulators display shows the subtotal of the value of the ORDAMT field. Because you created only one record in this example, the subtotal for the ORDAMT field is 300. As you add records, this subtotal will increase, and as you delete records this subtotal will decrease.

Your display appears as in Figure 120.

Display Batch Accumulators	
Field	Subtotal
ORDER AMOUNT	300.00

Press Enter to continue.

F3=Exit F12=Cancel

Bottom

Figure 120. Display Batch Accumulators Display

1. Press F12 (Cancel) to return to the data entry display. Your display appears as in Figure 121 on page 85.

```

ORDER MAINTENANCE RECORDS
Format . . . . . : ORDHDR__

Mode . . . . . : ENTRY
File . . . . . : QORDFILE

CUSTOMER  ORDER  ORDER  ORDER  TOTAL  INVOICE  ORDER
NUMBER    NUMBER STATUS AMOUNT  LINES  NUMBER  DATE
_____  _____  _____  _____  _____  _____  _____
          0_         0_         .00_    0_       0_       91/07/01

          SHIP
          VIA
          _____

F3=Exit      F5=Refresh   F6=Select format
F9=Insert    F10=Entry   F11=Change

```

Figure 121. Data Entry Display in Entry Mode

2. Press F18 (Auto-increment from last change) to activate the auto-increment function.
3. Press F21 (Status) from the data entry display to display the status of this run job.

Display Run Status Display

The Display Run Status display shows the current status of the DFU program being run. Your display appears as in Figure 122 on page 86.

```

                                Display Run Status

Program . . . . . :  ORD MNT
Library . . . . . :  MYLIB
Data file . . . . . : QORDFILE
Library . . . . . :  MYLIB
Member . . . . . :  QADZORDF
Record format . . . . . : ORDHDR
Last format . . . . . : ORDHDR

Current active functions:
Mode . . . . . :  ENTRY
Auto dup . . . . . : OFF
Auto advance . . . . . : OFF
Auto-increment . . . . . : ON      From last record

                                Bottom

Press Enter to continue.

F3=Exit      F12=Cancel

```

Figure 122. Display Run Status Display

1. Press Enter to return to the data entry display. Your display appears as in Figure 123.

```

ORDER MAINTENANCE RECORDS
Format . . . . . :  ORDHDR_____

Mode . . . . . :  ENTRY
File . . . . . :  QORDFILE

CUSTOMER  ORDER  ORDER  ORDER  TOTAL  INVOICE  ORDER
NUMBER    NUMBER STATUS AMOUNT  LINES  NUMBER  DATE
_____  ___10_  0_    _____,00_  ___0_  ___0_  91/07/01

                                SHIP
                                VIA
                                _____

F3=Exit      F5=Refresh      F6=Select format
F9=Insert    F10=Entry       F11=Change

```

Figure 123. Data Entry Display in Entry Mode

In this example, you are going to change the SHPVIA value in an existing record in the QORDFILE file.

2. Press F11 (Change) to enter Change mode.
3. Type the key value (110) in the ORDER NUMBER key field.

4. Press Enter.

Note: DFU retrieves the record from the file and shows the contents of the record so that you can change it.

Your display appears as in Figure 124.

```
ORDER MAINTENANCE RECORDS                               Mode . . . . : CHANGE
Format . . . . : ORDHDR__                               File . . . . : QORDFILE

CUSTOMER  ORDER  ORDER  ORDER  TOTAL  INVOICE  ORDER
NUMBER    NUMBER STATUS  AMOUNT  LINES  NUMBER  DATE
30__     _110_  2_    _____300.00__  _2_  _200_  91/07/01

                                SHIP
                                VIA
                                TRUCK_____

F3=Exit      F5=Refresh      F6=Select format
F9=Insert    F10=Entry       F11=Change
```

Figure 124. Data Entry Display in Change Mode

5. Type in a new value (PLANE) in the the SHIP VIA field. Your display appears as in Figure 125.

```
ORDER MAINTENANCE RECORDS                               Mode . . . . : CHANGE
Format . . . . : ORDHDR__                               File . . . . : QORDFILE

CUSTOMER  ORDER  ORDER  ORDER  TOTAL  INVOICE  ORDER
NUMBER    NUMBER STATUS  AMOUNT  LINES  NUMBER  DATE
30__     _110_  2_    _____300.00__  _2_  _200_  91/07/01

                                SHIP
                                VIA
                                PLANE_____

F3=Exit      F5=Refresh      F6=Select format
F9=Insert    F10=Entry       F11=Change
```

Figure 125. Data Entry Display with Changed Record

6. Press Roll Up (Page Down) to update the record. DFU changes the record in the QORDFILE data file and advances to the next record. You can continue to make changes by using the Roll keys to move through the records.
7. Press F3 (Exit) to go to the End Data Entry display and end this session.

End Data Entry Display

The End Data Entry display summarizes the changes made to the data file during the current session. You can exit the DFU data entry program from this display. When you end the data entry session, DFU prints the audit report if you requested it in your DFU program.

The display shown in Figure 126 shows that you have added three records, changed one record, and deleted one record during the current session. The informational message indicates that all records you added, changed, or deleted are printed. This message appears because you selected to print an audit report on the Define General Information/Indexed File display.

End Data Entry

Number of records processed

Added	3	
Changed	1	
Deleted	1	

Type choice, press Enter.

End data entry Y Y=Yes, N=No

F3=Exit F12=Cancel
All records added, changed, or deleted will be printed.

Figure 126. End Data Entry Display

1. Leave the default of Y (Yes) in the *End data entry* prompt.
2. Press Enter to end the session.

The Display Batch Accumulators display appears. DFU presents the accumulator totals when you exit DFU (if you defined accumulator fields). For this example, you defined the program to keep an accumulator total for the ORDAMT field. If no fields have been defined as accumulator fields, the AS/400 Data File Utility (DFU) menu appears directly.

Note: You also can press F17 (Display and Print Accumulators) to request the accumulator subtotals anytime during data entry.

In this example, DFU has reset the batch accumulator to zero because you requested to see the subtotals earlier (as shown in Figure 120 on page 84) and have not added additional records. Your display appears as shown in Figure 127 on page 89.

Display Batch Accumulators	
Field	Subtotal
ORDER AMOUNT	.00

Press Enter to continue.

F3=Exit F12=Cancel

Figure 127. Display Batch Accumulators Display

3. Press Enter to continue to the Display Total Accumulators display.

Display Total Accumulators Display

This display shows the accumulator totals (the sum of each batch subtotal) for each defined accumulator field. The total accumulators for this example is 300 because you created only one record. Your display appears as in Figure 128 on page 90.

Display Total Accumulators	
Field	Total
ORDER AMOUNT	300.00
<p>Press Enter to continue.</p> <p>F3=Exit F12=Cancel</p> <p style="text-align: right;">Bottom</p>	

Figure 128. Display Total Accumulators Display

1. Press Enter to end the session. The Run a DFU Program display appears.
2. Press F3 (Exit) and the AS/400 Data File Utility (DFU) display appears. The audit report is printed. See "Audit Report" for a sample audit report.

From the AS/400 Data File Utility (DFU) menu, you can perform another DFU mode or exit the utility.

Audit Report

Figure 129 on page 91 shows the audit report for the sample ORDMNT program.

```

5738SS1  V2R1M0  910524          AUDIT LOG          07/01/91  14:20:09  PAGE  1
Library/File . . . . . MYLIB/QORDFILE
Member . . . . . QADZORDF
Job Title . . . . . ORDER MAINTENANCE RECORDS
ORDER  CUSTOMER ORDER  ORDER  TOTAL INVOICE ORDER  SHIP
NUMBER NUMBER  STATUS AMOUNT  LINES NUMBER  DATE  VIA
Added      110    30      2      300.00    2    200  91/07/01 TRUCK
ORDER  ORDER  PART  PART  UNIT  TOTAL
NUMBER QUANTITY NUMBER DESCRIPTION AMOUNT AMOUNT
Added      110    10      44  PLIERS      3.00      30.00
Added      110     1      66  ELECTRIC DRILL  35.00     35.00
Deleted    110    10      44  PLIERS      3.00     30.00
Batch accumulators are displayed
ORDER AMOUNT                                300.00
ORDER  CUSTOMER ORDER  ORDER  TOTAL INVOICE ORDER  SHIP
NUMBER NUMBER  STATUS AMOUNT  LINES NUMBER  DATE  VIA
Changed    110    30      2      300.00    2    200  91/07/01 TRUCK
                                           PLANE
Batch accumulators are displayed
ORDER AMOUNT                                .00
Total accumulators are displayed
ORDER AMOUNT                                300.00
3 Records Added
1 Records Changed
1 Records Deleted

```

***** END OF DFU AUDIT REPORT *****

Figure 129. Sample Audit Report

Chapter 5. Updating Data Using a Temporary Program

This chapter shows a quick method for entering data into a data file. You do not have to define a DFU program first. Specify the data file you want to change and DFU defines a temporary program for you based on the externally described file specifications for that data file. When you finish data entry, DFU deletes the temporary program.

Note: The following defaults may differ each time you update data using a temporary program. The Yes and No values from the Define General Information display and the Specify Audit Control display (if *Audit report* was selected on the Define General Information display) are saved in your Interactive User Profile, so each time you define a new program the values may change. Updating data using a temporary program will not change the values in the Interactive User Profile.

The temporary data entry program uses the following defaults for each display:

- Define General Information display
 - *Job title:* WORK WITH DATA IN A FILE
 - *Display format:* Multiple column
 - *Audit report:* Yes
 - *S/36 style:* No
 - *Suppress errors:* No
 - *Allow updates on roll:* No
 - *Record numbers heading:* *RECNBR (nonindexed files only)
 - *Processing:* Sequential (nonindexed files only)
 - *Keys-Generate:* No (indexed files only)
 - *Keys-Changes allowed:* No (indexed files only)
 - *Generate record numbers:* No (nonindexed files only)
 - *Store record number in a field:* No (nonindexed files only).
- Specify Audit Control display
 - *Print additions:* Yes
 - *Print changes:* Yes
 - *Print deletions:* Yes
 - *Printer line width:* 132
 - *Printer column spacing:* 1.
- Work with Record Formats display: all available record formats
- Select and Sequence Fields display
 - *Select and Sequence fields:* Select all.
 - *Field headings:* The externally described headings if they exist, otherwise the field names specified in the file specification.
- Specify Extended Field Definition display (alphanumeric fields)
 - *Auto duplicate:* No
 - *Allow lowercase:* Yes
 - *Heading location:* *BEFORE
 - *Edit code and Edit word:* As specified in the DDS file description.

- Specify Extended Field Definition display (numeric fields)
 - *Auto duplicate*: No
 - *Accumulate*: No
 - *Heading location*: *BEFORE.
- Any validity specified in the DDS file description.

See the online help for more information about these values.

Procedure for Updating Data Using a Temporary Program

Use the following procedure to update data using a temporary program (to add or change records in a data file):

1. Sign on to the system.
2. Type STRDFU.
3. Press Enter.

The AS/400 Data File Utility (DFU) menu appears. Your display appears as in Figure 130.

AS/400 Data File Utility (DFU)

Select one of the following:

1. Run a DFU program
2. Create a DFU program
3. Change a DFU program
4. Delete a DFU program
5. Update data using temporary program

Selection or command
 ===> _____

F3=Exit F4=Prompt F9=Retrieve F12=Cancel

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Figure 130. AS/400 Data File Utility (DFU) Menu

4. Type 5 (Update data using temporary program) on the command line of the AS/400 Data File Utility (DFU) menu. Your display appears as in Figure 131 on page 95.

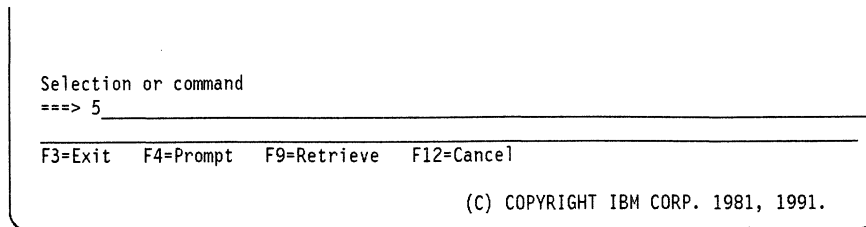


Figure 131. AS/400 Data File Utility (DFU) Menu with Option 5 Specified

5. Press Enter. The Update Data Using Temporary Program display appears.

Update Data Using Temporary Program Display

The Update Data Using Temporary Program display allows you to specify the name of the data file for which you want to add or change records. The default names are those you last specified when you were in DFU. Your display appears as in Figure 132.

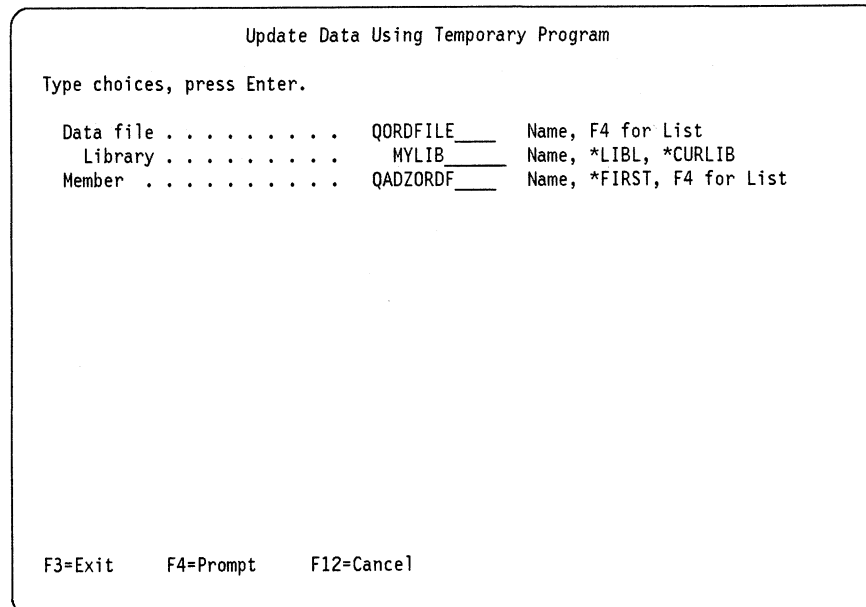


Figure 132. Update Data Using Temporary Program Display

1. Press Enter to display the first data entry display. Your display appears as in Figure 133 on page 96.

```

WORK WITH DATA IN A FILE                               Mode . . . . : CHANGE
Format . . . . : ORDHDR____                           File . . . . : QORDFILE

ORDER NUMBER: _____

F3=Exit          F5=Refresh          F6=Select format
F9=Insert        F10=Entry           F11=Change

```

Figure 133. Data Entry Display for a Temporary DFU Program

The temporary program uses all of the fields in the data file specification instead of only those you would select if creating your own program. DFU also creates data entry displays for all record formats specified in the external DDS or IDDU file descriptions.

2. Press F10 (Entry). This changes the mode to Entry and displays the rest of the fields.

```

WORK WITH DATA IN A FILE                               Mode . . . . : ENTRY
Format . . . . : ORDHDR____                           File . . . . : QORDFILE

ORDER NUMBER: _____
CUSTOMER NUMBER: _____
ORDER DATE: _____
SHIP VIA: _____
ORDER STATUS: _____
ORDER AMOUNT: _____
TOTAL LINES: _____
INVOICE NUMBER: _____

F3=Exit          F5=Refresh          F6=Select format
F9=Insert        F10=Entry           F11=Change

```

Figure 134. Data Entry Display for a Temporary DFU Program

You can add, change, or delete records as desired.

See Chapter 4, "Running a DFU Program," for additional information about running a DFU program.

3. Press F3 (Exit).

The End Data Entry display appears.

End Data Entry Display

When you end the data entry session, DFU prints the audit report if you requested it in your DFU program.

The informational message indicates that all records you added, changed, or deleted are printed.

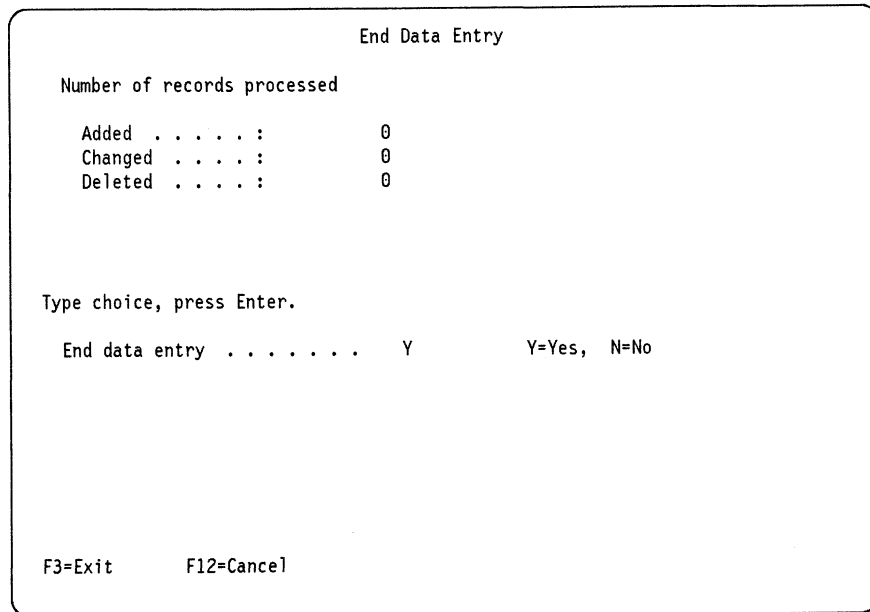


Figure 135. End Data Entry Display

1. Leave the default of Y (Yes) in the *End data entry* prompt.
2. Press Enter to end the session. The Update Data Using Temporary Program display appears and the audit report is printed.
3. Press F3 (Exit) to return to the AS/400 Data File Utility (DFU) menu. From the AS/400 Data File Utility (DFU) menu, you can perform another DFU operation or press F3 (Exit) to exit the utility.

Chapter 6. Tailoring a DFU Display

The Data File Utility (DFU) provides you with a way to tailor DFU data entry displays so they can meet your individual needs. A DFU program is made up of two types of files. There is a program file and a display file, both with the same name. You can save the DDS source for a DFU display file in a source file member and then tailor the DDS source to suit your needs. You can then use the tailored DDS source to create a DFU display file. To tailor the DDS source in order to change the appearance of the DFU data entry displays you use the Screen Design Aid (SDA) or the Source Entry Utility (SEU).

Note: Only experienced users should attempt to tailor their DFU display files. Tampering with the following restrictions is done at your own risk.

- Do not rearrange the fields in the display buffer. For example, you may move the fields around on the SDA work screen, but you cannot change the order of the fields in the display buffer.
- Do not overlap fields or constants.
- Do not add or remove display records, or change the name of a display record.
- Do not change the length of, add, or delete any fields.
- Do not change input, output or both field data types.
- Do not change the indicators specified.
- Do not change the names of input or output fields or record formats.
- Do not overlap fields in one record format with another record format; for example, you must not move a SFL field to the area defined or used by a SFLCTL record.
- You should note that the CRTDFUDSPF command does not perform any syntax checks on the DDS source prior to creating the object.

This chapter shows how to tailor the DDS source using SDA (Screen Design Aid). The examples show how to create a new DFU display file called ORDMNT, using the create DFU display file (CRTDFUDSPF) command. The characteristics of the DFU display file, and the data entry displays used to access data files, are also described.

Saving the DDS Source

In order to tailor your DFU display you first have to save the DDS source that DFU generates for the data entry display. Once you have saved the DDS source, you can then modify it using SDA or SEU to produce a display that suits your data entry needs.

Note: You need a source physical file in which to store the DDS source you are going to save. To create a source physical file use the CRTSRCPF command and name the file QDDSSRC, in library MYLIB.

The following example shows you how to save the DDS source:

1. Sign on to the system.
2. Type STRDFU.
3. Press Enter. The AS/400 Data File Utility (DFU) menu appears as shown in Figure 136.

```
AS/400 Data File Utility (DFU)

Select one of the following:

    1. Run a DFU program
    2. Create a DFU program
    3. Change a DFU program
    4. Delete a DFU program
    5. Update data using temporary program

Selection or command
====> _____

F3=Exit  F4=Prompt  F9=Retrieve  F12=Cancel

(C) COPYRIGHT IBM CORP. 1981, 1991.
```

Figure 136. AS/400 Data File Utility (DFU) Menu

4. Type 3 (Change a DFU program) on the command line of the AS/400 Data File Utility (DFU) menu as shown in Figure 137.

```
Selection or command
====> 3 _____

F3=Exit  F4=Prompt  F9=Retrieve  F12=Cancel

(C) COPYRIGHT IBM CORP. 1981, 1991.
```

Figure 137. AS/400 Data File Utility (DFU) Menu with Option 3 Specified

5. Press Enter. The Change a DFU Program display appears as shown in Figure 138 on page 101. The program that is going to be changed is the ORDMNT program that you changed in chapter 3.

```

Change a DFU Program

Type choices, press Enter.

Program . . . . . ORDMNT____ Name, F4 for List
Library . . . . . MYLIB____ Name, *LIBL, *CURLIB

Data file . . . . . QORDFILE__ Name, *SAME, F4 for List
Library . . . . . MYLIB____ Name, *LIBL, *CURLIB

F3=Exit      F4=Prompt      F12=Cancel

```

Figure 138. Change a DFU Program Display

6. Press Enter. The Define General Information/Indexed File display appears as shown in Figure 139.

```

Define General Information/Indexed File

Type choices, press Enter.

Job title . . . . . ORDER MAINTENANCE RECORDS_____
Display format . . . . . 4          1=Single, 2=Multiple
                                   3=Maximum, 4=Row oriented

Audit report . . . . . Y          Y=Yes, N=No
S/36 style . . . . . N          Y=Yes, N=No
Suppress errors . . . . . N      Y=Yes, N=No
Edit numerics . . . . . Y      Y=Yes, N=No
Allow updates on roll . . . . . Y Y=Yes, N=No
Keys:
  Generate . . . . . N          Y=Yes, N=No
  Changes allowed . . . . . Y   Y=Yes, N=No

F3=Exit      F12=Cancel      F14=Display definition

```

Figure 139. Define General Information/Indexed File Display

Note: If your data file is nonindexed, the Define General Information/Nonindexed File display appears.

7. Press F3 (Exit). The Exit DFU Program Definition display appears as shown in Figure 140 on page 102.

```

Exit DFU Program Definition

Type choices, press Enter.

Save program . . . . . Y           Y=Yes, N=No
Run program . . . . . Y           Y=Yes, N=No
  For choice Y=Yes:
    Type of run . . . . . 1       1=Change, 2=Display
Modify program . . . . . N       Y=Yes, N=No
Save DDS source . . . . . N       Y=Yes, N=No

For Save program Y=Yes:
Program . . . . .  ORDMNT_____ Name
Library . . . . .  MYLIB_____ Name, *CURLIB, . . .
Authority . . . . . *CHANGE_____ Name, *LIBCRTAUT, . . .
Text . . . . .    ORDER MAINTENANCE RECORDS_____

For Save DDS source Y=Yes:
Source file . . . . . _____ Name
Library . . . . .    *CURLIB_____ Name, *CURLIB, . . .
Source member . . . . . ORDMNT_____ Name

F3=Exit      F14=Display definition      F17=Fast path

```

Figure 140. Exit DFU Program Definition Display

Note: The prompts on this display are filled with values from the DFU program that you are changing.

8. Type Y in the *Save DDS source* prompt, and fill in the name of the source physical file you created (QDDSSRC) in the *Source file* prompt.
9. Type N (No) in the *Run program* prompt.
10. Type MYLIB over the default entry of *CURLIB in the *Library* prompt for the *Save DDS source* section.
11. Press Enter. The Exit DFU Program Definition display appears as shown in Figure 141 on page 103.


```

Exit DFU Program Definition

Type choices, press Enter.

Save program . . . . . Y           Y=Yes, N=No
Run program . . . . . N           Y=Yes, N=No
  For choice Y=Yes:
    Type of run . . . . . 1       1=Change, 2=Display...
Modify program . . . . . N           Y=Yes, N=No
Save DDS source . . . . . Y

For Save program Y=Yes:
Program . . . . . ORD_MNT_____ Name
Library . . . . . MYLIB_____ Name, *CURLIB, . . .
Authority . . . . . *CHANGE_____ Name, *LIBCRTAUT, . . .
Text . . . . . ORDER MAINTENANCE RECORDS_____

For Save DDS source Y=Yes
Source file . . . . . QDDSSRC_____ Name
Library . . . . . MYLIB_____ Name, *CURLIB, . . .
Source member . . . . . ORD_MNT_____ Name

F3=Exit      F14=Display definition    F17=Fast path
ORDMNT already exists. Press Enter or F17 to replace it.

```

Figure 141. Exit DFU Program Definition Display

Note: If you specify Y (Yes) in the Save DDS source prompt, you also have to specify Y (Yes) in the Save program prompt to ensure that a DFU program exists for the saved DDS.

12. Press enter to confirm the change of the program and save the DDS source. The AS/400 DFU menu appears.

You have now saved the DDS source for the display file in a file called ORDMNT. The next step is to go to the actual tailoring of the DDS.

Tailoring a DFU Data Entry Display

Now that you have saved the DDS source for the DFU data entry display you can customize the source to change the appearance of your data entry displays. The example shown in this chapter uses SDA to tailor the data entry display, but you can also use SEU.

Examples of what you can do to tailor your display using SDA are as follows:

- Highlight fields
- Make a field blink
- Show a field in reverse image
- Add constants
- Rearrange the fields on the screen
- Add UIM user help.

Perform the following steps to tailor your DFU data entry display with SDA:

1. Type STRSDA from any AS/400 command line.
2. Press Enter. The AS/400 Screen Design Aid (SDA) menu appears as shown in Figure 142.

```
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, 1991.
```

Figure 142. AS/400 Screen Design Aid (SDA) Menu

3. Type 1 (Design screens) on the command line of the AS/400 Screen Design Aid (SDA) menu as shown in Figure 143.

```
Selection or command
===> 1 _____

F1=Help  F3=Exit  F4=Prompt  F9=Retrieve  F12=Cancel
(C) COPYRIGHT IBM CORP. 1981, 1991.
```

Figure 143. AS/400 Screen Design Aid (SDA) Menu with Option 1 Specified

4. Press Enter. The Design Screens display appears.

Design Screens Display

1. Type the name of the source file (QDDSSRC), the name of the library (MYLIB), and the name of the source member (ORDMNT) that were specified when you saved your DDS source on the Exit DFU Program Definition display. The display appears, as shown in Figure 144 on page 105.

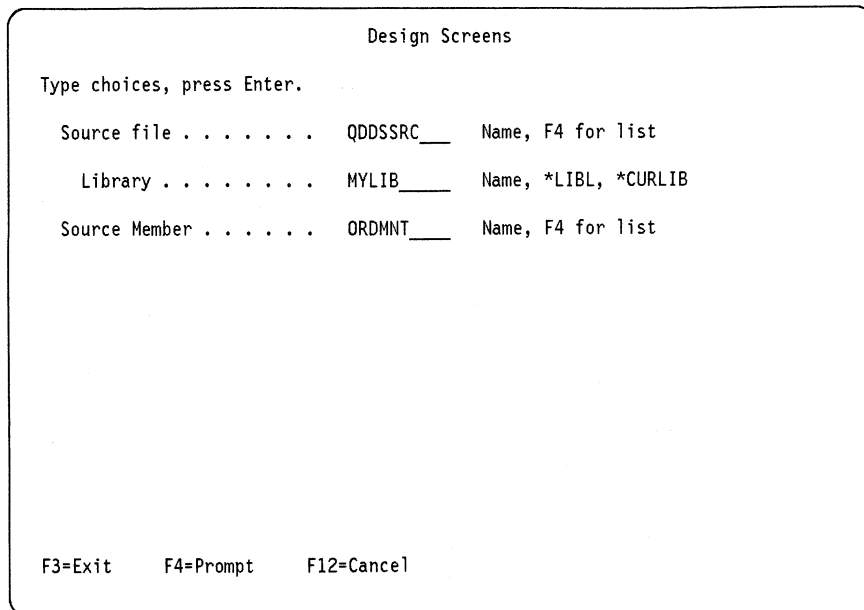


Figure 144. Design Screens Display

2. Press Enter to go to the Work with Display Records display. The display appears as shown in Figure 145.

Work with Display Records Display

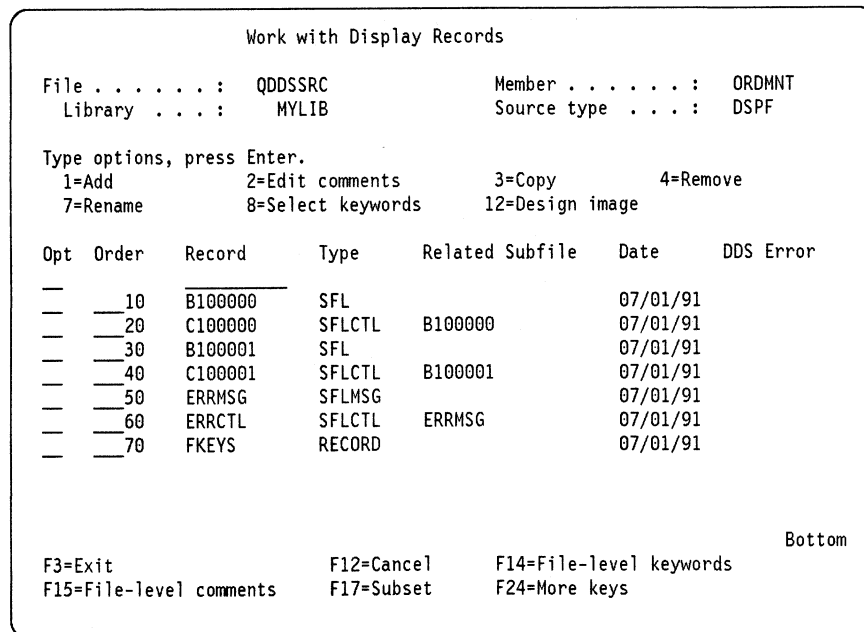


Figure 145. Work with Display Records Display.

The records listed on the Work with Display Records display contain the information that DFU uses to set up each data entry display within the DDS source member.

Following is a description of what each of these DFU records is:

- B100000 and B100001 represent subfiles (SFL) that contains the actual fields of the data entry display. Each field you selected on the Select and Sequence Fields display would be in these subfiles (one subfile for each record format).

Note: If there were additional data entry displays, the corresponding subfiles would be named as the above subfiles are, with the last digit on the right of the name increasing by one for each additional subfile. For example, if there was an additional subfile for this sample the name would be B100002.

- C100000 and C100001 represent the control information for subfile B100000 and subfile B100001.

Note: The naming conventions for control files are the same as those for subfiles. For example, if there was an additional control file in this sample it would be named C100002.

- ERRMSG represents the subfile used to issue messages on the message line of the data entry display.
- ERRCTL represents the control information for the subfile ERRMSG.
- FKEYS represents the record format used to display the function key line of the data entry display.

1. Type 12 (Design image) in the Opt column to select record B100000 on the Work with Display Records display. The display appears as shown in Figure 146.

Work with Display Records						
File :		QDSSRC		Member :		ORDMNT
Library :		MYLIB		Source type :		DSPF
Type options, press Enter.						
1=Add		2=Edit comments		3=Copy		4=Remove
7=Rename		8=Select keywords		12=Design image		
Opt	Order	Record	Type	Related Subfile	Date	DDS Error
<u>12</u>	10	B100000	SFL		07/01/91	
—	20	C100000	SFLCTL	B100000	07/01/91	
—	30	B100001	SFL		07/01/91	
—	40	C100001	SFLCTL	B100001	07/01/91	
—	50	ERRMSG	SFLMSG		07/01/91	
—	60	ERRCTL	SFLCTL	ERRMSG	07/01/91	
—	70	FKEYS	RECORD		07/01/91	
F3=Exit						Bottom
F15=File-level comments		F12=Cancel		F14=File-level keywords		
		F17=Subset		F24=More keys		

Figure 146. Work with Display Records Display.

2. Press Enter. The Design Image work screen appears.

Design Image Work Screen

1. The Design Image work screen, as shown in Figure 147, is a work screen on which you design your DFU display.

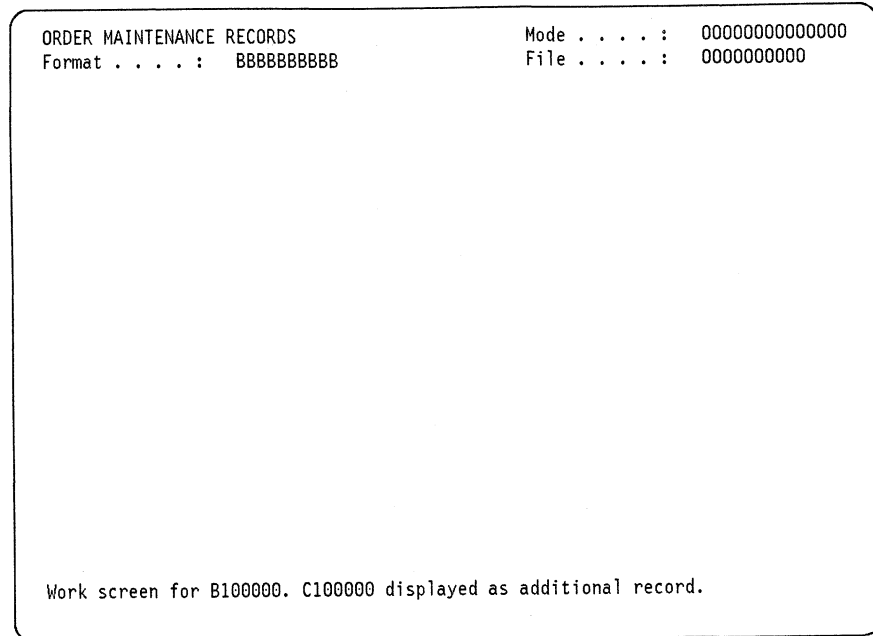


Figure 147. DFU Design Image Work Screen

A message appears on the bottom of the Design Image work screen the first time you reach it. You use the entire Design Image work screen when designing a display.

Note: None of the fields for subfile B100000 are visible on the work screen yet because they are subject to indicators which have not yet been conditioned ON.

2. Press F9 to go to the Select Additional Records for Display display.
3. Select the record name FKEYS. The display appears as shown in Figure 148 on page 108.

```

Select Additional Records for Display
File . . . . . : QDDSSRC          Member . . . . . : ORDMNT
Library . . . . . : MYLIB         Source type . . . : DSPF

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

Option  Record      Type   Status
 1     C100000___
 2     _____
 3     _____
-     B100000      SFL    In use
-     C100000      SFLCTL Selected
-     B100001      SFL
-     C100001      SFLCTL
-     ERRMSG       SFLMSG
-     ERRCTL       SFLCTL
 2     FKEYS       RECORD

F3=Exit    F5=Refresh    F12=Cancel
Records currently selected: C100000

Bottom

```

Figure 148. Select Additional Records for Display Display.

Note: Record C100000 has already been selected for you as an additional record.

4. Press Enter to return to the Design Image work screen and notice that the function keys are now displayed at the bottom of the work screen because you selected the FKEYS record as an additional record. Your display appears as in Figure 149.

```

ORDER MAINTENANCE RECORDS          Mode . . . . . : 00000000000000
Format . . . . . : BBBB BBBB      File . . . . . : 0000000000

F3=Exit          F5=Refresh          F6=Select Format
Additional record(s) selected: C100000 FKEYS

```

Figure 149. DFU Design Image Work Screen

5. Press F6 to go to the Condition Work Screen display.

6. Type Y (Yes) in the *Activate indicators* prompt to condition the Work Screen with the specified indicators.
7. Type 4 and 17 in the *Indicators to be turned ON* prompt. The Work Screen appears as if indicators 4 and 17 are the only indicators on.

Note: These indicators are used by DFU to condition the fields during data entry. If you do not turn them on, you will not see the DFU fields on the Work Screen.

Figure 150 shows how the Condition Work Screen display appears with the prompts filled in.

Condition Work Screen

Record . . . : B100000

Type choices, press Enter.

Activate indicators	Y	Y=Yes
Indicators to be turned ON	4_17 _ _ _ _	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 150. Condition Work Screen with Indicators Selected

8. Press Enter to return to the Design Image work screen.
- The Design Image work screen now appears as shown in Figure 151 on page 110.

```

ORDER MAINTENANCE RECORDS                               Mode . . . . : 00000000000000
Format . . . . : ORDHDR_____                          File . . . . : 0000000000

CUSTOMER  ORDER  ORDER  ORDER          TOTAL  INVOICE  ORDER
NUMBER    NUMBER STATUS AMOUNT          LINES   NUMBER   DATE
BBBBB    99999-  9-    999,999,999.99CR  999-    99999-   99/99/99

                                SHIP
                                VIA
                                BBBBBBBBBBBBBBBB

F3=Exit          F5=Refresh      F6=Select format
F9=Insert        F10=Entry       F11=Change

```

Figure 151. Work Screen with Indicators Selected

The work screen that you see reflects the DDS that you saved from your DFU program. Now you can use SDA to change the way the data entry display looks. The following steps will take you through an example of tailoring your DFU display. For more information on using SDA see the *SDA User's Guide and Reference* manual.

In SDA, you can use minus signs(-) and equal signs(=) to move fields around. The minus sign indicates which field you want to move, and the equal sign indicates the new position for the field.

1. Type a minus sign (-) in the attribute position for the INVOICE field. The attribute position is the position immediately to the left of the first character in the field. Now type an equal sign (=) under the CUSTOMER NUMBER field, and one character to the left of the N in NUMBER.

The Work Screen now appears as shown in Figure 152 on page 111.


```

ORDER MAINTENANCE RECORDS                               Mode . . . . : 00000000000000
Format . . . . : ORDHDR__                               File . . . . : 0000000000

CUSTOMER  ORDER  ORDER  ORDER          TOTAL  -INVOICE  ORDER
NUMBER    NUMBER STATUS  AMOUNT      LINES   NUMBER   DATE
BBBBB    99999-  9-    999,999,999.99CR  999-   99999-   99/99/99

=                                     SHIP
                                       VIA
                                       BBBBBBBBBBBBBBBB

F3=Exit          F5=Refresh      F6=Select format
F9=Insert        F10=Entry       F11=Change

```

Figure 152. Work Screen with INVOICE Field Marked for Move

2. Press Enter. The INVOICE field will now be located directly under the CUSTOMER NUMBER field. The screen appears as shown in Figure 153.

```

ORDER MAINTENANCE RECORDS                               Mode . . . . : 00000000000000
Format . . . . : ORDHDR__                               File . . . . : 0000000000

CUSTOMER  ORDER  ORDER  ORDER          TOTAL  -INVOICE  ORDER
NUMBER    NUMBER STATUS  AMOUNT      LINES   NUMBER   DATE
BBBBB    99999-  9-    999,999,999.99CR  999-   99999-   99/99/99

INVOICE                                     SHIP
                                       VIA
                                       BBBBBBBBBBBBBBBB

F3=Exit          F5=Refresh      F6=Select format
F9=Insert        F10=Entry       F11=Change

```

Figure 153. Work Screen with Invoice Field Moved

3. Now use the minus key(-) and the equal key(=) to move other fields on the display so it appears as the screen shown in Figure 154 on page 112.

ORDER MAINTENANCE RECORDS				Mode :	00000000000000
Format : ORDHDR_____				File :	0000000000
CUSTOMER NUMBER	ORDER NUMBER	ORDER STATUS	ORDER AMOUNT	TOTAL LINES	ORDER DATE
BBBBB	99999-	9-	999,999,999.99CR	999-	99/99/99
INVOICE NUMBER			SHIP VIA		
99999-			BBBBBBBBBBBBBBBB		
F3=Exit F9=Insert		F5=Refresh F10=Entry		F6=Select format F11=Change	

Figure 154. Tailored Work Screen

Note: Although you can make the Work Display appear as it does in Figure 154 by moving fields with the minus(-) and equal(=) keys, you can also use other SDA features to do more complex tailoring.

4. Press F3 to exit the Design Image work screen. The Exit SDA Work Screen display appears.

Exit SDA Work Screen Display

1. Select option 1 *Save work since last Enter and exit work screen*. The display appears as shown in Figure 155 on page 113.

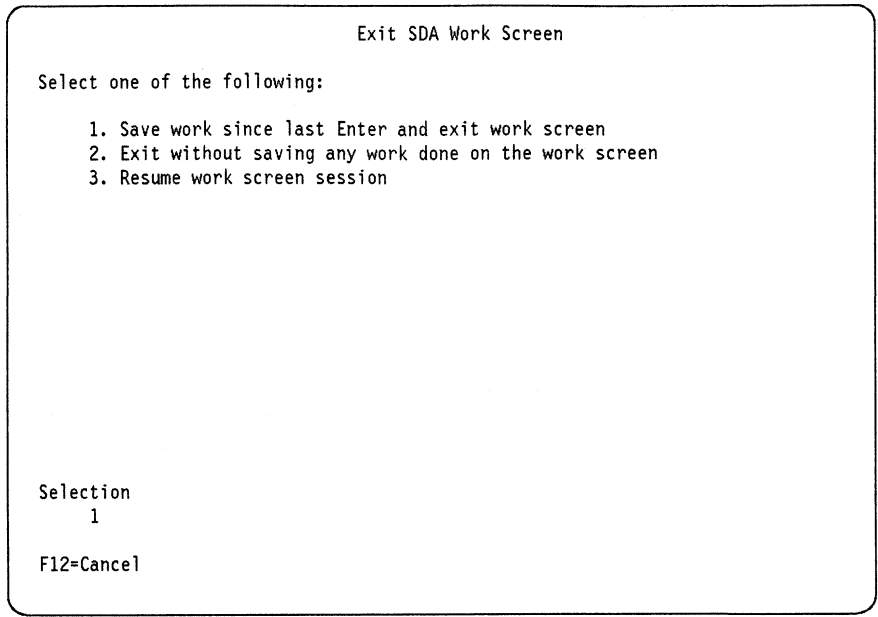


Figure 155. Exit SDA Work Screen with Option 1 Selected

2. Press Enter. The Work with Display Records display appears with a message at the bottom telling you that the image was updated. Your display appears as in Figure 156.

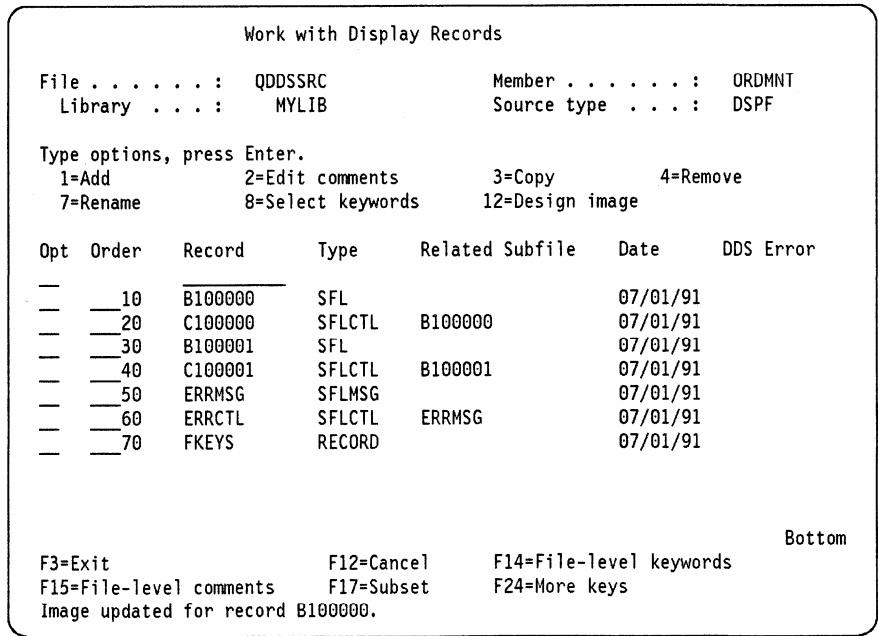


Figure 156. Work with Display Records Display.

3. Press F3 (Exit). The Save DDS — Create Display File display appears as shown in Figure 157 on page 114.

Save DDS - Create Display File Display

```

Save DDS - Create Display File

Type choices, press Enter.

Save DDS source . . . . . Y          Y=Yes
Source file . . . . . QDSSRC__ F4 for list
Library . . . . . MYLIB__ Name, *LIBL ...
Member . . . . . ORDMNT__ F4 for list
Text . . . . . ORDER MAINTENANCE RECORDS__

-----

Create display file . . . . . Y          Y=Yes
Prompt for parameters . . . . . Y=Yes
Display file . . . . . ORDMNT__ F4 for list
Library . . . . . MYLIB__ 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
File ORDMNT already exists but its type is DFU.

```

Figure 157. Save DDS - Create Display File Display with Default Values

1. Change the Y in the *Create display file* prompt to N (No) to save your member without creating a display file.

Note: You must not create the display file using the Save DDS – Create Display File display. You must use the CRTDFUDSPF (Create DFU Display File) command.
2. Press Enter to save the DDS source created by SDA in the member you have specified. The Save DDS – Create Display File display appears as shown in Figure 158 on page 115.

```

Save DDS - Create Display File

Type choices, press Enter.

Save DDS source . . . . . Y          Y=Yes
Source file . . . . . QDSSRC__ F4 for list
Library . . . . . MYLIB__ Name, *LIBL ...
Member . . . . . ORDMNT__ F4 for list
Text . . . . . ORDER MAINTENANCE RECORDS__

-----

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

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

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

F3=Exit F4=Prompt F12=Cancel
Source was saved in member ORDMNT. Press Enter.

```

Figure 158. Save DDS - Create Display File Display with Confirmation of Save

When SDA displays a completion message, you have finished your tailoring and saved the DDS source in a display file.

3. Press Enter to return to the Design Screens display.
4. Press F3 to return to the Screen Design Aid menu.
5. Press F3 to exit SDA.

When a DFU program is created a display file is automatically created along with the program. Now that you have saved and tailored the DDS source generated for the DFU display file, the next step is to use the Create DFU Display File (CRTDFUDSPF) command to create your new display file.

Creating a DFU Display File

When a DFU program is created a display file is automatically created along with the program. Now that you have saved and tailored the DDS source generated for the display file, the next step is to create a new DFU display file with the tailored DDS source that your DFU program is able to use. To do this you must use the Create DFU Display File command (CRTDFUDSPF). This command will allow you to replace the display file that was created with the program with a new display file that contains the tailored DDS source. It is important at this step to note that the name of the new display file should be the same as the name of the DFU program it is for. Otherwise DFU will not be able to use the new file. Perform the following steps to create a DFU display file:

1. Type the create DFU display file (CRTDFUDSPF) command on any AS/400 command line and press F4 (Prompt). The display appears as shown in Figure 159 on page 116.

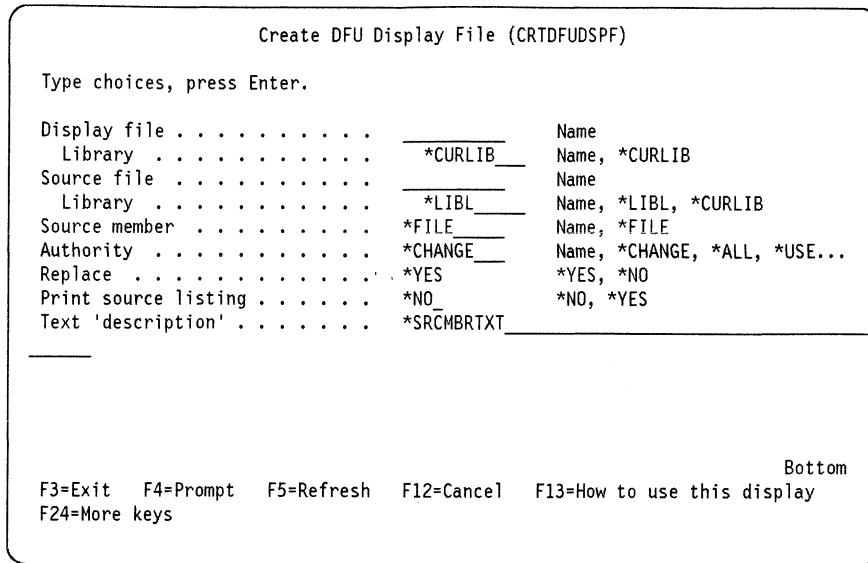


Figure 159. Create DFU Display File (CRTDFUDSPF) Display

Defaults on this display for the source file and the member come from the saved DDS source.

2. Type the name of the display file and the library name. The screen appears as in Figure 160.

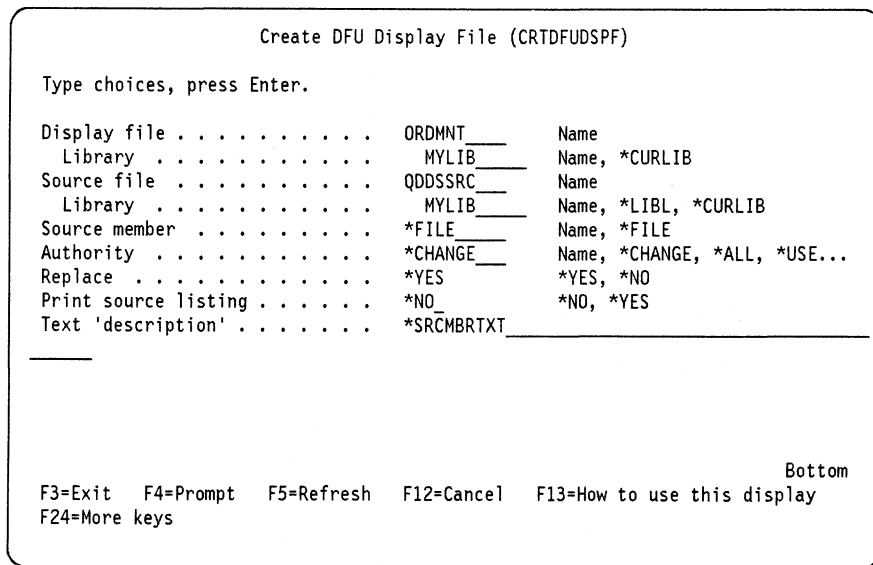


Figure 160. Create DFU Display File (CRTDFUDSPF) Display

3. Press Enter and the new DFU display file is created.

Now that you have created your new DFU display file you can re-run your DFU program, and you will see that the data entry screens are now the ones that you tailored in SDA. If you want to make additional changes to the data entry display after seeing them, you can repeat the process and tailor the screens again.

Chapter 7. Deleting a DFU Program

This chapter shows how to delete one or more Data File Utility (DFU) programs. To delete a program, specify the name of the program you want to delete and then confirm your selection for deletion.

Procedure for Deleting a DFU Program

Perform the following steps to delete an existing DFU program:

1. Sign on to the system.
2. Type STRDFU.
3. Press Enter. The AS/400 Data File Utility (DFU) menu appears as in Figure 161.

```
AS/400 Data File Utility (DFU)

Select one of the following:

1. Run a DFU program
2. Create a DFU program
3. Change a DFU program
4. Delete a DFU program
5. Update data using temporary program

Selection or command
====> _____

F3=Exit  F4=Prompt  F9=Retrieve  F12=Cancel

(C) COPYRIGHT IBM CORP. 1981, 1991.
```

Figure 161. AS/400 Data File Utility (DFU) Menu

4. Select option 4 (Delete a DFU program) from the AS/400 Data File Utility (DFU) menu. Your display appears as in Figure 162.

```
Selection or command
====> 4 _____

F3=Exit  F4=Prompt  F9=Retrieve  F12=Cancel

(C) COPYRIGHT IBM CORP. 1981, 1991.
```

Figure 162. AS/400 Data File Utility (DFU) Menu with Option 4 Specified

5. Press Enter. The Delete a DFU Program display appears.

Delete a DFU Program Display

The Delete a DFU Program display lets you specify the name of the program you want to delete. Alternatively, you can display a list of programs and delete more than one program. DFU automatically uses the *Program* and *Library* names you last specified in DFU. Your display appears as in Figure 163.

```
Delete a DFU Program

Type choices, press Enter.

Program . . . . . ORD MNT ___ Name, F4 for List
Library . . . . . MYLIB ___ Name, *LIBL, *CURLIB

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

Figure 163. Delete a DFU Program Display

1. Move your cursor to the *Program* prompt.
2. Press F4 for a list of available programs in the MYLIB library. The Select Program display appears.

Select Program Display

The programs listed on this display depend on what is in your MYLIB library. You can select more than one program for deletion from the Select Program display. Your display appears as in Figure 164 on page 119.


```

Select Program

Library . . . . . : MYLIB
Position to . . . . . : _____
Type option, press Enter.
  1=Select

Opt   Program      Description
-     ORDNT        ORDER MAINTENANCE RECORDS
-     ORDPGM       ORDER MAINTENANCE RECORDS

F5=Refresh      F12=Cancel

Bottom

```

Figure 164. Select Program Display

1. Type 1 (Select) beside the programs you want to delete. Your display appears as in Figure 165.

```

Type option, press Enter.
  1=Select

Opt   Program      Description
1     ORDNT        ORDER MAINTENANCE RECORDS
1     ORDPGM       ORDER MAINTENANCE RECORDS

```

Figure 165. Select Program Display with Program Choices

2. Press Enter. The Confirm Delete of DFU Programs display appears.

Confirm Delete of DFU Program Display

The Confirm Delete of DFU Program display shows all the programs you selected for deletion.

If you want to change your choice of programs to be deleted, press F12 (Cancel) to return to the Select Program display. Otherwise, press Enter to delete all selected programs. DFU returns to the Delete a DFU Program display.

Your display appears as in Figure 166 on page 120.

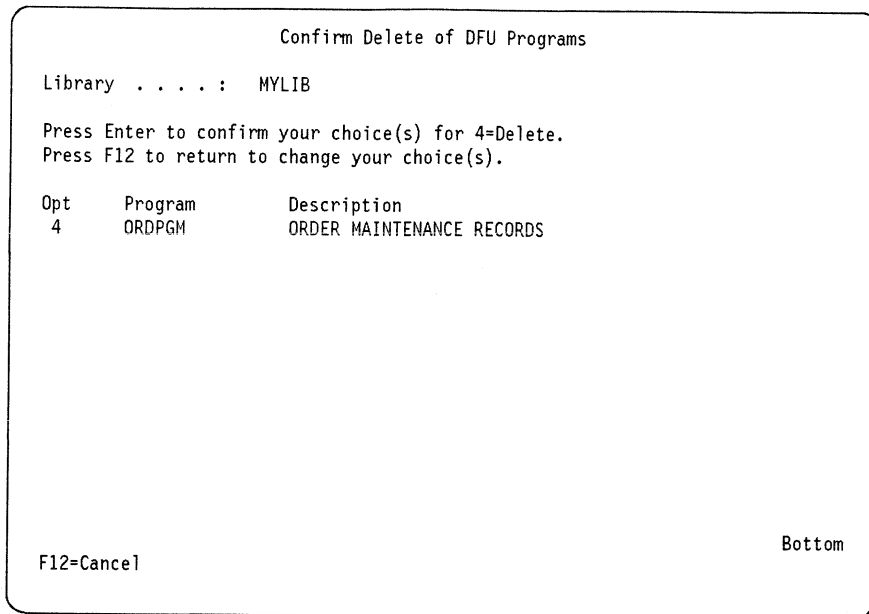


Figure 166. Confirm Delete of DFU Programs Display

1. Press Enter to confirm deletion. The Delete a DFU Program display appears.
2. Press F3 (Exit). The AS/400 Data File Utility (DFU) menu appears. From the AS/400 Data File Utility (DFU) menu, you can perform another DFU operation or press F3 (Exit) to exit the utility.

Chapter 8. Reference Information for DFU Displays

This section shows the various displays you will see when you use DFU, and describes the prompts on these displays. The displays are arranged alphabetically by screen name.

Change a Data File Display

Change a Data File

Type choices, press Enter.

Program	ORDPGM__	Name, F4 for List
Library	MYLIB__	Name, *LIBL, *CURLIB
Data file	ORDIDDU__	Name, *SAME, F4 for List
Library	MYLIB__	Name, *LIBL, *CURLIB
Member	*FIRST__	Name, *FIRST, F4 for List

F3=Exit F4=Prompt F12=Cancel

Figure 167. Change a Data File Display

Descriptions of the prompts on the Change a Data File display are as follows:

Program. The name of the program you want to run. To see a list of available programs, move your cursor to this prompt and press F4. The Select Program display appears and you can select the program you want to run. See “Select Program Display” on page 154 for additional information. The defaults for the *Program* field are the following:

- The program name used on the Exit DFU Program Definition display
- The value specified for the DFUPGM parameter if you used the CHGDTA or STRDFU commands.

Library. The name of the library containing the DFU program. The defaults are the following:

- Your library list (*LIBL)
- The current library (*CURLIB)

- The library name used on the Exit DFU Program Definition display
- The value specified for the DFUPGM parameter if you used the CHGDTA or STRDFU commands.

Data file. The name of the data file to be changed by your DFU program. To see a list of available data files, move your cursor to this prompt and press F4. The defaults are the following:

- The file specified on the Exit DFU Program Definition display
- The file specified for the FILE parameter if you used the CHGDTA or STRDFU commands to reach this display
- The file specified in the DFU program (*SAME) if you leave this prompt blank.

Library. The name of the library containing the data file. The defaults are the following:

- The library specified on the Exit DFU Program Definition display
- The library specified for the CHGDTA or STRDFU commands if either were used
- The current library (*CURLIB)
- The library specified in the DFU program (*SAME) if you leave the prompt blank.

Member. The name of the member in the data file that you want to change.

Change a DFU Program Display

Change a DFU Program

Type choices, press Enter.

Program	ORDPGM__	Name, F4 for List
Library	MYLIB__	Name, *LIBL, *CURLIB
Data file	ORDIDDU__	Name, *SAME, F4 for List
Library	MYLIB__	Name, *LIBL, *CURLIB

F3=Exit F4=Prompt F12=Cancel

Figure 168. Change a DFU Program Display

Descriptions of the prompts on the Change a DFU Program display are as follows:

Program. The name of the DFU program to change. To see a list of the DFU programs in the library specified in the *Library* prompt, move your cursor to the *Program* prompt and press F4. The Select Program display appears and you can select the program you want to change. See “Select Program Display” on page 154 for additional information. The defaults for the *Program* field are the following:

- The name you specified in the previous DFU session
- The name specified for the DFUPGM parameter if you used the STRDFU command.

Library. The name of the library containing the DFU program. The defaults are the following:

- The library specified in the previous DFU session
- The library name specified for the DFUPGM parameter if you used the STRDFU command
- The current library (*CURLIB).

You can use an existing library or create a new library using the Create Library (CRTLIB) command from any AS/400 command line.

Data file. The name of the data file on which the DFU program is to operate. DFU uses the name specified here if you run the DFU program without specifying a data file for the FILE parameter. To see a list of available data files, move your cursor to this prompt and press F4. A list of data files in the library specified on the *Library* prompt appears and you can then select the file you want from the list, if applicable. See “Select File Display” on page 153 for additional information. The defaults for the *Data File* field are the following:

- The data file you specified in the last DFU session
- *SAME if the field is blanked out
- The name you specified for the FILE parameter if you used the STRDFU command.

Library. The name of the library containing the desired data file. If you specify *LIBL, your library list is searched for the data file. The defaults are the following:

- The name of the library you specified in the previous DFU session
- The name you specify for the FILE parameter if you used the STRDFU command
- *LIBL, if DFU has not been previously used or if the field is blanked out
- The current library (*CURLIB).

Confirm Delete of DFU Programs Display

```
Confirm Delete of DFU Programs

Library . . . . : MYLIB

Press Enter to confirm your choice(s), for 4=Delete.
Press F12 to return to change your choice(s).

Opt   Program      Description
 4    ORDPGM       ORDER MAINTENANCE RECORDS

F12=Cancel                                           Bottom
```

Figure 169. Confirm Delete of DFU Programs Display

Descriptions of the prompts on the Confirm Delete of DFU Programs display are as follows:

Library. The name of the library that contains the DFU program you are deleting.

Opt. This prompt is pre-filled with 4 (Delete).

Program. The name of the DFU program you are deleting.

Description. The description of the DFU program you are deleting.

Note: This display asks for confirmation of your decision to delete a DFU program. To confirm your choice, press Enter. To cancel the delete process, press F12.

Create DFU Display File (CRTDFUDSPF) Display

```

Create DFU Display File (CRTDFUDSPF)

Type choices, press Enter.

Display file . . . . . _____ Name
Library . . . . . *CURLIB_____ Name, *CURLIB
Source file . . . . . _____ Name
Library . . . . . *LIBL_____ Name, *LIBL, *CURLIB
Source member . . . . . *FILE_____ Name, *FILE
Authority . . . . . *CHANGE_____ Name, *CHANGE, *ALL, *USE...
Replace . . . . . *YES_____ *YES, *NO
Print source listing . . . . . *NO_____ *NO, *YES
Text 'description' . . . . . *SRCMBRTXT_____

Bottom
F3=Exit F4=Prompt F5=Refresh F12=Cancel F13=How to use this display
F24=More keys

```

Figure 170. Create DFU Display File (CRTDFUDSPF) Display

Descriptions of the prompts on the Create DFU Display File (CRTDFUDSPF) display are as follows:

Display file. The name of the DFU display file to be created. DFU expects this name to be the same as the DFU program name that was originally created when you saved the DDS source. DFU matches the program name with the display file name and will not run the program if no match is found.

Library. The name of the library to contain the DFU display file being created. You can specify *CURLIB to have the file you are creating stored in the current library, or you can specify any valid name; however, DFU expects this name to be the same as the library name into which the original DFU program was created. DFU searches this library for both the program and the display file and will not use the program if both are not found. The default is *CURLIB.

Source file. The name of the source physical file that contains the DDS source.

Library. The name of the library that contains the saved DDS source. You can specify any valid library name, *LIBL to use the library list to locate the source file, or *CURLIB to use the current library for the job to locate the source file. QGPL is used as the current library, if none exists. The default is *LIBL.

Source member. The name of the member within the source file that contains the saved DDS for this DFU display file. You can specify any valid member name, or *FILE to indicate that the member name that matches the DFU display file name should be used.

Authority. The authority level that you want associated with your display file. The default is *CHANGE. The *CHANGE authority permits any user to make object-operational changes and perform basic functions on the display file.

Other available authority levels are: *ALL, *USE, *EXCLUDE. The *ALL authority permits any user to change, run, or delete the display file. The *USE authority permits any user to read the display file but not to change it. The *EXCLUDE authority restricts rights to the display file to the owner (creator) of the display file. You can also specify the name of an authorization list in this prompt. The authorization list contains a list of users and their authorities, which gives you a way of granting a specific group of users a specific level of authority to a DFU display file.

Replace. Specifies whether or not you want to replace the existing file with the new file. To replace the original display file with a new one of the same name, type *YES in this prompt. Type *NO if you do not want to replace the display file. The default is *YES.

Print source listing. Specifies whether or not you want to print the listing produced when the file is created. To print the listing, type *YES in this prompt, or *NO if you do not want to print the listing. The default is *NO.

Text 'description'. The text description of the DFU display file. You can specify up to 50 characters, enclosed in apostrophes, or type *BLANK. The default is the source member text description.

Create a DFU Program Display

Create a DFU Program

Type choices, press Enter.

Program	_____	Name, F4 for List
Library	*CURLIB__	Name, *CURLIB
Data file	_____	Name, F4 for List
Library	*LIBL__	Name, *LIBL, *CURLIB

F3=Exit F4=Prompt F12=Cancel

Figure 171. Create a DFU Program Display

Descriptions of the prompts on the Create a DFU Program display are as follows:

Program. The name of the DFU program to be created. The defaults are the following:

- The name you specified in the previous DFU session
- The name specified for the DFUPGM parameter if you used the STRDFU command.

To see a list of existing programs, move your cursor to the *Program* prompt and press F4.

Library. The name of the library in which you want to place the DFU program. The defaults are the following:

- The current library (*CURLIB)
- The last name you specified in the previous DFU session
- The library name specified for the DFUPGM parameter if you used the STRDFU command.

You can use an existing library or create a library by using the Create Library (CRTLIB) command from any AS/400 command line.

Data file. The name of the data file your DFU program uses when you run the program. To see a list of existing data files in the library specified in the *Library* prompt, press F4 while the cursor is in the *Data file* prompt. Select the desired file from the list, if applicable. See "Select File Display" on page 153 for additional information. The defaults are the following:

- The name you specified in the previous DFU session
- The name you specified for the FILE parameter if you used the STRDFU command.

Library. The name of the library containing the desired data file. If you specify *LIBL, your library list is searched for the data file. The defaults are the following:

- Your library list (*LIBL)
- The current library (*CURLIB)
- The library you specified in the previous DFU session
- The library specified for the FILE parameter if you used STRDFU.

Data Entry Display

ORDER MAINTENANCE RECORDS			Mode : ENTRY		
Format : ORDHDR ____			File : QORDFILE		
CUSTOMER NUMBER	ORDER NUMBER (NUMERIC CODE)	ORDER STATUS	ORDER AMOUNT	TOTAL LINES	INVOICE NUMBER
_____	___0_	0_	_____.00_	__0_	___0_
	ORDER DATE 91/07/01		SHIP VIA _____		
F3=Exit F9=Insert			F5=Refresh F10=Entry		F6=Select format F11=Change

Figure 172. Data Entry Display in Entry Mode

Descriptions of the prompts on the data entry display are as follows:

ORDER MAINTENANCE RECORDS. A sample defined job title. This title will be the same for all data entry displays within a particular DFU program.

Mode. The current mode. There are four possible modes: Entry, Change, Insert, or Display (if you selected option 2 from the Run a DFU Program menu). The activities you perform in each mode are as follows:

- Entry mode is used to add new records at the end of a file (sequential entry). This is the default mode.
- Change mode is used to change existing records in the file.
- Insert mode is used to insert records anywhere in the file. If the file is processed sequentially, insert mode is identical to entry mode, that is, records are added to the end of the file.

When you are processing indexed files, you are prompted for a record key and the associated data. Insert mode then functions like entry, with operator-specified record keys. If DFU-generated record keys have been specified in the DFU program, however, you must specify a new record key less than the next record key to be generated by DFU, otherwise DFU will not continue to generate record keys for you.

When processing direct files, you are prompted for a record number and the associated data. Insert mode then functions like entry mode with operator-specified record numbers. The record corresponding to the specified record number must exist in the file and must currently be blank.

- Display mode is used to view records but not to change them.

Format. Shows the current record format. DFU always presents the first record format selected when you defined your program. You can change the displayed format by pressing F6 (Select format) or by typing the new format into the *Format* prompt and pressing Enter.

File. The name of the data file being edited.

The remaining fields that appear on the data entry display are the data input fields that you selected when you created your DFU program. The format and appearance of these fields will differ depending on whether or not you have an indexed or a nonindexed file, single or multiple keys, or an AS/400 System versus a System/36 display style.

Note: If all of the fields that you selected for this program cannot fit on one display, there may be more than one display for a record. If so, press Enter to advance to the additional fields.

To change to a different record format, press F6 (Select format) or move the cursor to the *Format* prompt, type the name of the record format you want, and press Enter.

Define Audit Control Display

```
Define Audit Control

Type choices, press Enter.

Print additions . . . . . Y           Y=Yes, N=No
Print changes . . . . . Y           Y=Yes, N=No
Print deletions . . . . . Y         Y=Yes, N=No
Printer:
  Line width . . . . . 132         60-198
  Column spacing . . . . . 1       0-9

F3=Exit    F12=Cancel    F14=Display definition
```

Figure 173. Define Audit Control Display

Descriptions of the prompts on the Define Audit Control display are as follows:

Print additions. Indicates whether or not to print a copy of each new record. The default is Y (Yes).

Print changes. Indicates whether or not to print a copy of each changed record. The default is Y (Yes).

Print deletions. Indicates whether or not to print a copy of each deleted record. The default is Y (Yes).

Printer line width. Specifies the line width to send to the printer. The range is from 60 to 198 characters. The default length is 132. To print a width greater than 132, you must use a printer that can accept more than 132 characters in a print line.

Printer column spacing. Specifies the number of spaces to place between fields on the printed output. The range is 0 to 9. The default spacing is 1 character.

Define General Information/Indexed File Display

```
Define General Information/Indexed File

Type choices, press Enter.

Job title . . . . . ORDMNT
Display format . . . . . 2      1=Single, 2=Multiple
                                   3=Maximum, 4=Row oriented

Audit report . . . . . Y      Y=Yes, N=No
S/36 style . . . . . N      Y=Yes, N=No
Suppress errors . . . . . N   Y=Yes, N=No
Edit numerics . . . . . N   Y=Yes, N=No
Allow updates on roll . . . . . Y Y=Yes, N=No
Keys:
  Generate . . . . . N      Y=Yes, N=No
  Changes allowed . . . . . Y Y=Yes, N=No

F3=Exit      F12=Cancel      F14=Display definition
```

Figure 174. Define General Information/Indexed File Display

Descriptions of the prompts on the Define General Information/Indexed File display are as follows:

Job title. The name you want to appear on the audit report and data entry display heading. The title can be up to 36 characters long. The default title is the DFU program name.

Note: If you select the System/36 style of data entry, the job title can only be 24 characters long.

Display format. Indicates whether you want the data entry display format to be single-column (1), multiple-column (2), maximum data (3), or row oriented (4). The default is 2 (multiple-column). If there are more fields than can fit on a single display for a given display format, the remaining fields appear on additional displays. When you run your DFU program, press F12 to move backwards through multiple data entry displays or press Enter to advance. The four available formats are as follows:

- *1=Single-column format:* All fields are listed in a single column on as many data entry displays as required. The format is similar to the one shown in Figure 175.

```

ORDER MAINTENANCE RECORDS          Mode . . . . : ENTRY
Format . . . . : ORDHDR2__         File . . . . : ORDIDDU

ORDER NUMBER: _____
CUSTOMER NUMBER: _____
ORDER DATE: _____
SHIPPING INSTRUCTIONS: _____
ORDER STATUS: _____
ORDER AMOUNT: _____
TOTAL LINES: _____
CUSTOMER TELEPHONE: _____
FOB DESTINATION: _____
ORDER DESTINATION: _____
CUSTOMER CONTACT: _____
BIN SPECIFICATION: _____
DIN NUMBER: _____
ISO NUMBER: _____
ANSI NUMBER: _____
SHIP TELEPHONE: _____

F3=Exit          F5=Refresh          F6=Select format
F9=Insert        F10=Entry           F11=Change

```

Figure 175. Data Entry Display in Single-Column Format

- *2=Multiple-column format:* More fields are packed into one data entry display. DFU tries to fit all the fields in a single column. If they do not fit in a single column on one data entry display, DFU arranges the fields in multiple columns as shown in Figure 176 on page 132. Additional data entry displays are used if required. DFU uses as few columns as possible, which results in the least number of displays.

```

ORDER MAINTENANCE RECORDS                               Mode . . . . : ENTRY
Format . . . . : ORDHDR2__                             File . . . . : ORDIDDU

ORDER NUMBER: _____ SHIP TELEPHONE: _____
CUSTOMER NUMBER: _____ CONTACT STREET: _____
ORDER DATE: _____ CONTACT CITY: _____
SHIPPING INSTRUCTIONS: _____
ORDER STATUS: _____ PART NUMBER: _____
ORDER AMOUNT: _____
TOTAL LINES: _____ ALTERNATE PART ID: _____
CUSTOMER TELEPHONE: _____
FOB LOCATION: _____
ORDER DESTINATION: _____
CUSTOMER CONTACT: _____
BIN SPECIFICATION: _____
DIN NUMBER: _____
ISO NUMBER: _____
ANSI NUMBER: _____

F3=Exit          F5=Refresh          F6=Select format
F9=Insert        F10=Entry           F11=Change

```

Figure 176. Data Entry Display in Multiple-Column Format

- **3=Maximum data format:** DFU packs as many fields into each data entry display as can neatly be accommodated. Additional data entry displays are used if required. DFU uses as few columns as possible, which results in the least number of displays. The format is similar to the one shown in Figure 177.

```

ORDER MAINTENANCE RECORDS                               Mode . . . . : ENTRY
Format . . . . : ORDHDR__                             File . . . . : QORDFILE

ORDER NUMBER: _____ CUSTOMER NUMBER: _____
ORDER DATE: _____ SHIPPING INSTRUCTIONS: _____
ORDER STATUS: _____ ORDER AMOUNT: _____
TOTAL LINES: _____ CUSTOMER TELEPHONE: _____
FOB DESTINATION: _____
ORDER DESTINATION: _____
CUSTOMER CONTACT: _____
BIN SPECIFICATION: _____ DIN NUMBER: _____
ISO NUMBER: _____ ANSI NUMBER: _____ SHIP TELEPHONE: _____
CONTACT STREET: _____ CONTACT CITY: _____
CONTACT CODE: _____ PART NUMBER: _____ PART SUPPLIER: _____
ALTERNATE PART ID: _____ TERMS OF SALE: _____

F3=Exit          F5=Refresh          F6=Select format
F9=Insert        F10=Entry           F11=Change

```

Figure 177. Data Entry Display in Maximum Data Format

- **4=Row oriented format:** DFU allows you to further define how your data entry screen appears. In addition to other prompts, Heading location, Begin on new line, and Default spacing are available when the row oriented format

is specified. Choose this display format if you are going to select multiple records for processing. The format is similar to the one shown in Figure 178 on page 133.

```

ORDER MAINTENANCE RECORDS
Format . . . . . : ORDHDR____

Mode . . . . . : ENTRY
File . . . . . : QORDFILE

CUSTOMER  ORDER  ORDER  ORDER  TOTAL  INVOICE
NUMBER    NUMBER  STATUS  AMOUNT  LINES  NUMBER
          (NUMERIC CODE)
          0_    0_    _____ .00_  0_    0_

          ORDER
          DATE
          91/07/01

          SHIP
          VIA
          _____

F3=Exit      F5=Refresh   F6=Select format
F9=Insert    F10=Entry   F11=Change

```

Figure 178. Data Entry Display in Row Oriented Format

Audit report. Indicates whether or not the DFU program should produce an audit report. An audit report is a listing showing all changes made to a file. You specify the type of changes to be listed on the Define Audit Control display. If you specify Y (Yes), DFU goes to the Define Audit Control display where you can specify the contents of the audit report. If you specify N (No), the Specify Record Formats display appears.

See “Audit Report” on page 90 for a sample listing of an audit report.

S/36 style. Indicates that the DFU program should use a System/36 display style Y (Yes), or an AS/400 display style N (No) for the data entry displays. If you type Y (Yes), you see a display that allows you to select other System/36 style DFU functions. For more information, see Appendix D, “Using DFU in the System/36 Environment” on page 197.

The System/36 display style **does not** show function key descriptions on the bottom of the display. The AS/400 display style **does** show function key descriptions on the bottom of the display. See “DFU Function Keys” on page 4 for a list of available AS/400 function keys. If you specify the System/36 style, you must use the System/36 function keys instead of the AS/400 function keys when you run your program. See “System/36 Style Run-Time Function Keys” on page 199 for a list of System/36 function keys. Also see “Data Entry Display Example” on page 11 and “Example System/36 Data Entry Display” on page 201 for examples of the two display styles.

Suppress errors. Indicates whether or not you want DFU to attempt to suppress decimal data errors in a record requested during data entry. If Y (Yes), DFU

uses the method described in “Error Suppression” on page 178 to handle decimal data errors.

Edit numerics. Indicates whether or not numeric fields should appear in numeric format on the Entry, Change, and Display data entry displays. If N (No), numeric entries are **not** edited. Non-edited numeric fields are right-justified and do not have decimal points. If Y (Yes), numeric entries are edited. Edited numeric fields are right-justified, have a decimal point, and do not show leading zeros. To specify additional editing for a particular field you can specify edit codes or edit words on the Specify Extended Field Definition display.

Enter all negative numbers using the Field Exit key on your keyboard for both edited and non-edited numeric fields. Accumulator results, and numeric fields on the audit report, are automatically edited with the J edit code. The J edit code inserts a comma to separate every three digits, inserts a decimal point, and does not show leading zeros.

Note: To use edit codes or edit words on the data entry screen, you must specify Y (Yes) in the *Edit numerics* prompt. If you specify N (No), editing will be suppressed on the data entry screen.

If you choose to edit numeric fields Y (Yes), you must enter the decimal point as appropriate, otherwise DFU places the decimal point after the last digit in the field. For example, if you type 100 and have defined the field to have 2 decimal places, DFU assumes you mean 100.00. If you type 100 for a field with 2 decimal places but choose not to edit numerics (N), DFU assumes you mean 1.00.

Allow updates on roll. Indicates whether or not values, which you enter, will be used to update the records when you roll. If N (No), any value entered on the screen, while running the DFU program, will be lost after rolling. If Y (Yes), values are used to update the records when you roll. If N (No), you have to press the Enter key to update the records.

Keys - Generate. Indicates whether or not DFU should generate keys for the data file. If Y (Yes), DFU generates a key for a new record at the next multiple of 10 after the highest key found in the file. Subsequent keys are increased by units of 10.

Keys - Changes allowed. Indicates whether or not DFU should allow changes to the keys for the data file, during Change mode. If Y (Yes), DFU allows changes to the key values while running the DFU program.

Define General Information/Nonindexed File Display

```

Define General Information/Nonindexed File

Type choices, press Enter.

Job title . . . . . ORDPGM
Display format . . . . . 2      1=Single  2=Multiple
                                   3=Maximum, 4=Row oriented

Audit report . . . . . Y      Y=Yes, N=No
S/36 style . . . . . N      Y=Yes, N=No
Suppress errors . . . . . N    Y=Yes, N=No
Edit numerics . . . . . N    Y=Yes, N=No
Allow updates on roll . . . . . Y  Y=Yes, N=No
Record numbers:
  Generate . . . . . N      Y=Yes, N=No
  Store in a field . . . . . N  Y=Yes, N=No
  Heading . . . . . *RECNR_____

Processing . . . . . 2      1=Direct
                                   2=Sequential

F3=Exit      F12=Cancel      F14=Display definition
  
```

Figure 179. Define General Information/Nonindexed File Display

With the following exceptions, the descriptions of the prompts on the Define General Information/Nonindexed File display are identical to those for the Define General Information/Indexed File Display (see “Define General Information/Indexed File Display” on page 130). Here are the descriptions of the different prompts:

Record numbers-Generate. Specifies whether or not DFU should generate record numbers for new records. If N (No), you must provide your own record numbers when you create new records. If Y (Yes), DFU provides the record numbers. DFU generates record numbers by locating the first unused record in a file and starts numbering from that record.

Record numbers-Store in a field. Specifies whether or not DFU should store the record numbers in a field of the file. If Y (Yes), the Select Field for Record Number display appears showing a list of fields available for storing a record number. The default is N (No).

Record numbers-Heading. The record number prompt that you want to appear on the data entry display and printouts. The default is *RECNR.

Processing. Indicates the method (direct or sequential) for adding records to a data file. The following methods are available for file processing:

- **1=Direct:** If you type 1, new records can be added anywhere in the file as long as the total number of records does not exceed the file limits.
- **2=Sequential:** If you type 2, new records can only be added to the end of sequential files.

Delete a DFU Program Display

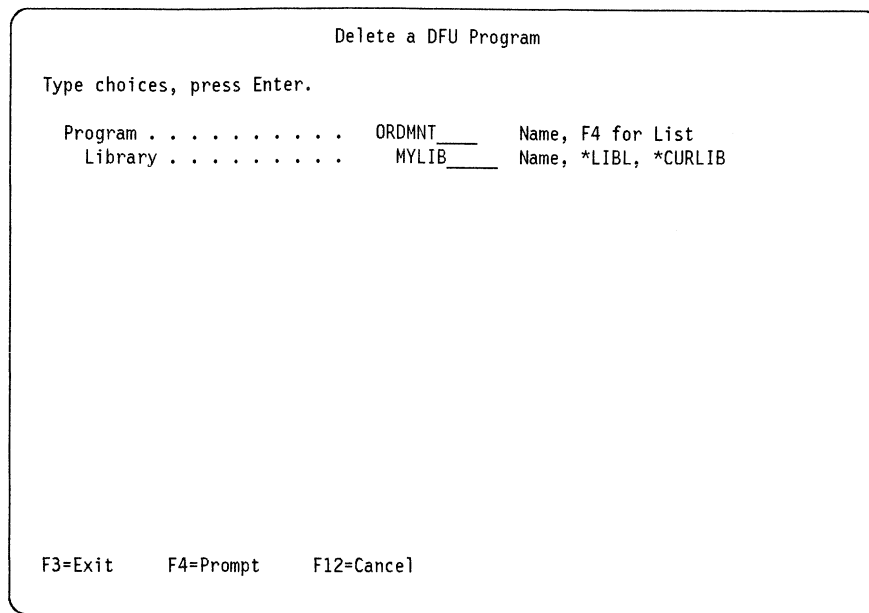


Figure 180. Delete a DFU Program Display

Descriptions of the prompts on the Delete a DFU Program display are as follows:

Program. The name of the program you want to delete. To see a list of available programs, move your cursor to this prompt and press F4. The Select Program display appears and you can select the programs you want to delete. The defaults for the *Program* field are the following:

- The program name you specified in the previous DFU session
- The value specified for the DFUPGM parameter if you used the STRDFU command.

Library. The name of the library containing the DFU program. The defaults are the following:

- The library name specified in the previous DFU session
- Your library list (*LIBL)
- The current library (*CURLIB)
- The value specified for the DFUPGM parameter if you used the STRDFU command.

Note: See “Select Program Display” on page 154 for a description of the information on the Select Program Display.

Display a Data File Display

```
Display a Data File

Type choices, press Enter.

Program . . . . . ORDMNT__ Name, F4 for List
Library . . . . . MYLIB__ Name, *LIBL, *CURLIB

Data file . . . . . QORDFILE__ Name, *SAME, F4 for List

Library . . . . . MYLIB__ Name, *LIBL, *CURLIB
Member . . . . . *FIRST__ Name, *FIRST, F4 for List

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

Figure 181. Display a Data File Display

Descriptions of the prompts on the Display a Data File display are as follows:

Program. The name of the program you want to run. To see a list of available programs, move your cursor to this prompt and press F4. The Select Program display appears and you can select the program you want to run. The defaults for the *Program* field are the following:

- The program name used on the Exit DFU Program Definition display
- The value specified for the DFUPGM parameter if you used the DSPDTA or STRDFU commands.

Library. The name of the library containing the DFU program. The defaults are the following:

- Your library list (*LIBL)
- The current library (*CURLIB)
- The library name used on the Exit DFU Program Definition display
- The value specified for the DFUPGM parameter if you used the DSPDTA or STRDFU commands.

Data file. The name of the data file to be displayed by your DFU program. To see a list of available data files, move your cursor to this prompt and press F4. The defaults are the following:

- The file specified on the Exit DFU Program Definition display
- The file specified for the FILE parameter if you used the DSPDTA or STRDFU commands
- The file specified in the DFU program (*SAME) if you leave this prompt blank.

Library. The name of the library containing the data file. The defaults are the following:

- The library specified on the Exit DFU Program Definition display
- The library specified for the DSPDTA or STRDFU commands
- The library specified in the DFU program (*SAME) if you leave this prompt blank
- The current library (*CURLIB).

Member. The name of the member in the data file you want to display.

Display Batch Accumulators Display

Display Batch Accumulators	
Field	Subtotal
ORDER AMOUNT	300.00
Press Enter to continue.	
F3=Exit	F12=Cancel
Bottom	

Figure 182. Display Batch Accumulators Display

Descriptions of the prompts on the Display Batch Accumulators display are as follows:

Field. The name of the field for the accumulator subtotal.

Subtotal. The batch total for the field.

Display Data File Detail Display

Display Data File Detail					
File . . . :	QORDFILE			Library :	MYLIB
Format/Field	Start	Length	Type	Attr	Description
ORDHDR					Order Header Record
CUST	1	5	CHAR		Customer Number
ORDER	6	5,0	PACK	KEY	Order Number
ORDDAT	9	6,0	PACK		Date Order was Entered
SHPVIA	13	15	CHAR		Ship Via
ORDSTS	28	1,0	PACK		Order Status: 1=Open 2=Close
ORDAMT	29	11,2	PACK		Order Amount
TOTLIN	35	3,0	PACK		Total Items in Order
INVNUM	37	5,0	PACK		Invoice Number
ORDDTL					Order Detail Record
ORDER	1	5,0	PACK	KEY	Order Number
					More...
Press Enter to continue.					
F3=Exit	F12=Cancel		F15=Print		

Figure 183. Display Data File Detail Display

Descriptions of the prompts on the Display Data File Detail display are as follows:

File. The name of the data file used by the DFU program.

Library. The name of the library containing the data file.

Format/Field. Represents the record format or field name. The field names are subgrouped within a record format and are indented two spaces on this display.

Start. The starting position of the field in the record format.

Length. The length of each field in a record format. (For packed fields, this represents the number of bytes occupied by the field, not the actual number of digits.)

Type. The data type (CHAR, PACK, ZONE, BIN, or DBCS) of each field in the record format.

Attr. The field attribute (KEY, OUT, or RRN for direct or sequential files) for each field within the record format.

Description. The description of the record format or field.

Display DFU Program Detail Display

Display DFU Program Detail					
Program :			ORDMNT	Library : MYLIB	
Format/Field	Attr	Extended Definition	Length	Type	Description/Heading
ORDHDR					Order Header Record
CUST		N	5	CHAR	CUSTOMER
ORDER	KEY	Y	5,0	PACK	ORDER
ORDSTS		N	1,0	PACK	ORDER
ORDAMT		Y	11,2	PACK	ORDER
TOTLIN		N	3,0	PACK	TOTAL
INVNUM		N	5,0	PACK	INVOICE
ORDDAT		Y	6,0	PACK	ORDER
SHPVIA		Y	15	CHAR	SHIP
ORDDTL	MLT				Order Detail Record
ORDER	KEY	Y	5,0	PACK	Order Number
					More...
Press Enter to continue.					
F3=Exit	F12=Cancel	F15=Print			

Figure 184. Display DFU Program Detail Display

Descriptions of the prompts on the Display DFU Program Detail display are as follows:

Program. The name of the DFU program being defined.

Library. The name of the library containing the DFU program.

Format/Field. The record format or field name. The field names are grouped within a record format and are indented two spaces on the display.

Attr. The field attribute (KEY, OUT, or RRN for direct or sequential files) for each field within the record format, or the record attribute (MLT or blank) for each record format.

Extended definition. Shows whether or not a field has an extended definition.

Length. Indicates the length of each field in the record format. (For packed fields, the length is the number of bytes the field occupies, not the actual number of digits).

Type. Indicates the data type (CHAR, PACK, ZONE, BIN, or DBCS) of each field in the record format.

Description/Heading. The description of the record format (if the item is a record format), or the heading for a field (if the item is a field).

Display DFU Program Summary Display

```
Display DFU Program Summary

Program . . . . . : ORDMNT
Library . . . . . : MYLIB
Data file . . . . . : QORDFILE
Library . . . . . : MYLIB
Job title . . . . . : ORDER MAINTENANCE RECORDS
Display format . . . . . : Row oriented
Allow updates on roll . . . . . : Y
Keys:
  Generate . . . . . : N
  Key changes allowed . . . . . : Y

Press Enter to continue.

F3=Exit    F12=Cancel    F15=Print

More...
```

Figure 185. Display DFU Program Summary Display for an Indexed File

```
Display DFU Program Summary

Program . . . . . : ORDMNT
Library . . . . . : MYLIB
Data file . . . . . : QORDFILE
Library . . . . . : MYLIB
Audit report . . . . . : Y
  Print additions . . . . . : Y
  Print changes . . . . . : Y
  Print deletions . . . . . : Y
Printer:
  Line width . . . . . : 132
  Column spacing . . . . . : 1
S/36 style . . . . . : N
Suppress data
  errors . . . . . : N
  Edit numerics . . . . . : Y

Press Enter to continue.

F3=Exit    F12=Cancel    F15=Print

Bottom
```

Figure 186. Display DFU Program Summary Display for an Indexed File

Descriptions of the prompts on the Display DFU Program Summary display are as follows:

Program. The name of the DFU program specified on the Create a DFU Program display.

Library. The name of the library containing the specified DFU program. This parameter was selected on the Create a DFU Program display.

Data file. The name of the specified data file to be used by the DFU program. This parameter was selected on the Create a DFU Program display.

Library. The name of the library containing the specified data file. This parameter was selected on Create a DFU Program display.

Job title. The name that appears on the data entry display heading and the audit report, if requested. The default name is the name of the DFU program.

Display format. The column format for your data entry display. The format can be single-column, multiple-column, maximum data, or row oriented display.

Allow updates on roll. Indicates whether you want to update the record when you roll through the file during data entry.

Keys-Generate. Indicates whether DFU should generate keys for the data file.

Keys-Changes allowed. Indicates whether DFU should allow changes to the keys for the data file, during Change mode.

Note: If you have a nonindexed data file, the Display DFU Program Summary display contains the following prompts pertaining to record numbers for nonindexed files:

- *Processing.* The designated method of file processing. It can be sequential (1), or direct (2).
- *Record numbers-Generate.* Indicates whether DFU should generate record numbers for the data file. This option is only available for non-indexed data files and hence the prompt does not appear.
- *Record numbers-Field.* The name of the field selected to hold the record number, if any. This option is only available for nonindexed data files and hence the prompt does not appear.
- *Record numbers-Heading.* The prompt designated to appear on the data entry display and audit report for the record number as defined on the General Information/Nonindexed File display.

Descriptions of the prompts on the Display DFU Program Summary display, shown when the Page Down (Roll Up) key is pressed, are as follows:

Audit report. Indicates whether or not DFU prints an audit report after data entry. For this example, Y (Yes) was specified on the Define General Information/Indexed File display, and DFU produces an audit report after running the program.

Print additions. Indicates whether or not the audit report should show newly added records. For this example, Y (Yes) was specified on the Define Audit Report display.

Print changes. Indicates whether or not the audit report should include changed records.

Print deletions. Indicates whether or not the audit report should include deleted records.

Printer Line width. Specifies the designated line width for the audit report.

Printer Column spacing. Specifies the designated number of spaces to appear between fields on the audit report.

S/36 style. Specifies the designated display format.

Suppress data errors. Indicates whether or not data errors should be suppressed.

Edit numerics. Indicates whether or not you want DFU to edit your numeric entries when you run your program.

Display Run Status Display

```
Display Run Status

Program . . . . . : ORDMNT
Library . . . . . : MYLIB
Data file . . . . . : QORDFILE
Library . . . . . : MYLIB
Member . . . . . : QORDFILE
Record format . . . . . : ORDHDR
Last format . . . . . : ORDHDR

Current active functions:
Mode . . . . . : ENTRY
Auto dup . . . . . : OFF
Auto advance . . . . . : OFF
Auto-increment . . . . . : ON      From end of file

Press Enter to continue.

F3=Exit      F12=Cancel
```

Figure 187. Display Run Status Display

Descriptions of the prompts on the Display Run Status display are as follows:

Program. The name of the DFU program being run.

Library. The name of the library containing the program.

Data file. The name of the data file being edited.

Library. The name of the library containing the data file.

Member. The member in the data file being edited.

Record format. The current record format.

Last format. The last used record format.

Mode. The current mode (Entry, Change, Insert, Display).

Auto dup. Indicates whether the automatic duplication function is currently on or off.

Auto advance. Indicates whether the automatic record advance is ON or OFF. You can switch the auto advance ON and OFF while you are running the program by pressing F20 (Automatic record advance). When ON, DFU processes the contents of a data entry display as soon as you finish entering data into the last prompt on the data entry display.

Auto-increment Indicates whether the auto-increment function is ON or OFF

Note: There are two ways of activating the auto-increment function. If you pressed F18 in a previous display, then auto-increment is active from the last record changed. If you previously pressed F19, then auto-increment is active from the last record in the file.

Display Total Accumulators Display

Display Total Accumulators	
Field	Total
ORDER AMOUNT	300.00
Press Enter to continue.	
F3=Exit	F12=Cancel
Bottom	

Figure 188. Display Total Accumulators Display

Descriptions of the prompts on the Display Total Accumulators display are as follows:

Field. The name of the accumulator field.

Total. The total accumulator value for the field.

End Data Display Display

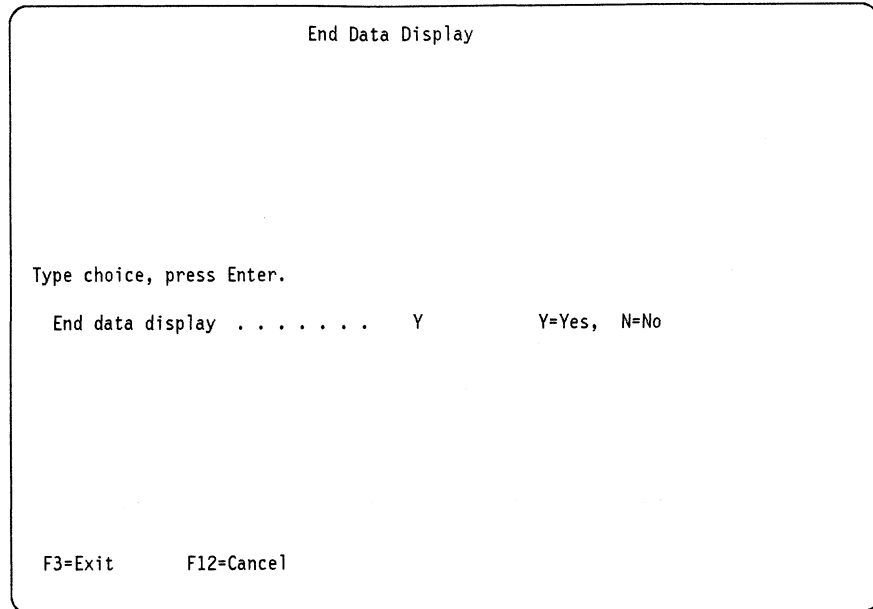


Figure 189. End Data Display

A description of the prompt on the End Data Display display is as follows:

End data display. Specified whether or not to end the data display session. The prompt requires a Y (Yes) or N (No) answer. The default is Y (Yes).

End Data Entry Display

```
                                End Data Entry

Number of records processed

Added . . . . . :          1
Changed . . . . . :          1
Deleted . . . . . :          0

Type choice, press Enter.

End data entry . . . . . Y          Y=Yes, N=No

F3=Exit      F12=Cancel
```

Figure 190. End Data Entry Display

Descriptions of the prompts on the End Data Entry display are as follows:

Added. Shows the total number of new records added to the file.

Changed. Shows the total number of records changed in the file.

Deleted. Shows the total number of records deleted from the file.

End data entry. Specifies whether or not to end the data entry session. The prompt requires a Y (Yes) or N (No) answer. The prompt defaults to Y (Yes). If you select N (No), you return to the data entry display. If you select Y (Yes) and your DFU program maintains accumulator totals for any fields, the Display Batch Accumulators display appears when you press Enter. Otherwise, the data entry job ends, and you return to the AS/400 Data File Utility (DFU) menu.

Exit DFU Program Definition Display

```

Exit DFU Program Definition

Type choices, press Enter.

Save program . . . . . Y          Y=Yes, N=No
Run program . . . . . Y          Y=Yes, N=No
  For choice Y=Yes:
    Type of run . . . . . 1      1=Change, 2=Display
Modify program . . . . . N          Y=Yes, N=No
Save DDS source . . . . . N        Y=Yes, N=No

For Save program Y=Yes:
Program . . . . . ORDPGM_____ Name
Library . . . . . *CURLIB_____ Name, *CURLIB, . . .
Authority . . . . . *LIBCRTAUT_____ Name, *LIBCRTAUT, . . .
Text . . . . . ORDER MAINTENANCE RECORDS_____

For Save DDS source Y=Yes:
Source file . . . . . _____ Name
Library . . . . . *CURLIB_____ Name, *CURLIB, . . .
Source member . . . . . ORDPGM_____ Name

F3=Exit      F14=Display definition      F17=Fast path

```

Figure 191. Exit DFU Program Definition Display

Descriptions of the prompts on the Exit DFU Program Definition display are as follows:

Save program. Specifies whether or not to save the DFU program you just defined. Type Y (Yes) to save the program, or N (No) if you do not want to save the program. The default is Y (Yes).

Run program. Indicates whether or not you want to run the program. Type Y (Yes) to run the program when you leave this display, or N (No) if you do not want to run the program now. The default is Y (Yes).

Type of run. Specifies the conditions for running the program. Type 1 (Change) if you are changing an existing data file. Type 2 (Display) if you want to view the data file only. This prompt only applies if you selected Y (Yes) to run the program. The default for this prompt is 1 (Change).

Modify program. Allows you to return to the Define General Information display to continue defining your program. To modify the program, type Y (Yes) in this prompt and press Enter. The default is N (No).

Save DDS source. Specifies whether or not you want to save the DDS source generated for your data entry displays. If you specify Y (Yes) you must also specify Y (Yes) for the *Save program* prompt to ensure that there is a DFU program for the saved DDS source. The default is N (No).

Program. The name under which you want to save your DFU program. The default name is the name you entered on the Create a DFU Program display. If you change the name in this prompt, DFU saves the program under the new name.

Library. The name of the library to contain the saved DFU program. The library must already exist.

Authority. The authority level you want associated with your program, or the name of an authority list. The authority list contains a list of users and their authorities. Use this list to grant a specific group of users a specific level of authority to a DFU program.

The default authority is *LIBCRTAUT. This value sets the public authority of the display file to the value specified in the CRTAUT parameter of the library that will contain the display file. If the CRTAUT value for the library changes after the display file is created, the new value does not affect any existing objects in the library.

Other available authority levels are: *CHANGE, *ALL, *USE, *EXCLUDE. The *CHANGE authority permits users to perform all operations on the program except those limited to the owner or controlled by object existence authority and object management authority. The user can run the program, but cannot change it. The *CHANGE authority also permits any user to make object-operational changes and perform basic functions on the display file. The *ALL authority permits any user to perform any operation on the program except those limited to the owner or controlled by authorization list management authority. With *ALL authority, users can change, run, or delete the program, but cannot transfer the ownership of the program. The *USE authority permits any user to run the program but not to change it. The *EXCLUDE authority restricts rights to the program to the owner (creator) of the program.

Text. The text description of the DFU program. The default is the job title you specified on the Define General Information display.

Source file. The name of the source file in which you want the saved DDS source to be stored.

Library. The name of the library in which the source physical file is stored. The library must already exist.

Source member. The name of the source member within the source file where the saved DDS source will be stored. The default is the same name as the program being saved.

Note: Saving DDS Source: When you want to save DDS source material, you must specify the information for the following prompts:

Source file. The name of the source physical file to contain the DDS source. You must enter the name of an existing source file.

Library. The name of the library to contain the saved DDS source. The library, which contains the source file, must already exist.

Source member The name of the member within the source file into which you want to save the DDS source. The default name is the name of your DFU program. You may change the default to any other valid name that you want. DFU will create the member with the type DSPF.

Run a DFU Program Menu

```
Run a DFU Program

Select one of the following:

1. Change a data file
2. Display a data file

Selection or command
===> _____

F3=Exit  F4=Prompt  F9=Retrieve  F12=Cancel
```

Figure 192. Run a DFU Program Menu

Descriptions of the menu items on the Run a DFU Program menu are as follows:

Change a data file. This option allows you to change a data file when you run your DFU program. Type 1 on the command line to choose this option.

Display a data file. This option displays a data file when you run your DFU program. You can see the records in the data file, but you cannot change them. Type 2 on the command line to choose this option.

Select and Sequence Fields Display

```

Select and Sequence Fields

File . . . . . : QORDFILE      Library . . . . . : MYLIB
Record format . . . . . : ORDHDR

Select fields and their sequence or press F21 to select all; press Enter.

Sequence  Field      Attr   Length  Type      Description
-----  -
CUST          5  CHAR    Customer number
ORDER        KEY    5,0  PACK    Order number
ORDDAT       6,0  CHAR    Date order was entered
SHPVIA       15  CHAR    Ship Via
ORDSTS       1,0  PACK    Order status: 1=Open 2=Close
ORDAMT      11,2  PACK    Order amount
TOTLIN       3,0  PACK    Total items in order
INVNUM       5,0  PACK    Invoice number

F3=Exit      F5=Refresh   F12=Cancel   Bottom
F20=Renumbr  F21=Select all  F14=Display definition

```

Figure 193. Select and Sequence Fields Display

Descriptions of the prompts on the Select and Sequence Fields display are as follows:

File. The name of the data file for which the program is defined.

Library. The name of the library containing the data file.

Record format. The name of the format containing the fields contained in the file.

Sequence. Allows you to select and sequence the fields you want to use for your data entry program. Type a sequence number from 1 through 999999 to select and sequence fields for processing. The sequence number must be an integer. Leave the sequence number blank for any field you do not want to include for processing.

Field. The name of the field as it appears in the DDS or IDDU specification.

Attr. The attribute of the field. A field attribute can be KEY, OUT (output only fields), or RRN (Relative Record Number for direct or sequential files). You must select all fields that have an attribute of KEY for indexed files (or RRN for direct or sequential files). Each KEY field composes part of the key of the record.

Length. Indicates the length of each field in the record format. (For packed fields, the length is the number of bytes the number occupies, not the actual number of digits).

Type. The type of the field: character (CHAR), packed decimal (PACK), zoned decimal (ZONE), binary (BIN), or double-byte character set (DBCS). See Appendix B, "Double-Byte Character Set Considerations for DFU Programs" on page 181, for considerations about using double-byte characters.

Description. The description of the field as contained in the DDS specification.

Select Data File Member Display

```

                                Select Data File Member
File . . . . : QORDFILE                Library . . . . : MYLIB
Position to . . . . . _____
Type option, press Enter.
1=Select
Opt   Member      Description
-    QORDFILE
                                           Bottom
F5=Refresh      F12=Cancel
```

Figure 194. Select Data File Member Display

Descriptions of the prompts on the Select Data File Member display are as follows:

File. The name of the data file containing the listed members shown on this display.

Library. The name of the library containing the specified data file.

Position to. The members are shown in alphanumeric order on this display. To start at a specific position in the list, type a character string (for example, the name of a known member) and press Enter. The list repositions itself to the member name you specify or to the nearest alphanumeric member name preceding your entry in this prompt. You can use the special keywords *TOP and *BOT to reposition the list to the top or bottom respectively. The prompt defaults to blanks.

Opt. Indicates that you want to select a member for processing. All prompts default to blank. If you want to select a member, type 1 (Select) in the *Opt* column next to the member of interest. You can select only one member for processing. When you press Enter, DFU places the selected member name into the *Member* prompt on the display from which you requested the list.

Member. The name of each member in the data file.

Description. Shows the description of the member as defined in the file description.

Select Field for Record Number Display

```

                                Select Field for Record Number
File . . . :  ORDIDDU                      Library . . . . :  MYLIB
Type option, press Enter.
  1=Select
Option      Field      Defined      Start      Length      Type
-           RCDTYPE          1           1           1          CHAR
-           ORDER            7           7           5,0        PACK

F3=Exit      F5=Refresh      F12=Cancel

                                Bottom

```

Figure 195. Select Field for Record Number Display

Descriptions of the prompts on the Select Field for Record Number display are as follows:

File. The name of the data file containing the listed fields.

Library. The name of the library containing the data file.

Option. Indicates which field to use for storing the record number. Type 1 (Select) into the *Option* column next to the field in which you want to store the record number. You can only select one field.

Field. The name of all fields qualifying to store a record number. Qualified fields must occur in the same position in every record format in the file.

Defined. Specifies whether or not a field has been previously defined for this program. The indicator is Y (Yes) if previously defined and N (No) if not.

Start. The field starting position in the record.

Length. The length of the field.

Type. The type of field: character (CHAR), binary (BIN), packed decimal (PACK), zone decimal (ZONE), or double-byte character set (DBCS).

Select File Display

```

                                     Select File
Library . . . . . : MYLIB
Position to . . . . . _____
Type option, press Enter.
1=Select

Opt   File      Type      Description
-    QORDDTL   PF-DTA
-    QORDFILE  LF
-    QORDHDR   PF-DTA

F5=Refresh      F12=Cancel

Bottom
```

Figure 196. Select File Display

Descriptions of the prompts on the Select File display are as follows:

Library. The name of the library containing the listed data files.

Position to. The files are shown in alphanumeric order on this display. To start at a specific position in the list, type the desired character string (for example, the name of a known data file) and press Enter. The list repositions to the file name you specify, or to the nearest alphanumeric file name preceding your entry. You can also use the special keywords *TOP and *BOT to reposition the list to the top or bottom respectively. This prompt defaults to blanks.

Opt. Indicates the file you want to select for processing. The *Opt* column defaults to blanks. If you want to select a file, type 1 (Select) in the *Opt* column next to the file you want to process. You can select only one file at a time for processing. When you press Enter, DFU places the selected file name into the *Data file* prompt of the Create a DFU Program display.

File. The file names for all files found in the specified library. The list shows only the physical, logical, and Distributed Data Management (DDMF) data files you are authorized to use.

Type. Describes the file type as physical (PF-DTA), logical (LF), or Distributed Data Management (DDMF).

Description. The object description of each file.

Select Program Display

```

                                Select Program

Library . . . . . : MYLIB

Position to . . . . . _____

Type option, press Enter.
  1=Select

Opt   Program      Description
-     ORDMNT       ORDER MAINTENANCE RECORDS
-     ORDPGM       ORDER MAINTENANCE RECORDS

F5=Refresh      F12=Cancel

Bottom
```

Figure 197. Select Program Display

Descriptions of the prompts on the Select Program display are as follows:

Library. The name of the library containing the listed programs.

Position to. Indicates the alphanumeric position at which you want the list to start. The list starts at the top by default. Enter a character string (for example, the name of a known program) and press Enter. The list repositions itself to the program name you specify or to the nearest alphanumeric program name preceding your entry in this prompt. You can use the special keywords *TOP and *BOT to reposition the list to the top or bottom respectively. The prompt defaults to blanks.

Opt. Indicates whether or not you want to select a program for processing. The *Opt* column defaults to blanks. If you want to select a program, type 1 (Select) in the *Opt* column next to the program of interest. You can select only one program for processing. When you press Enter, DFU places the selected program name into the *Program* field on the Change a DFU Program display.

Program. The name of the DFU program in the specified library.

Description. Shows the object description of the program as defined in the program description.

Select Record Format Display

```

                                Select Record Format

Type option, press Enter.
 1=Select

Opt  Format      Description
-   ORDHDR      Order Header Record
-   ORDDTL      Order Detail Record

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

Figure 198. Select Record Format Display

Descriptions of the prompts on the Select Record Format display are as follows:

Opt. Indicates whether or not you want to select a record format. Type 1 (Select) to select a format. You can only select one record format at a time. All prompts default to blank.

Format. The list of available record formats for this data file. An entry in the list consists of a 10-character format name as defined in the external file definition or the IDDU file definition used to create the DFU program.

Description. The format description for each record format as described in the external DDS or IDDU file definition.

Specify Extended Field Definition Display for Alphanumeric Fields

```

Specify Extended Field Definition
Field . . . . . : SHPVIA      Record format . . . . . : ORDHDR
Type choices, press Enter.
Auto-duplicate . . . . . N      Y=Yes, N=No
Allow lowercase . . . . . N      Y=Yes, N=No
Extended field
  heading . . . . . SHIP_____
                   VIA_____
Heading location . . . . . *ABOVE_  *ABOVE, *BEFORE
Initial value . . . . .
Validity checks . . . . . _      2=Change, 4=Delete
More...
F3=Exit      F12=Cancel      F14=Display definition
  
```

Figure 199. Specify Extended Field Definition Display for Alphanumeric Fields

```

Specify Extended Field Definition
Field . . . . . : SHPVIA      Record format . . . . . : ORDHDR
Type choices, press Enter.
Begin on new line . . . . . N      Y=Yes, N=No
Field exit required . . . . . Y      Y=Yes, N=No
Output only . . . . . N      Y=Yes, N=No
Non-display . . . . . N      Y=Yes, N=No
Default spacing . . . . . Y      Y=Yes, N=No
  For choice N=No:
    Number of spaces . . . . . 01      0-40
Alphabetic characters
  only . . . . . N      Y=Yes, N=No
Bottom
F3=Exit      F12=Cancel      F14=Display definition
  
```

Figure 200. Second Part of Extended Field Definition Display

Descriptions of the prompts on the Specify Extended Field Definition display are as follows:

Field. The name of the field selected for extended definition.

Record format. The name of the record format describing the fields contained in the file.

Auto duplicate. Specifies whether or not you want DFU to fill the field with the value from the field in the previously processed record when you run your program. This function helps speed data entry when you have fields that are the same in many records. If you type Y (Yes), the field will be automatically duplicated when you run your DFU program.

Allow lowercase. Specifies whether you want to be able to use mixed case during data entry. The default specification is N (No), which restricts entries to uppercase only.

Extended field heading. An extended text heading you can use for the data entry display instead of the default heading from the DDS specification. The extended heading can appear on three lines and can be as many as 20 characters per line. Your extended heading appears as a prompt on the data entry display when you run your program.

Heading location. Specifies where to place the extended heading on the data entry screen, in relation to its corresponding field. *ABOVE allows the extended heading to be placed on as many as three separate lines, which are no more than 20 characters each, above the field. Leading blanks can be used to center the headings.

Note: *ABOVE can only be used if the Row oriented format is selected as the display format on the Define General Information display. *ABOVE is the default for Row oriented format.

*BEFORE is the default value and will be used if Single-column, Multiple-column, or Maximum data format has been specified. The heading appears on the same line as the field value. A single blank is inserted after each of the first two heading parts and a colon is added to the end, unless the part ends with - or /.

Note: This prompt is not input-capable if you chose option 1, 2 or 3 for display format.

Initial value. A character string you can use to initialize the fields in new records. The initial value can be as many characters as the length of your field or a maximum of 36 characters. You can use the user ID of the person running the program (*USRID), the ID of the terminal on which the DFU program is running (*DSPDEV), or the name of the job under which the DFU program is running (*JOB), as valid initial values. The reserved words *USRID, *DSPDEV, and *JOB must start in position one of the Initial value prompt. The default is blank, which indicates that no initial value is to be used for this field.

Validity checks. Specifies whether you want to leave a blank to keep the validity checks already defined for the field, change (2) the default, or delete (4) any pre-

viously defined validity checks for the field. If you specify 4 (Delete), you will not get any validity for the field.

Begin on new line. Specifies whether or not you want new fields to begin on a new line of the data entry display even if they will fit on the current line. DFU inserts line breaks and vertical spreading only. If the field is more than one line, the last line of the field is not shared with the next field. The default for this prompt is N (No).

Note: This option is only valid if you have selected 4=Row oriented on the Define General Information display. If you have chosen option 1, 2 or 3 for the display format, then this prompt is not input-capable.

Field exit required. Specifies whether or not you must press the Field Plus, Field Minus, or Field Exit key to advance from one field to the next. The default is Y (Yes), which indicates that you must press one of the field exit keys to advance to the next field.

Output only. Specifies whether or not the field will be input capable during data entry. If you choose N (No) data can be entered during data entry, unless the field was defined as output only in the file definition. If you choose Y (Yes) the field will be output only during data entry.

Note: Mandatory Entry validity check will be ignored if the field is output only.

Non-display. Specifies whether or not the field will be displayed when you are in data entry mode. Choose N (No) to have the field displayed or Y (Yes) to not have the field displayed during data entry.

Note: If you choose Y (Yes) for the *Output only* prompt and Y (Yes) for the *Non-display* prompt, then you will have hidden fields during data entry. The hidden fields do not take up any space on the Data Entry Display, but if you have specified an initial value or auto-increment then DFU will update them.

Default spacing. Specifies whether or not you want DFU to control the field and heading spacing. You can choose Y (Yes) and DFU will control the spacing or N (No) and you can control the spacing. The default is Y (Yes).

Note: This option is only valid if you specified 4=Row oriented on the Define General Information display. If you have selected option 1, 2 or 3 for the display format, then this prompt is not input-capable.

Number of spaces. Specifies the spacing value that you want, if you chose N (No) for the *Default spacing* prompt.. The valid values are 0-40. If you defined the heading as *ABOVE, DFU defines the number of spaces preceding each heading and value pair. If you defined the heading as *BEFORE, DFU defines the number of spaces before the heading and value. Spacing that you have defined is ignored at the start of a new line unless you typed Y in the *Begin on new line* prompt.

Note: This option is only valid if you have selected 4=Row oriented on the Define General Information display. If you have selected option 1, 2 or 3 for the display format, then this prompt is not input-capable.

Alphabetic characters only. Specifies whether or not alphabetic characters only will be allowed. If you specify Y (Yes) the only valid characters will be the 26 letters of the alphabet, the comma (,), period (.), dash (-), and space. The default N (No) allows any alphanumeric characters during data entry.

Specify Extended Field Definition Display for Numeric Fields

```

Specify Extended Field Definition
Field . . . . . : ORDER      Record format . . . . . : ORDHDR
Type choices, press Enter.
Auto duplicate . . . . . N      Y=Yes, N=No
Accumulate . . . . . N      Y=Yes, N=No
Extended field
  heading . . . . . ORDER_____
  NUMBER_____
Heading location . . . . . *ABOVE_  *ABOVE, *BEFORE
Initial value . . . . . _____
Auto-increment . . . . . _____
Validity checks . . . . . _      2=Change, 4=Delete

F3=Exit      F12=Cancel      F14=Display definition      More...

```

Figure 201. Specify Extended Field Definition Display for a Numeric Field

```

Specify Extended Field Definition
Field . . . . . : ORDDAT      Record format . . . . . : ORDHDR
Type choices, press Enter.
Begin on new line . . . . . N      Y=Yes, N=No
Field exit required . . . . . Y      Y=Yes, N=No
Output only . . . . . N      Y=Yes, N=No
Non-display . . . . . N      Y=Yes, N=No
Default spacing . . . . . Y      Y=Yes, N=No
  For choice N=No:
    Number of spaces . . . . . 01      0-40
Edit code . . . . . _      Blank, 1-4, A-D, J-M, . . .
Edit word . . . . . _ / / ' _____

F3=Exit      F12=Cancel      F14=Display definition      Bottom

```

Figure 202. Second Screen of Extended Field Definition Display

With the following exceptions, the descriptions of the prompts on the Specify Extended Field Definition display for numeric fields are identical to those for alphanumeric fields. (see "Specify Extended Field Definition Display for Alphanumeric Fields" on page 156). Here are the descriptions of the different prompts:

Accumulate. Specifies whether or not to maintain a running total of changes made to this field in various records when you run your DFU program. Deletions are subtracted from the running total. To view these subtotals while you run your program, press F17 (Display and print accumulators). The subtotal is added to a total accumulator for the field and then reset to zero. The remaining subtotal and the final total appear when you finish running the program and exit from the End Data Entry display. DFU also prints the total accumulator tally with the audit report if you requested an audit report.

Type Y (Yes) to maintain a running total of changes, or N (No) if you do not want to maintain a total. The default for this prompt is N (No).

Initial value. A character string you can use to initialize the fields in new records. The initial value can be as many characters as the length of your field or 36 characters. You can use the reserved word *DATE to insert the system date at the time of processing in this field. The format is YYMMDD. For example, if your field is 4,2 and the date is 891208, the initial value would be 12.08. The default is blank, which indicates that no initial value is to be used for this field.

Auto-increment. A positive or negative integer to add a value to the field for each consecutive record, when the auto-increment indicator is on, during data entry.

Edit code. The edit code that has been specified for this field in the file description. If no edit code or edit word was specified in the file description, then DFU defaults to edit code L, which does the following:

- Inserts a decimal place in the correct place if decimal positions are indicated in the file description.
- Indicates negative numeric fields by placing a minus sign (-) to the right of the last digit in the field.
- Blanks out unnecessary leading zeros.

Note: For edit codes to work on the data entry display, you must specify Y (Yes) in the *Edit numerics* prompt on the Define General Information display.

Edit word. The edit word that has been specified for this field in the file description. If no edit word was specified in the file description this prompt is blank and you can specify an edit word. The edit word must be enclosed in apostrophes (') and any embedded apostrophes must be typed twice (''). The edit word can be up to 258 characters in length, including the apostrophes, and the sum of the blanks and stop-zero suppression characters (digit position) in the edit word must equal the length of the field. When you use a floating currency symbol, the currency symbol is not counted as a digit position.

Note: For edit words to work on the data entry display you must specify Y (Yes) in the *Edit numerics* prompt on the Define General Information display.

You cannot specify both an edit code and an edit word for one field.

Specify Validity Checks Display for Alphanumeric Fields

```
Specify Validity Checks
Field . . . . . : SHPVIA      Record format . . . . . : ORDHDR
Type choices, press Enter.
Mandatory entry . . . . . N      Y=Yes, N=No
Mandatory fill . . . . . N      Y=Yes, N=No
Name check . . . . . N          Y=Yes, N=No
Extended name check . . . . . N  Y=Yes, N=No
Allow blanks . . . . . N        Y=Yes, N=No
Relational operator . . . . . _   EQ, NE, LE, NG, . . .
List of values . . . . . _____
_____
_____
_____
_____
1 to 20 list values

F3=Exit    F12=Cancel    F14=Display definition
```

Figure 203. Specify Validity Checks Display for SHPVIA Field

Descriptions of the prompts on the Specify Validity Checks display are as follows:

Note: This display will reflect any validity that you have specified in the DDS file description.

Field. The name of the field selected for extended definition.

Record format. The name of the record format containing this field.

Mandatory entry. Specifies whether or not you can proceed without having to fill the field in any new record during data entry. If you type Y (Yes), the field must receive at least 1 character. The default is N (No). This function is ignored for multiple records.

Mandatory fill. Specifies whether or not you can proceed without requiring to completely fill the field in any new record during data entry. If you type Y (Yes), each position in the field must be filled with a character. The default is N (No).

Name check. Specifies whether or not you can proceed without requiring that the field meet any system rules for name construction of a simple name. If you type Y (Yes), DFU will check the field value entered against the following AS/400 system conventions:

- The first character must be a dollar sign, a number sign, an at sign, or A through Z.
- The remaining characters must be alphanumeric (dollar sign, number sign, at sign, A through Z, 0 through 9, or underscore).
- Characters must not contain embedded blanks.

Note: Entering a blank value during data entry will not satisfy the name check criteria, unless you also specify Allow blanks.

The default is N (No).

Extended name check. Specifies whether or not you can proceed without requiring that the field meet any system rules for name construction of an extended field name. If you type Y (Yes), DFU will check the field value entered against the following AS/400 system conventions:

- If the name is not delimited by double quotation marks:
 - The first character must be a dollar sign, a number sign, an at sign, A through Z, or a through z.
 - The remaining characters must be a dollar sign, a number sign, a period, A through Z, a through z, or an underscore.
 - Lowercase letters will be converted to uppercase.
- If the name is delimited by double quotation marks:
 - Any character is allowed except:

Hex 00 through Hex 3F	(device control)
Hex FF	(device control)
Hex 40	(blank)
Hex 5C	(*)
Hex 6F	(?)
Hex 7D	(')
Hex 7F	(").
 - Lowercase letters remain lowercase
 - The system removes quotation marks when they are not needed, that is, when the syntax of the name meets the requirements of a name without quotation marks and when all letters are uppercase.
- Extended name check cannot be specified with the following validity checks:
 - Name check
 - Relational operators
 - Range
 - List of values.

The default is N (No).

Allow blanks. Specifies whether or not you can enter blanks in an alphanumeric field during data entry. If you type Y (Yes), blanks are allowed in the entire field during data entry. The default is N (No). If you specify both Allow blanks and Name check, blanks are allowed in place of the other validity checks.

Relational operators. Tests or validates fields against certain values. Input data will only be accepted if it matches the condition.

The following are valid relational operators:

- EQ Equal
- NE Not equal
- LT Less than
- LE Less than or equal
- GT Greater than
- GE Greater than or equal
- NG Not greater than
- NL Not less than
- RG Range
- LS List of values.

List of values. Specifies a number of 1 to 20 numeric values when you enter a relational operator. Use the following rules for relational operators:

- EQ, NE, LT, LE, GT, GE, NG, and NL require that you enter 1 value.
- The RG (Range) value requires that you enter 2 values.
- The LS (List of values) value requires that you enter 2 or more values.
- More than one entry must be separated by spaces.
- Character values must be enclosed by apostrophes.
- DBCS strings are valid, providing DBCS is supported.

Specify Validity Checks Display for Numeric Fields

Specify Validity Checks

Field : ORDER Record format : ORDHDR

Type choices, press Enter.

Mandatory entry	Y	Y=Yes, N=No
Mandatory fill	N	Y=Yes, N=No
Mod 10 check	N	Y=Yes, N=No
Mod 11 check	N	Y=Yes, N=No
Immediate check for		
Mod 10 or Mod 11	N	Y=Yes, N=No
Relational operator	—	EQ, NE, LE, NG, . . .
List of values	_____	

1 to 20 list values		

F3=Exit F12=Cancel F14=Display definition

Figure 204. Specify Validity Checks Display

With the following exceptions, the descriptions of the prompts on the Specify Validity Checks display for numeric fields are identical to the descriptions for alphanumeric fields (see “Specify Validity Checks Display for Alphanumeric Fields” on page 161). Here are the descriptions of the different prompts:

Mod 10 check. Specifies whether or not to validate a field entry containing a **self-check digit** based on a **modulus 10 calculation**. Type Y (Yes) to use the modulus 10 check, or N (No) if you do not want to use modulus 10. See Appendix E, “Calculating Modulus 10 and Modulus 11 Self-Check Digits” on page 243 for a detailed explanation of the calculation used to produce this self-check digit.

Mod 11 check. Specifies whether or not to validate a field entry containing a self-check digit based on a **modulus 11 calculation**. Type Y (Yes) to use the modulus 11 check, or N (No) if you do not want to use modulus 11. See Appendix E, “Calculating Modulus 10 and Modulus 11 Self-Check Digits” on page 243 for a detailed explanation of the calculation used to produce this self-check digit.

Modulus 10 and modulus 11 calculations are formulas used to calculate the check digit for a **self-check field**. The self-check digit is the far right digit of the self-check field. A self-check field, such as an account number, also contains a base number. For data entry applications, the operator-entered self-check number is compared with the self-check number calculated by the system.

Note: Mod 10 check and Mod 11 check use different algorithms. You cannot specify both Mod 10 check and Mod 11 check for the same field.

Immediate check for Mod 10 or Mod 11. Specifies whether or not immediate checking of the Mod 10 or Mod 11 fields is required. The default value is N (No). Type Y (Yes), to verify that valid numbers are entered for either the Mod 10 check or Mod 11 check fields, as the numbers are entered into the fields.

List of values. Specifies a number of 1 to 20 values when you enter a relational operator. Use the following rules for relational operators:

- EQ, NE, LT, LE, GT, GE, NG, and NL require that you enter 1 value.
- The RG (Range) value requires that you enter 2 values.
- The LS (List of values) value requires that you enter 2 or more values.
- More than one entry must be separated by spaces.

Update Data Using Temporary Program Display

Update Data Using Temporary Program

Type choices, press Enter.

Data file	QORDFILE ____	Name, F4 for List
Library	MYLIB ____	Name, *LIBL, *CURLIB
Member	QADZORDF ____	Name, *FIRST, F4 for List

F3=Exit F4=Prompt F12=Cancel

Figure 205. Update Data Using Temporary Program Display

Descriptions of the prompts on the Update Data Using Temporary Program display are as follows:

Data file. The name of the data file to which you want to add or change records. To see a list of available data files, move your cursor to this prompt and press F4. The Select File display appears and you can select the data file you want to update. The defaults are as follows:

- The file name you specified in the previous DFU session
- The value specified for the FILE parameter if you used the STRDFU or UPDDTA commands.

Library. The name of the library containing the data file. The defaults are as follows:

- Your library list (*LIBL)
- The current library (*CURLIB)
- The library name you specified in the previous DFU session
- The value specified for the FILE parameter, if you used the STRDFU or UPDDTA commands.

Member. The name of the member in the data file.

Note: For information on the Data Entry display and the End Data Entry display see “Data Entry Display” on page 128 and “End Data Entry Display” on page 146.

Work with Fields Display

```
Work with Fields

File . . . . . : QORDFILE      Library . . . . . : MYLIB
Record format . . . . . : ORDHDR

Type options, press Enter. Press F21 to select all.
2=Specify extended definition
4=Delete extended definition

Opt  Field      Extended
      Definition  Heading
-   CUST        N      CUSTOMER_____
-   ORDER       N      ORDER_____
-   ORDSTS      N      ORDER_____
-   ORDAMT      N      ORDER_____
-   TOTLIN      N      TOTAL_____
-   INVNUM      N      INVOICE_____
-   ORDDAT      N      ORDER_____
-   SHPVIA      N      SHIP_____

F3=Exit          F5=Refresh      F12=Cancel
F14=Display definition  F21=Select all

Bottom
```

Figure 206. Work with Fields Display

Descriptions of the prompts on the Work with Fields display are as follows:

File. The name of the data file for which the program is defined.

Library. The library containing the data file.

Record format. The name of the format containing the fields shown on this display.

Opt. Indicates whether you want to specify an extended definition for a field (option 2), or to remove a field’s extended definition (option 4). If you want to specify validity checks for a field, you must select option 2. Deleting extended field definitions also deletes any validity checks. File defined validity checks will

still be retained. Leave the *Opt* column blank if you do not want to select or remove an extended definition.

When you leave this display, an extended definition display appears for each selected field in order of their selection. See “Specify Extended Field Definition Display for Alphanumeric Fields” on page 156 and “Specify Extended Field Definition Display for Numeric Fields” on page 159 for more information about extended definitions.

Field. The name of the field as specified in the DDS- or IDDU-described file specification.

Extended definition. Specifies whether or not the field already has an extended definition. If a field already contains a Y here, you do not need to select the field again unless you want to change its extended definition.

Heading. The field’s heading in the externally described DDS or IDDU file specifications. DFU uses the headings shown here for the field headings on your data entry display. You can change the headings if you want them to appear differently on the data entry display. If you need to define a field heading that is longer than the length available on this display, type 2 (Specify extended definition) in the *Opt* column next to the desired field. The Specify Extended Field Definition display appears when you leave this display and you can specify a longer heading.

Note: If no heading is defined in the file definition, the field name appears here.

Work with Record Formats Display

```
Work with Record Formats
File . . . : QORDFILE           Library . . . . : MYLIB
Type options, press Enter. Press F21 to select all.
  2=Specify  4=Delete
Opt  Format      Multiple  Defined  Description
-   ORDHDR      N         N        Order Header Record
-   ORDDTL      N         N        Order Detail Record
F3=Exit      F5=Refresh  F12=Cancel
F14=Display definition  F21=Select all
Bottom
```

Figure 207. Work with Record Formats Display

Descriptions of the prompts on the Work with Record Formats display are as follows:

File. The name of the data file your DFU program uses when you run the program.

Library. The name of the library containing the data file.

Opt. The option you want to perform on each record format. Type 2 (Specify) to work with a record format for processing. You can select more than one record format by typing 2 (Specify) next to each record format you want to use. To select all record formats in the list, press F21 (Select all). To remove a previously selected format, type 4 (Delete) next to the record format you no longer want and press Enter. Leave the *Opt* column blank if you do not want to work with or remove a record format.

Note: You can select only option 4 (Delete) if the record format has been previously defined for your program (where *Defined* is Y).

Multiple Records. Specifies whether or not multiple record processing has been selected for this record format. You can also type Y (Yes) or N (No) if you want to change what has been specified. The indicator is Y (Yes) if previously selected or N (No) if not.

Note: You must specify 2 (Select) to select the record format before you can specify Y (Yes) for Multiple Records.

Format. The list of record formats found in the externally described DDS- or IDDU-described file.

Defined. Specifies whether or not a record format has been previously defined for this program. The indicator is Y (Yes) if previously defined and N (No) if not.

Description. The description of the record format as stored in the external file description.

Note: Figure 208 on page 169 shows the Work with Record Formats display without the Multiple Record prompt. This display would appear if you did not specify 4 (Row oriented) in the *Display format* prompt on the Define General Information display. The descriptions of the other prompts on the display are the same as those described in “Work with Record Formats Display” on page 167.

```

Work with Record Formats

File . . . : QORDFILE           Library . . . . : MYLIB

Type options, press Enter. Press F21 to select all.
  2=Specify  4=Delete

Opt  Format      Defined  Description
-   ORDHDR       N         N   Order Header Record
-   ORDDTL       N         N   Order Detail Record

F3=Exit           F5=Refresh       F12=Cancel       Bottom
F14=Display definition  F21=Select all

```

Figure 208. Work with Record Formats Display

Appendix A. Additional Considerations

This appendix describes the following additional considerations for using the Data File Utility (DFU):

- DFU command and file security control
- Using database files
- Using the library list
- Responding to file changes
- Error suppression
- Unsupported data types.

Security

DFU allows you full access to any file and any DFU command unless you define alternate security controls. To ensure adequate data security, you must introduce file controls over DFU functions. Figure 209 on page 172 summarizes the minimum required authority needed to perform DFU functions.

Figure 209. Minimum Authority for DFU Functions

Operation	OBJ	Object Authority			Data Authority			
		OBJOPR	OBJMGT	OBJEXIST	READ	ADD	UPD	DLT
Create/Save program								
Create program	Library ¹				X	X		
	File	X						
Change program	Library				X	X		X
	File	X						
	Program	X		X				
Run program								
DSPDTA	Program	X			X			
	File	X			X			
CHGDTA ²	Program	X			X			
	Add	File	X		X	X		
	Change	File	X		X		X	
	Delete	File	X		X			X
UPDDTA ²	Program	X			X			
	Add	File	X		X	X		
	Change	File	X		X		X	
	Delete	File	X		X			X
DLTDFUPGM	Library	X			X			X
	Program			X				
Tailor display								
CRTDFUDSPF	Library				X	X		
	Display file	X		X		X		
	Library				X			
	Source file			X		X		
	Source member				X			

¹ The minimum authority required for the database file library is **operational** for all DFU functions.

² The same authority to the database file is required for the STRDFU command to do these functions.

Authority

The authority (AUT) of an object specifies the different levels of access users have to the objects being created. Object rights can be public or private. Public object rights are authorized for all users. Private object rights are authorized only to specific users.

The owner of the object and the person at your location who is responsible for security have all rights to the object. They can both grant or revoke authority for an object to other users of the system. They are the only individuals who can grant object management rights for an object.

There are two major groups of rights: object rights and data rights. Object rights control how the user can use the entire object. Data rights control how the user can use the data contained in the object.

Object Authority

The following types of authority can be granted to the public for rights to the object:

Operational authority (OBJOPR)

The right to use an object and look at its description. For objects such as physical files, operational authority can also include one or more of the data rights (read, add, delete, and update).

Object existence authority (OBJEXIST)

The right to delete, save, restore, free storage of, and transfer ownership of the object. For example, to delete a program, you must have object existence authority for that program.

Object management authority (OBJMGT)

The right to move, rename, grant authority to, take authority away from, and change the attributes of an object. For example, to move an object from one library to another, you must have object management authority for the object.

All commands require that you have operational authority over the command. To change or delete a DFU program, you must have operational authority over the command, and operational and read authority over the objects to be changed. Note that each DFU program is made up of two objects: FILE and PGM. The objects have the same name and are in the same library.

Data Authority

The following types of authority can be granted to the public for rights to the data:

Read authority (READ)

The right to read the entries in an object. For example, to read records from a file you must have read authority for the file.

Add authority (ADD)

The right to add an entry to an object. For example, to add a record to a file, you must have add authority for the file.

Update authority (UPD)

The right to change the entries in an object. For example, to update a record in a file, you must have update authority for the file.

Delete authority (DLT)

The right to delete an entry from an object. For example, to delete a record from a file, you must have delete authority for the file.

Refer to the *Security Concepts and Planning* manual for more information on authority.

Command Authorization

DFU commands have a *USE authority when they are shipped. This authority allows all users to use any DFU command. The person responsible for security at your location can, however, limit the use of the commands to individual users. For information on how the use of commands can be limited to individual users, see the *CL Reference*. The *USE authority allows all users to use the following DFU commands:

- STRDFU
- CHGDTA
- DSPDTA
- UPDDTA
- DLTFUPGM
- CRTDFUDSPF.

You can also be authorized for access to the external (DDS or IDDU) and program-defined (RPG) specification files used for program definition. The default authorization allows public access when the specification file is created. If you want the file to be privately authorized, you should specify AUT (*EXCLUDE) when you create the data specification file.

You can be authorized for specific commands, programs, and files when you run a DFU program. For example, you can be authorized to use the following:

- The CHGDTA or DSPDTA command that uses a program. The default is for public operational authorization. The command authorization can be changed by the person responsible for security at your location.
- A specific DFU program. The AUT parameter determines if the program is authorized for public use or not. The default is for public operational authorization.
- The database file used by DFU. These can be individually controlled. Definition and creation of a DFU program requires that the operator is authorized to use the database file. A productive run of the created program requires additional file authorizations.

Database File Authorization

DFU supports the use of group profiles for database authorization. You can be a member of a group profile as well as an individual with your own user profiles. As a member of a group profile, you have access to any objects that the group owns or is explicitly authorized to use, as well as those objects that you, as an individual user, are explicitly authorized to use, or that you own.

Default Security Implications

The following DFU security status applies if you use all command defaults without changing the authorization supplied:

- All database and IDDU files can be used by DFU.
- Any user profile can use the CHGDTA and DSPDTA commands to run any DFU program created by the programmer (QPGMR).

DFU Use of Database Files

By default, DFU opens the first member of the database file when you run the DFU program. If you want to open a different member, specify the desired member name on the MBR parameter of the CHGDTA, DSPDTA, or STRDFU commands, or in the *Member* prompt if you use menu access to DFU.

Level Checking

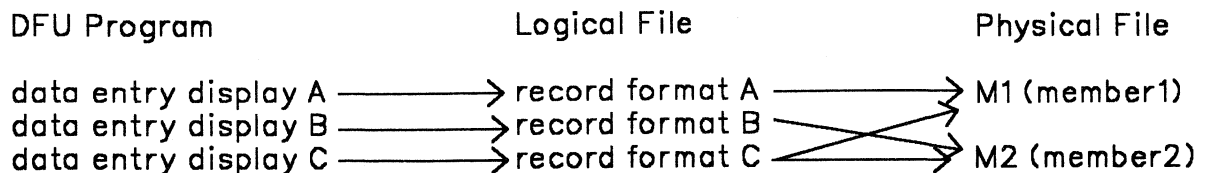
The database formats (or types) used by the DFU program are taken from existing DDS, IDDU, or RPG II file descriptions when the program is created. The file and library name of these descriptions are saved as part of the created program. Then, when you run the DFU program, DFU extracts the data file description and checks the identifier assigned to the file to make sure that the file description has not been changed since you defined the DFU program.

The record format level numbers are checked against the level numbers that existed when the program was created. If the formats present in the program and database members have equal level numbers, no message is created and the file is used. Otherwise, DFU checks the file definition for the file against the definition stored in the program to try to match them and allow you to run the program against a new file.

Note: DFU does not support predefined joined files.

Multiple Record Formats

A single DFU data entry display can add records to only one physical file member. If a DFU data entry display is defined on a logical file record format, the DFU data entry display can add records if the logical file record format is linked to **only one** physical file member. An example is shown below:



QDF4APA1

All data entry displays can add records except data entry display C because it is linked to two physical file members.

The relationship between logical file record formats and physical file members is defined by the DTAMBRs parameter of the CRTLF (Create Logical File) command and the ADDLFM (Add Logical File Member) command. See the *Control Language Reference* for a description of these commands.

The following examples show how the DTAMBRs parameter affects a DFU program.

Example 1

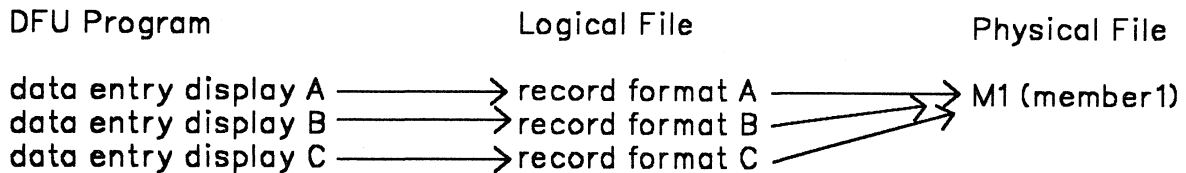
A logical file has three formats that reference the physical file MYLIB/FILE1. The member M1 is the only member FILE1. You want to define a DFU program to add records to FILE1. The DTAMBRs parameter must be coded in one of two ways:

```
DTAMBRs ((MYLIB/FILE1 M1) (MYLIB/FILE1 M1) (MYLIB/FILE1 M1))
```

or

```
DTAMBRs (*ALL)
```

The relationship defined is the same in either case:



QDF4APA2

Each record format in the logical file is linked to only one physical file member; all data entry displays of the DFU program can add records to the physical file.

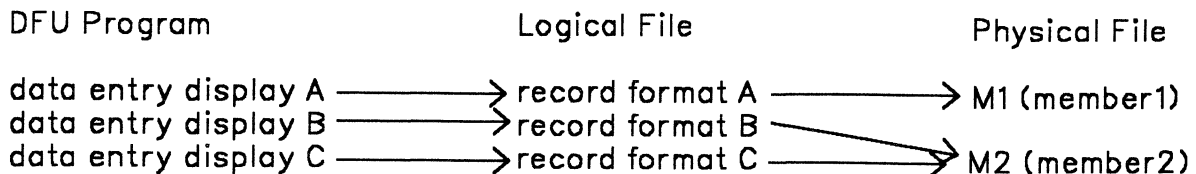
Example 2

The physical file MYLIB/FILE1 has two members. Consider the following ways in which you can code the DTAMBRs parameter:

1.

```
DTAMBRs ((MYLIB/FILE1 M1) (MYLIB/FILE1 M2) (MYLIB/FILE1 M2))
```

The relationship between data entry displays, logical record formats, and physical file members is shown below:



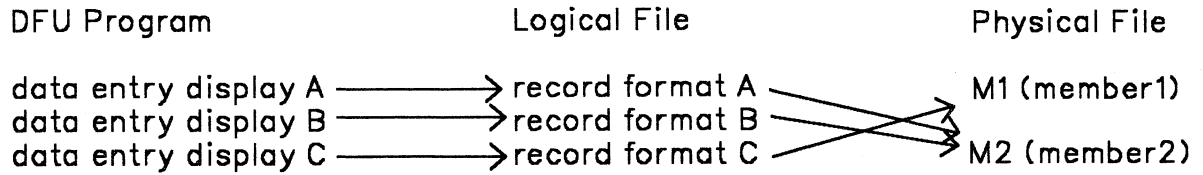
QDF4APA3

All three data entry displays can add records.

2.

```
DTAMBRS ((MYLIB/FILE1 M2) (MYLIB/FILE1 M2) (MYLIB/FILE1 M1))
```

The relationship between data entry displays, logical record formats, and physical file members is shown below:



QDF4APA4

All data entry displays of the DFU program can add records.

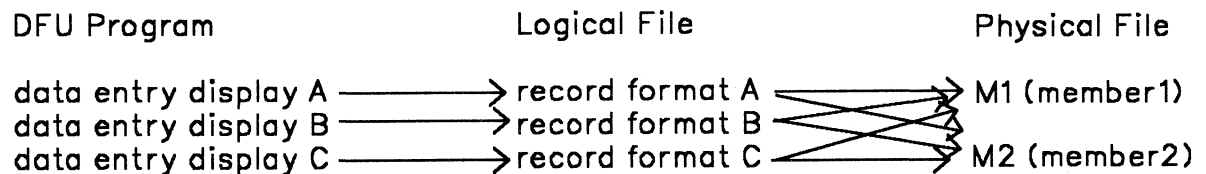
3.

```
DTAMBRS (*ALL)
```

This is equivalent to:

```
DTAMBRS ((MYLIB/FILE1 M1 M2) (MYLIB/FILE1 M1 M2)  
(MYLIB/FILE1 M1 M2))
```

The relationship between data entry displays, logical record formats, and physical file members is shown below:



QDF4APA5

None of the data entry displays can add records since all of the logical record formats are linked to more than one physical file member.

Using the Library List

As indicated in the command descriptions, DFU uses the default library list (*LIBL) to find objects for which no library qualifier is specified in a command. Before you enter DFU commands, you may want to make sure that the objects you refer to in the commands are either qualified in the command or named, if appropriate, in the library list. You can use the following commands to operate on library lists:

- DSPLIBL (Display Library List) allows you to look at the library list
- RPLLIBL (Replace Library List) allows you to change the entire library list

- ADDLIBLE (Add Library List Entry) allows you to add a single entry to the library list
- RMVLIBLE (Remove Library List Entry) allows you to remove a single entry from the library list.

The *CL Reference* describes the commands explained above.

Responding to File Changes

The file description used by a DFU program can be changed a number of times after the DFU program has been defined. The changes, such as the addition, deletion, or reordering of fields within record formats, may or may not affect your DFU program directly, however:

- If the changes to a file affect your definition directly, you must change your DFU program definition by creating a new program based on the new file description. For example, if fields referred to by your program are deleted, you must redefine the program.
- If the changes to a file do not affect your program directly, you only need to re-create the program from the existing definition. Re-creating the program ensures that it reflects the context of changed record formats.

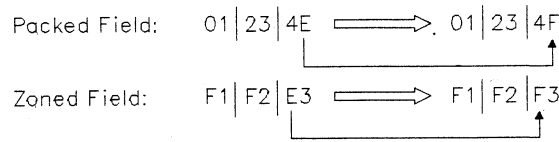
If the changes do not affect the program, you do not have to re-create the program.

Error Suppression

It is unlikely your data file will contain data errors as a result of working with DFU. Your file could, however, have errors if you made an invalid change to a field from outside of DFU. If you request error suppression when you define your program, DFU attempts to suppress any decimal data errors so that the record can still be displayed.

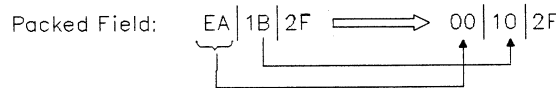
DFU uses the following method for suppressing errors in all fields containing invalid data:

- In a packed or zoned field, an invalid sign is forced to a positive sign value as follows:



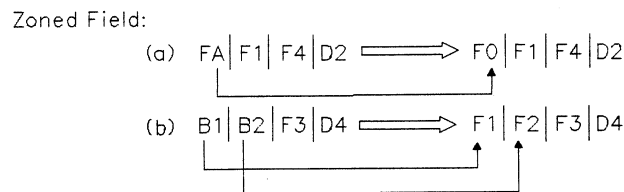
QDF4APA6

- In a packed field, any hex digit (other than the sign digit) field that is greater than hex 9 is forced to hex 0 as follows:



QDF4APA7

- In a zoned field, any hex digit in the numeric half-byte of each byte that is greater than hex 9 is forced to hex 0. Any hex digit in the zone half-byte of each byte less than hex F (except the sign half-byte) is forced to hex F. Examples of these circumstances follow:



QDF4APA8

If error suppression is successful, DFU shows the corrected data on your data entry display. The corrected fields are written back to the data file only if you subsequently change the corrected field on the data entry display. For example, imagine that fields A and B are zoned fields that contain an invalid hex 40. DFU suppresses the error by changing the hex 40 to zero. The zero is what shows on your data entry display. If you change the zero (error suppressed hex 40) in field A to valid data but do not change the zero (error suppressed hex 40) in field B, then only field A is written back to the data file. The original contents of field B (hex 40) are undisturbed.

If error suppression was not selected, or your record contains invalid data in a non-numeric field, then DFU does not display the record and issues you an error message.

Unsupported Data Types

AS/400 DFU does not support the following data types:

- Floating point field
- Any hex fields in *HEX format.

Appendix B. Double-Byte Character Set Considerations for DFU Programs

This appendix discusses double-byte character set (DBCS) considerations, including the following:

- DBCS characters supported on AS/400
- Software requirements
- Programming considerations.

Supported DBCS Characters

DBCS on the AS/400 system consists of the following types of characters:

- Kanji (Japanese)
- Katakana (Japanese)
- Hiragana (Japanese)
- Hangeul (Korean)
- Jamo (Korean)
- Hanja (Korean)
- Traditional Chinese
- Simplified Chinese
- Alphabetic and numeric (A through Z, a through z, and 0 through 9)*
- Roman numerals (I through X)*
- Greek
- Cyrillic*
- Special symbols*
- Additional characters defined through the Character Generator Utility (CGU).

Characters marked with an asterisk (*) are supplied by IBM in the Japanese basic DBCS. Many frequently used Japanese Kanji characters are also included in this basic DBCS. Additional Japanese Kanji characters and user-defined characters not included in the Japanese basic DBCS comprise the Japanese extended double-byte character set, and are called extension characters. Extension characters require additional processing to be displayed and printed, basic characters do not.

Double-byte character sets differ from alphanumeric character sets in the following ways:

- The Japanese alphanumeric character set consists of only Roman (A-Z) and Katakana alphabets, and numerals (0-9).
- The Korean alphanumeric character set consists of the uppercase and lowercase Roman (A-Z, a-z) and Korean Jamo alphabets, and numerals (0-9).
- The traditional and simplified Chinese alphanumeric character sets consist of the uppercase and lowercase Roman (A-Z, a-z) alphabet and numerals (0-9).

Note: Alphanumeric characters are also included in the DBCS. When using DBCS versions of alphanumeric characters, however, the characters are considered DBCS.

- DBCS data, when displayed and printed, usually is twice as wide as alphanumeric data.
- DBCS characters each use two bytes of storage plus shift-out and shift-in characters required at the ends of a DBCS string. Alphanumeric characters use one byte.

Software Requirements

When programming in DFU with DBCS characters:

- The DBCS OS/400 feature must be on your system.
- You must use a DBCS-capable display station.
- You must start each DBCS character string with a shift-out (SO) character and end it with a shift-in character (SI).

Open fields allow you to mix alphanumeric and DBCS characters. DBCS characters must be within shift-in and shift-out characters.

- Printed output must be sent to a DBCS-capable printer.

Programming Considerations

Part of the ideographic Japanese character (IGC) feature is the ability to use Katakana (single byte) characters. Alphanumeric characters and Katakana characters are one position each. DBCS characters are two positions each.

A string of DBCS characters begins with a shift-out character of one position, followed by DBCS characters of two positions each, followed by a shift-in character of one position. This configuration means each DBCS character string is an even number of positions at least four positions long for a single DBCS character. The following shows a string of three DBCS characters, where the first and fifth characters represent the shift-out and shift-in characters respectively. This example requires eight character positions: one for the shift-out character, two for each DBCS character, and one for the shift-in character.

The image shows a sequence of eight characters. The first character is a small circle with a horizontal line below it (SO). The second character is the Japanese character '日' (sun). The third character is the Japanese character '本' (tree). The fourth character is the Japanese character '史' (history). The fifth character is a small circle with a horizontal line below it (SI). The sixth, seventh, and eighth characters are blank space.

QDF4APPB

Figure 210. DBCS Character Example

In DFU, you can select DBCS fields on the Select and Sequence Fields display as shown in Figure 211 on page 183.


```

Select and Sequence Fields

File . . . . . : DBCSFILE      Library . . . . . : QS36F
Record format . . . . . : KATAREC

Select fields and their sequence or press F21 to select all; press Enter.

Sequence  Field      Attr  Length  Type      Description
-----  -
         DBCSCHR    KEY      6    DBCS      DBCS FIELD

F3=Exit      F5=Refresh      F12=Cancel      F14=Display definition
F20=Renumber  F21=Select all

Bottom

```

Figure 211. Select and Sequence Fields Display for DBCS Characters

In Figure 211, the DBCSCHR field is designated as a DBCS field. This means you can enter only DBCS characters into this field on the data entry display. You can also specify extended definitions for DBCS fields selected from the Define Fields display. If you have DBCS-capable DFU, your display appears as shown in Figure 212.

```

Specify Extended Field Definition

Field . . . . . : DBCSCHR      Record format . . . . . : KATAREC

Type choices, press Enter.

Auto duplicate . . . . . N          Y=Yes, N=No
Allow lowercase . . . . . N        Y=Yes, N=No
Extended field
  heading . . . . . DBCS _____
                   FIELD _____

Heading location . . . . . *BEFORE  *ABOVE, *BEFORE
Initial value . . . . . _____
Validity checks . . . . . -         2=Change, 4=Delete
Double-byte character
  attribute . . . . . J           J=DBCS Only
                                O=DBCS Open
                                E=Either DBCS

More...

F3=Exit      F12=Cancel      F14=Display definition

```

Figure 212. Specify Extended Field Definition Display for DBCS-Capable DFU

Note: The value shown in the *Double-byte character* prompt may be different than the one shown on your display, depending on what was specified in the DDS file description.

Description of the DBCS specific information on the Specify Extended Field Definition display is as follows:

Double-byte character attribute. Allows you to specify whether or not a DBCS character can be entered into this field prompt on the data entry display. The following values are available:

J DBCS ONLY: This field accepts DBCS characters only.

Note: The field must be at least 4 bytes long and of even length. DBCS characters are 2 bytes long and are delimited with shift-out and shift-in characters. If you omit the leading shift-out character, the entire string is deleted up to the next shift-in character. You cannot delete the shift-in character unless you delete the shift-out character.

O DBCS OPEN: The field accepts both DBCS and alphanumeric characters at the same time.

E Either DBCS (default): The field accepts either all DBCS or all alphanumeric characters but not both types together in the same field.

Note: The field must be at least 4 bytes long and of even length. DBCS characters are 2 bytes long and are delimited with shift-out and shift-in characters. If you omit the leading shift-out character, the entire string is deleted up to the next shift-in character. The shift-in character cannot be deleted unless you delete the shift-out character.

In DBCS mode, the following are DBCS:

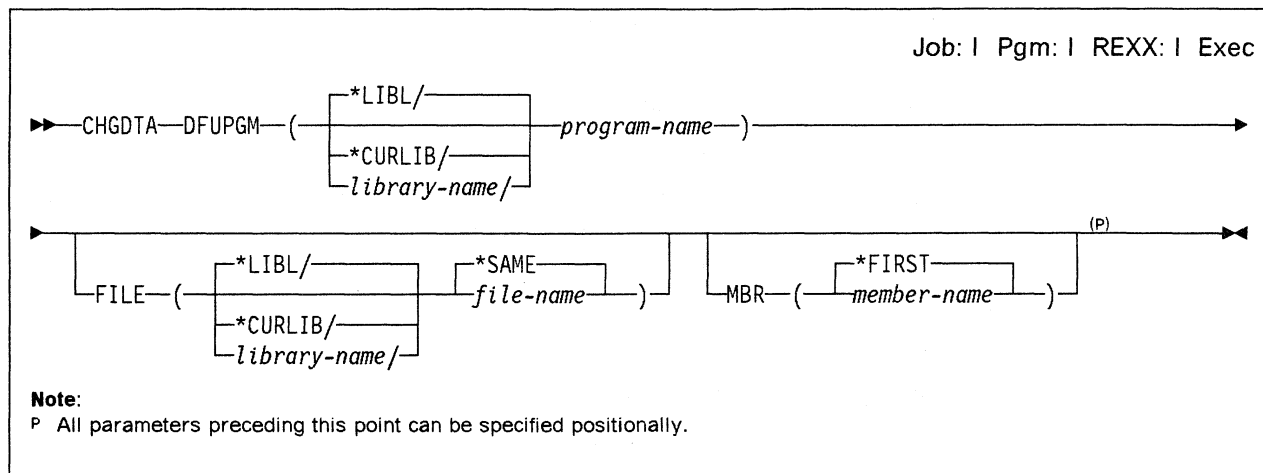
- DFU prompts
- DFU informational messages
- Output page headings.

Note: DFU supports data description specifications (DDS) extensions for DBCS support in database files only.

Appendix C. Control Language Commands in the Data File Utility

This appendix describes the Control Language (CL) commands that are specific to DFU.

CHGDTA (Change Data) Command



Purpose

The CHGDTA command allows you to add, change, or delete records in an existing database file.

Restriction: Overrides on the specified file are ignored.

Required Parameters

DFUPGM

Specifies the qualified name of the DFU program that controls the interactive update of data.

The possible library values are:

***LIBL:** The library list is used to locate the DFU program.

***CURLIB:** The current library for the job is used to locate the DFU program. 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 DFU program is located.

program-name: Specify the name of the DFU program that controls the interactive update of data.

Optional Parameters

FILE

Specifies the qualified name of the database file you want to process.

The possible library values are:

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

***CURLIB:** The current library for the job is used to locate the data 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 data file is located.

The possible file values are:

***SAME:** DFU uses the file that was used to define the program.

file-name: Specify the name of the data file you want DFU to process. The file should have at least one record format name in common with the file used to define the program.

MBR

Specifies the member in the file you want to process.

***FIRST:** DFU processes the first member of the file.

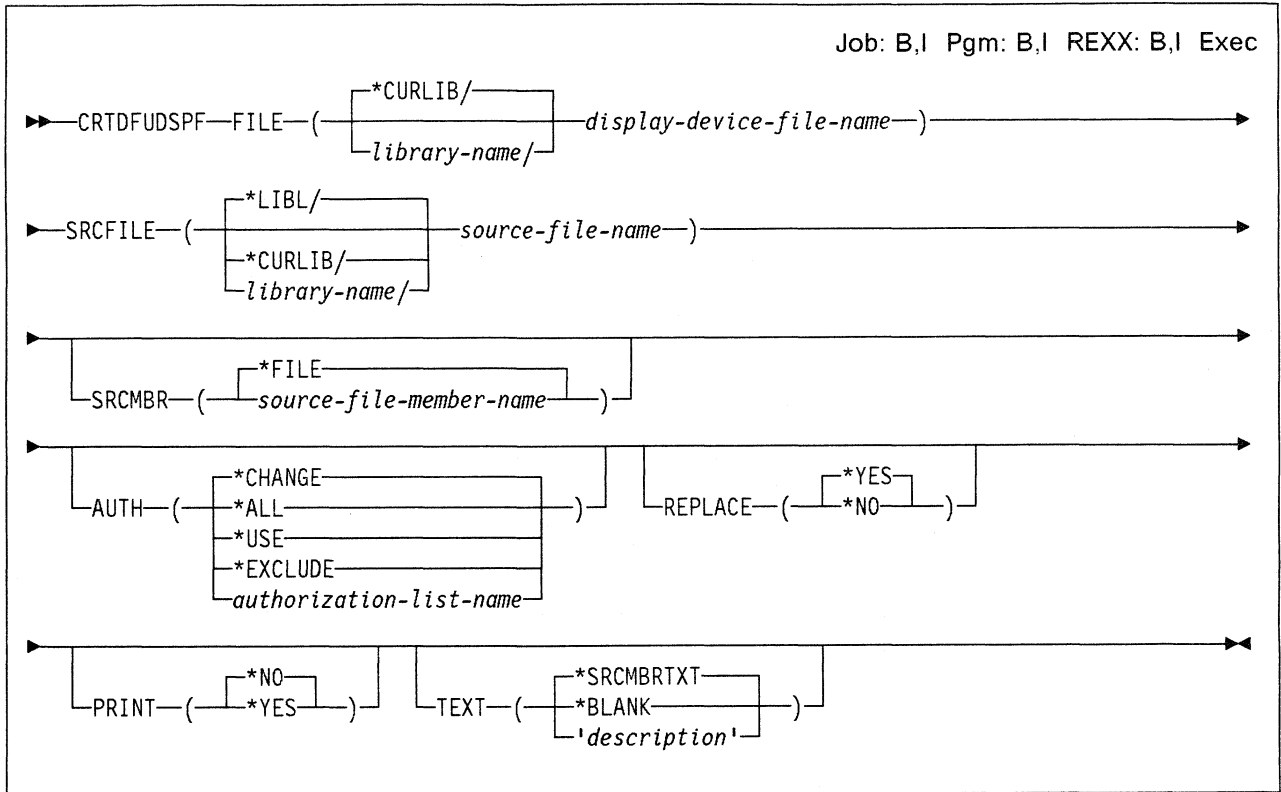
member-name: Specify the name of the member you want DFU to process.

Example

```
CHGDTA DFUPGM(LIB1/DATA) FILE(FILEA)
```

This command uses the application named DATA in library LIB1 to process the file named FILEA.

CRTDFUDSPF (Create DFU Display File) Command



Purpose

The CRTDFUDSPF command creates a DFU display file.

Restriction: Overrides on the specified file are ignored.

Required Parameters

FILE

Specifies the qualified name of the DFU display file that is being created.

The possible library values are:

***CURLIB:** The current library for the job is used to store the display file when it is created. 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 in which the DFU display file is created.

display-device-file-name: Specify the name of the DFU display device file being created. The display device file name must match the name of the program with which the original device file was created.

SRCFILE

Specifies the qualified name of the source file that contains the DDS source.

The possible library values are:

***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 the source file that contains the DDS for this display device file.

Optional Parameters

SRCMBR

Specifies the name of the member in the source file that contains the DDS for this DFU display file. Any valid name can be used.

***FILE:** The name specified on the FILE parameter is used as the source file member name.

source-file-member-name: Specify the name of the member that contains the DDS source.

AUTH

Specifies the authority for the display file and its description that is being granted to the public. The authority can be altered for all or specified users after display device file creation by using the GRTOBJAUT (Grant Object Authority) command, the RVKOBJAUT (Revoke Object Authority) command, or the EDTOBJAUT (Edit Object Authority) command.

***CHANGE:** The public has only object operational rights for the display file. The user can perform basic functions on the file.

***ALL:** The public has complete authority for the display file. The user can control the file, change the file, and specify security for the file, but cannot transfer ownership.

***USE:** The public can perform basic operations on the file, but cannot change it.

***EXCLUDE:** The public cannot access the file.

authorization-list-name: Specify the name of an authorization list to which the display file is added.

REPLACE

Specifies whether a new display file is created when a display file of the same name already exists in the same library.

***YES:** A new display file is created and any existing display files of the same name in the specified library are deleted.

***NO:** A new display file is not created if a display file of the same name already exists in the specified library.

PRINT

Specifies whether the listing that is produced when the file is created is printed.

***NO:** A listing is not printed when the file is created.

***YES:** A listing, which includes the DDS source statements used and any errors that occurred when the file was created, is printed.

TEXT

Specifies text that briefly describes the display file and its function.

***SRCMBRTXT:** The text is taken from the source file member that was used to create the display file.

***BLANK:** No text is specified.

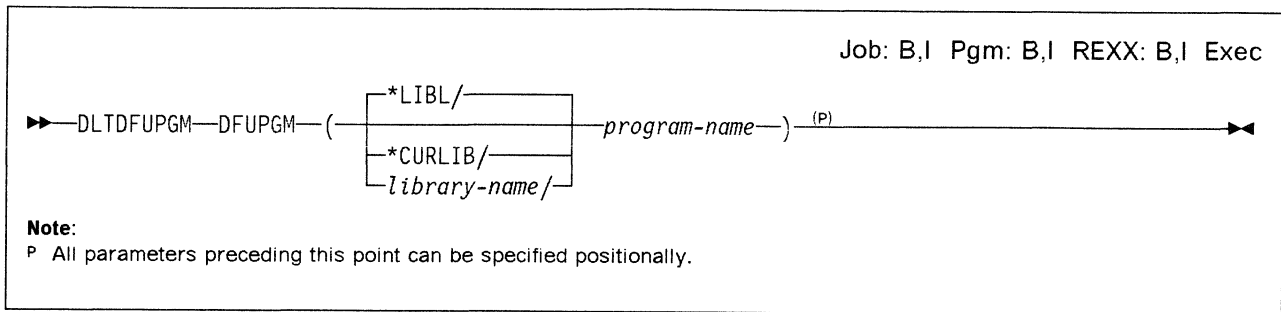
'description': Specify no more than 50 characters of text, enclosed in apostrophes.

Example

```
CRTDFUDSPF FILE(JONES/DISPLAY) REPLACE (*YES)
```

This command deletes any existing DFU display file named DISPLAY in library JONES and creates a new display file named DISPLAY in library JONES.

DLTDFUPGM (Delete DFU Program) Command



Purpose

The DLTDFUPGM command deletes a DFU program from a library.

Required Parameters

DFUPGM

Specifies the qualified name of the DFU program being deleted.

The possible library values are:

***LIBL:** The library list is used to locate the DFU program.

***CURLIB:** The current library for the job is used to locate the DFU program. 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 DFU program is located.

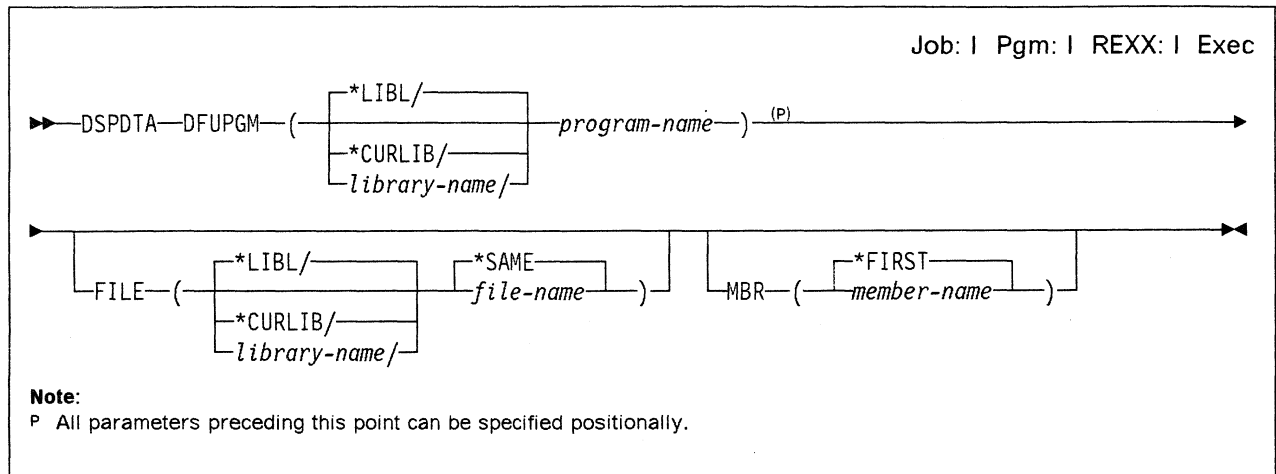
program-name: Specify the name of the DFU program being deleted.

Example

```
DLTDFUPGM DFUPGM(LIB1/PGMA)
```

This command deletes program PGMA from library LIB1.

DSPDTA (Display Data) Command



Purpose

The DSPDTA command displays a data file. You cannot change the data in the file.

Restriction: Overrides on the specified file are ignored.

Required Parameters

DFUPGM

Specifies the qualified name of the DFU program that controls the interactive display of data.

The possible library values are:

***LIBL:** The library list is used to locate the DFU program.

***CURLIB:** The current library for the job is used to locate the DFU program. 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 DFU program is located.

program-name: Specify the name of the DFU program that controls the interactive display of data.

Optional Parameters

FILE

Specifies the qualified name of the database file you want to display.

The possible library values are:

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

***CURLIB:** The current library for the job is used to locate the data 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 data file is located.

***SAME:** DFU processes the file that was used to define the program.

file-name: Specify the name of the data file you want DFU to process.

MBR

Specifies the name of the member you want to display.

***FIRST:** DFU displays the first member of the file.

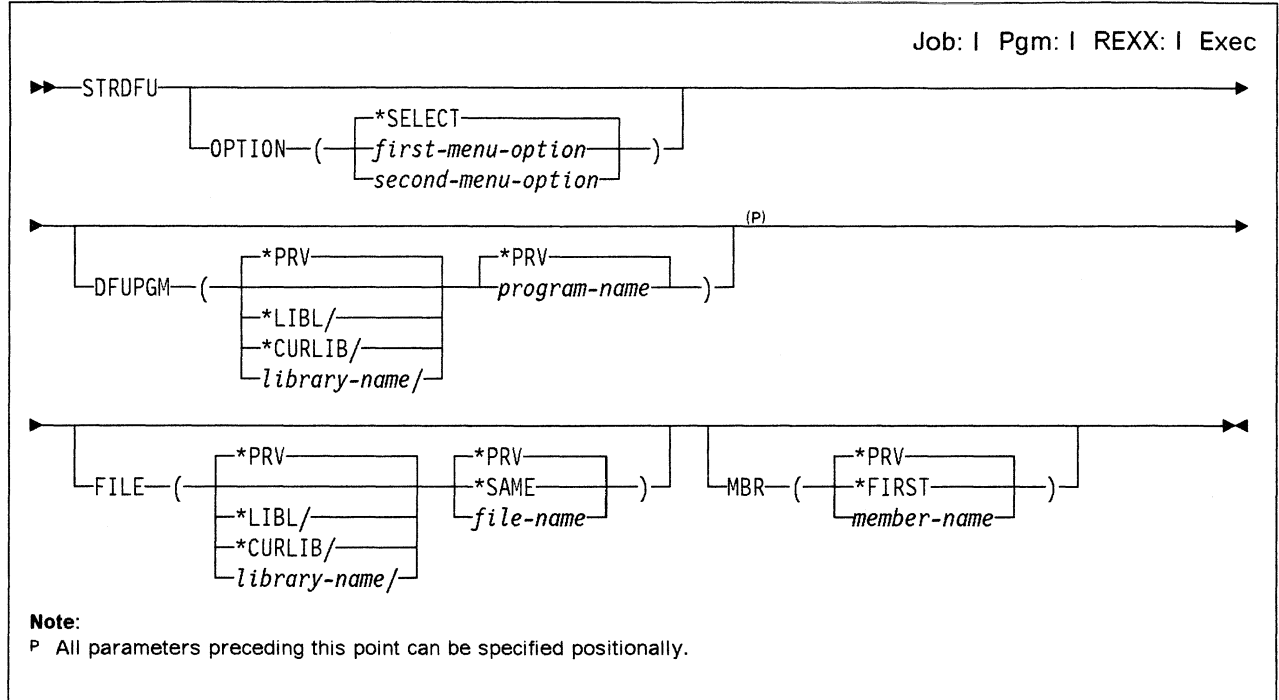
member-name: Specify the name of the member you want DFU to display.

Example

```
DSPDTA DFUPGM(LIB1/DATA) FILE(FILEA)
```

This command displays the data in the first member of the data file FILEA of application DATA in library LIB1. If you want to add, change, or delete data in the data file, use the CHGDTA (Change Data) command.

STRDFU (Start DFU) Command



Purpose

The STRDFU command starts DFU.

Restriction: Overrides on the specified file are ignored.

Optional Parameters

OPTION

Specifies the option to use as a value for the DFU main menu.

***SELECT:** The DFU main menu is shown. The user can select an option from the menu.

first-menu-option: Specify a number ranging from 1 through 5. Specify:

- 1 to run a DFU program
- 2 to create a DFU program
- 3 to change a DFU program
- 4 to delete a DFU program
- 5 to run a temporary DFU program.

Note: Options 2, 3, and 4 are available only if the Programming Development Aid (PDA) product is installed.

second-menu-option: Specify:

- 1 to change data
- 2 to display data without changing it.

If 1 is specified (to run a DFU program), the user can also specify a second option. The second option must be 1 or 2.

DFUPGM

Specifies the qualified name of the DFU program to run, create, change, or delete. The user does not use this parameter if option 5 is selected (to run a temporary DFU program).

The possible library values are:

***PRV:** The library that was used in the previous DFU session is used to locate the DFU program.

***LIBL:** The library list is used to locate the DFU program.

***CURLIB:** The current library list is used to locate the DFU program. 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 used to locate the DFU program.

***PRV:** DFU uses the program that was used in the previous DFU session.

program-name: Specify the name of the DFU program being used.

FILE

Specifies the qualified name of the database file being changed or displayed by using DFU.

The possible library values are:

***PRV:** The library used to locate the database file name in the previous DFU session is used.

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

***CURLIB:** The current library for the job is used to locate the data 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 database file is located.

***PRV:** DFU uses the file that was used in the last DFU session.

***SAME:** DFU uses the file that was used to define the program. *SAME can be specified only if option 1 is selected (to run a DFU program) or option 3 (to change a DFU program).

file-name: Specify the qualified name of the data file DFU is to process.

MBR

Specifies the name of the member in the file being changed or displayed.

***PRV:** DFU uses the member that was used in the previous DFU session.

***FIRST:** DFU uses the first member of the file.

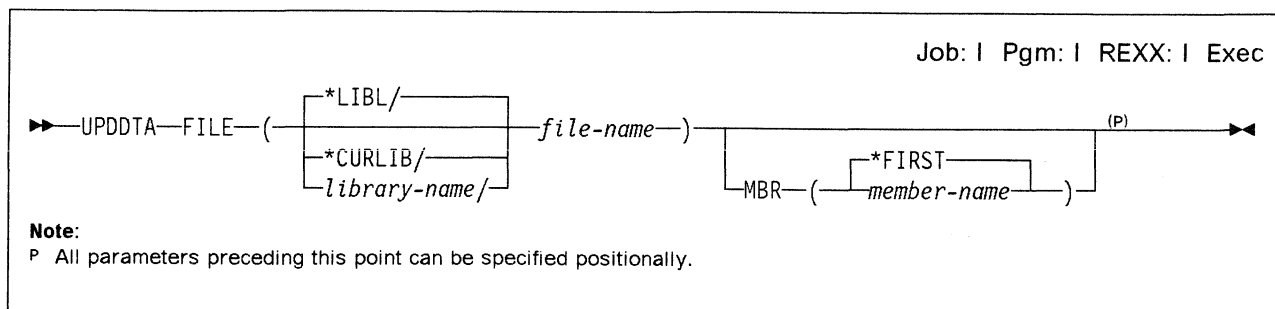
member-name: Specify the name of the member being processed by the DFU.

Example

STRDFU

This command starts DFU.

UPDDTA (Update Data) Command



Purpose

The UPDDTA command creates and runs a temporary DFU program. This temporary program can be used to update a database file.

Restriction: Overrides on the specified file are ignored.

Required Parameters

FILE

Specifies the qualified name of the data file being updated.

The possible library values are:

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

***CURLIB:** The current library is used to locate the data 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 data file is located.

file-name: Specify the name of the data file that is updated.

Optional Parameters

MBR

Specifies the name of the member in the file being updated.

***FIRST:** The first member of the file is updated.

member-name: Specify the name of the member being updated.

Example

```
UPDDTA
```

This command creates and runs a temporary DFU program.

Appendix D. Using DFU in the System/36 Environment

Using DFU in the System/36 environment on an AS/400 system is similar to using DFU on a System/36. This appendix shows how to create a DFU program in the System/36 environment.

The main differences between the two systems are the following:

- AS/400 command function keys have different functions from those on the System/36. If you specify the System/36 style option when you define your DFU program, the function keys and displays are the same as if the program were defined on a System/36 (when you run your program).
- AS/400 displays and function keys are used when you define a DFU program. System/36 function keys are used when you run the program, if you specify the System/36 style when you define the program.
- If you want to change a DFU program using the OCL procedures ENTER, UPDATE, or INQUIRY from the System/36 environment, **do not** delete the program before trying to change it. DFU bases the change on the program object itself. To change the program, leave the *Name of DFU program* prompt blank, and specify the name of the program you want to change in the *Name of DFU specification source member* prompt.

The following System/36 DFU functions are available only within the System/36 environment:

- DFU LIST function. The List function is used to print the contents of a file. See the *DFU List for the System/36 Environment User's Guide and Reference* for details.
- DFU UPDATE function. The Update function is used to change a data file.
- DFU INQUIRY function. The Inquiry function is used to display a data file.
- DFU ENTER function. The Enter function is used to create a new data file.

These functions can only be accessed by using the ENTER, UPDATE, INQUIRY, or LIST procedures. Using the DFU procedure does not give access to these functions. (Use ENTER#, UPDATE#, INQUIRY#, or LIST# to run the program.)

RPG II-Described Files

DFU determines what a file looks like based on file descriptions. In the System/36 environment, DFU can use RPG II-, DDS-, or IDDU-described data files. In an RPG II program-described file, you provide the file description on two RPG II specifications: the F specification and the I specification.

Note: For RPG II F and I specifications, character fields with length greater than 60, and binary fields are not picked up during program definition.

Figure 213 on page 198 shows the layout of RPG II F and I specifications. Use the information on these forms for the example in "Creating a DFU Program for an Indexed Data File" on page 203.

File Description Specifications

Line	Form Type	Filename	File Type				Mode of Processing				Device	Symbolic Device	Labelis STATE/M	Extent Exit for DAM		File Addition, Unordered			
			File Designation	Seq. of File	Sequence	File Format	Length of Key Field or Record Address Field	Record Address Type	Type of File Organization or Additional Prop.	Key Field Starting Location				Extension Code E/L	Name of Label Exit	Storage Index	Number of Tracks for Cylinder Overflow	Number of Extents	Type Ranking
02	F	INVRPG	U			53	6	I		1	DISK								

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RPG INPUT SPECIFICATIONS

GX09-1033-03 UM/050
 Printed in U.S.A.

Program: _____ Keying Instruction: _____ Graphic: _____ Card Electro Number: _____
 Programmer: _____ Date: _____ Key: _____ Page 12 of 76 76 77 78 79 80
 Program Identification: _____

Line	Form Type	Filename or Record Name	Sequence	Subfield Initialization Value			Field Location		RPG Field Name	Control Level (L-B)	Matching Fields or Chaining Fields	Field Record Relation	Field Indicators					
				Names Constant Value	External Field Name	Record Identifier Codes	From	To					Plus	Minus	Zero or Blank			
01	I	INVRPG	01	42	NC	43	NC											
02	I							1	6				ORDER					
03	I							7	12				ORDATE					
04	I							13	17				CUSORD					
05	I							18	22				CUST					
06	I							23	37				SHPVIA					
07	I							P	38	41			PRICE					
08	I								42	43			SHPTO					
09	I								44	53			GOODS					
10	I	INVRPG	02	42	C													
11	I							1	6				ORDER					
12	I							7	12				SALDAT					
13	I							13	33				SALEMN					
14	I							34	53				FILLER					

Figure 213. RPG II F and I Specification Coding Sheets

To use a program-described data file, you must enter the F and I specifications into a source member (this is the only coding you have to do for DFU). Source member information appears in the same format as you enter it through the text editor. You can use any AS/400 text editor to enter the information into a source member. For example, you can enter the information through the Source Entry Utility (SEU), a part of the Application Development Tools licensed program.

For information on how to use SEU, see the *SEU User's Guide and Reference*.

If the DFU program you create processes an existing file, there may already be F and I specifications in the system for that file. In this case, you do not need to

create file specifications for the data file. DFU uses the existing F and I specifications from any existing RPG II source program.

Note: When using the ENTER, UPDATE, INQUIRY, LIST, ENTER#, UPDATE#, INQUIRY#, or LIST# System/36 procedures in the System/36 environment, all data files must reside in library QS36F, and all RPG II source members must reside in file QS36SRC in the library you specify.

System/36 Style Run-Time Function Keys

If your DFU program uses System/36 style data entry displays, you can use the System/36 function keys when you run your program. You define the data entry display style on the Define General Information display.

Note: Some of these keys are functional on certain displays only.

The System/36 run-time function keys are described in Figure 214.

Figure 214 (Page 1 of 2). System/36 Run-Time Function Keys

Work Station Key	Name of Function Key	Description
F1	Auto dup	Switches the automatic duplicate function on and off. When on, fields defined for automatic duplication are filled with the last specified value for the field. When off, blank fields are displayed.
F2	Display accumulators	Moves to the Display Batch Accumulators display, shows the current accumulator totals, adds the accumulators to the total accumulators, and resets them to zero.
F3	Select record type	Allows you to select a record type for processing from a list of available record types and returns to the data entry display from which this key was pressed.
F4	Delete	Removes the record physically from the file if no record delete code is specified and if the file is delete capable. Otherwise, the delete code is written into the record to indicate that it is deleted.
F5	Record backspace	Shows the previous display of a multiple display record. This function is not supported.
F6	Print record	Prints the record on the user's defined printer. This function is active in Display mode only.
F7	End of job	Returns to the previous display by way of the End Data Entry display without saving the field values for the currently displayed record.

Figure 214 (Page 2 of 2). System/36 Run-Time Function Keys

Work Station Key	Name of Function Key	Description
F9	Insert	Changes the mode to Insert, which allows you to insert records anywhere in the file. If the file is processed sequentially, insert mode is identical to entry mode, that is, records are added at the end of the file.
F10	Entry	Changes the mode to Entry, which allows you to add new records.
F11	Change	Changes the mode to Change, which allows you to change existing records.
F12	Record advance	Places default entries into any unfilled fields in the record and saves the entire record to the data file.
F18	Auto-increment from last change	Turns automatic-increment on from the last record changed. When on if you are entering records in Entry mode or returning to Entry mode from Change mode, DFU presents the field value of the last record changed or added, plus the increment value.
F19	Auto-increment from the end of file	Turns automatic-increment on from the end of the file. When on if you are entering records in Entry mode or returning to Entry mode from Change mode, DFU presents the field value of the last record in the file, plus the increment value. Note: You can use either F18 or F19, but not both at one time. If you turn on one automatic-increment key, and then turn on the other, the original key is turned off.
F20	Auto record advance	Switches the automatic record advance on and off. The automatic record advance is set to ON mode when the user runs the program. When on, the contents of a display are processed as soon as data is entered into the last field on the display. It is not necessary to press Enter.
F21	Status	Displays the status of data entry including the current data file, library, format or type, and active functions (mode, automatic duplication, auto record advance).

Creating a DFU Program through the System/36 Environment

This section shows how to create a Data File Utility (DFU) program to add and change records in a data file called INVRPG. It defines the characteristics of the DFU program and the data entry displays used to access data files. It also includes two examples of how to create a new DFU program: one for indexed data files and one for nonindexed data files.

The displays for running and deleting programs are similar on both the AS/400 system and System/36. Review Chapter 4, "Running a DFU Program" on page 75, and Chapter 7, "Deleting a DFU Program" on page 117, for details on these procedures.

The DFU program is created from a definition made through the create or change option of the AS/400 Data File Utility (DFU) menu. You can modify existing program definitions to create a new program by saving the modified version under a different name.

Example System/36 Data Entry Display

When you create your DFU program, you can select an AS/400 or System/36 data entry style from the Define General Information display. You can run the program in either style in the System/36 environment. If you select the System/36 style for this example, the display shown in Figure 215 appears when you run the DFU program.

```
INVENTORY RECORDS                Filename: INVRPG        Mode: Display
Record Type: 01                   Last record type: 01   Auto-dup: OFF
OUR ORDER NUMBER (ALPHAMERIC XC CODE): _____

DATE:                             _____
CUST. ORD. NO.:                   _____
CUSTOMER NO.:                     _____
SHIP VIA.:                         _____
SHIP TO:                           _____
PRICE OF ORDER:                    _____
```

Figure 215. System/36 Style Data Entry Display

Procedure for Creating a DFU Program from the System/36 Environment

After you enter the DFU command, DFU displays a menu from which you can select options to create, change, delete, or run a DFU program. After your selection to create a program for this example, DFU begins a prompting sequence through which you define the program. The displays that appear for creating and for changing DFU programs are the same.

Notes:

1. You can also use the System/36 commands Enter, Update, and Inquiry to define DFU programs from the System/36 environment. You can use the System/36 commands ENTER#, UPDATE#, and INQUIRY# to run DFU programs from the System/36 environment. See the *System Reference for the System/36 Environment* for descriptions of these commands. See the *Concepts and Programmer's Guide for the System/36 Environment* for details on using the System/36 environment.
2. You must use the System/36 LIST command to access the DFU LIST function. You can also use the System/36 command LIST# to run DFU LIST programs from the System/36 environment. See the *DFU List for the System/36 Environment User's Guide and Reference* for more information.
3. All data files referenced through the operation control language (OCL) from the System/36 environment must exist in library QS36F. DFU uses OCL to access files in the System/36 environment.
4. If you want to change a DFU program using the OCL procedures ENTER, UPDATE, or INQUIRY from the System/36 environment, **do not** delete the program before trying to change it. DFU bases the change on the program object itself. To change the program, leave the *Name of DFU program* prompt blank, and specify the name of the program you want to change in the *Name of DFU specification source member* prompt.

You can review the program or the data file definitions and default entries any time while you are creating or changing a DFU program. Command function keys are provided for this purpose. DFU returns to the definition display after you finish reviewing program or data file details.

The rest of this appendix discusses the displays that appear when you define a DFU program in the System/36 environment. The examples show the prompt entries you enter into each display to produce the sample DFU program.

Perform the following steps to define a DFU program:

1. Sign on to the System/36 environment by typing
STRS36.

This command puts you into the System/36 environment and allows you to enter System/36 style commands provided your work station is defined to the System/36 environment. Ignore this step if you are already signed on to the System/36 environment.

2. Press Enter.
3. Type DFU.
4. Press Enter. The AS/400 Data File Utility (DFU) menu appears. Your display appears as in Figure 216 on page 203.

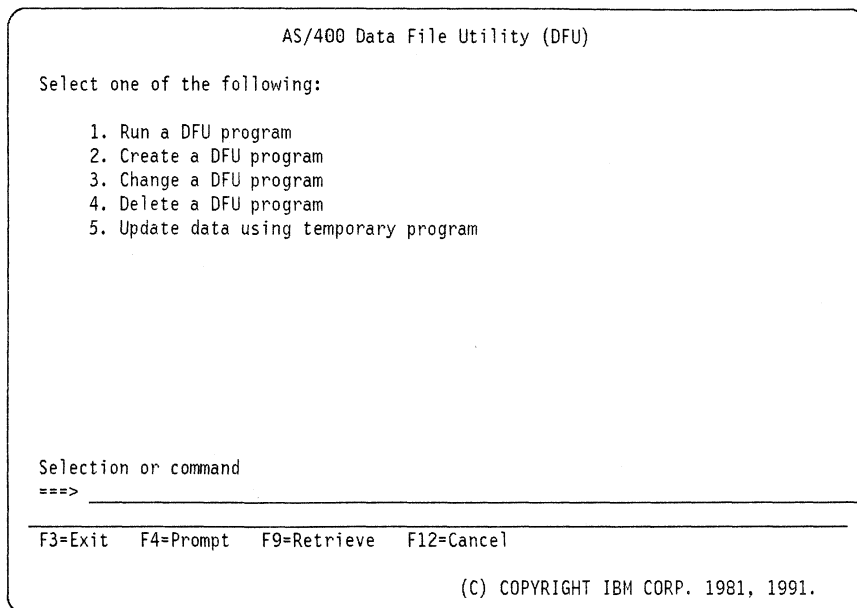


Figure 216. AS/400 Data File Utility (DFU) Menu

5. Select option 2 (Create a DFU program) from the AS/400 Data File Utility (DFU) menu. Your display appears as in Figure 217.

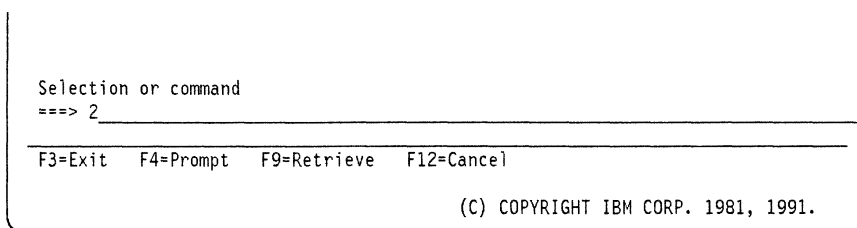


Figure 217. AS/400 Data File Utility (DFU) Menu with Option 2 Specified

6. Press Enter. The Create a DFU Program display appears.
7. Type data in the displays shown for this function as described in this chapter.

Creating a DFU Program for an Indexed Data File

This example shows you how to create a DFU program for an indexed RPG II-described data file. DFU determines whether or not you have an indexed or a nonindexed data file and the appropriate displays appear for you. You use the same procedure for creating a program for either type of data file. DFU may, however, present an additional display (Select Field for Record Number) when you create a program for a nonindexed file.

Use the BLDFILE procedure to create a file that matches the RPG II F and I specification shown in Figure 213 on page 198 to do this example.

Create a DFU Program Display

The Create a DFU Program display appears when you select option 2 (Create a DFU program) from the AS/400 Data File Utility (DFU) menu. This display requests the name of the DFU program being defined and the data file on which the program will run. Because you entered DFU using the System/36 procedure DFU, the display also prompts you for RPG II source member information.

Your display appears as in Figure 218. Your display can contain different values. This example assumes that you put the F and I specifications in MYLIB.

```
                                Create a DFU Program

Type choices, press Enter.

Program . . . . . _____ Name, F4 for List
Library . . . . . _____ Name, *CURLIB

Data file . . . . . _____ Name, F4 for List
Library . . . . . QS36F_____ Name, *LIBL, *CURLIB

If the data file is program described, type information, press Enter.

Source member . . . . . _____ Name, F4 for List
Source file . . . . . QS36SRC_____ Name, F4 for List
Library . . . . . MYLIB_____ Name, *LIBL, *CURLIB

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

Figure 218. Create a DFU Program Display for an RPG II-Described File

1. Move your cursor to the *Source member* prompt and press F4. A list of the available source members for this data file appears.

Select RPG II Source Member

The Select RPG II Source Member display appears when you press F4 from the *Source member* prompt of any display with such a prompt. For this example, this display appears when you press F4 from the Create a DFU Program display.

The Select RPG II Source Member display shows you a list of available source members. You can select the member you want to process from this list.

Your display appears as in Figure 219 on page 205.

```

Select RPG II Source Member

File . . . . : QS36SRC                      Library . . . . . : MYLIB

Position to . . . . . _____

Type options, press Enter.
  1=Select  5=Display

Opt   Member      Description
-     ADDMBR      Shipping Addresses Source Member
-     SHPMBR      Shipping Order Source Member
-     SRCMBR      Inventory File Source Member

Bottom

F5=Refresh  F12=Cancel

```

Figure 219. Select RPG II Source Member Display

1. Type 1 (Select) in the *Opt* column next to the SRCMBR member to select it for processing for this example. This member contains the F and I specifications shown on the coding sheets in Figure 213 on page 198. Your display appears as in Figure 220.

```

Select RPG II Source Member

File . . . . : QS36SRC                      Library . . . . . : MYLIB

Position to . . . . . _____

Type options, press Enter.
  1=Select  5=Display

Opt   Member      Description
-     ADDMBR      Shipping Addresses Source Member
-     SHPMBR      Shipping Order Source Member
1     SRCMBR      Inventory File Source Member

Bottom

F5=Refresh  F12=Cancel

```

Figure 220. Select RPG II Source Member Display with Selected Member

2. Press Enter to return to the Create a DFU Program display with the selected source member. Your display appears as in Figure 221 on page 206.

```

                                Create a DFU Program

Type choices, press Enter.

Program . . . . . _____ Name, F4 for List
Library . . . . . _____ Name, *CURLIB

Data file . . . . . _____ Name, F4 for List
Library . . . . . QS36F_____ Name, *LIBL, *CURLIB

If the data file is program described, type information, press Enter.

Source member . . . . . SRCMBR_____ Name, F4 for List
Source file . . . . . QS36SRC_____ Name, F4 for List
Library . . . . . MYLIB_____ Name, *LIBL, *CURLIB

F3=Exit   F4=Prompt   F12=Cancel

```

Figure 221. Create a DFU Program Display for an RPG II-Described File

3. Type the name of the sample program (INVNTRY). the name of the data file (INVRPG), and the library names MYLIB and QS36F over the default entries. Your display appears as in Figure 222.

```

                                Create a DFU Program

Type choices, press Enter.

Program . . . . . INVNTRY_____ Name, F4 for List
Library . . . . . MYLIB_____ Name, *CURLIB

Data file . . . . . INVRPG_____ Name, F4 for List
Library . . . . . QS36F_____ Name, *LIBL, *CURLIB

If the data file is program described, type information, press Enter.

Source member . . . . . SRCMBR_____ Name, F4 for List
Source file . . . . . QS36SRC_____ Name, F4 for List
Library . . . . . MYLIB_____ Name, *LIBL, *CURLIB

F3=Exit   F4=Prompt   F12=Cancel

```

Figure 222. Create a DFU Program Display with Example Entries

4. Press Enter to continue to the Define General Information/Indexed File display.

Note: If your data file is nonindexed, the Define General Information/Nonindexed File display appears.

Define General Information/Indexed File Display

The Define General Information/Indexed File display appears if you press Enter from the Create a DFU Program display and if your data file is indexed. This display allows you to define the format of your data entry display and to choose whether or not to print an audit report.

Your display appears as in Figure 223.

```
Define General Information/Indexed File

Type choices, press Enter.

Job title . . . . . INVNTRY
Display format . . . . . 2      1=Single, 2=Multiple
                                   3=Maximum, 4=Row oriented

Audit report . . . . . Y      Y=Yes, N=No
S/36 style . . . . . Y      Y=Yes, N=No
Suppress errors . . . . . N   Y=Yes, N=No
Edit numerics . . . . . N   Y=Yes, N=No
Allow updates on roll . . . . . N   Y=Yes, N=No
Keys:
  Generate . . . . . N      Y=Yes, N=No
  Changes allowed . . . . . N   Y=Yes, N=No

F3=Exit      F12=Cancel      F14=Display definition
```

Figure 223. Define General Information/Indexed File Display

1. Type INVENTORY RECORDS over the default job title to change the entry for the sample program. Your display appears as in Figure 224.

```
Define General Information/Indexed File

Type choices, press Enter.

Job title . . . . . INVENTORY RECORDS
Display format . . . . . 2      1=Single, 2=Multiple
                                   3=Maximum, 4=Row oriented
```

Figure 224. Define General Information/Indexed File Display

2. Press Enter to continue to the Define Audit Control Display. This display appears when you use the default setting of Y (Yes) for the *Audit report* prompt. Otherwise, if you type N (No) in the *Audit report* prompt, the Work with Record Types display appears.

Define Audit Control Display

The Define Audit Control display appears if you type Y (Yes) in the *Audit report* prompt on the Define General Information/Indexed File display. The audit report is a printed list of changes made to a data file when you run your DFU program. This display allows you to define the scope of information you want reported on the listing.

If you type Y (Yes) next to a reportable change on the Define Audit Control display, DFU prints a copy of each changed record for the specified print category (additions, changes, or deletions). If you have accumulator fields, you also receive a printout of accumulator totals on your audit report. If you do not specify to print any of the audit control options but indicate that you want an audit report on the Define General Information/Indexed Files display, you receive a printout of accumulator totals only (if you have defined accumulators).

1. Leave the default values for the sample INVNTY program. Your display appears as in Figure 225.

```
Define Audit Control

Type choices, press Enter.

Print additions . . . . . Y          Y=Yes, N=No
Print changes . . . . . Y          Y=Yes, N=No
Print deletions . . . . . Y        Y=Yes, N=No
Printer:
  Line width . . . . . 132        60-198
  Column spacing . . . . . 1      0-9

F3=Exit      F12=Cancel      F14=Display definition
```

Figure 225. Define Audit Control Display

See "Define Audit Control Display" on page 129 for a description of the prompts on this display.

2. Press Enter to continue to the Select S/36 Style Options display.

Select S/36 Style Options Display

The Select S/36 Style Options display appears when you leave Y (Yes) in the *S/36 style* field on the Define General Information/Indexed File display. You can select S/36 style options that you want to appear in your DFU data entry program.

Your display appears as in Figure 226 on page 209.

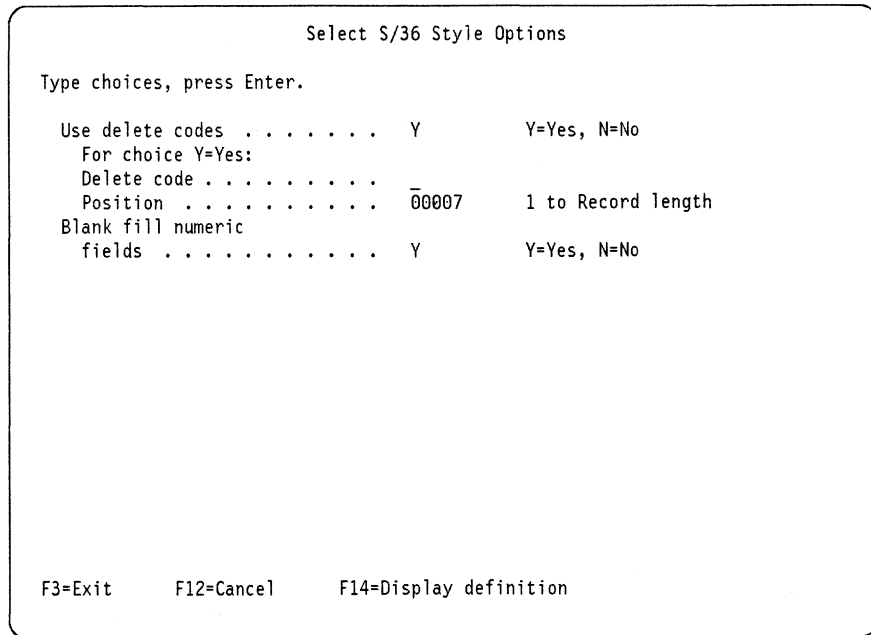


Figure 226. Select S/36 Style Options Display

1. Press Enter to continue to the Work with Record Types display. For RPG II files, this display appears instead of the Work with Record Formats display (as would appear if your file is DDS or IDDU described).

Work with Record Types Display

The Work with Record Types display appears if your data file is an RPG II-described file. This display lists the various record types defined in the RPG II-described file. You can work with one or more types for processing. If you work with multiple record types, DFU presents a separate field definition display for each record type selected as you go through program definition.

Note: Make sure that you define record ID codes for each selected record when using multiple record types for RPG II. ID codes allow DFU to differentiate between the record types on a record-by-record basis.

Your display appears as in Figure 227 on page 210.

```

Work with Record Types

File . . . : INVRPG                      Library . . . . : QS36F

Type options, press Enter.  Press F21 to select all.
  2=Specify  4=Delete  8=Display attributes

Opt Record Type  Defined
-      01        N
-      02        N

F3=Exit      F5=Refresh      F12=Cancel      Bottom
F14=Display definition  F21=Select all

```

Figure 227. Work with Record Types Display

1. Type 8 (Display attributes) in the *Opt* column next to record type 01 to display the RPG II attributes of record type 01. Your display appears as in Figure 228.

```

Work with Record Types

File . . . : INVRPG                      Library . . . . : QS36F

Type options, press Enter.  Press F21 to select all.
  2=Specify  4=Delete  8=Display attributes

Opt Record Type  Defined
8      01        N
-      02        N

F3=Exit      F5=Refresh      F12=Cancel      Bottom
F14=Display definition  F21=Select all

```

Figure 228. Work with Record Types Display with Option 8 Specified

2. Press Enter to continue to the Display Record Type display.

Display Record Type Display

The Display Record Type display appears when you type 8 (Display attributes) in the *Opt* field next to a record type on the Select Record Type display and press Enter. This display allows you to review the RPG II specifications for a record type. The display shows the values in the RPG II specification that determine whether or not a record in the data file belongs to this record type. See the *System/36-Compatible RPG II User's Guide and Reference* for additional information about record identification codes.

Your display appears as in Figure 229.

```
Display Record Type
File . . . . . : INVRPG      Library . . . . . : QS36F
Record type . . . . . : 01

Or/And  Position  Not  Type  Character
      42    X   CHAR
AND    43    X   CHAR

Press Enter to continue.
F3=Exit    F12=Cancel    F14=Display definition
Bottom
```

Figure 229. Display Record Type Display

1. After you have reviewed the information, press Enter to return to the Work with Record Types display. Your display appears as in Figure 230 on page 212.

```

Work with Record Types

File . . . : INVRPG                      Library . . . : QS36F

Type options, press Enter. Press F21 to select all.
  2=Specify  4=Delete  8=Display attributes

Opt Record Type  Defined
-      01         N
-      02         N

Bottom

F3=Exit      F5=Refresh      F12=Cancel
F14=Display definition  F21=Select all

```

Figure 230. Work with Record Types Display

2. Type 2 (Specify) in the *Opt* column next to record type 01. Your display appears as in Figure 231.

```

Work with Record Types

File . . . : INVRPG                      Library . . . : QS36F

Type options, press Enter. Press F21 to select all.
  2=Specify  4=Delete  8=Display attributes

Opt Record Type  Defined
2      01         N
-      02         N

Bottom

F3=Exit      F5=Refresh      F12=Cancel
F14=Display definition  F21=Select all

```

Figure 231. Work with Record Types Display with Option 2 Specified

3. Press Enter to work with record type 01 and continue to the Select and Sequence Fields display.

Select and Sequence Fields Display

The Select and Sequence Fields display appears when you press Enter from the Work with Record Types display. This display allows you to select the fields and the field order that your DFU program uses for the data entry display. The displayed information is from the applicable RPG II file definition. This display reappears for each selected record type when you finish the definition sequence for the current record type.

If you want to select all of the displayed fields from the record type, press F21 (Select all). If you change the sequence of the displayed fields, the screen reappears in ascending sequential order when you press Enter. Press Enter again to confirm your changes and continue to the next definition display. If you do not change any information, the Work with Fields display appears when you press Enter.

If you do not want to define new field headings or extended definitions for the fields you select from this display, press F17 (Fast path) to bypass the Work with Fields and Specify Extended Field Definition displays for the current record type. If there are still record types to process, the Select and Sequence Fields display reappears for the next selected record type. Otherwise, the Exit DFU Program Definition display appears.

To use F17 (Fast path), first select the fields you want for your data entry display and press Enter to confirm your selections. Then press F17 (Fast path).

The Fast path uses the following defaults:

- *Auto duplicate*: No
- *Allow lowercase*: No
- *Accumulate*: No
- *Initial value*: No
- *Auto-increment*: No
- *Begin on new line*: No
- *Output only*: No
- *Alphanumeric characters*: No
- *Mandatory entry*: No
- *Mandatory fill*: No
- *Name checking*: No
- *Modulus 10 checking*: No
- *Modulus 11 checking*: No
- *Run tests against relational operators and list of values*: No
- *Field headings*: The RPG II field names
- *Blanks allowed*: Yes
- *Default spacing*: Yes
- *Heading location*: *BEFORE
- *Double-byte characters*: O

The display shown in Figure 232 on page 214 appears for the RPG II-described INVRPG data file of this example.

```

Select and Sequence Fields

File . . . . . : INVRPG      Library . . . . . : QS36F
Record type . . . . . : 01

Select fields and their sequence or press F21 to select all; press Enter.

Sequence  Field      Attr   Length  Type      Description
-----  -
1_____ ORDER      KEY    6       CHAR
2_____ ORDATE
3_____ CUSORD    5       CHAR
4_____ CUST      5       CHAR
5_____ SHPVIA   15      CHAR
6_____ PRICE   7,0    PACK
7_____ SHPTO    2       CHAR
8_____ GOODS   10     CHAR

F3=Exit      F5=Refresh   F12=Cancel   F14=Display definition
F20=Renumbr  F21=Select all

Bottom

```

Figure 232. Select and Sequence Fields Display for RPG II-Described Files

1. Type the sequence numbers shown in Figure 233 for the sample INVNTY program.

```

Select and Sequence Fields

File . . . . . : INVRPG      Library . . . . . : QS36F
Record type . . . . . : 01

Select fields and their sequence or press F21 to select all; press Enter.

Sequence  Field      Attr   Length  Type      Description
-----  -
1_____ ORDER      KEY    6       CHAR
2_____ ORDATE
3_____ CUSORD    5       CHAR
4_____ CUST      5       CHAR
5_____ SHPVIA   15      CHAR
6_____ PRICE   7,0    PACK
7_____ SHPTO    2       CHAR
8_____ GOODS   10     CHAR

F3=Exit      F5=Refresh   F12=Cancel   F14=Display definition
F20=Renumbr  F21=Select all

Bottom

```

Figure 233. Select and Sequence Fields Display with Selected Fields

2. Press Enter to indicate your choices for the sample INVNTY program. Press Enter again to confirm. The Work with Fields display appears.

Work with Fields Display

The Work with Fields display appears when you press Enter from the Select and Sequence Fields display. From here you can select the fields that need extended definition and specify alternate headings to appear on the Data Entry display. If you do not require extended definitions, press Enter. If there are record types still to be processed (based on selections made on the Select Record Types display), the Select and Sequence Fields display for the next record type appears. Otherwise, the Exit DFU Program Definition display appears.

Your display appears as shown in Figure 234.

```
Work with Fields
File . . . . . : INVRPG      Library . . . . . : QS36F
Record type . . . . . : 01

Type options, press Enter. Press F21 to select all.
  2=Specify extended definition
  4=Delete extended definition

Opt  Field      Extended  Heading
-   ORDER      N        ORDER_____
-   ORDATE     N        ORDATE_____
-   CUSORD     N        CUSORD_____
-   CUST       N        CUST_____
-   SHPVIA    N        SHPVIA_____
-   PRICE     N        PRICE_____
-   SHPTO     N        SHPTO_____

Bottom

F3=Exit      F5=Refresh   F12=Cancel
F14=Display definition  F21=Select all
```

Figure 234. Work with Fields Display

1. Type 2 (Specify extended definition) in the *Opt* column next to the ORDER field to select it for extended definition to type new headings for each selected field as shown in Figure 235 on page 216.

```

Work with Fields
File . . . . . : INVRPG      Library . . . . . : QS36F
Record type . . . . . : 01

Type options, press Enter. Press F21 to select all.
2=Specify extended definition
4=Delete extended definition

Opt  Field          Extended
     Field          Definition  Heading
 2  ORDER           N          ORDER _____
-  ORDATE          N          ORDATE _____
-  CUSORD          N          CUSORD _____
-  CUST            N          CUST _____
-  SHPVIA          N          SHPVIA _____
-  PRICE           N          PRICE _____
-  SHPTO          N          SHPTO _____

Bottom

F3=Exit          F5=Refresh      F12=Cancel
F14=Display definition  F21=Select all

```

Figure 235. Work with Fields Display with a Selected Field

2. Press Enter to continue to the Specify Extended Field Definition display. There are two types of extended definition displays: one for alphanumeric fields, and one for numeric fields. For this example, only the Specify Extended Field Definition display for alphanumeric fields appears because you selected only the alphanumeric ORDER field for extended definition.

Note: If you have not selected fields for extended definition and there are no other record types to process, the Exit DFU Program Definition display appears instead of an extended definition display.

Specify Extended Field Definition Display for Alphanumeric Fields

Extended field definitions allow you to define additional features for selected alphanumeric fields. You can select the automatic duplication feature of DFU, choose whether or not to allow lowercase characters to be entered in this field on the data entry display, and specify extended field headings. For RPG II-described files, you can also specify double-byte character set attributes for a field if you have DBCS capable DFU.

The Specify Extended Field Definition display appears for each alphanumeric field you select for extended definition on the Work with Fields display. A field's alphanumeric type (CHAR) is displayed on the Select and Sequence Fields display. The type (alphanumeric or numeric) determines whether or not this display appears or the Specify Extended Field Definition display for **numeric** fields appears.

For this example, the only field selected for an extended definition is the alphanumeric ORDER field as shown in Figure 236 on page 217.

```

Specify Extended Field Definition
Field . . . . . : ORDER          Record type . . . . . : 01
Type choices, press Enter.
Auto duplicate . . . . . N          Y=Yes, N=No
Allow lowercase . . . . . N          Y=Yes, N=No
Extended field
  heading . . . . . ORDER_____
                                     _____
                                     _____
Heading location . . . . . *BEFORE  *ABOVE, *BEFORE
Initial value . . . . . _____
Validity checks . . . . . _         2=Change, 4=Delete

F3=Exit      F12=Cancel      F14=Display definition      More...

```

Figure 236. Specify Extended Field Definition Display for an Alphanumeric Field

1. Press Page Down (Roll Up) to go to the second part of the Specify Extended Field Definition display. Your display appears as in Figure 237.

```

Specify Extended Field Definition
Field . . . . . : ORDER          Record type . . . . . : 01
Type choices, press Enter.
Begin on new line . . . . . N      Y=Yes, N=No
Field exit required . . . . . Y      Y=Yes, N=No
Output only . . . . . N          Y=Yes, N=No
Non-display . . . . . N          Y=Yes, N=No
Default spacing . . . . . Y          Y=Yes, N=No
  For choice N=No:
    Number of spaces . . . . . 01    0-40
Alphabetic characters
  only . . . . . N          Y=Yes, N=No

F3=Exit      F12=Cancel      F14=Display definition      Bottom

```

Figure 237. Second Part of Specify Extended Field Definition Display

2. Press Page Up (Roll Down) to go back to the first part of the Specify Extended Field Definition display.
3. Type the text shown in Figure 238 on page 218 into the *Extended field heading* prompt.

```

Specify Extended Field Definition

Field . . . . . : ORDER          Record type . . . . . 01

Type choices, press Enter.

Auto duplicate . . . . . N          Y=Yes, N=No
Allow lowercase . . . . . N          Y=Yes, N=No
Extended field
  heading . . . . . OUR ORDER NUMBER
                    (ALPHAMERIC XC CODE)

Heading location . . . . . *BEFORE  *ABOVE, *BEFORE
Initial value . . . . .
Validity checks . . . . . -          2=Change, 4=Delete

More...

F3=Exit   F12=Cancel   F14=Display definition

```

Figure 238. Specify Extended Field Definition with Extended Heading

4. You are finished defining your DFU program. Press F14 (Display definition) to see the Display DFU Program Summary display to review your DFU program definition.

Display DFU Program Summary Display

The Display DFU Program Summary display appears when you press F14 (Display definition) during the program definition process. This display allows you to review the information you have specified so far for the DFU program. Undefined prompts appear with their default values. Summary information appears on two displays. Press Enter on the Display DFU Program Summary display to go to the Program Summary report display.

Your display appears as in Figure 239 on page 219.

```

Display DFU Program Summary

Program . . . . . : INVNTRY
Library . . . . . : MYLIB
Data file . . . . . : INVRPG
Library . . . . . : QS36F
Job title . . . . . : INVENTORY RECORDS
Display format . . . . . : Multiple
Allow updates on roll . . . . . : N
Keys:
  Generate . . . . . : N
  Changes allowed . . . . . : N

RPG source file . . . . . : QS36SRC
Library . . . . . : MYLIB
RPG source member . . . . . : SRCMBR

Press Enter to continue.

F3=Exit      F12=Cancel    F15=Print
More...

```

Figure 239. Display DFU Program Summary Display for Indexed Files

1. Press Page Down (Roll Up) to go to the second part of the Display DFU Program Summary display. Your display appears as in Figure 240.

```

Display DFU Program Summary

Program . . . . . : INVNTRY
Library . . . . . : MYLIB
Data file . . . . . : INVRPG
Library . . . . . : QS36F
Audit report . . . . . : Y
Print additions . . . . . : Y
Print changes . . . . . : Y
Print deletions . . . . . : Y
Printer:
  Line width . . . . . : 132
  Column spacing . . . . . : 1
  S/36 style . . . . . : Y
Suppress data
  errors . . . . . : N
Edit numerics . . . . . : N

Press Enter to continue.

F3=Exit      F12=Cancel    F15=Print
Bottom

```

Figure 240. Second Part of Display DFU Program Summary Display for Indexed Files

The display of summary information for a nonindexed file appears as shown in Figure 241 on page 220.

```

                                Display DFU Program Summary
Program . . . . . : INVNTRY
  Library . . . . . : MYLIB
Data file . . . . . : QINVFILE
  Library . . . . . : QS36F
Job title . . . . . : INVENTORY MAINTENANCE RECORDS
Display format . . . . . : Multiple
Allow updates on roll . . . . . : N
Record numbers:
  Generate . . . . . : N
  Field . . . . . :
  Heading . . . . . : *RECNRB

Processing . . . . . : Sequential
RPG source file . . . . . : QS36SRC
  Library . . . . . : MYLIB
RPG source member . . . . . : SRCMBR

Press Enter to continue.
F3=Exit      F12=Cancel      F15=Print
More...

```

Figure 241. Display DFU Program Summary Display for a Nonindexed File

2. Press Page Down (Roll Up) to view the second part of the Display DFU Program Summary display. Your display appears as in Figure 242.

```

                                Display DFU Program Summary
Program . . . . . : INVNTRY
  Library . . . . . : MYLIB
Data file . . . . . : QINVFILE
  Library . . . . . : QS36F
Audit report . . . . . : Y
  Print additions . . . . . : Y
  Print changes . . . . . : Y
  Print deletions . . . . . : Y
Printer:
  Line width . . . . . : 132
  Column spacing . . . . . : 1
S/36 style . . . . . : Y
Suppress data
  errors . . . . . : N
Edit numerics . . . . . : Y

Press Enter to continue.
F3=Exit      F12=Cancel      F15=Print
Bottom

```

Figure 242. Second Part of Display DFU Program Summary Display for a Nonindexed File

3. Press Enter to review the DFU Program Detail display.

Display DFU Program Detail Display

The Display DFU Program Detail display appears when you press Enter from either of the program summary displays. This display allows you to review the details of the record types and fields defined so far for the DFU program.

Your display appears as shown in Figure 243.

Display DFU Program Detail					
Program :			INVNTRY	Library : MYLIB	
Type/Field	Attr	Extended Definition	Length	Type	Description/Heading
01					
ORDER	KEY	N	6	CHAR	OUR ORDER NUMBER
ORDATE		N	6	CHAR	ORDATE
CUSORD		N	5	CHAR	CUSORD
CUST		N	5	CHAR	CUST
SHPVIA		N	15	CHAR	SHPVIA
PRICE		N	7,0	PACK	PRICE
SHPTO		N	2	CHAR	SHPTO

Press Enter to continue.

F3=Exit F12=Cancel F15=Print

Bottom

Figure 243. Display DFU Program Detail Display

1. Press Enter to review the Display Data File Detail display.

Display Data File Detail Display

The Display Data File Detail display appears when you press Enter from the DFU Program Detail display. This display allows you to review the details of the record types and fields defined by the RPG II specifications for this data file.

This display shows all of the fields in the file specification, not just your selected fields. For this example, your display appears as shown in Figure 244 on page 222.

```

Display Data File Detail

File . . . . : INVRPG                      Library . . . . : QS36F

Type/Field   Start Length Type      Attr  Description
01
ORDER        1     6 CHAR      KEY
ORDATE       7     6 CHAR
CUSORD       13    5 CHAR
CUST         18    5 CHAR
SHPVIA       23   15 CHAR
PRICE        38   7,0 PACK
SHPTO        42    2 CHAR
GOODS        44   10 CHAR
02
ORDER        1     6 CHAR      KEY

Press Enter to continue.

F3=Exit      F12=Cancel   F15=Print

More...

```

Figure 244. Display Data File Detail Display

1. You are finished reviewing the program definition and file details. Press F3 (Exit) to return to the Specify Extended Field Definition display. Your display appears as shown in Figure 245.

```

Specify Extended Field Definition

Field . . . . . : ORDER                      Record type . . . . . : 01

Type choices, press Enter.

Auto duplicate . . . . . N                    Y=Yes, N=No
Allow lowercase . . . . . N                    Y=Yes, N=No
Extended field
  heading . . . . . OUR ORDER NUMBER_____
                    (ALPHAMERIC XC CODE)

Heading location . . . . . *BEFORE             *ABOVE, *BEFORE
Initial value . . . . . _____
Validity checks . . . . . _                    2=Change, 4=Delete

F3=Exit      F12=Cancel   F14=Display definition

More...

```

Figure 245. Specify Extended Field Definition Display

2. Press Enter twice. The Exit DFU Program Definition display appears.

Exit DFU Program Definition Display

The Exit DFU Program Definition display is the final display in the definition sequence. The Exit DFU Program Definition display allows you to save, or to save and then run, your newly defined DFU program. You can also return to the definition sequence to make additional modifications to your program.

The following example saves the INVNTY program and then runs the program in Display mode. This gives you a chance to check the data entry displays you have just defined. Display mode allows you to look at records in the INVRPG data file but not change them.

Your display appears as in Figure 246.

Note: Option 9=Create appears in the *Type of run* prompt only if you used the OCL ENTER procedure.

```

Exit DFU Program Definition

Type choices, press Enter.

Save program . . . . . Y          Y=Yes, N=No
Run program . . . . . Y          Y=Yes, N=No
  For choice Y=Yes:
    Type of run . . . . . 1       1=Change, 2=Display
Modify program . . . . . N          Y=Yes, N=No
Save DDS source . . . . . N        Y=Yes, N=No

For Save program Y=Yes:
Program . . . . . INVNTY__      Name
Library . . . . . MYLIB__      Name, *CURLIB, . . .
Authority . . . . . *LIBCRTAUT  Name, *LIBCRTAUT, . . .
Text . . . . . INVENTORY RECORDS_____

For Save DDS source Y=Yes:
Source file . . . . . _____  Name
Library . . . . . *CURLIB__     Name, *CURLIB, . . .
Source member . . . . . INVNTY__ Name

F3=Exit      F14=Display definition    F17=Fast path

```

Figure 246. Exit DFU Program Definition Display

1. Type 2 (Display) over the default setting in the *Type of run* prompt. Your display appears as in Figure 247.

```

Exit DFU Program Definition

Type choices, press Enter.

Save program . . . . . Y          Y=Yes, N=No
Run program . . . . . Y          Y=Yes, N=No
  For choice Y=Yes:
    Type of run . . . . . 2       1=Change, 2=Display
Modify program . . . . . N          Y=Yes, N=No

```

Figure 247. Exit DFU Program Definition Display for a Display Type of Run

See "Exit DFU Program Definition Display" on page 41 for a description of the information on this display.

2. Press Enter to save your program and continue to the Display a Data File display. This display appears because you selected to run the program in Display mode (option 2 (Display) in the *Type of run* prompt). This is also the first display that appears when you run a DFU program by using the DSPDTA command.

Display a Data File Display

The Display a Data File display allows you to specify the name of the data file you want to look at. See Chapter 4, "Running a DFU Program" on page 75, for additional information about running DFU programs. When displayed from the Exit DFU Program Definition display, as for this example, this display contains default entries based on the information you specified on that display.

For this example, your display appears as shown in Figure 248.

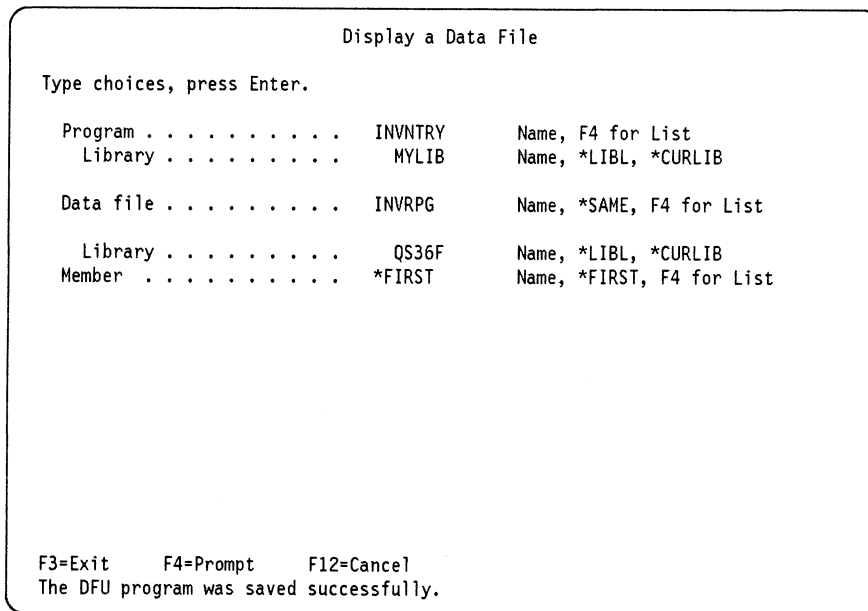


Figure 248. Display a Data File Display

1. Press Enter. The first data entry display appears as shown in Figure 249 on page 225.

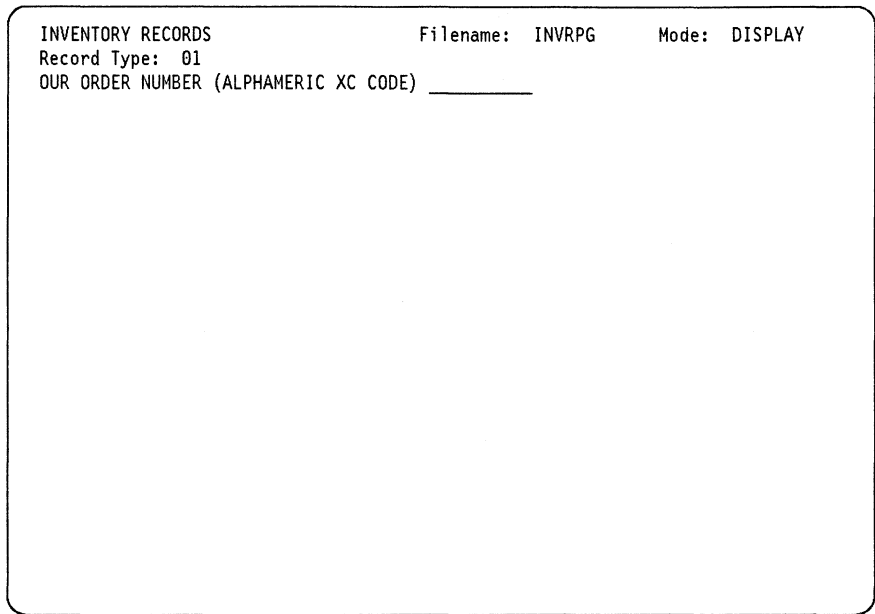


Figure 249. System/36 Style Data Entry Display for the INVENTORY Program

You can run the DFU program in the same way as on the AS/400 system. You use System/36 function keys to perform DFU functions instead of AS/400 function keys. To display specific records, enter a key field value and press Enter. That record appears. You can also use Page Up and Page Down to page through records.

Reference Information for Using DFU in a System/36 Environment

This section contains reference information for Appendix C. Each of the prompts that appear on the various displays are described.

Select RPG II Source Member Display

```

                                Select RPG II Source Member
File . . . :   QS36RC                      Library . . . :   MYLIB
Position to . . . . . _____
Type options, press Enter.
  1=Select  5=Display
Opt  Member      Description
-    ADDMBR      Shipping Addresses Source Member
-    SHPMBR      Shipping Order Source Member
-    SRCMBR      Inventory File Source Member

                                                                    Bottom

F5=Refresh      12=Cancel
```

Figure 250. Select RPG II Source Member Display

Descriptions of the prompts on the Select RPG II Source Member display are as follows:

File. The name of the RPG II source file used by the DFU program.

Library. The name of the library containing the source file.

Position to. Indicates the alphanumeric position you want to start at in the member list. To reposition the list, type the desired character string (for example, the name of a known source member) into this prompt and press Enter. The list repositions to the member name you specify, or to the nearest alphanumeric member name preceding your entry. You can also use the special keywords *TOP or *BOT to position the list to either the top or bottom respectively. The default for the prompt is blanks, that is, the list starts at the top.

Opt. Indicates whether you want to select a member for processing or whether you want to display source member details. Type 1 (Select) in the *Opt* column and press Enter to select the member for processing. Type 5 (Display) in the *Opt* column and press Enter to display the member. SEU browse is called.

Member. The list of member names in this data file.

Description. The description of each member.

RPG II Information on the Create a DFU Program Display

```
                                Create a DFU Program

Type choices, press Enter.

Program . . . . . _____ Name, F4 for List
Library . . . . . _____ Name, *CURLIB

Data file . . . . . _____ Name, F4 for List
Library . . . . . QS36F_____ Name, *LIBL, *CURLIB

If the data file is program described, type information, press Enter.

Source member . . . . . _____ Name, F4 for List
Source file . . . . . QS36SRC_____ Name, F4 for List
Library . . . . . MYLIB_____ Name, *LIBL, *CURLIB

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

Figure 251. Create a DFU Program Display for an RPG II-Described File

Description of the information that appears for RPG II-described files follows. See “Create a DFU Program Display” on page 126 for a description of the other prompts on this display.

Source member. The name of the RPG II source member containing the F and I specifications describing your selected data file.

If you press F4 while the cursor is on this prompt, a list of RPG II source members from the file specified in the following *file* prompt appears. You can then select the desired source member in the specified source file from the list.

The source member for the sample program is SRCMBR.

Source file. The name of the source file containing the RPG II source member.

If you press F4 while the cursor is on this prompt, a list of source files from the library specified in the following *Library* prompt appears. You can then select the desired file from the list, if applicable. To use your program with the System/36 environment OCL, all source members must be in a file called QS36SRC.

The source file for the sample program is QS36SRC.

Library. The name of the library containing the designated source member and file. The defaults are the following:

- Your user library list (*LIBL)
- The current library (*CURLIB).

The library for the sample program is MYLIB.

Select S/36 Style Options Display

```
                                Select S/36 Style Options

Type choices, press Enter.

Use delete codes . . . . . Y           Y=Yes, N=No
  For choice Y=Yes:
  Delete code . . . . . _             1 to Record length
  Position . . . . . 00007
Blank fill numeric
  fields . . . . . Y           Y=Yes, N=No

F3=Exit      F12=Cancel      F14=Display definition
```

Figure 252. Select S/36 Style Options Display

Descriptions of the prompts on the Select S/36 Style Options display are as follows:

Use delete codes. DFU uses the delete code and position specified on this display to mark each record you delete when you run your program.

Type Y (Yes) and the data entry program will mark records to delete rather than actually deleting them when you run your DFU program. Type N (No), and records will actually be deleted from the file when you run your DFU program. DFU physically deletes the record from the file if the file is delete capable.

Delete code. If you enter a valid delete code and position, when you run the program and use the delete key to delete a record, DFU marks the record as deleted by writing this character into the record in the position you specify.

Position. The position in the record where you want the delete code to be added to your record. If you enter a valid delete code and position, this is the position in the record where DFU inserts the delete code when you run your DFU data entry program and deletes a record. You must enter a valid number between one and the record length of the file. The delete code cannot be in the record key.

Blank fill numeric fields. DFU fills all selected unchanged zoned numeric fields in your file with blanks or zeros.

Type Y (Yes) if you want selected unchanged zoned numeric fields filled with blanks. Type N (No) if you want selected unchanged zoned numeric fields filled with zeroes.

Note: This option only applies to the System/36 environment.

Work with Record Types Display

```
Work with Record Types

File . . . : INVRPG                Library . . . . : QS36F

Type options, press Enter. Press F21 to select all.
  2=Specify  4=Delete  8=Display attributes

Opt Record Type  Defined
-      01         N
-      02         N

F3=Exit      F5=Refresh      F12=Cancel      Bottom
F14=Display definition  F21=Select all
```

Figure 253. Work with Record Types Display

Descriptions of the prompts on the Work with Record Types display are as follows:

Note: An extra prompt appears on this display if you chose multiple records when you defined your program. The prompt indicates Y (Yes) if you chose multiple records and N (No) if you did not chose multiple records. You can also type over this prompt with a Y or N for a record format you are selecting if you want to change what was previously specified.

File. The data file on which the DFU program operates.

Library. The name of the library containing the data file.

Opt. The option you want to perform on each record type. Option 2 (Specify) selects a record type for processing. You can select multiple record types by typing 2 (Specify) next to all record types of interest. You can work with all record types in the list by pressing F21 (Select all). You can also remove a previously selected type by typing 4 (Delete) next to the record type you no longer want. Type 8 (Display attributes) to review the details of a record type on the Display a Record Type display.

The sample display shows selection of option 8 (Display attributes) next to record type 01.

Record type. The list of record types found in the RPG II-described file.

In the sample display, DFU found two record types: 01 and 02.

Defined. Specifies whether or not a record type has been previously defined for this program. The indicator is Y (Yes) if previously defined and N (No) if not.

The sample display shows that none of the record types have been previously defined for a DFU program.

Display Record Type Display

```
Display Record Type
File . . . . . : INVRPG      Library . . . . . : QS36F
Record type . . . . . : 01

Or/And  Position  Not  Type  Character
      AND      42    X   CHAR
      AND      43    X   CHAR

Press Enter to continue.
F3=Exit      F12=Cancel      F14=Display definition

Bottom
```

Figure 254. Display Record Type Display

Descriptions of the prompts on the Display Record Type display are as follows:

File. The data file on which DFU operates.

The file indicated on the sample display is INVRPG.

Library. The name of the library containing the data file.

Record type. The record type for which attributes are displayed.

The selected record type shown in the sample display is 01.

Or/And. The logical connector between the character tests in each position. The result of the logical operation specifies the conditions in which a record type in the data file matches the selected record type.

Position. The position of the data in the record to be tested for determining the record type.

Not. Indicates whether or not the character specified in the *Character* field should be in the specified position. The field contains an X if the **NOT** condition is used. Otherwise, the field is blank.

For example, one test to be considered for record type 01 is that the characters in positions 42 and 43 cannot be blanks.

Type. Represents the portion of the character to use for the record identification test. The type can be one of the following:

Type Explanation

CHAR Use the entire character.

ZONE Use the zone portion of the character only.

DIGIT Use the digit portion of the character only.

Character. The alphanumeric character, special character, or numeric character used in the record as the identification code or part of the code (the actual value to test against).

Select and Sequence Fields Display

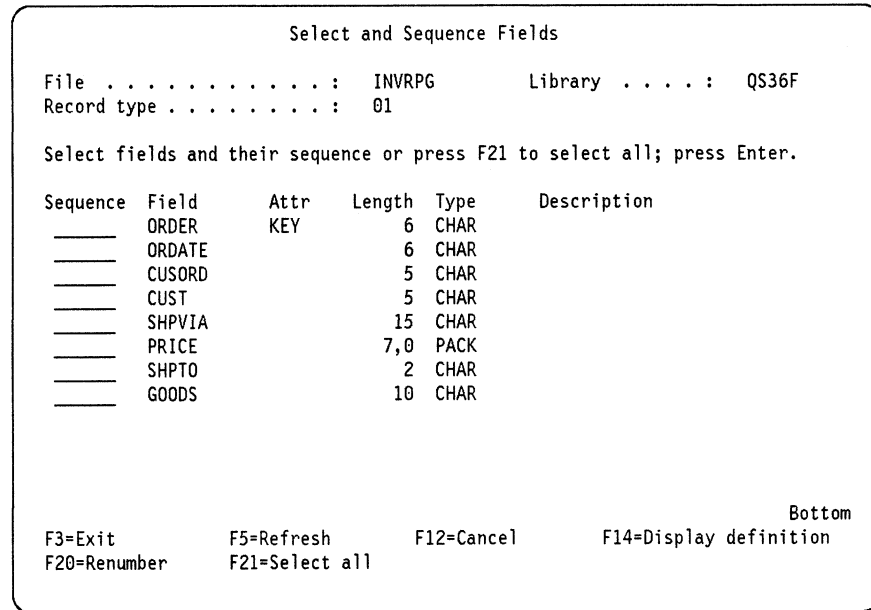


Figure 255. Select and Sequence Fields Display for RPG II-Described Files

Descriptions of the prompts on the Select and Sequence Fields display are as follows:

File. The name of the data file for which the program is defined.

In the sample display, the file is INVRPG.

Library. The name of the library containing the data file. The library for the sample program is QS36F.

Record type. The name of the record type describing the fields contained in the file.

The selected record type for the sample program is 01.

Sequence. Allows you to select and sequence fields you would like to use. Type a sequence number from 1 through 999999 to select fields for processing and specify the sequence of the field. The sequence number must be an integer. Leave the sequence number blank for any fields you do not want to include for processing.

In the sample display, the fields numbered 1 through 7 have been selected for processing. The GOODS field has not been selected and is blank.

Field. The name of the field in the RPG II file specification.

Attr. The field's attribute. A field attribute can be KEY, OUT (output fields only), or RRN (Relative Record Number for direct or sequential files). You must select all fields that have an attribute of KEY or RRN. They represent a single key that is the composite of more than one field.

Length. The length of the field measured in bytes.

Type. The type of the field: character (CHAR), packed decimal (PACK), zone decimal (ZONE), binary (BIN), or double-byte character set characters (DBCS). See Appendix B, "Double-Byte Character Set Considerations for DFU Programs" on page 181, for considerations about using DBCS characters.

All of the fields in the sample display are defined as CHAR except for the PRICE field, which is packed (PACK).

Work with Fields Display

```

Work with Fields

File . . . . . : INVRPG      Library . . . . . : QS36F
Record type . . . . . : 01

Type options, press Enter. Press F21 to select all.
2=Specify extended definition
4=Delete extended definition

Opt  Field      Extended  Heading
   2  ORDER      N         ORDER_____
   -  ORDATE     N         ORDATE_____
   -  CUSORD     N         CUSORD_____
   -  CUST       N         CUST_____
   -  SHPVIA    N         SHPVIA_____
   -  PRICE     N         PRICE_____
   -  SHPTO    N         SHPTO_____

Bottom

F3=Exit      F5=Refresh  F12=Cancel
F14=Display definition  F21=Select all

```

Figure 256. Work with Fields Display

Descriptions of the prompts on the Work with Fields display are as follows:

File. The name of the data file for which the program is defined. The file in the sample display is INVRPG.

Library. The library containing the data file. The library in the sample display is QS36F.

Record type. The name of the record type describing the fields contained in the file.

The selected record type for the sample program is 01.

Opt. Specifies whether or not you want to work with a field for extended definition (option 2), or to remove a field's extended definition (option 4). Leave the *Opt* column blank if you do not want to select or remove an extended definition.

The ORDER field in the sample display has been selected for an extended definition. When leaving this display, the Specify Extended Field Definition display appears for this field and you can specify additional text for the field heading. See "Specify Extended Field Definition Display for Alphanumeric Fields" on page 156 and "Specify Extended Field Definition Display for Numeric Fields" on page 159 for more information.

Field. The name of the field in the RPG II-described file.

Extended definition. Specifies whether or not the field already has an extended definition.

None of the fields in the sample display have existing extended definitions because you are creating the DFU program for the first time.

Heading. The name of the field from the RPG II-described file. DFU uses the displayed headings for the data entry displays when you run the DFU program. You can change the headings that appear here for the data entry display. If you want to define a field heading that is longer than is available on this display, you can request an extended field definition by typing 1 in the option column next to the field for which you want an extended definition. Extended field headings can be up to 60 characters in length. This heading also appears on the Audit Report, if you have requested to print that report.

Specify Extended Field Definition Display

For information on the Specify Extended Field Definition Display for Alphanumeric Fields see “Specify Extended Field Definition Display for Alphanumeric Fields” on page 156.

For information on the Specify Extended Field Definition Display for Numeric Fields see “Specify Extended Field Definition Display for Numeric Fields” on page 159.

Specify Validity Checks Display

For information on the Specify Validity Checks Display for Alphanumeric Fields see “Specify Validity Checks Display for Alphanumeric Fields” on page 161.

For information on the Specify Validity Checks Display for Numeric Fields see “Specify Validity Checks Display for Numeric Fields” on page 164.

Display DFU Program Summary Display

```
Display DFU Program Summary

Program . . . . . : INVNTRY
Library . . . . . : MYLIB
Data file . . . . . : INVRPG
Library . . . . . : QS36F
Job title . . . . . : INVENTORY RECORDS
Display format . . . . . : Multiple
Allow updates on roll . . . . . : N
Keys:
  Generate . . . . . : N
  Changes allowed . . . . . : N

RPG source file . . . . . : QS36SRC
Library . . . . . : MYLIB
RPG source member . . . . . : SRCMBR

Press Enter to continue.

F3=Exit    F12=Cancel    F15=Print
```

Figure 257. Display DFU Program Summary Display for Indexed Files

Press Page Down (Roll Up) to go to the second part of the Display DFU Program Summary display. Your display appears as in Figure 258.

```
Display DFU Program Summary

Program . . . . . : INVNTRY
Library . . . . . : MYLIB
Data file . . . . . : INVRPG
Library . . . . . : QS36F
Audit report . . . . . : Y
  Print additions . . . . . : Y
  Print changes . . . . . : Y
  Print deletions . . . . . : Y
Printer:
  Line width . . . . . : 132
  Column spacing . . . . . : 1
  S/36 style . . . . . : Y
Suppress data
  errors . . . . . : N
Edit numerics . . . . . : N

Press Enter to continue.

F3=Exit    F12=Cancel    F15=Print
```

Figure 258. Second Part of Display DFU Program Summary Display for Indexed Files

The display of summary information for a nonindexed file appears as shown in Figure 259 on page 236.

```

                                Display DFU Program Summary
Program . . . . . : INVNTY
Library . . . . . : MYLIB
Data file . . . . . : QINVFIL
Library . . . . . : QS36F
Job title . . . . . : INVENTORY MAINTENANCE RECORDS
Display format . . . . . : Multiple
Allow updates on roll . . . . . : N
Record numbers:
  Generate . . . . . : N
  Field . . . . . :
  Heading . . . . . : *RECNR
Processing . . . . . : Sequential
RPG source file . . . . . : QS36SRC
Library . . . . . : MYLIB
RPG source member . . . . . : SRCMBR
                                More...
Press Enter to continue.
F3=Exit    F12=Cancel    F15=Print

```

Figure 259. Display DFU Program Summary Display for a Nonindexed File

Press Page Down (Roll Up) to view the second part of the Display DFU Program Summary display. Your display appears as in Figure 260.

```

                                Display DFU Program Summary
Program . . . . . : INVNTY
Library . . . . . : MYLIB
Data file . . . . . : QINVFIL
Library . . . . . : QS36F
Audit report . . . . . : Y
  Print additions . . . . . : Y
  Print changes . . . . . : Y
  Print deletions . . . . . : Y
Printer:
  Line width . . . . . : 132
  Column spacing . . . . . : 1
  S/36 style . . . . . : Y
Suppress data
  errors . . . . . : N
  Edit numerics . . . . . : Y
                                Bottom
Press Enter to continue.
F3=Exit    F12=Cancel    F15=Print

```

Figure 260. Second Part of Display DFU Program Summary Display for a Nonindexed File

Descriptions of the prompts on the Display DFU Program Summary File display are as follows:

Program. The name of the DFU program you specified on the Create a DFU Program display.

Library. The name of the library containing the specified DFU program. You chose this parameter on the Create a DFU Program display.

Data file. The name of the specified data file to be used by the DFU program. You chose this parameter on the Create a DFU Program display.

Library. The name of the library containing the specified data file. You selected this parameter on the Create a DFU Program display.

Job title. The name that appears on the data entry display heading and the audit report, if requested. The name you defined on the Define General Information/Indexed File display is INVENTORY RECORDS.

Display format. The user-defined format for the data entry display which can be either Single, Multiple, Maximum, or Row oriented.

The sample display shows the value Multiple, which produces a multiple-column display format. You select this value from the Define General Information/Indexed File display.

Allow updates on roll. This prompt contains the value N (No) because you typed N (No) in the *Allow updates on roll* prompt on the Define General Information/Indexed File display.

Keys-Generate. This prompt contains the value N (No) because you typed N (No) in the *Keys-Generate* prompt on the Define General Information/Indexed File display.

Keys-Changes allowed. This prompt contains the value N (No) because you typed N (No) in the *Keys-Changes allowed* prompt on the Define General Information/Indexed File display.

Note: If you have a nonindexed data file, the Display DFU Program Summary display contains the following prompts pertaining to record numbers for nonindexed files:

- *Processing.* The designated method of file processing. It can be sequential (1), or direct (2). In this example, the INVRPG file is indexed and the prompt does not appear.
- *Generate record numbers.* This prompt contains the value N (No) because you typed N (No) in the Record numbers-Generate prompt on the Define General Information/Nonindexed File display.
- *Record number heading.* The prompt designated to appear on the data entry display and audit report for the record number as defined on the General Information/Nonindexed File display.
- *Record number field.* The name of the field selected to hold the record number, if any.

Note: Press Roll Up (Page Down) to get to the second view of the Display DFU Program Summary Display.

Descriptions of the additional prompts of the alternate view of the Display DFU Program Summary display are as follows:

Audit report. Specifies whether or not an audit report is to be printed. You used the default of Y (Yes) on the Define General Information/Indexed File display for the sample program.

Print additions. Specifies whether or not the audit report should include new records. You used the default of Y (Yes) on the Define Audit Control display for the sample program.

Print changes. Specifies whether or not the audit report should include changed records. You used the default of Y (Yes) on the Define Audit Control display for the sample program.

Print deletions. Specifies whether or not the audit report should include deleted records. You used the default of Y (Yes) on the Define Audit Control display for the sample program.

Printer line width. Specifies the designated line width for the audit report. You used the default of 132 characters on the Define Audit Control display for the sample program.

Printer column spacing. Specifies the designated number of spaces to appear between fields on the Audit report. You used the default of 1 on the Define Audit Control display for the sample program.

S/36 style. Specifies the designated display format. You used the default of Y (Yes) on the Define General Information/Indexed File display for the sample program.

Suppress data errors. Specifies whether or not data errors should display. You used the default N (No) on the Define General Information/Indexed File display for the sample program.

Edit numerics: Specifies whether or not you want DFU to edit your numeric entries when you run the program. For this example, you selected N (No) from the Define General Information/Indexed File display.

Display DFU Program Detail Display

Display DFU Program Detail					
Program :			INVNTRY	Library : MYLIB	
Type/Field	Attr	Extended Definition	Length	Type	Description/Heading
01					
ORDER	KEY	N	6	CHAR	OUR ORDER NUMBER
ORDATE		N	6	CHAR	ORDATE
CUSORD		N	5	CHAR	CUSORD
CUST		N	5	CHAR	CUST
SHPVIA		N	15	CHAR	SHPVIA
PRICE		N	7,0	PACK	PRICE
SHPTO		N	2	CHAR	SHPTO

Bottom

Press Enter to continue.
 F3=Exit F12=Cancel F15=Print

Figure 261. Display DFU Program Detail Display

Descriptions of the prompts on the Display DFU Program Detail display are as follows:

Program. The name of the DFU program being defined.

Library. The name of the library containing the DFU program.

Type/Field. Represents the record type or field name. The field names are grouped within a record type and are indented two spaces on the display.

In the sample display, 01 is the specified record type for this DFU program and the subsequent entries are the fields selected from record type 01 for the data entry display.

Attr. The field attribute (KEY, OUT, or RRN for direct or sequential files) for each field within the record type, or the record attribute (blank or MLT).

Extended definition. Shows whether or not a field has an extended definition.

Length. Specifies the length of each field in the record type.

Type. The data type (CHAR, PACK, ZONE, BIN, or DBCS) of each field within the record type.

Description/Heading. The description of the record type (if the item is a record type) or the heading for a field (if the item is a field).

Display Data File Detail Display

Display Data File Detail					
File :			INVRPG	Library : QS36F	
Type/Field	Start	Length	Type	Attr	Description
01					
ORDER	1	6	CHAR	KEY	
ORDATE	7	6	CHAR		
CUSORD	13	5	CHAR		
CUST	18	5	CHAR		
SHPVIA	23	15	CHAR		
PRICE	38	7,0	PACK		
SHPTO	42	2	CHAR		
GOODS	44	10	CHAR		
02					
ORDER	1	6	CHAR	KEY	
Press Enter to continue.					
F3=Exit		F12=Cancel		F15=Print	
More...					

Figure 262. Display Data File Detail Display

Descriptions of the prompts on the Display Data File Detail display are as follows:

File. The name of the data file used by the DFU program.

Library. The name of the library containing the data file.

Type/Field. Represents the record type or field name. The field names are sub-grouped within a record type and are indented two spaces on the display. In the sample display, 01 and 02 are the specified record types for this DFU program and the subsequent entries are the fields selected for the data entry display.

Start. The start position of the field in the record type.

Length. Specifies the length of each field in a record type.

Type. The data type (CHAR, PACK, ZONE, BIN, or DBCS) of each field within the record type.

Attr. The field attribute (KEY, OUT, or RRN for direct or sequential files) for each field within the record type.

Description. The description of the record or field.

Display a Data File Display

For information on the Display a Data File Display see "Display a Data File Display" on page 137.

Appendix E. Calculating Modulus 10 and Modulus 11 Self-Check Digits

DFU can perform data entry validation for numerical entries that contain a self-check digit if you choose either the modulus 10 or modulus 11 check on the Specify Extended Field Definition display shown in Figure 29 on page 27. The two examples shown in this appendix use the same base number so that you can see the difference in the result of the calculation.

Modulus 10 Self-Check Digit

The modulus 10 check validates a field entry containing a self-check digit based on the following calculation:

1. Save the farthest right digit of the number as the number to be compared against the self-check digit.
2. Multiply the units in the next farthest right position and in every alternate position of that number by 2.
3. Add the digits in the products to the digits in the numbers not used in step 2 (except for the farthest right).
4. Subtract the sum from the next highest number ending in zero. The difference is the self-check digit.
5. Compare the self-check digit with the farthest right digit of the input field saved in step 1. If the digits are the same, the self-check is successful.

For example:

Base number with
self-check digit: 1 2 3 4 6 1 2 8 7

Alternate positions
(excluding farthest
right) 2 4 1 8

Multiply by 2: 4 8 2 16

Digits not multiplied: 1 3 6 2

Add: 4 + 8 + 2 + 1 + 6 + 1 + 3 + 6 + 2 = 33

Next highest number
ending in zero: 40

Subtract: 40 - 33 = 7

Self-check digit: 7

Farthest right digit: 7

Therefore, the modulus 10 check passes and the number 123461287 is a valid modulus 10 number. If an operator types this number into a field selected for the modulus 10 check, DFU would accept the number.

Modulus 11 Self-Check Digit

The modulus 11 check validates an entry containing a self-check digit using the following calculation:

1. Exclude the farthest right digit and save it.
2. Assign a weighting factor to each digit of the entered numbers except the self-check digit (the farthest right digit). The weighting factors are assigned to each digit in the following order: 2,3,4,5,6,7,2,3,4,5,6,7 and so on, starting with the farthest right position of the number (except the self-check digit) and progressing toward the high-order digit (farthest left). For example, the weighting factor for each digit of the base number 123461282 is as follows:

Base number with self-check digit:	1 2 3 4 6 1 2 8 2 (exclude 2 farthest to the right)
---------------------------------------	---

Weighting factor:	3 2 7 6 5 4 3 2
	<- - - - - - - -

3. Multiply each digit (except the farthest right self-check digit) by its weighting factor.
4. Add the products.
5. Divide the sum by 11.
6. Subtract the remainder from 11. The difference is the self-check digit.
7. Compare the self-check digit with the farthest right digit of the input field. If the digits are the same, the self-check is successful.

For example:

Base number with self-check digit:	1 2 3 4 6 1 2 8 2
---------------------------------------	-------------------

Weighting factor:	3 2 7 6 5 4 3 2
-------------------	-----------------

Multiply each digit by its weighting factor:	3 4 21 24 30 4 6 16
---	---------------------

Add the products:	$3 + 4 + 21 + 24 + 30 + 4 + 6 + 16 = 108$
-------------------	---

Divide by 11:	$108/11 = 9$ with a remainder of 9
---------------	------------------------------------

Subtract remainder from 11:	$11 - 9 = 2$
-----------------------------	--------------

Self-check digit:	2
-------------------	---

Farthest right digit:	2
-----------------------	---

Since the self-check digit (2) is the same as the farthest right digit in the original number (2), the number 123461282 passes the modulus 11 self-check test. If an

operator types this number into a field selected for the modulus 11 check, DFU would accept the number.

Appendix F. Differences Between System/38, System/36, and AS/400 DFU

Some operations and treatment of records and files differ between systems and environments. You should note the following differences if you are accustomed to using the System/36 or System/38, or are using the AS/400 system in a different environment.

DFU Migration

The AS/400 DFU migration aid works with R-modules (DFU sub-routine members), and O-modules (DFU screen load members). You must, therefore, compile your DFU source into System/36 R-modules before running the migration aid.

On System/36, you can define a DFU program for inquiry purposes only. This means that the DFU inquiry program cannot update records or insert records into a file. On the AS/400 system, however, DFU does not distinguish between inquiry and update programs. This causes DFU inquiry programs to become update-capable when migrated to the AS/400 system. You can use this System/36 inquiry program to update the file on the AS/400 system. To limit this System/36 inquiry program to only inquiry, selectively limit the use of the CHGDTA command. The *Security Concepts and Planning* manual contains information on how to selectively limit the use of specific commands.

Changing Programs Using OCL Procedures

If you want to change a DFU program using the OCL procedures ENTER, UPDATE, or INQUIRY from the System/36 environment, **do not** delete the program before trying to change it. DFU bases the change on the program object itself. To change the program, leave the *Name of DFU program* prompt blank, and specify the name of the program you want to change in the *Name of DFU specification source member* prompt.

Printing Reports

In the AS/400 environment, you must use Query to print reports instead of DFU LIST. For further details, see the *Query/400 User's Guide*. If you are in the System/36 environment, you can use DFU LIST.

Deleting Records

System/36 marks records as deleted by placing a specified character in the record. Unless delete codes are specified, the AS/400 system physically deletes the record.

Audit Reports

System/36 DFU produces a summarized report on the number of records processed in the data file by specifying the number of records created, updated, and deleted. In AS/400 DFU the report also includes information on how each record has been processed, with the field heading shown above the values used in each field. The library name, file name, and member name are also shown.

Blank Records

When you use the BLDFILE command to create a file in System/36, the records of the file are created with blanks. System/36 treats all blank records (X'40') as empty. If you create a file on the AS/400 system with externally described data, the numeric fields are filled with zeros, and the records do not appear empty to DFU.

Key Fields on the Data Entry Display

In data entry in INQUIRY mode on the System/36, DFU shows two field prompts related to the key: *Current key and Next key*. The AS/400 system shows only one key field. This one key provides both functions depending on the current mode. For example, if you type a key and press Enter during Change mode, the requested record appears.

CHGDTA Command

In the System/38 environment, the CHGDTA command starts the System/38 DFU product. In the AS/400 environment, the CHGDTA command starts the AS/400 DFU product.

Record Backspace (Cmd 5)

On the System/36, if you press the Record Backspace function key when in entry or insert mode, the previously processed record is displayed. The mode changes to update mode and you can change the record. When you have changed the record, press Enter to return to the previous mode.

AS/400 DFU does not support this function. To achieve a similar result in the AS/400 environment, press F11 (Change) to go to the Change mode. Type the key for the record you want to update and press Enter. The record you want to update appears. You can now change this record.

Bibliography

The manuals below are listed with their full titles and base order numbers. When these manuals are referred to in the text, a shortened version of the title is used.

For more information, refer to the following IBM publications:

- *Application Development Tools: Source Entry Utility User's Guide and Reference*, SC09-1338
Short title: *SEU User's Guide and Reference*
- *Distributed Data Management Guide*, SC41-9600
Short title: *DDM Guide*
- *Languages: System/36-Compatible RPG II User's Guide and Reference*, SC09-1162
Short title: *System/36-Compatible RPG II User's Guide and Reference*
- *Programming: Concepts and Programmer's Guide for the System/36 Environment*, SC41-9663
Short title: *Concepts and Programmer's Guide for the System/36 Environment*
- *Programming: Control Language Reference*, SC41-0030
Short title: *CL Reference*
- *Data Description Specifications Reference*, SC41-9620
Short title: *DDS Reference*
- *Security Concepts and Planning*, SC41-8083
Short title: *Security Concepts and Planning*
- *Programming: System Reference for the System/36 Environment*, SC41-9662
Short title: *System Reference for the System/36 Environment*
- *Query/400 User's Guide*, SC41-9614
Short title: *Query/400 User's Guide*
- *System Operator's Guide*, SC41-8082
Short title: *Operator's Guide*
- *Utilities: Data File Utility List for the System/36 Environment User's Guide and Reference*, SC09-1362
Short title: *DFU List for the System/36 Environment User's Guide and Reference*
- *Utilities: Interactive Data Definition Utility User's Guide*, SC41-9657
Short title: *IDDU User's Guide.*

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Readers' Comments

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