

AS/400



# Application Development ToolSet/400 Screen Design Aid for the System/36 Environment

*Version 3*

**Note!**

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

**First Edition (September 1994)**

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## About This Manual

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

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

- Displays
- Menus
- Online help information.

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

You may need to refer to other IBM manuals for more specific information about a particular topic. The *Publications Reference*, SC41-3003, provides information on all the manuals in the AS/400 library.

For a list of related publications, see the “Bibliography” on page 137.

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## Who Should Use This Manual

This manual is to be used by application programmers, system programmers, and system operators who design and create displays.

To use this manual effectively, you must:

- Have a general knowledge of the AS/400\* system
- Be able to use your workstation
- Be able to use messages.

If the AS/400 system is new to you, and you have no knowledge of how it works, refer to *System Operation*, SC41-3203, and *System Startup and Problem Handling*, SC41-3206.

If you are not familiar with your workstation, refer to the specific guide for your workstation.

The user (described as *you* in this manual) refers to the programmer creating the displays and menus. The operator referred to in this manual is the individual who is working with the displays and menus created by the user.



---

# Chapter 1. Introducing SDA

This chapter contains introductory information on the screen design aid (SDA).

This chapter discusses:

- SDA capabilities
- SDA function keys
- Starting and ending SDA sessions
- Other SDA considerations

You can use the interactive utility SDA to create display formats, menus, and online help information. Display formats define displays used by an application program. Menus present a list of options for the workstation operator. You can create online help information for both display formats and menus.

You can use SDA to do the following:

- Create and maintain menus. Use SDA to design or maintain menu text (including online help information) and to specify the commands or procedures for a particular option on the menu.  
  
SDA generates the source specifications for the menu and the commands or procedures run by the menu, and creates the display file and message file needed to make the menu appear. It optionally prints an image of the menu text and the source specifications for the text. You can change the menu text and command text, or delete the menu and all text.
- Create and maintain display formats to design and maintain a display. You can define attributes of the entire display and individual fields on the display. SDA generates the source specifications for your display format, and optionally prints an image of the display format and the display format source specifications.  
  
SDA also creates the display file needed for you to look at and show your display formats. It allows you to either delete or copy a display format, as well as create and maintain online help information.
- Create programs of RPG II WORKSTN file source specifications to use with your display formats.
- Use the Source Entry Utility (SEU). SEU is an interactive program you use to create or change source specifications, procedures, or programs.
- View, print, or compile display formats. SDA allows you to do the following:
  - See a display format as it appears to the operator.
  - Print an image of a display format and its source specifications.
  - Compile display format source specifications into a display file.

---

## Function Keys

You must press Enter, Reset, or any valid function key to clear the messages on the work screens before you continue your work on those displays.

The following table is a summary of the function keys used in SDA.

<b>Function Key</b>	<b>Name of Function Key</b>	<b>Description</b>
F1	Help	Shows additional information about displays, commands, or messages.
F3	Exit	Ignores information typed on a current SDA display and exits the display.
F4	Prompt	Requests command name or parameter prompting.
	List	Shows List displays.
F5	Refresh	Refreshes member list.
F6	Free-Form	Changes menu to free-form.
	See all help areas	Displays all help areas on a display that you define.
	Color	Changes from color to no color.
F9	Retrieve	Displays the previous commands typed on the command line.
F10	Continue	Shows the next SDA display.
	Save work	Saves work done.
F11	Underline	Underlines appear on the display.
	Column Indicators	Turns column indicators ON or OFF.
F12	Cancel	Returns to the previous display.
F13	Lowercase/ Uppercase	Alternates between lowercase and uppercase input.
F14	Format Attribute display	Shows Format Attribute display.
	Help Change display	Makes Help Display/Display All display become Help Update display.
F15	Image display	Shows the Image display.
	Next option	Shows the next option.
F16	Retrieve Fields	Allows you to work with all the fields SDA cannot show.
F17	Subset	Shows the subset of a display.
F18	Suppress Attributes	Suppresses the automatic prompting for extended attributes.
	Help	Shows additional information about the display or option that you selected.
	Home	Positions the cursor at the Home position.
	Page Down (Roll Up)	Moves forward to show additional information for the display.
	Page Up (Roll Down)	Moves backward to show additional information for the display.
	Print	Prints information shown on the display. You must press Reset to clear the message that the Print key produces.

Function Key	Name of Function Key	Description
	Sysreq	<p>Interrupts the job you are working on and shows a menu from which you can do tasks such as:</p> <ul style="list-style-type: none"> <li>• Start a second interactive job on the system at the same display station.</li> <li>• End the previous request.</li> <li>• Display information about the current job.</li> <li>• Display and send messages.</li> </ul>

**Note:** If you customize your function keys, the function key assignments in this manual may differ from those at your location.

---

## Starting and Ending SDA

The following section describes how to start an SDA session by using either the SDA procedure or the CL command STRSDA.

When you start SDA, it supplies the necessary parameters to get you started. For example, SDA uses your current library as the default value for any prompts that ask you to specify a library name. While you are using SDA, you can change the library name or any of the other default values SDA supplies.

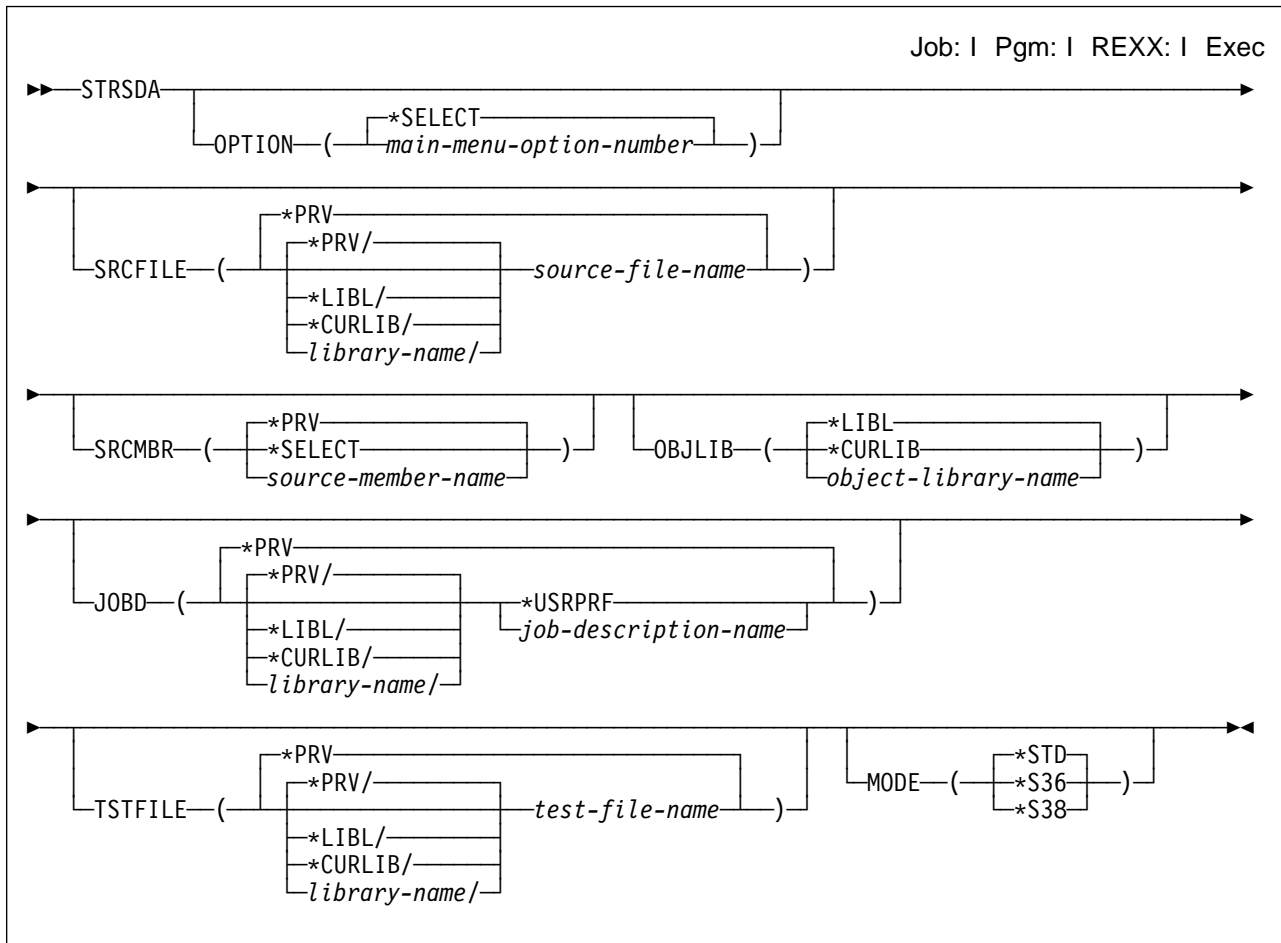
This section also describes how to end an SDA session, and how to use SDA with parameters.

### Using the SDA Procedure

To start System/36 environment SDA by using the SDA procedure, type SDA on the command line in the System/36 environment. Press Enter and the Screen Design Aid (SDA) menu appears.

### Using the STRSDA (Start Screen Design Aid) Command

The following figure shows the syntax for the STRSDA command.



## Purpose

The STRSDA command is the primary command for the IBM AS/400 Screen Design Aid (SDA) utility. This command can be called in the System/36 and System/38 environments, as well as the AS/400 system.

## Optional Parameters

### OPTION

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

**\*SELECT:** The SDA main menu is shown.

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

### SRCFILE

Specifies the qualified name of the source file that contains the source member being updated, or the name of the source file to which a new source member is being added. Only the library qualifier is used if MODE (\*S36) is specified.

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

The possible library values are:

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

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

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

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

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

### **SRCMBR**

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

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

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

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

### **OBJLIB**

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

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

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

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

### **JOB**

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

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

The possible library values are:

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

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

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

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

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

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

## TSTFILE

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

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

The possible library values are:

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

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

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

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

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

## MODE

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

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

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

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

## Example

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

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



If you want to start System/36 environment SDA, specifying only the MODE parameter, type STRSDA MODE (\*S36) on any AS/400 command line. Press Enter and the Screen Design Aid (SDA) menu appears.

The Screen Design Aid (SDA) menu is as follows:

```
Screen Design Aid (SDA)

Select one of the following:

    1. Design menus and help text
    2. Design display formats and help text
    3. Build RPG II WORKSTN file specifications
    4. Edit source and procedure members
    5. View display formats
    6. Print display formats
    7. Compile display formats

Selection
====>_

F1=Help  F3=Exit  F4=Prompt  F9=Retrieve  F12=Cancel
(C) COPYRIGHT IBM CORP. 1981, 1994.
```

Use the Screen Design Aid (SDA) menu to select the type of work you want to do. For example, select option 1 (Design menus and help text) to create a menu or online help information for a menu. SDA provides a display on which you can specify items such as the menu name and the task you want to do. SDA then leads you through the steps needed to complete your work with the menu.

**Notes:**

1. When you are using SDA, do not request another session on the System Request display and attempt to start SDA. Unpredictable results can occur if you attempt to start SDA from another session on the same workstation.
2. When you call a product from the SDA command line, do not call SDA again from the command line. SDA does not allow this.
3. You must store all source members in the source file QS36SRC in your current library. If the file does not exist, SDA creates it for you.

## Ending SDA

To end SDA from a work screen, press F12 (Cancel), and then press F3 (Exit) until the system menu appears. To end SDA from any other display, press F3 until the system menu appears. You can display another feature of the system, return to SDA, or sign off the system.

## SDA with Parameters

Type SDA, followed by one or more parameters, to supply the information specified on the SDA Help display. The following shows the SDA procedure format:

```
SDA [Format member name] , [Input library name] , , [N  
Y  
PARTIAL] ,  
[Output library name] , [Display file library name]
```

See the *System/36 Environment Reference*, SC41-3731, for more information about entering the SDA procedure with parameters. SDA uses the parameters you enter to create a profile of your session. To view the accepted SDA parameters, type SDA on the command line and press F4 (Prompt).

After you enter the SDA procedure with the correct parameters, the Screen Design Aid (SDA) menu appears for you to select an option.

SDA maintains a profile of your SDA session, which it uses throughout the session, to supply certain default values for each option. If you change the default values in each option, SDA uses the new entries in the profile until you change them.

---

## SDA Considerations

SDA operates on any model of the AS/400 system that has the Operating System/400\* (OS/400\*) system or its equivalent and an appropriate workstation. You can use SDA while you use other system functions, and multiple users can use SDA at the same time.

## Using the 3180 Model 2 Display Station

The 3180 Model 2 Display Station allows a 132-column display format and 27 rows of data. You can look at display formats designed for an 80-column display format. However, you can look at display formats designed for the 3180 Model 2 Display Station only on a 3180 Model 2.

When you use option 5 (View display formats) of the Screen Design Aid (SDA) menu to see a series of format displays, indicate on the display control (S) specification that the 132-column display format clears all lines. If you do not clear all lines, a message is issued which indicates that data that is not valid was sent to the display station.

When you finish looking at the display formats, go back to the S specification and type your original data in the *Clear all lines* prompt and recompile the display format.

When you go from 80- to 132-column processing, specify on the S specification that the 132-column display clears all lines. When you go from 132- to 80-column processing, specify on the S specification that the 80-column display clears all lines.



---

## Chapter 2. Creating Display Formats

In this chapter, you create, in library QGPL and source member ORDENTRY, the display format ORDDE1. You use ORDDE1 to create the customer order entry display Order Entry. The operator types the customer number and order number on this display to enter an order.

---

### Beginning a Display Format

In the following example, you select input library QGPL, source member ORDENTRY, and display format name ORDDE1 to begin the display format. Use the following example to help you begin the display format.

1. On the Screen Design Aid (SDA) menu, do the following:
  - a. Select option 2 (Design display formats and help text) as shown in the following figure.

```
Screen Design Aid (SDA)

Select one of the following:

    1. Design menus and help text
    2. Design display formats and help text
    3. Build RPG II WORKSTN file specifications
    4. Edit source and procedure members
    5. View display formats
    6. Print display formats
    7. Compile display formats

Selection
====> 2

F1=Help  F3=Exit  F4=Prompt  F9=Retrieve  F12=Cancel
(C) COPYRIGHT IBM CORP. 1981, 1994.
```

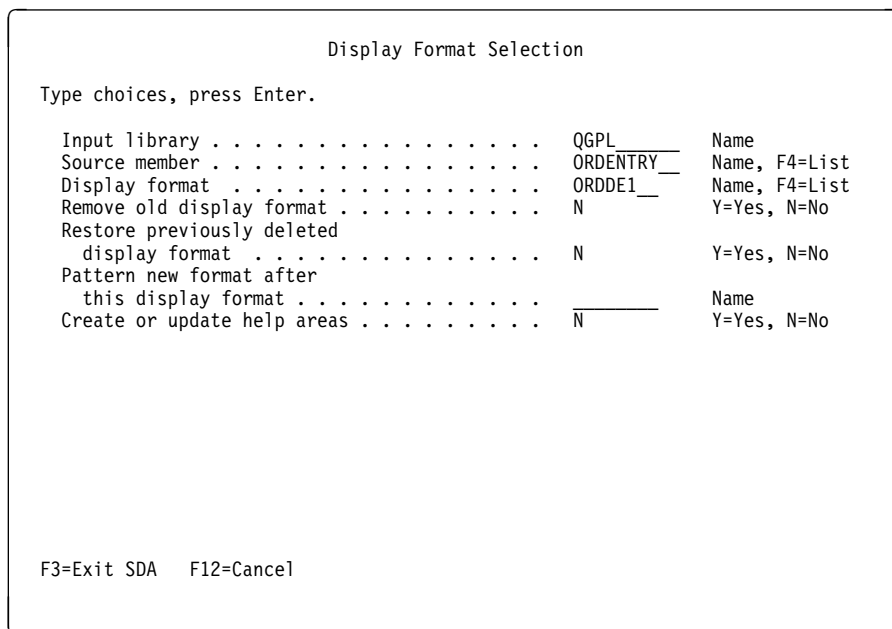
- b. Press Enter. The Display Format Selection display appears.
2. On the Display Format Selection display, do these steps:
  - a. Type QGPL in the *Input library* prompt.
  - b. Type ORDENTRY in the *Source member* prompt.

c. Type ORDDE1 in the *Display format* prompt, as shown in the following figure.

**Note:** The display format name must be unique to create a new display format. Library and member names in the System/36 environment of the AS/400 system can be 10 characters long. The following characters are not valid in System/36 environment library and member names:

- comma (,)
- apostrophe (')
- question mark (?)
- slash (/)
- greater than sign (>)
- equal sign (=)
- plus sign (+)
- hyphen (-).

System/36 library and member names cannot be longer than 8 characters. Be sure that the names of libraries and members that you want to move from the AS/400 system to the System/36 are no longer than 8 characters



d. Press Enter and the Image work screen appears.

## Creating an Image of a Display Format

The Image work screen resembles a blank piece of paper on which you design the display format ORDDE1. The first line of the Image work screen is a row of numbers showing the columns of the display format. The column indicators appear only to assist you in designing the display format. They do not appear on the display format.

To design the display format ORDDE1 and to copy information on the Image work screen, do the following:

1. To design the display format, type and arrange all the titles, prompts, column headings, and legends that appear on the display format shown in the following figure.

```
.....10.....20.....30.....40.....50.....60.....70.....:IMAGE
                                ORDER ENTRY

Customer number:   XXXXXX

Order number:     XXXXXX

Type in the customer number and the order number,
and press one of the following keys:

Enter/Rec Adv - Allows you to enter items on this order
Cmd2 - Allows you to change ship-to and order information
Cmd7 - Ends the order entry program
```

2. To copy information on the Image work screen, do the following:

- a. Type two single quotation marks in columns 1 and 2 of the blank line that is below the line you want to copy. If you type two single quotation marks on more than one line, SDA copies the original entry to the selected number of lines. To make two copies of the following sentence, type two single quotes on two blank lines below the sentence:

```
This is a line to be copied.
''
''
```

- b. Press Enter. The following appears:

```
This is a line to be copied.
This is a line to be copied.
This is a line to be copied.
```

**Note:**

- If you receive an error message, press Enter to clear the message before you continue.
- To see a list of available function keys, press Help.
- To remove the column indicators from row 1 and work with the entire display, press F11.
- To switch to uppercase input only, press F13.
- When you request several actions concurrently, the sequence of operations performed is from top to bottom and left to right.

- c. Press F10. The Attribute work screen appears.

The Attribute work screen looks similar to the Image work screen, except that the Attribute work screen displays *ATTRB* in the upper right corner while the Image work screen displays *IMAGE* in the upper right corner. Use the Attribute work screen to define field attributes, and use the Image work screen to create a field.

3. Press F14. The Display Format Attributes display appears.

## Defining Attributes for an Entire Display Format

Use the Display Format Attributes display to define attributes of the entire display format ORDDE1 that do not affect individual fields. SDA uses the information you type on the Display Format Attributes display to build the display control (S) specification for the display format. See *System/36 Environment Programming*, SC41-3730, for more information about S specifications.

In the following example, you suppress input for indicator 99 and enable command keys 2 and 7 for the display format ORDDE1. Use these steps:

1. Type 99 in the *Suppress input* prompt on the Display Format Attributes display to suppress data input when indicator 99 is turned ON.
2. Type Y in the *Enable command* keys prompt to enable all command keys you list in the *Key mask* prompt.
3. Type BG in the *Key mask* prompt to enable command keys 2 and 7, as shown in the following figure.

Display Format Attributes for ORDDE1

Type choices, press Enter.

Output attributes:		
Start line number . . . . .	—	1-27, V=Variable
Erase input fields . . . . .	—	1-99, Y=Yes, N=No
Sound alarm . . . . .	—	1-99, Y=Yes, N=No
Number of lines to clear . . . . .	—	0-27
Override fields . . . . .	—	1-99, Y=Yes, N=No
Blink cursor . . . . .	—	1-99, Y=Yes, N=No
132 column capable . . . . .	—	Y=Yes, N=No
Input attributes:		
Return input . . . . .	—	Y=Yes, N=No
Allow lowercase . . . . .	—	Y=Yes, N=No
Suppress input . . . . .	99	1-99, Y=Yes, N=No
Null fill . . . . .	—	1-99, Y=Yes, N=No
Enable function keys . . . . .	—	R=Retain, Y=Yes, N=No
Enable command keys . . . . .	Y	R=Retain, Y=Yes, N=No
Key mask . . . . .	BG _____	A-N, P-Y, 1-6

F3=Exit

4. Press Enter. The Attribute work screen appears.



## Defining Attributes for Individual Fields

The Attribute work screen looks similar to the Image work screen. It shows the display format ORDDE1 with the characters ATTRB in the upper right corner of the display. In the following example, you add attributes to the fields defined for display format ORDDE1 by doing the following:

- Making the prompts constants
- Indicating the type of data the operator can enter in the input fields
- Indicating where the prompts end
- Selecting individual attributes for the *Customer number* field.

1. Use the following example to help you add attributes to the display format:
  - a. Type c immediately before the title and the prompt fields to define the field type as constant.
  - b. Type In so that the n overlaps the first input field to allow high intensity numeric, zero-filled data. Type the I immediately before the first character of the field. Type the n in the first position of the field.

The I defines the field type as input, while uppercase specifies that the field is displayed in high intensity. The I must be in the space immediately before the field. The n specifies that the field accepts numeric, zero-filled data. It must be in the space immediately following the field attribute.

- c. Type In in front of the second input field to allow high intensity numeric, zero-filled data.
- d. Type t at the end of each field to show where the field ends.
- e. Type \*t in the bottom left corner of the display to define the error message field.

### Notes:

- 1) You can define fields using text that is alphanumeric-Katakana (A/N/K), double-byte character set (DBCS), or both. The text can extend beyond one line. To avoid errors with DBCS character strings longer than one line, make sure each line starts with a shift-out (SO) character and ends with a shift-in (SI) character.
- 2) Do not use the Insert and Delete keys on the Attribute work screen except when you are adding DBCS characters. Adding DBCS characters should be the only operation you are performing because the resultant shifting of succeeding fields can result in errors for other field operations.

The display appears as follows.

```

.....10.....20.....30.....40.....50.....60.....70.....ATTRB
                                cORDER ENTRYt

cCustomer number:t  InXXXXt
cOrder number:t     InXXXXt

cType the customer number and the order number,t
cand press one of the following keys:t

cEnter/Rec Adv - Allows you to enter items on this ordert
cCmd2 - Allows you to change ship-to and order informatont
cCmd7 - Ends the order entry programt

*t

```

f. Press F10. The Field Attributes 1 display appears.

On Field Attributes 1 and Field Attributes 2 displays, you can further define the attributes of fields for which you have specified a field attribute of \*, e, i, k, or b. SDA uses the information you type on this display to build the D specifications for each selected field.

For more information about the results of entries made on the Field Attributes displays, see the *System/36 Environment Programming* manual.

**Note:** If a field at the top of the Field Attributes 1 display is a DBCS field that is not totally shown (for example, the first or last part of the field does not display), one of two keyboard error messages (0068 or 0069) is issued to indicate that an SI character is missing. This does not affect your format. Press Error Reset to continue.

You now define the attributes for the *Customer number* field of the display format ORDDE1. The *Customer number* field appears in reverse image on the Field Attributes 1 display.

2. On the Field Attributes 1 display, do the following:
  - a. Type CUSN0 in the *Field* prompt. This is not the name that appears on the display.
  - b. Type Y in the *Column Separators* prompt to mark the field with column separators.
  - c. Type N in the *Bypass syntax checking* prompt to have the system perform a syntax check on this field. The display appears as follows.

```

Field Attributes 1

Field for which override data is being entered is shown in reverse image:

Customer number:  XXXXXX

Length . . . . : 6
Location . . . . : 4 31

Type choices, press Enter.

Field . . . . . CUSNO__ Name
Column separators . . . . . Y Y=Yes, N=No
Nondisplay . . . . . — 1-99, Y=Yes, N=No
Blink field . . . . . — 1-99, Y=Yes, N=No
High intensity . . . . . Y_ 1-99, Y=Yes, N=No
Reverse Image . . . . . — 1-99, Y=Yes, N=No
Underline . . . . . — 1-99, Y=Yes, N=No
Bypass syntax checking . . . . . N Y=Yes, N=No

F3=Exit F6=Color

```

- d. Press Enter and the Field Attributes 2 display appears.
- 3. Use the Field Attributes 2 display to indicate whether the field is an input or output field and what type of data is allowed or displayed. On the Field Attributes 2 display, do these steps:
  - a. Type Y in the *Output data* prompt to allow the program to put data in this field when the display appears.
  - b. Type Y in the *Position cursor* prompt to position the cursor at the first position of the field for the operator to enter data.
  - c. Type Y in the *Mandatory entry* prompt to require the operator to type data in this field. The display appears as shown in the following figure.

```

Field Attributes 2

Type choices, press Enter.

Output data . . . . . Y_ 1-99, Y=Yes, N=No
Constant type . . . . . — C=Constant, M=Message
Input allowed . . . . . Y_ Y=Yes, N=No
Position cursor . . . . . Y_ 1-99, Y=Yes, N=No
Auto record advance . . . . . — Y=Yes, N=No
Mandatory entry . . . . . Y_ Y=Yes, N=No
Adjust/fill . . . . . Z Z=Zero fill, B=Blank fill
Allow lowercase . . . . . — Y=Yes, N=No
Data type . . . . . N A, B, D, E, F, K, M, N, O, R, S, X
Protect field . . . . . — 1-99, Y=Yes, N=No
Controlled exit . . . . . — Y=Yes, N=No
Mandatory fill . . . . . — Y=Yes, N=No
Self check . . . . . — T=Modulus 10, E=Modulus 11
Enable duplicate . . . . . — Y=Yes, N=No

F3=Exit F12=Field Attributes 1

```

- d. Press F12 to return to the Field Attributes 1 display.

4. Press F6 on the Field Attributes 1 display. The Color Field Attributes 1 display appears.

**Note:** Some combinations of entries on the Field and Color Field Attributes displays are not allowed. SDA checks these combinations and blinks the response fields. The following restrictions apply when you are using the Color Field Attributes displays:

- If you type Y in the *Blink field* prompt, red is the only valid color.
- If you type Y in both the *Reverse image* and *Underline* prompts, and you select white, yellow, blue, or blinking red, the results are unpredictable.
- If you type Y in the *Nondisplay* prompt, you can use green and turquoise only, and you cannot specify either Reverse Image or Underline.

SDA displays the input-capable fields that have syntax errors in reverse image. If SDA finds a syntax error and you want to continue, type Y in the *Bypass syntax checking* prompt on the Field Attributes 1 display. The system cannot compile the display format if you use an improper combination of entries.

## Defining Color Attributes

In the following example, you define the color attributes for the *Customer number* field of the display format ORDDE1.

**Note:** If a field at the top of the Color Field Attributes 1 display is a DBCS field that is not totally shown (for example, the first or last part of the field does not display), one of two keyboard error messages (0068 or 0069) is displayed to indicate that an SI character is missing. This does not affect your format. Press Error Reset to continue.

Use the following example to help you define color attributes on the Color Field Attributes 1 display:

1. Type 7 in the *Color Selection* prompt to color the field yellow. The display appears as shown in the following figure.

```

                                Color Field Attributes 1

Field for which override data is being entered is shown in reverse image:

Customer number:  XXXXXX

Length . . . . . :      6
Location . . . . . :    4 31

Type choices, press Enter.

Field . . . . . CUSNO  Name
Color Selection . . . . . 7  1=Green, 2=Turquoise, 3=Blue,
                               4=Red, 5=Pink, 6=White, 7=Yellow
Blink field (Red only) . . . N  Y=Yes, N=No
Nondisplay . . . . .      —  1-99, Y=Yes, N=No
Reverse image . . . . .    —  1-99, Y=Yes, N=No
Underline . . . . .       —  1-99, Y=Yes, N=No
Bypass syntax checking . . . N  Y=Yes, N=No

F3=Exit   F6=No color

```

2. Press Enter and the Color Field Attributes 2 display appears as shown in the following figure with the selections you made on the Field Attributes 2 display. You can use this display to change field attributes for color fields.

```

                                Color Field Attributes 2

Type choices, press Enter.

Output data . . . . . Y_  1-99, Y=Yes, N=No
Constant type . . . . . —  C=Constant, M=Message
Input allowed . . . . . Y  Y=Yes, N=No
Position cursor . . . . Y_ 1-99, Y=Yes, N=No
Auto record advance . . . —  Y=Yes, N=No
Mandatory entry . . . . Y_  Y=Yes, N=No
Adjust/fill . . . . . Z  Z=Zero fill, B=Blank fill
Allow lowercase . . . . —  Y=Yes, N=No
Data type . . . . . N  A, B, D, E, F, K, M, N, O, R, S, X
Protect field . . . . . —  1-99, Y=Yes, N=No
Controlled exit . . . . —  Y=Yes, N=No
Mandatory fill . . . . . —  Y=Yes, N=No
Self check . . . . . —  T=Modulus 10, E=Modulus 11
Enable duplicate . . . . —  Y=Yes, N=No

F3=Exit   F12=Color Field Attributes 1

```

3. Press F12 to return to the Color Field Attributes 1 display.
4. Press F6 on the Color Field Attributes 1 display to return to the Field Attributes 1 display.
5. Press Enter. The Field Attributes 2 display appears.
6. Press Enter again. The Field Attributes 1 display appears so you can define the next field.

**Note:** The End of Display Format Options display does not appear until you define all the fields.

## Completing the Display Format

In the following example, you complete display format ORDDE1 by defining the attributes for the *Order Number* and the *Error Message* fields.

1. On the Field Attributes 1 display, do the following:
  - a. Type ORDNO in the *Field* prompt.
  - b. Type Y in the *Column separators* prompt to have vertical lines placed between each character position of this field.
  - c. Press Enter and the Field Attributes 2 display appears.
2. On the Field Attributes 2 display, do these steps:
  - a. Type Y in the *Output data* prompt to allow the program to put data in this field when the display appears.
  - b. Type Y in the *Mandatory entry* prompt to require the operator to type data in this field.
  - c. Type B in the *Adjust/fill* prompt to select blank fill.
  - d. Press Enter and the Field Attributes 1 display appears so you can define the next field.
3. On the Field Attributes 1 display, do the following:
  - a. Type ERRMSG in the *Field* prompt.
  - b. Type 99 in the *Reverse image* prompt to set 99 as the indicator for turning the reverse image operation on and off.
  - c. Press Enter. The Field Attributes 2 display appears.
4. Use these steps on the Field Attributes 2 display:
  - a. Type 99 in the *Output data* prompt to set 99 as the indicator for turning the output operation on and off.
  - b. Press Enter and the End of Display Format Options display appears.

---

## Saving the Display Format

This exercise shows you how to save the display format.

1. On the End of Display Format Options display, do the following:
  - a. Select option 2 (Save the work done) as shown in the following figure.

**Note:** If you use F3 to leave either the Image work screen or the Attribute work screen, option 2 (Save the work done) is not displayed. Select either option 1 (Return to display format definition) or option 3 (Disregard the work done on this display format).

```

                                End of Display Format Options

Type choices, press Enter.

Option . . . 2  1=Return to display format definition
                2=Save the work done
                3=Disregard work done on this display format

For option 2 only:

Print an image of the display format . . . . . N  Y=Yes, N=No
Print source specifications for the
display format . . . . . N  Y=Yes, N=No

F3=Exit  F12=Cancel

```

b. Press Enter. The Display Format Options display appears as shown in the following figure.

```

                                Display Format Options

Input library . . . . . :  QGPL
Source member . . . . . :  ORDENTRY

Type choices, press Enter.

Display format . . . . . ORDDE1__  Name, F4=List
Remove old format . . . . . N      Y=Yes, N=No
Restore previously deleted
display format . . . . . N      Y=Yes, N=No
Pattern new format after
this display format . . . . . _____  Name
Create or update help areas . . . . . N      Y=Yes, N=No

F3=Exit Format  F12=Cancel

```

2. Press F3 on the Display Format Options display. The End of Member Options display appears.
3. Do the following on the End of Member Options display:
  - a. Select option 2 (Save the work done) as shown in the following figure.

```

                                End of Member Options

Type choices, press Enter.

Option . . . 2  1=Return to prior member selection display
                2=Save the work done
                3=Disregard work done on all formats in the member

For option 2 only:

Output source library . . . . . QGPL_____ Name
Output source member . . . . . ORDENTRY_  Name
Renumbr source specifications . . . . . N      Y=Yes, N=No
Compile the source member . . . . . Y        Y=Yes, N=No
Output library . . . . . QGPL_____ Name
Output display file . . . . . ORDENTRY_  Name

F3=Exit   F12=Cancel

```

b. Press Enter to return to the Screen Design Aid (SDA) menu. A message is displayed on the Screen Design Aid (SDA) menu which indicates that SDA has submitted a compile of the display format member to be run.

**Note:** Do not use QTEMP as the source output library. If you do, the compilation is lost.

---

## Procedure Summary

Use the following steps to create a display format:

1. Create an image of the display format.
2. Define attributes for the entire display format.
3. Define attributes for individual fields on the display format.
4. Save the display format.

---

## Reference Information

The following sections supply additional information for creating display formats.

### Defining Input, Output, and Input/Output Fields

The following describe input fields, output fields, and input/output fields:

- Input fields allow the operator to type data. They are underlined when a program shows a display. The system sends the contents of the input field to the program, which uses this data to run an operation, such as a calculation or a file change.



- The operator cannot change information in output fields, and the contents of output fields do not return to the program. Output fields can either contain data supplied by the program, or they can be **prompts** or **constants** defined by the display format. A prompt tells the operator what kind of information to type, the form in which to type the information, and the options or values to allow as input for the data field.
- Input/output fields allow the operator to type data, and they allow the data to appear. The operator can either type new data in a blank input/output field or change data displayed in an input/output field. Either the program or the display format can supply displayed data. Data contained in an input/output field returns to the program when the operator completes the display.

## Specifying Field Type

You must define the type of data the operator can enter if you define a field as input/output. Define the field type with a **field attribute**. The field attribute is a character placed in the blank space immediately before the field you want to define on the Attribute work screen. Type the field attributes in lowercase or uppercase. Lowercase characters indicate the field appears in normal intensity. Uppercase characters indicate the field appears in high intensity. If you use an asterisk (\*), you must define all attributes, including the field intensity, on the Field Attribute display.

You can type the following characters as field attributes on the Attribute work screen:

### Character    Field Type

- |              |  |
|--------------|--|
| c (or blank) | A constant field that appears with the data typed on the Image work screen. Use this field for constants such as titles, prompts, and legends.   |
| k            | An input/output field that shows the data specified on the Image work screen. Use this field attribute for input/output fields with a default value.   |
| e            | A program that supplies data to appear in this output field when the display format appears.   |
| m            | A field that displays a message identified by the 6-character message identification code (MIC) and message member identifier you specified on the Image work screen. A message identified by a MIC and message member identifier supplied by the program appears if you left the Image work screen blank where this field exists. |
| i            | An input field.  |
| b            | An input/output field.   |
| *            | A field attribute that lets you define all the attributes of the field. Press F10 to define other attributes of the field, such as reverse image or mandatory entry.   |

Field types b, c, e, and k can display alphanumeric, double-byte character set (DBCS) output data, or both. Characters that are not valid appear for extended DBCS characters of combined DBCS-alphanumeric data if the first character is alphanumeric. Break the field into an alphanumeric field and a separate DBCS field if the first character must be alphanumeric.

**Note:** If you press F18 before you press F10, the Field Attributes display does not appear for fields with a field attribute of e, i, k, or b. The Field Attributes display always appears for fields with a field attribute of \* even if you press F18.

## Specifying the End of a Field

Use a t or a T to mark the end of a field. If only one blank separates the end of one field from the beginning of the next field, the field attribute typed for the second field marks the end of the first field.

To define the field type as a constant and to show the end of the prompt, type a c at the beginning of the prompt and a t at the end of the prompt on the Attribute work screen as shown in the following example:

```
cOrder number:t
```

To show an input field in high intensity, type the following on the Attribute work screen:

```
cOrder number:IXXXXXXt
```

**Note:** You do not have to use a t or a T to show where the *Order number* prompt ends. The character I does that for you.

## Secondary Data Types

You can type a secondary attribute for all input or input/output fields on the display. To define a secondary attribute for a field, place a character in the first position of the input or input/output field. It immediately follows the field attribute and can be a lowercase or an uppercase character. The valid secondary data types are b (or no entry), m, n, and s. See the chart below for more information about these types.

The following examples show how to change the field type of the XXXXXXXXXXXX field on the Attribute work screen:

- Type the following characters to make the field an input field that allows alphanumeric data:

```
ibXXXXXXXXXXt
```

- Type the following characters to make the field an input/output field that allows numeric, zero filled data:

```
bnXXXXXXXXXXt
```

The input or input/output field has a data type of alphanumeric if you do not make an entry for the secondary attribute. If the first letter in the field (as specified on the Image work screen) contains m, M, n, N, s, or S, you must specify b or B to make the field alphanumeric. Following are the secondary data types:

Character	Data Type
a	The field accepts alphabetic data only.
b or blank	The field accepts alphanumeric data as input.
d	The field accepts only numeric characters. You cannot use Field- in this type of field; you can use all other function keys. You can use a data type of D only if the system is attached to a 5294 Work Station Controller. Remote displays attached to a 5251 Model 12

Display Station allow the operator to enter alphanumeric characters into a D type field.

s The field accepts only numbers, a plus sign (+), or a minus sign (-). When you press Field Exit, the data right-adjusts in the field, and any remaining positions in the field fill with blanks. You can use Field+ and Field Exit to type a positive value, and Field- to type a negative value.

An input or input/output field with data type s (signed numeric) can be from 2 through 16 characters long, with one additional byte in the program input or output data area than the field length.

When the application program sends a negative number as output to a signed numeric field, the minus sign appears along with the number. When the application program sends output to a signed numeric field that is also blank fill, the system replaces any leading zeros with blanks. When you specify signed numeric data only, the application program assumes adjust/fill and control field exit Y (Yes).

m The field accepts all alphanumeric data. The keyboard automatically shifts to numeric shift for this field when no manual keyboard shifts are active. For example, if the operator presses U without first pressing the numeric shift key, 1 appears on the screen.

n The field accepts only numeric data, blanks, commas, periods, plus signs, or minus signs. When the operator presses Field Exit, the data right-adjusts in the field, and any remaining positions fill with zeros. You can use Field+ and Field Exit to type a positive value. You can use Field- to type a negative value.

Programs written in programming languages such as RPG II or COBOL, may not be able to use special characters (commas, plus signs, or minus signs) entered in an N- type field. You should include an error recovery routine in programs that use this format.

k The field accepts Katakana characters as input data.

e The field accepts either alphanumeric-Katakana (A/N/K) data or DBCS data, but not both. The system initially fills the field with DBCS nulls (an SO character, binary zeros, and an SI character). The display station is set to enter DBCS characters. The cursor blinks when it is in the first position of the field to indicate that the operator can switch types of operation and enter alphanumeric and Katakana characters.

f The field accepts either alphanumeric-Katakana (A/N/K) data or DBCS data, but not both. The system initially fills the field with DBCS nulls (an SO character, binary zeros, and an SI character). The display station is set to enter DBCS characters. The cursor blinks when it is in the first position of the field to indicate the operator can switch types of operation and enter alphanumeric and Katakana characters.

**Note:** This data type exists for the System/36 only. If you compile it on the AS/400 system, it will default to a data type of e.

- o The field accepts any combination of alphanumeric, Katakana, and DBCS characters.
- x The field accepts only DBCS data. If an x field is an input/output field, the output data should be DBCS data.
- r The field accepts data from the magnetic stripe reader. Use the nondisplay field attribute for this field. The field can be up to 128 positions long. If you specify data type r, you must also specify nondisplay on the SDA Field Attributes display or in columns 43 and 44 of the D specification.
- z This entry specifies that the cursor moves from right to left within this input field. See the *System/36 Environment Programming* manual for more information about right-to-left display processing.  
  
The SDA Field Attributes display does not allow a z entry. You must use SEU to make this entry to the display format source specifications.

**Notes:**

1. The system uses only e and x for its DBCS version of the OS/400 operating system. You cannot specify e, x, and o for a display format used by a remote workstation attached through a 5251 Model 2 or 12.
2. If the output data of an e or o field that is an input/output field is from the format or from the program, the data covers the alphanumeric or DBCS nulls and overrides the coded input attributes of the e and o fields. A Y in either column 23 of the D specification or columns 23 and 24 of the D specification specifies an indicator that is on when the field appears.
3. If an x field is an input/output field, the output data from the format or from the program should be DBCS data.

## Field Attributes

You can use the Field Attributes 1 display to specify the following attributes:

- High intensity  
Data in high intensity is brighter than data in normal intensity.
- Blink field  
Data in a blink field blinks. A blinking field is easy to see and can be used to draw attention to important information, but it is difficult to read.
- Nondisplay  
The operator cannot see data typed in or sent to a nondisplay field. A nondisplay field supplies information needed by the application program but not by the operator, such as a display or record identification (ID), or confidential information such as a password or security code.
- Reverse image  
Data normally appears as light characters on a dark background. The data in a field with the reverse image attribute appears as dark characters on a light background.

- Underline

You can use an underlined field to emphasize information or to show the length of an input field. A keyboard error message results if the operator attempts to type data outside of the input field.

- Column separators

You can use column separators to show the number of positions in an input field. Column separators appear as dots or vertical lines (depending on the type of display station) on either side of each character position within the field. They do not require character positions of their own. An input field with five character positions, for example, can look like this:

.i.n.p.u.t.

See the *System/36 Environment Programming* manual for more information on column separators.

For 5292 Color Display users, SDA identifies errors in the following ways:

- Relational errors are pink and underlined.
- Syntax errors are turquoise and reversed image.
- Syntax and relational errors for the same field attribute are pink, reversed image, and underlined.

## Message Fields

If you need to fill in any field on the display format with a message identified by a MIC number and a message member identifier, consider the following:

- The first four characters of the field indicate the MIC of the message to appear.
- The fifth and sixth characters of the field indicate the message member from which to retrieve the message. You may use the following as fifth and sixth characters:

Blank	User level 1
U1	User level 1
U2	User level 2
P1	Program level 1
P2	Program level 2
M1	System level 1
M2	System level 2

**Note:** Use 6 blank characters to indicate that the application program determines which message appears. The program uses an output field to supply the MIC and message member identifier.

## Using and Determining Self-Check Digits for Moduli 10 and 11

The AS/400 system offers two methods of self-checking: modulus 10 and modulus 11. If you specify a self-checking method in column 30 of the D specification for an input field, the AS/400 system determines a self-check digit for the contents of the field by using the specified self-check method. The system compares that self-check digit to the farthest right position of the input field (nulls and blanks are considered to be self-check digits of zero). If it matches, the contents of the input field are allowed and the operator can continue. If they do not match, the contents of the input field are not allowed, and a keyboard error appears.

## Modulus 10

To determine the modulus 10 self-check digit, disregard the farthest right digit and do the following calculation on the remaining digits:

1. Multiply the unit position and every alternate position of that number by 2.
2. Add the digits in the products to the digits in the number that were not multiplied in step 2.
3. Subtract the sum from the next higher number ending in 0.

The difference is the self-check digit. Compare this digit with the farthest right digit of the input field. If those digits are the same, the self-check digit is successful.

For example, if you specify modulus 10 self-checking for an input field and the operator types 436188:

Number to be self-checked	4 3 6 1 8
New farthest right position and every alternate position	4 6 8
Multiply by 2	8 12 16
Digits not multiplied	3 1
Add	$8 + 3 + 1 + 2 + 1 + 1 + 6 = 22$
Next higher number ending in 0	30
Subtract	$30 - 22 = 8$
Self-check digit	8

The self-check digit matches the farthest right digit of the entered number.

## Modulus 11

To determine the modulus 11 self-check digit, exclude the farthest right digit and perform the following calculation on the remaining digits:

1. Assign a weighting factor to each digit of the entered number. These factors are: 2, 3, 4, 5, 6, 7, 2, 3, 4, 5, 6, 7, 2, 3, and so on, starting with the new farthest right position of the number and progressing toward the high-order digit (the farthest left digit).

For example, the input number 991246351 is assigned the weighting factors as follows:

Number to be self-checked	9 9 1 2 4 6 3 5
Weighting factor	3 2 7 6 5 4 3 2

2. Multiply each digit by its weighting factor.
3. Add the products.
4. Divide this sum by 11.

5. Subtract the remainder from 11.

The difference is the self-check digit. Compare this digit with the farthest right digit of the input field. If those digits are the same, the self-check is successful.

**Notes:**

1. If the remainder from step 4 is 0, the self-check digit is 0. If the remainder is 1, the entered number does not have a self-check digit; you must ensure you do not use numbers with remainders of 1 in step 4 in the fields you define as self-check fields.

For example, if you specify modulus 11 self-checking for an input field and the operator types 123218:

Number to be self-checked	1 2 3 2 1
Weighting factor	6 5 4 3 2
Multiply	6 10 12 6 2
Add	6 + 10 + 12 + 6 + 2 = 36
Divide	36/11 = 3 plus a remainder of 3
Subtract	11 - 3 = 8
Self-check digit	8

The self-check digit matches the farthest right digit of the input number.

2. Although in this example the remainder and the quotient are both 3, remember that you always subtract the remainder.

**Considerations for Using Self-Check Digits**

Use the following equation to determine the maximum number of input fields (X) where SEQ is equal to 0:

- A equals 255.
- B equals SEQ. SEQ is equal to 0 if the display format defines all input fields in exactly the order they appear on the display.
- C equals the number of Modulus 10 or Modulus 11 fields.
- D equals the number of magnetic stripe reader fields.
- E equals one half the length of the longest magnetic stripe reader field.

$$X = \frac{A - B - C - D - E}{2}$$

If one or more input fields are out of order, SEQ is equal to the number of out-of-order fields plus 1.

For example, if 20 fields (10 are Modulus 10 fields and 10 are Modulus 11 fields) are specified out of order, the maximum number of input fields is:

$$\frac{255 - 21 - 10}{2} = 112 \text{ input fields}$$

## Output Produced by SDA

If you print source specifications, SDA produces a listing that consists of the following:

- An image of the display format, except for those attributes controlled by an indicator
- Source specifications
- Diagnostic or informational messages

SDA prints the source specifications in the order they appear in the source member. If SDA finds an error in processing, a message appears immediately following the statement that caused the error.

Sometimes SDA finds an error called a **terminal error**. This makes the display format unusable and causes processing to end. If a terminal error occurs, SDA does not create the display file. You must try to correct the problem and rerun SDA. See the *System/36 Environment Programming* manual for more information on rerunning SDA.

The three types of output from SDA are:

- Display file
- SFGR
- Screen prints

For more information on printing, see the *CL Reference*, SC41-3722.

## Considerations for Designing Fields

Consider the following when designing the fields on your display:

- Do not begin a field such as a prompt or input field in the first position. The system uses the first column of the display format (row 1, column 1) for control information.
- Allow at least one space for the control character that comes before each field on the display. The system supplies the control character; it does not appear on the display.
- Allow at least one space between the first field on the new display and the last displayed field on the old display if a display overlays a portion of another display. If a field begins in column 1 of any line, the control character occurs in column 80 of the previous line for an 80-column format and column 132 of the previous line for a 132-column format.
- The display format member can contain up to 255 individual display formats. Each display format is made up of specifications that define information about the following:



- The entire display is defined on the S specification.
- Individual fields on the display are defined on the D specifications.
- Online help information is defined on the H specifications.
- A maximum of 256 fields is allowed in a display. Of these, a maximum of 127 may be input fields. A maximum of fewer than 127 input fields is allowed if any of the following is true:
  - If the specifications for the input fields on the display are in a different order in the display format specifications than they appear on the display
  - If you have fields that contain data to be read from a magnetic stripe reader.



---

## Chapter 3. Changing or Deleting Display Formats

In the examples in this chapter, you change and delete the display format ORDDE1 created in Chapter 2, "Creating Display Formats."

---

### Changing a Display Format

In the following example, you select input library QGPL and source member ORDENTRY to change the display format ORDDE1.

Use the example in this section to help you change the display format.

1. On the Screen Design Aid (SDA) menu, do the following:
  - a. Select option 2 (Design display formats and help text) as shown in the following figure:

```
Screen Design Aid (SDA)

Select one of the following:

1. Design menus and help text
2. Design display formats and help text
3. Build RPG II WORKSTN file specifications
4. Edit source and procedure members
5. View display formats
6. Print display formats
7. Compile display formats

Selection
====> 2

F1=Help  F3=Exit  F4=Prompt  F9=Retrieve  F12=Cancel
(C) COPYRIGHT IBM CORP. 1981, 1994.
```

- b. Press Enter and the Display Format Selection display appears.
  2. On the Display Format Selection display, do these steps:
    - a. Type QGPL in the *Input library* prompt. The display appears as follows.

Display Format Selection

Type choices, press Enter.

Input library . . . . .	QGPL_____	Name
Source member . . . . .	_____	Name, F4=List
Display format . . . . .	_____	Name, F4=List
Remove old display format . . . . .	N_____	Y=Yes, N=No
Restore previously deleted display format . . . . .	N_____	Y=Yes, N=No
Pattern new format after this display format . . . . .	_____	Name
Create or update help areas . . . . .	N_____	Y=Yes, N=No

F3=Exit SDA    F12=Cancel

- b. Press F4 with the cursor in the *Source member* prompt to select a source member name. The Select Member Using SDA display appears.
3. On the Select Member Using SDA display, do the following:
- a. For ORDENTRY, type 1 in the *Opt* column as shown in the following figure:

Select Member Using SDA

File:    QS36SRC            Library:    QGPL

Position to . . . . . \_\_\_\_\_ Starting character(s)  
Subset . . . . . \*ALL\_\_\_\_\_ \*ALL, name, \*generic\*

Type option, press Enter.  
1=Select

Opt	Member	Type	Text
-	ACCRM	MNU36_____	_____
-	ACCRM##	MNU36_____	_____
-	INVFRE	MNU36_____	_____
-	INVFRE##	MNU36_____	_____
-	ORDDISPS	DSPF36_____	_____
-	ORDENT	MNU36_____	_____
-	ORDENT##	MNU36_____	_____
1	ORDENTRY	DSPF36_____	_____

F3=Exit    F5=Refresh    F12=Cancel

- b. Press Enter. The Display Format Selection display appears.
4. Press Enter again. The Display Format Options display appears as shown in the following figure.

```

                                Display Format Options
Input library . . . . . : QGPL
Source member . . . . . : ORDENTRY

Type choices, press Enter.

Display format . . . . . _____ Name, F4=List
Remove old format . . . . . N _____ Y=Yes, N=No
Restore previously deleted
  display format . . . . . N _____ Y=Yes, N=No
Pattern new format after
  this display format . . . . . _____ Name
Create or update help areas . . . . . N _____ Y=Yes, N=No

F3=Exit format  F12=Cancel

```

5. Press F4 while the cursor is in the *Display format* prompt on the Display Format Options display, to select a display format name. The Display Format List display appears.
 

If there is more than one page of display format names, use the Page Down (Roll Up) or Page Up (Roll Down) key to see them. A message appears if no display formats are in the specified source member.
6. On the Display Format List display, do the following:
  - a. Type 1 in the *Option* column for ORDDE1, as shown in the following figure.

```

                                Display Format List
Input library . . . . . : QGPL
Source member . . . . . : ORDENTRY

Type option, press Enter.
1=Select

Option   Status   Format
 1              ORDDE1

Bottom

F3=Exit format  F12=Cancel

```

- b. Press Enter and the Display Format Options display appears.
- 7. Press Enter again. The Update work screen appears.

## Changing, Adding, or Deleting Information on the Update Work Screen

The Update work screen, shown in the following figure, looks similar to the Image work screen display format ORDDE1. Input fields are represented with I's, while output and input/output fields are represented with O's. Blanks within output-constant fields are represented by semicolons so that you can see where a constant field with a large number of blanks begins and ends.

```

.....10.....20.....30.....40.....50.....60.....70.....:UPDTE
                                ORDER;ENTRY

Customer;number:    000000

Order;number:      000000

Type;in;the;customer;number;and;the;order;number,
and;press;one;of;the;following;keys:

Enter/Rec;Adv;-;Allows;you;to;enter;items;on;this;order
Cmd2;-;Allows;you;to;change;ship-to;and;order;information
Cmd7;-;Ends;the;order;entry;program

;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;

```

In the examples in the following sections, you move, delete, add, and change information on the display format ORDDE1 by using the Update work screen.

You can do the following before you move, delete, add, or change information on the display format:

- Press F6 to remove the semicolons to see the entire display.
- Press Enter to replace the semicolons and change the display.
- Press F11 to see or remove the column indicator numbers in row 1.

**Notes:**

1. You can use text that is alphanumeric-Katakana, double-byte character set (DBCS), or both. The text can extend beyond one line. To avoid errors with DBCS character strings longer than one line, make sure each line starts with a shift-out (SO) character and ends with a shift-in (SI) character.
2. Double-byte character set text used in your display is added in insert mode. Any succeeding fields on the same display are shifted by the inserted text.
3. Keyboard error messages 0068 or 0069 can occur indicating a mismatch if a line of text is missing an SI character.
4. Do not use the Insert and Delete keys on the Update work screen except when adding DBCS characters. Adding DBCS characters should be the only operation you are performing because the resultant shift of succeeding fields can result in errors for other field operations.
5. If error messages appear on the Update work screen, press Enter to clear the messages before you continue.
6. When you request several actions at the same time, SDA does them from left to right and from top to bottom. SDA handles moves last.

Press F10 when you finish changing the display format. The End of Display Format Options display appears.

### **Moving One Field**

In the following example, you move the *Customer;number* field of the display format ORDDE1. Use the following steps to help you move an individual field on the Update work screen:

1. Type a minus sign (–) in the first position immediately before the *Customer;number* field as shown below:  
–Customer;number:
2. Type an equal sign (=) where you want to place the first character of the *Customer;number* field.
3. Press Enter to see the *Customer;number* field in the new position on the Update work screen.

**Note:** The number of characters or positions within the field remains the same.

### **Moving a Block of Fields**

In the following example, you move the *Customer;number* and *Order;number* fields of the display format ORDDE1. Use the following steps to help you move a block of fields on the Update work screen:

1. Type a minus sign (–) immediately before the first position of the *Customer;number* field as shown in the following example:  
–Customer;number:

2. Type a percent sign (%) following the last position of the *Order;number* field as shown in the following example:  
`Order;number:%`
3. Type an equal sign (=) where you want to place the first character of the block containing the *Customer number* and *Order number* fields.
4. Press Enter to see the block of fields in the new position on the Update work screen.

**Note:** You can move only one block of fields at a time.

### Shifting Fields within the Same Line

In the following example, you move the *Order;number* field two positions to the right.

Type one greater-than sign (>) for each position you want to move the field. Type the greater-than sign on the right to move the field to the right. Type the greater-than sign on the left to move the field to the left.

Use the following steps to move a field within the same line on the Update work screen:

1. To move the *Order;number* field 2 positions to the right, type in two greater than signs as shown in the following example:  
`Order;number:>>`
2. Press Enter to see the shifted field.

**Note:** The number of characters or positions within the field remains the same.

### Deleting a Field

In the following example, you delete the *Customer;number* field. Use the following steps to help you delete a field on the Update work screen:

1. Type D or d in the first position immediately before the *Customer number* field as shown in the following example:  
`dCustomer;number:`
2. Press Enter.
3. SDA removes the field and its D specification from the display and the display format.

### Adding a Field

To add an output-constant field, such as a prompt or a heading, type the text of the field as it appears. To add an input field, output field, or input/output field, type representative data (such as X's or numbers) to show the position and length of the field.

In the following examples you add the output-constant field, *Customer;number* and an input/output field in which the operator types the customer number.



To add an output-constant field, do the following:

1. Type a plus sign (+) 2 positions before the beginning of the output-constant field, *Customer;number*, and a percent sign (%) at the end of the field as shown in the following example:

```
+ Customer;number:%
```

2. Type a field attribute between the plus sign and the first character of Customer number to define the field type.

To define the *Customer; number* field as a constant, type c in the beginning of the prompt as shown in the following example:

```
+cCustomer;number:%
```

Type the field attribute in lowercase to make the field appear in normal intensity. Type the field attributes in uppercase to make the field appear in high intensity. If you use an asterisk (\*), you must define all the attributes, including field intensity, on the Field Attributes displays shown in “Defining Attributes for Individual Fields” on page 15. See “Specifying Field Type” on page 23 for a list of available field types.

3. Press Enter to see the added field.

Use the following steps to help you add an input/output field on the Update work screen:

1. Type the following input/output field next to the *Customer number* field on the Update work screen, as shown in the following example:

```
Customer;number: 000000
```

2. Do the following:

- a. Type a secondary attribute in the first position of the input or input/output field you want to add. It immediately follows the field attribute and can be lowercase or uppercase.

- b. Type *ib* to allow alphanumeric data as shown in the following example:

```
Customer;number: +ib00000
```

- c. Type *bn* to allow numeric, zero filled data as shown in the following example:

```
Customer;number: +bn00000
```

**Note:** If you do not type an entry for the secondary attribute, the input or input/output field has a data type of alphanumeric. However, if the first letter in the field contains *m*, *M*, *n*, *N*, *s*, or *S*, you **must** specify *b* to make the field alphanumeric. For a complete list of secondary attributes, see “Secondary Data Types” on page 24.

3. Type a percent sign (%) immediately following the added field to mark the end of the field as shown in the following example:

```
Customer;number: +bn00000%
```

4. Press Enter to see the added field.

**Note:** Leave at least one blank before and after the added field and any other fields that are already on the display.

## Working with DBCS Characters

You can change the position of a double-byte character set (DBCS) field or add a new DBCS field so that it extends past the end of one line and continues onto the next line. You cannot split DBCS characters across a line boundary. Position the field to start on an even-numbered column to ensure DBCS characters are not split across a line boundary.

## Changing Field Attributes

In the following example you change the attributes of the *Customer;number* field. Use the following steps to help you change or review the attributes of a field on the Update work screen:

1. Type an asterisk (\*) in the first position immediately preceding the *Customer;number* field as shown in the following example:  
\*Customer;number:
2. Press Enter to see the Field Attributes displays or the Color Field Attributes displays. Use F6 to toggle between the two displays.
3. Change the entries on these displays.

## Changing the Field

In the following examples, you change the length of the 6-position input/output field you created in “Adding a Field” on page 38 to 10 positions and to 5 positions. Use the following steps to help you change the length of an input or input/output field on the Update work screen:

1. Type a plus sign (+) 2 positions before the beginning of the field as shown in the following example:  
+ 000000
2. Type a percent sign (%) immediately following position 10 to lengthen the field to 10 positions as shown in the following example:  
+ 000000 %
3. Press Enter to see the lengthened field.
4. Type a percent sign immediately following position 5 to shorten the field to 5 positions:  
+ 00000%0000
5. Press Enter to see the shortened field.

**Note:** Make the field longer if it is too short to hold all the constant characters previously shown on the Update work screen. SDA displays a message and places the cursor at the beginning of a field that is too short.

In the following example, you shorten the output-constant field *Customer;number* to *Customer*. Use the following steps to shorten an output-constant field:

1. Type either an asterisk (\*), an R, or an r between the plus sign and the first position of the field as shown in the following example:  
+rCustomer;number:

This tells SDA to replace any constant information in the field with the constant information that can fit in the new field length.

2. To change the constant field to *Customer*, type a colon (:) following *Customer* and a percent sign (%) in the first position of number as shown in the following example:

```
+rCustomer:%umber:
```

3. Press Enter to see the new constant field as shown in the following example:

```
Customer:
```

### **Changing the Attributes of an Entire Display Format**

You can redefine attributes of the entire display format that do not affect individual fields on the display, as described in “Defining Attributes for an Entire Display Format” on page 14.

## **Working with Fields That SDA Cannot Show**

SDA displays a message at the bottom of the Update work screen when it finds an error in the specification for a field and cannot show the field. The message indicates the following:

- A field cannot be shown.
- A field is too long or too short.
- A field has a position that is not allowed, for example:
  - On an 80-column display, a column greater than 80 or a line greater than 24
  - On a 132-column display, a column greater than 132 or a line greater than 27.

### **Changing Field Attributes for Fields That SDA Cannot Show**

Do the following to see the Field Attributes displays for the first incorrect field or for the only incorrect field:

1. Type an asterisk (\*) in the last column of the last line of the Update work screen.
2. Press Enter. The Field Attributes displays appear for the first or only incorrect field.
3. Press Enter to return to the Update work screen.

To show the Field Attributes display for all the incorrect fields, beginning with the first incorrect field:

1. Type an asterisk (\*) in the last column of the last line of the Update work screen.
2. Press F16.
3. Change the information on the Field Attributes displays.
4. Press Enter to show the Field Attributes displays for the remaining incorrect fields.
5. The Update work screen appears when you have seen all the incorrect fields.

### **Moving Fields That SDA Cannot Show**

Do the following move operation to display the field if an incorrect field position is causing the error:

1. Type a plus and a minus sign (+-) in the last two columns of the last line.
2. Type an equal sign (=) in the position where you want the first character of the incorrect field to be placed.
3. Press Enter to see the moved field.

You can check, move, or delete the field after it is in a position in which it can appear. You can move and see only one field at a time.

**Note:** Some SDA errors cause pairs of error messages. Place the cursor on the message line and press Page Down or Page Up to display the second message of a pair.

### **Deleting Fields That SDA Cannot Show**

Do the following to delete one field SDA cannot show:

1. Type D or d in the last column of the last line of the display.
2. Press Enter.

Use the following steps to delete all fields that SDA cannot display:

1. Type D or d in the last column of the last line of the display.
2. Press F16.

---

## **Saving a Changed Display Format**

Use the following example to help you save the changed display format:

1. Press F10 (Save work) or F18 (Suppress attributes) from the Update work screen.
2. On the End of Display Format Options display, do the following:
  - a. Select option 2 (Save the work done) as shown in the following figure.

**Note:** If you have used F3 to leave the Update work screen, SDA does not show you option 2 (Save the work done). Select option 1 (Return to display format definition), or option 3 (Disregard work done on this display format).

```

                                End of Display Format Options

Type choices, press Enter.

Option . . . 2  1=Return to display format definition
                2=Save the work done
                3=Disregard work done on this display format

For option 2 only:

Print an image of the display format . . . . . N  Y=Yes, N=No
Print source specifications for the
display format . . . . . N  Y=Yes, N=No
Sort field specifications by
image position . . . . . Y  Y=Yes, N=No

F3=Exit  F12=Cancel

```

- b. Press Enter and the Display Format Options display appears.
- 3. Press F3 on the Display Format Options display. The End of Member Options display appears.
- 4. On the End of Member Options display, do the following:
  - a. Select option 2 (Save the work done) as shown in the following figure.

```

                                End of Member Options

Type choices, press Enter.

Option . . . 2  1=Return to prior member selection display
                2=Save the work done
                3=Disregard work done on all formats in the member

For option 2 only:

Output source library . . . . . QGPL_____ Name
Output source member . . . . . ORDENTRY_ Name
Renumbr source specifications . . . . . N  Y=Yes, N=No
Compile the source member . . . . . Y  Y=Yes, N=No
Output library . . . . . QGPL_____ Name
Output display file . . . . . ORDENTRY_ Name

F3=Exit  F12=Cancel

```

- b. Press Enter to return to the Screen Design Aid (SDA) menu.
- 5. A message appears on the display station to indicate SDA has submitted a compiled display format member for execution.

---

## Deleting a Display Format

In the following example you select input library QGPL, source member ORDENTRY, display format ORDDE1, and indicate you want to delete the display format ORDDE1.

**Note:** Do not do this exercise until after you complete all the exercises in this manual. You need display format ORDDE1 for the following exercises.

Do the following on the Display Format Selection display to delete the display format:

1. Type QGPL in the *Input library* prompt.
2. Type ORDENTRY in the *Source member* prompt.
3. Type ORDDE1 in the *Display format* prompt.
4. Type Y in the *Remove old display format* prompt on the Display Format or Options display.
5. Press Enter. A message indicating that the format has been deleted is issued on the Display Format Options display.

The specified display format appears on the Display Format List display marked with a D.

6. Press F3. The End of Member Options display appears.
7. Save your work as described in "Saving a Changed Display Format" on page 42.

---

## Procedure Summary

Do the following to change or delete a display format:

1. Select a display format to change or delete.
2. Change, add, or delete information on the Update work screen.
3. Save the changed display format or complete the deletion.

---

## Chapter 4. Creating and Changing Online Help Information for Display Formats

Define online help information on a display format to explain all or part of that display. The application program then uses the rectangular help area you define on the display format to supply online help information. Define each help area with a specification in the display format called the **help definition (H) specification**. The help area and H specification represent online help information on a type of display format called a **help format**. Help areas and help formats separate operator instructions kept on the system from the application program they describe. See "Reference Information" on page 60 for additional information about using help areas and help formats.

In the example in this chapter, you create a help format and help specifications to create online help information for the display format ORDDE1 created in Chapter 2, "Creating Display Formats."

---

### Creating Help Formats or Online Documents

The first step in creating online help information for a display format is to either create a help format as you would any other display format, or create online documents by using the word processing function of the AS/400 system.

#### Creating Help Formats

You create a help format in the same way as any other display format. See Chapter 2, "Creating Display Formats" for information on creating a display format. A help format appears when the operator presses Help. It does not require special coding or operations in the application program.

#### Creating Online Documents

Online documents are similar to online help information. You define help areas for online documents through display format source specifications. When the operator presses Help, an online document appears starting from a specified location in the document. The operator pages through the online document by pressing the Page Down (Roll Up) or Page Up (Roll Down) key. The operator presses a function key to move to a section of the online document, and to print or leave the online document. See Appendix F, "Creating Help Displays and Help Documents" for information on creating an online help document. See *Using OfficeVision/400 Word Processing*, SH21-0701, for additional information.

---

### Creating Help Specifications

To create help specifications for a display format, you can use the source entry utility (SEU) to change the display format source specifications, or SDA displays to create \$SFGR help specifications as described in "Creating \$SFGR Help Specifications" on page 46.

## Using SEU to Add H Specifications to Display Formats

To create help formats for a display format, you must add help definition (H) specifications to the display format. The H specification indicates which help formats appear for the display format. Place the H specifications between the display control (S) specifications and the field definition (D) specifications.

Use SEU to change the display format source specifications by selecting option 4 (Edit source and procedure members) of the Screen Design Aid (SDA) menu. Chapter 8, "Editing, Viewing, Printing, and Compiling Display Formats" describes how to use option 4 and SEU. The specific entries to the H specifications are described in the *System/36 Environment Programming* manual.

Recompile the display format after you add the H specifications to the display format source specifications. Use option 7 (Compile source format members) of the Screen Design Aid (SDA) menu to recompile the display format. Option 7 is described in Chapter 8, "Editing, Viewing, Printing, and Compiling Display Formats."

---

## Creating \$SFGR Help Specifications

You can create \$SFGR help specifications from the Display Format Selection display or the Display Format Options display.

In the following example, you select input library QGPL, source member ORDENTRY, and indicate you want to create a help area. You define a help area and help attributes for help formats ORDHLP10 and ORDHPL20 of display format ORDDE1.

Use this example to help you create a help area specification.

1. On the Screen Design Aid (SDA) menu, do the following:
  - a. Select option 2 (Design display formats and help text) as shown in the following figure:

```
Screen Design Aid (SDA)

Select one of the following:

    1. Design menus and help text
    2. Design display formats and help text
    3. Build RPG II WORKSTN file specifications
    4. Edit source and procedure members
    5. View display formats
    6. Print display formats
    7. Compile display formats

Selection
====> 2

F1=Help  F3=Exit  F4=Prompt  F9=Retrieve  F12=Cancel
(C) COPYRIGHT IBM CORP. 1981, 1994.
```



- b. Press Enter. The Display Format Selection display appears.
2. On the Display Format Selection display, do these steps:
  - a. Type QGPL in the *Input library* prompt.
  - b. Type ORDENTRY in the *Source member* prompt.
  - c. Type ORDDE1 in the *Display format* prompt.
  - d. Type Y in the *Create or update help areas* prompt. The Display Format Selection display appears as shown in the following figure:

```

                                Display Format Selection

Type choices, press Enter.

Input library . . . . . QGPL_____ Name
Source member . . . . . ORDENTRY___ Name, F4=List
Display format . . . . . ORDDE1___ Name, F4=List
Remove old display format . . . . . N Y=Yes, N=No
Restore previously deleted
display format . . . . . N Y=Yes, N=No
Pattern new format after
this display format . . . . . _____ Name
Create or update help areas . . . . . Y Y=Yes, N=No

F3=Exit SDA F12=Cancel
  
```

- e. Press Enter and the HELPA (Help Add) display appears as shown in the following figure.

```

.....10.....20.....30.....40.....50.....60.....70.....HELPA
                                ORDER;ENTRY

Customer;number: 000000

Order;number: 000000

Type;in;the;customer;number;and;the;order;number,
and;press;one;of;the;following;keys:

Enter/Rec;Adv;-;Allows;you;to;enter;items;in;this;order
Cmd2;-;Allows;you;to;change;ship-to;and;order;information
Cmd7;-;Ends;the;order;entry;program

;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
  
```

3. On the Help Add display, do these steps:

- a. Type a plus sign (+) in row 4, column 31 to mark the beginning point of the help area.
  - b. Type a percent sign (%) in row 4, column 36 to mark the ending point of the help area.
  - c. Press Enter and pound signs (#) appear over the customer number line.
  - d. Press Enter again, and the Help Attributes display appears
4. On the Help Attributes display, do the following:
- a. Type 0001 in the *Sequence number* prompt.
  - b. Type ORDHLP10 in the *Format/Text* prompt.
  - c. Type ORDENTHP in the *Display file/Document* prompt.
  - d. Type QGPL in the *Library/Folder* prompt.

**Notes:**

- 1) The help display or help document must exist **before** you type its name on the Help Attributes display. For more information on creating help documents, see Appendix F, "Creating Help Displays and Help Documents."
  - 2) If the help format name contains extended characters that are not allowed in DDS format names, you must define that format in the same display file. If any other display file or library is specified, that H specification is ignored by \$SFGR when the source is compiled.
- e. Type N in the *Bypass syntax checking* prompt to have the system perform a syntax check on this help specification. The display now looks like the following:

Help Attributes		
Type Choices, press Enter.		
Sequence number . . . . .	0001_	0-99999
Format/Text . . . . .	ORDHLP10	Name
Display file/Document . . . . .	ORDENTHP	Name
Library/Folder . . . . .	QGPL	Name
Upper left row . . . . .	04	1-24 or 1-27
Upper left column . . . . .	31	1-80 or 1-D2
Lower right row . . . . .	04	1-24 or 1-27
Lower right column . . . . .	36	1-80 or 1-D2
Suppress selection indicator . . . . .	—	1-99
Restore application format . . . . .	—	1-99, Y=Yes, N=No
Boundary indicator . . . . .	—	1-99, Y=Yes, N=No
Online document . . . . .	—	Y=Yes, N=No
Bypass syntax checking . . . . .	N	Y=Yes, N=No
F3=Exit		

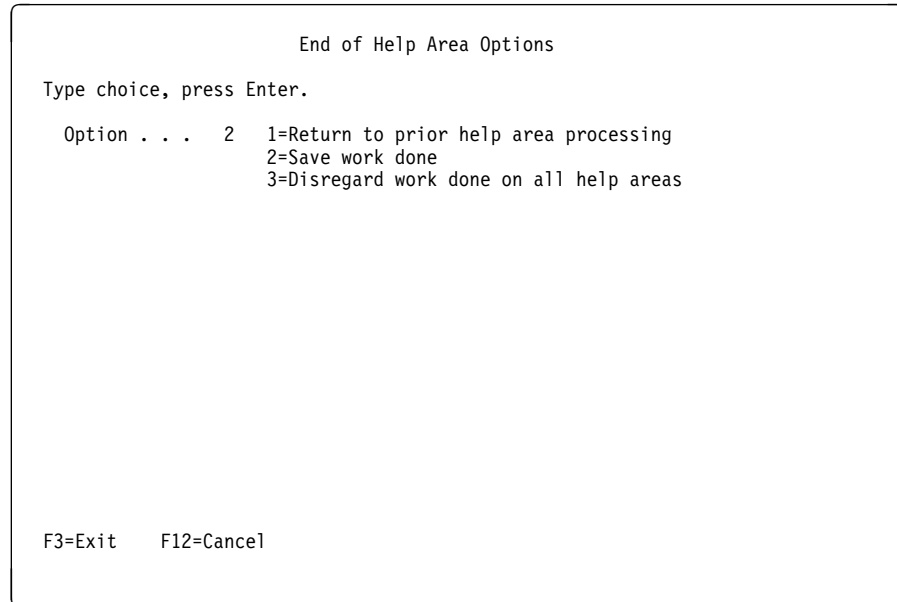
Press Help on a specific field to see a description of the fields on the Help Attributes display.

- f. Press F10 and the End of Help Area Options display appears.

5. On the End of Help Area Options display, do the following:

a. Select option 2 (Save work done) as shown in the following figure.

**Note:** If you used F3 to leave the Help Add display or the Help Attribute display, SDA does not show you option 2 (Save work done). Select option 1 (Return to prior help area processing) or option 3 (Disregard work done on all help areas).



b. Press Enter and the Display Format Options display appears.

6. On the Display Format Options display, do the following:

a. Type ORDDE1 in the *Display format* prompt.

b. Type N in the *Remove old format* prompt.

c. Type N in the *Restore previously deleted display format* prompt.

d. Type Y in the *Create or update help areas* prompt. The display appears as shown in the following figure.

```

                                Display Format Options
Input library . . . . . : QGPL
Source member . . . . . : ORDENTRY

Type choices, press Enter.

Display format . . . . . : ORDDE1__  Name, F4=List
Remove old format . . . . . : N        Y=Yes, N=No
Restore previously deleted
display format . . . . . : N        Y=Yes, N=No
Pattern new format after
this display format . . . . . : _____ Name
Create or update help areas . . . . . : Y        Y=Yes, N=No

F3=Exit Format   F12=Cancel

```

- e. Press Enter and the Help Specifications display appears.
- 7. On the Help Specifications display, do the following:
  - a. Select option 9 (Add) for ORDHLP10, as shown in the following figure:
    - Note:** You can press F6 to view all help areas at any time.

```

                                Help Specifications
Type options, press Enter.
  2=Change  4=Delete  5=Display/Change  6=Display/Change all  9=Add

Opt Num Seq#   Format/   File/   Library/
                Text      Document Folder  UR  UC  LR  LC  SI  RF  BI  OD
  9   001      ORDHLP10  ORDENTHP  ORDERLIB  04  31  04  36

Total number of specifications:  001

F3=Exit   F6=View all help areas   F10=Save work   F12=Cancel

```

- b. Press Enter and the Help Add display appears.
- 8. On the Help Add display, do the following:
  - a. Type a plus sign (+) in row 6, column 31.
  - b. Type a percent sign (%) in row 6, column 36. Your display appears as follows.

```

.....10.....20.....30.....40.....50.....60.....70.....HELPA
                                ORDER;ENTRY

Customer;number:    000000

Order;number:      +000000%

Type;in;the;customer;number;and;the;order;number,
and;press;one;of;the;following;keys:

Enter/Rec;Adv;-;Allows;you;to;enter;items;in;this;order
Cmd2;-;Allows;you;to;change;ship-to;and;order;information
Cmd7;-;Ends;the;order;entry;program

;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;

```

**Note:** You can press F6 to show previously defined help areas on this display.

c. Press Enter. Pound signs (#) cover the new help area as shown in the following figure.

**Note:** If error messages appear, press Enter to clear them before you continue.

```

.....10.....20.....30.....40.....50.....60.....70.....HELPA
                                ORDER;ENTRY

Customer;number:    000000

Order;number:      #####

Type;in;the;customer;number;and;the;order;number,
and;press;one;of;the;following;keys:

Enter/Rec;Adv;-;Allows;you;to;enter;items;in;this;order
Cmd2;-;Allows;you;to;change;ship-to;and;order;information
Cmd7;-;Ends;the;order;entry;program

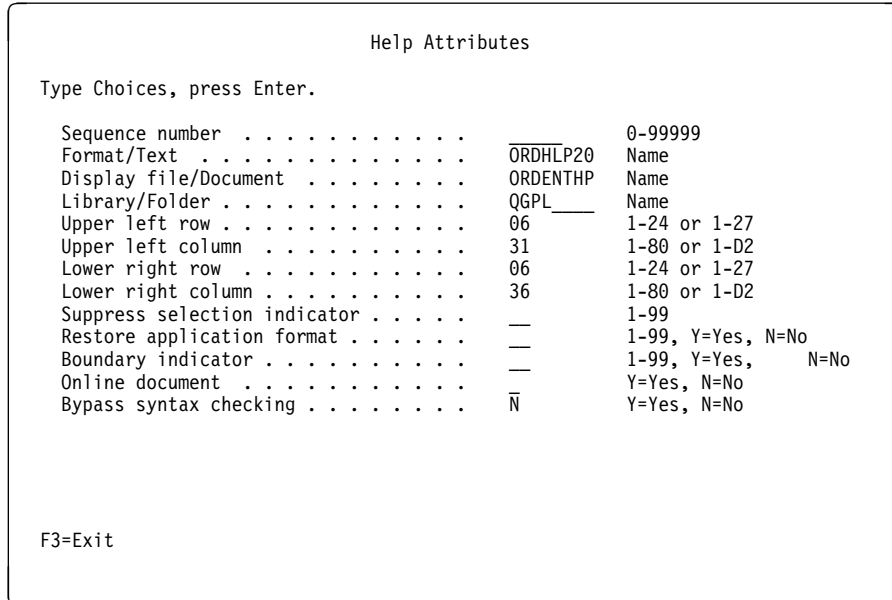
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;

```

d. Press Enter again. The Help Attributes display appears for you to define the attributes of the new help area.

- 9. On the Help Attributes display, do the following:
  - a. Type ORDHLP20 in the *Format/Text* prompt.

- b. Type ORDENTHP in the *Display file/Document* prompt.
- c. Type QGPL in the *Library/Folder* prompt.
- d. Type N in the *Bypass syntax checking* prompt to have the system perform a syntax check on this help specification. The display appears as shown in the following figure.



- e. Press Enter to return to the Help Add display to create other help area specifications.

**Note:** You can continue to create help area specifications by repeating the procedure above.

10. Press F10. The End of Help Area Options display appears.

## Saving the Help Specifications

Use the following example to help you save the help specification:

1. On the End of Help Area Options display, do the following:
  - a. Select option 2 (Save work done) as shown in the following figure.

**Note:** If you used F3 to leave the Help Add display or the Help Attribute display, SDA does not show you option 2 (Save work done). Select option 1 (Return to prior help area processing) or option 3 (Disregard work done on all help areas).

```

                                End of Help Area Options

Type choice, press Enter.

Option . . . 2  1=Return to prior help area processing
                2=Save work done
                3=Disregard work done on all help areas

F3=Exit  F12=Cancel

```

b. Press Enter. The Display Format Options display appears as shown in the following figure.

```

                                Display Format Options

Input library . . . . . :  QGPL
Source member . . . . . :  ORDENTRY

Type choices, press Enter.

Display Format . . . . .  ORDDE1__  Name, F4=List
Remove old format . . . . .  N      Y=Yes, N=No
Restore previously deleted
display format . . . . .  N      Y=Yes, N=No
Pattern new format after
this display format . . . . .  _____  Name
Create or update help areas . . . . .  N      Y=Yes, N=No

F3=Exit format  F12=Cancel

```

2. On the Display Format Options display, press F12. The End of Member Options display appears.
3. On the End of Member Options display, do the following:
  - a. Select option 2 (Save the work done) as shown in the following figure.

```

                                End of Member Options

Type choices, press Enter.

Option . . . 2  1=Return to prior member selection display
                2=Save the work done
                3=Disregard work done on all formats in the member

For option 2 only:

Output source library . . . . . QGPL_____ Name
Output source member . . . . . ORDENTRY_  Name
Renumber source specifications . . . . . N      Y=Yes, N=No
Compile the source member . . . . . Y        Y=Yes, N=No
Output library . . . . . QGPL_____ Name
Output display file . . . . . ORDENTRY_  Name

F3=Exit   F12=Cancel

```

- b. Press Enter to return to the Display Format Selection display to select another display format.

## Changing a Help Specification

In the following example, you select input library QGPL, source member ORDENTRY, display format ORDDE1, and you indicate that you want to change help format ORDHLP20. You change the size and position of the help area on ORDDE1.

Use the following example to change the help specification:

1. On the Screen Design Aid (SDA) menu, do the following:
  - a. Select option 2 (Design display formats and help text).
  - b. Press Enter. The Display Format Selection display appears.
2. On the Display Format Selection display, do the following:
  - a. Type QGPL in the *Input library* prompt.
  - b. Press F4 with the cursor in the *Source member* prompt to select a source member name. The Select Member Using SDA display appears.



3. On the Select Member Using SDA display, do the following:

- a. Type 1 in the *Opt* column for ORDENTRY. The display appears as shown in the following figure.

Select Member Using SDA

File: QS36SRC      Library: QGPL

Position to . . . . . \_\_\_\_\_ Starting character(s)  
Subset . . . . . \_\_\_\_\_ \*ALL, name, \*generic\*

Type option, press Enter.  
1=Select

Opt	Member	Type	Text
-	ACCRM	MNU36	_____
-	ACCRM##	MNU36	_____
-	INVFRE	MNU36	_____
-	INVFRE##	MNU36	_____
-	ORDDISPS	DSPF36	_____
-	ORDENT	MNU36	_____
-	ORDENT##	MNU36	_____
I	ORDENTRY	DSPF36	_____

F3=Exit    F5=Refresh    F12=Cancel

- b. Press Enter and the Display Format Selection display appears.

4. On the Display Format Selection display, do the following:

- a. Type Y in the *Create or Update Help Areas* prompt.
- b. Press F4 while the cursor is in the *Display format* prompt to select a display format name. The Display Format List display appears.

If there is more than one page of display format names, use Page Down or Page Up to display them. A message appears if there are no display formats in the specified source member.

5. On the Display Format List display, do the following:

- a. Type 1 in the *Option* column for ORDDE1. The display appears as shown in the following figure.

```

                                Display Format List
Input library . . . . . : QGPL
Source member . . . . . : ORDENTRY

Type option, press Enter.
1=Select

Option  Status  Format
1              ORDDE1

F3=Exit format  F12=Cancel
Bottom

```

- b. Press Enter. The Display Format Options display appears.
  - c. Press Enter again. The Help Specifications display appears.
6. On the Help Specifications display, do the following:
- a. Type 2 in the *Opt* column for ORDHLP20. Your display appears as shown in the following figure:

```

                                Help Specifications
Type options, press Enter.
2=Change 4=Delete 5=Display/Change 6=Display/Change all 9=Add

Opt Num Seq#  Format/  File/  Library/
              Text   Document Folder  UR  UC  LR  LC  SI  RF  BI  OD
  001      ORDHLP10  ORDENTHP  ORDERLIB  04  31  04  36
  2 002      ORDHLP20  ORDENTHP  ORDERLIB  06  31  06  36
  _ 003      ORDHLP30  ORDENTHP  ORDERLIB  18  11  20  78          Y

Total number of specifications: 003

F3=Exit  F6=View all help areas  F10=Save work  F12=Cancel

```

- b. Press Enter and the Help Update display appears.

The Help Update display looks like the Help Add display, except that the characters HELPU (help update) appear in the upper right corner, as shown in the following figure.

7. On the Help Update display, do the following to change the size or position of the help area.
  - a. Type a plus sign (+) in the upper left corner of the help area.
  - b. Type a percent sign (%) in the lower right corner to change the size or position of the help area.
  - c. Press Enter. The help area changes to the new size and position, and is highlighted.
  - d. Press Enter. The Help Attributes display appears.

**Notes:**

- a. If you want to define a help area that consists of one space only, type a plus sign (+) on the space and omit the percent sign.
- b. If any messages appear on the Help Update display, press Enter to clear them before you continue.

```

.....10.....20.....30.....40.....50.....60.....70.....HELPU
                                ORDER;ENTRY

Customer;number:    000000

Order;number:      #####

Type;in;the;customer;number;and;the;order;number,
and;press;one;of;the;following;keys:

Enter/Rec;Adv;-;Allows;you;to;enter;items;in;this;order
Cmd2;-;Allows;you;to;change;ship-to;and;order;information
Cmd7;-;Ends;the;order;entry;program

;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;

```

8. On the Help Attributes display, do the following:
  - a. Type a response in any of the prompts to change the attributes of the help specification.
  - b. Press Enter and the Help Specifications display appears.
9. Press F10. The End of Help Area Options display appears.
10. Save the changed help specification as described in “Saving the Help Specifications” on page 52.

**Viewing and Changing a Help Specification**

In the following example, you select input library QGPL, source member ORDENTRY, display format ORDDE1, and indicate that you want to see and change help format ORDHLP20.

Use the following steps to see and change the help specification:

1. On the Screen Design Aid (SDA) menu, do the following:
  - a. Select option 2 (Design display formats and help text).
  - b. Press Enter. The Display Format Selection display appears.
2. On the Display Format Selection display, do these steps:
  - a. Type QGPL in the *Input library* prompt.
  - b. Type ORDENTRY in the *Source member* prompt.
  - c. Type ORDDE1 in the *Display format* prompt.
  - d. Type Y in the *Create or update help areas* prompt.
  - e. Press Enter. The Help Specifications display appears.
3. On the Help Specifications display, you can select either option 5 (Display/Change) to see one help area specification, or option 6 (Display/Change all) to see all help area specifications. You can change a help area specification while you are viewing it. Press Enter. The Help/Browse display appears with the characters HELPB in the upper right corner. The Help/Browse All display appears with the characters HELPX in the upper right corner. These displays show an image of the display format similar to that shown on the Help Update display.
4. Press F14 to access the change operation for the help area you want. Change the help area as described in “Changing a Help Specification” on page 54.
5. Press F10. The End of Help Area Options display appears.
6. Save the changed help specification as described in “Saving the Help Specifications” on page 52.

## Deleting a Help Area

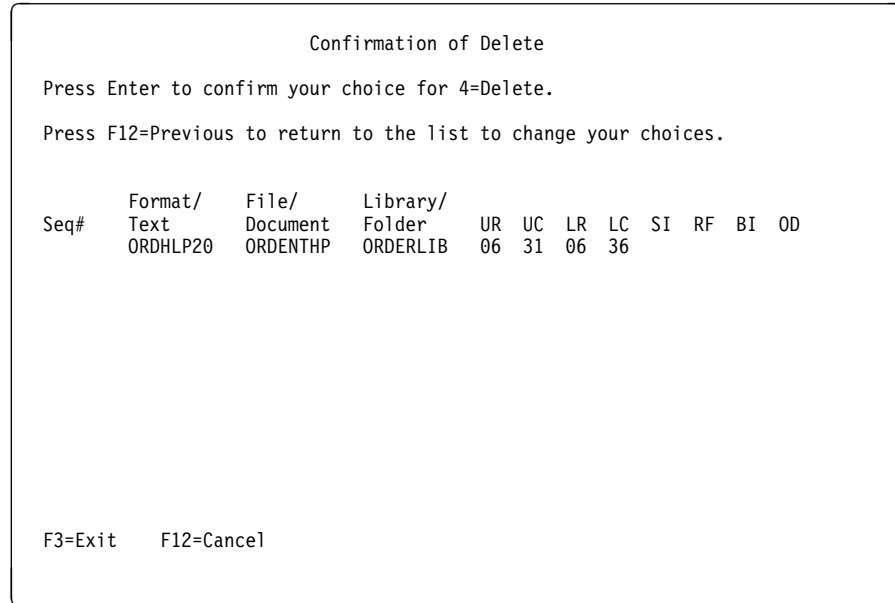
In the following example, you select input library QGPL, source member ORDENTRY, display format ORDDE1, and indicate then confirm that you want to delete help area ORDHLP20.

**Note:** Do not delete ORDHLP20 until you have completed all the exercises in this manual. You need ORDHLP20 for other exercises.

Use the following steps to delete the help area ORDHLP20 for the display format ORDDE1:

1. On the Screen Design Aid (SDA) menu, do these steps:
  - a. Select option 2 (Design display formats and help text).
  - b. Press Enter. The Display Format Selection display appears.
2. Do the following on the Display Format Selection display:
  - a. Type QGPL in the *Input library* prompt.
  - b. Type ORDENTRY in the *Source member* prompt.
  - c. Type ORDDE1 in the *Display format* prompt.
  - d. Type Y in the *Create or update help areas* prompt.
  - e. Press Enter. The Help Specifications display appears.

3. On the Help Specifications display, do the following:
  - a. Select option 4 (Delete) for help area ORDHLP20.
  - b. Press Enter and the Confirmation of Delete display appears with the H specifications selected for deletion as shown in the following figure.



4. Press Enter to delete ORDHLP20 and the Help Specification display appears. The deleted H specifications do not appear in the Help Specification list.
 

**Note:** You can press F12 or F3 to cancel the deletion request.
5. Press F10 on the Help Specification display. The End of Help Areas Options display appears.
6. Save your work as described in “Saving the Help Specifications” on page 52.

---

## Procedure Summary

Use the following steps to create, change, or delete online help information for display formats:

1. Create a help format or an online document.
2. Create help specifications by using SEU or SDA.
3. Select a display format to create, change, or delete help specifications.
4. Add or change information on the Help Add or Help Update display. Delete a help area on the Confirmation of Delete display.
5. Save the new or changed help area specifications.

---

## Reference Information

The following sections supply additional information about using help areas and help formats.

### Naming Help Formats

The first 6 characters in the help format name should be different from the first 6 characters in the display format name. If they are the same, the display format can appear when the operator looks at other help formats.

If you put help formats for different application programs in the same display file, the first 6 characters of the help format name must also differ from the first 6 characters of the display format name.

### Restrictions on Using Help Formats

Help formats cannot do operations that require information to be supplied by the program. Errors do not occur if you use unsupported operations, but SDA does not do the desired operation.

SDA does not support the following for help formats:

- Variable start line number. SDA assumes 01 as the start line number if you specify a variable start line in the S specification of a help format.
- Output fields that require data supplied by the application program. The D specifications of the help format determine these blank output fields.
- Indicators controlled by the application program. SDA assumes that any indicators used in the S or D specifications of the help format are OFF.
- Function key mask. SDA ignores the function key masks that you specified on the S specification format when that format appears.

H specifications contained in help formats do not create help areas on the help displays. The operator cannot use Help when looking at a help format.

### Specifying the Help Formats for a Help Area

You must specify the first help format to appear for a help area. The last 2 characters of each help format name are numeric characters from 00 through 99 which must differ for each help format. The last 2 characters determine the sequence in which the help formats appear.

The help format neither has to be in the same display file nor in the same library as the display file that contains the display formats unless the help format name contains an extended character that is not allowed in DDS format names. For a description of the entries on the Help definition specification (H) specification, see the *System/36 Environment Programming* manual.

Use name and sequence number to control the sequence in which the system selects new help formats. You can insert a new help format if you number the original help formats in increments of 5 or 10.

Do the following to add a help format between formats HELPFO40 and HELPFO50:

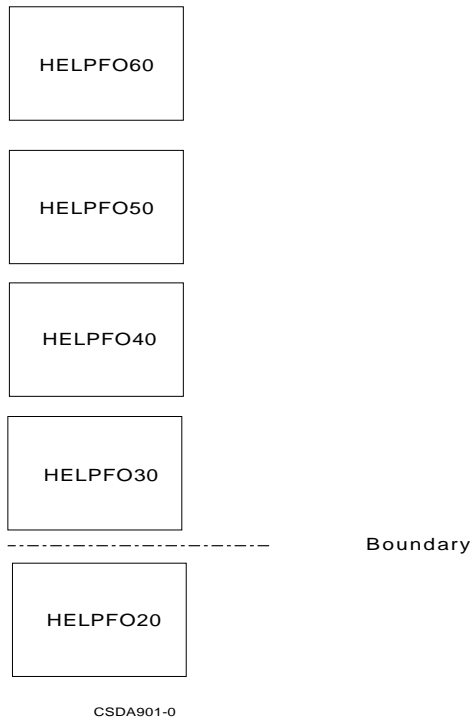
1. Give the new format a name with the same first 6 characters (in this case, HELPFO).
2. For the last 2 positions use a 2 digit number. Here use 45.
3. Help format HELPFO45 appears between HELPFO40 and HELPFO50 as shown in the following figure.



The boundary that appears after HELPFO30 establishes HELPFO30 as the boundary for an operator using the Page Up and Page Down key. HELPFO20 is outside of this boundary, and is unavailable to the operator.

## Showing the Help Formats for a Help Area

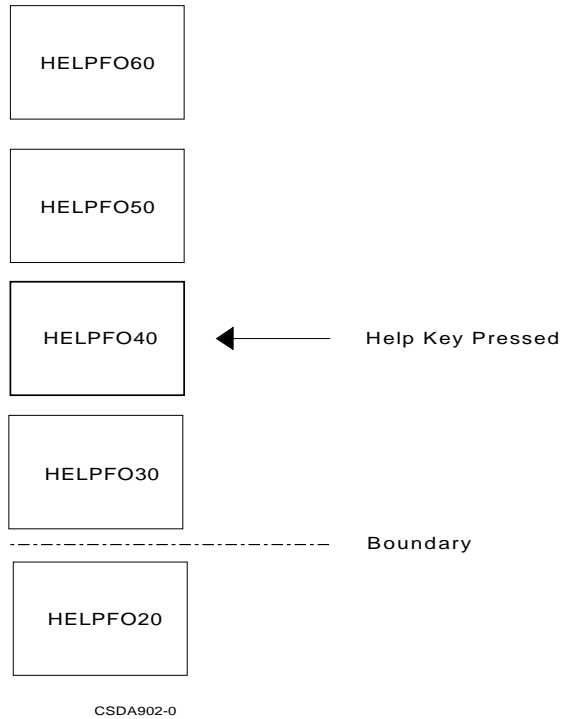
When the operator presses the Page Down (Roll Up) key, the system searches the display file you specified in the H specification for a help format name with the same first 6 characters and the next higher last 2 digits. When the operator presses the Page Up (Roll Down) key, the system searches the display file for the help format name with the next lower last 2 characters. The following figure shows help formats for display file HELPFORM.



The boundary that appears after HELPF030 establishes HELPF030 as the boundary for an operator using the Page Up and Page Down key. HELPF020 is outside of this boundary, and is unavailable to the operator.

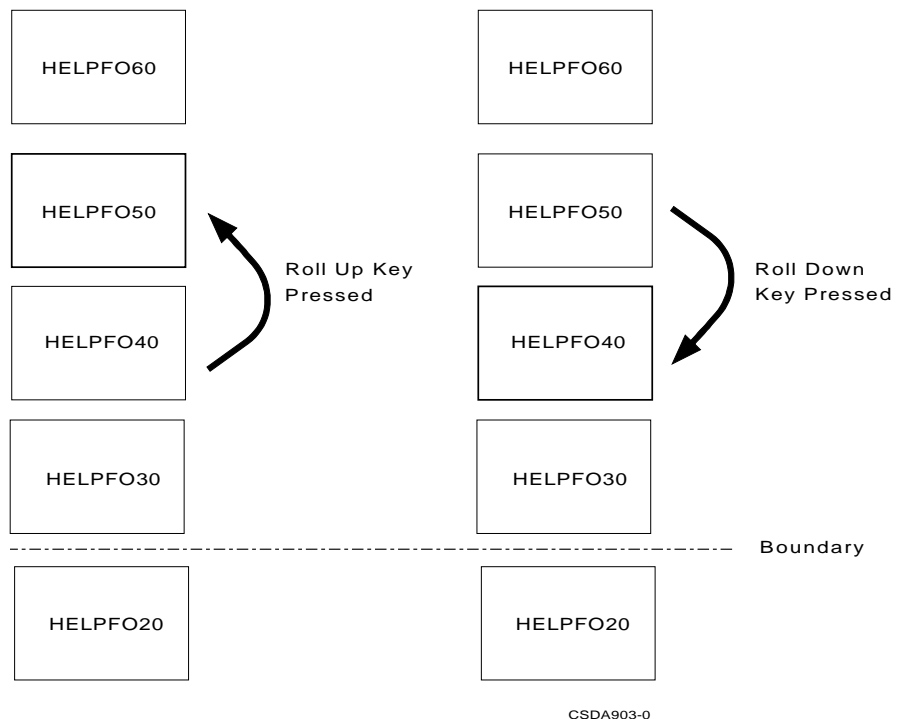
Help format HELPF040, as shown in the following figure, is the help area indicated in the H specification. It appears when the operator presses help while the cursor is in the defined help area.





The boundary that appears after HELPF030 establishes HELPF030 as the boundary for an operator using the Page Up and Page Down key. HELPF020 is outside of this boundary, and is unavailable to the operator.

Help format HELPF050 appears if the operator presses the Page Down key. Help format HELPF040 appears if the operator presses the Page Up key. These operations appear in the following figure.

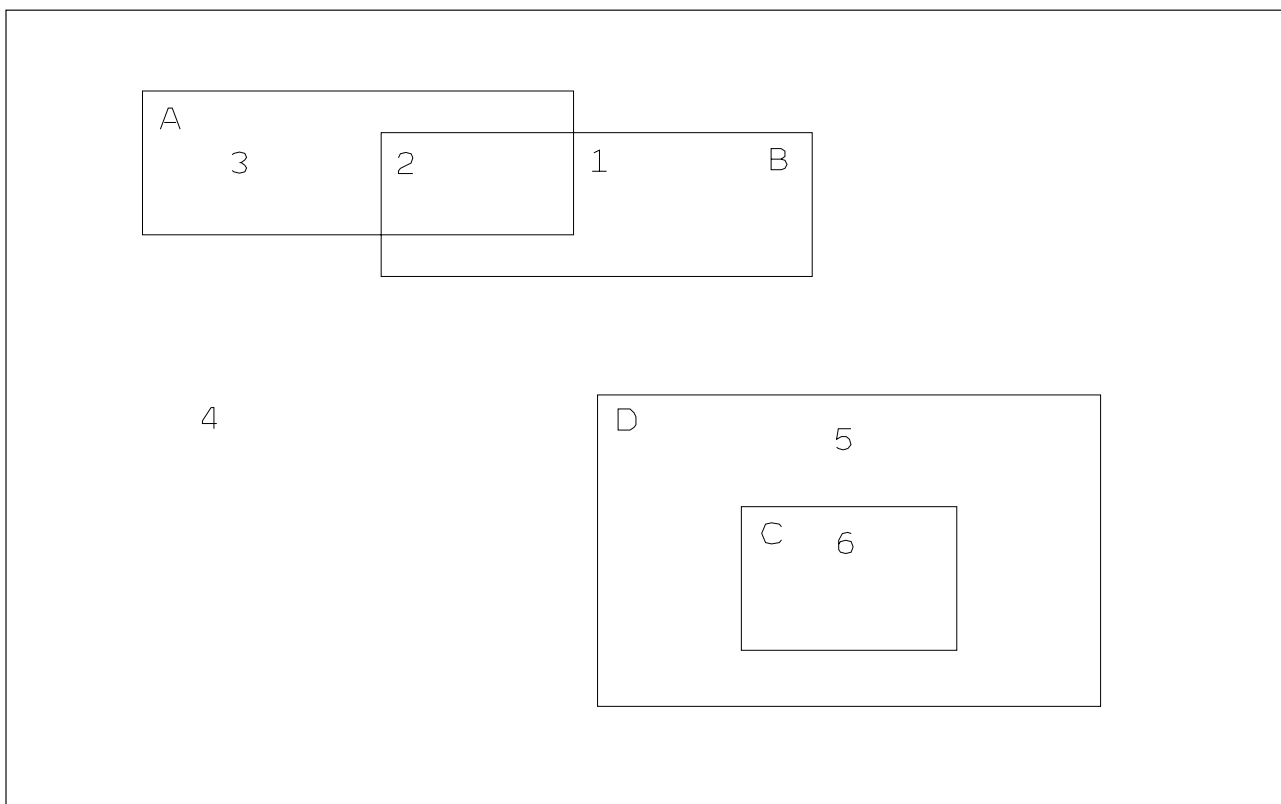


The boundary that appears after HELPF030 establishes HELPF030 as the boundary for an operator using the Page Up and Page Down key. HELPF020 is outside of this boundary and is unavailable to the operator.

## Displaying Help Formats If Help Areas Overlap

Help areas can overlap and the cursor may be in two or more help areas when the operator presses Help. The order of the H specifications for the help areas determines which help format appears when the operator presses Help.

The following example describes overlapping help areas for a display format with help areas **A**, **B**, **C**, and **D** defined. Help areas **A** and **B** overlap, and help area **D** completely encloses help area **C**. There are six cursor positions at which the operator can press Help. These cursor positions are marked with a number **1** through **6** as shown in the following figure.



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When an application program shows a display format containing H specifications, the system saves the H specifications in a help list. It associates the help list with the display station used by the application program. The system lists the H specifications in the same order they appear within the specifications for the display format. SDA adds new H specifications to the top of the list of H specifications.

In the following examples, the help area list does not contain any H specifications:

- An application program shows a help format that defines the H specifications in the order A, B, C, and D. The system builds the following list of help areas when the display format appears:

A (top)  
B  
C  
D (bottom).

When the operator presses Help while the cursor is in one of these help areas, the system searches the help area list from top to bottom to find the first help area enclosing the cursor position and shows the help format specified for that help area. The following table shows the help format that appears for each of the cursor positions.

---

<b>Cursor Position</b>	<b>Help Format Shown</b>
1	Help format specified for area B
2	Help format specified for area A
3	Help format specified for area A
4	Error message—no help area defined for this position
5	Help format specified for area D
6	Help format specified for area C

---

- An application program shows a help format that defines the H specifications in the order B, A, D, and C. The system builds the list of help areas when the display format appears as shown in the following table:

---

<b>Cursor Position</b>	<b>Help Format Shown</b>
1	Help format specifies for area B
2	Help format specified for area B
3	Help format specified for area A
4	Error message—no help area defined for this position
5	Help format specified for area D
6	Help format specified for area D

---

If you define the help areas in this order, the help format for help area C does not appear when the operator moves the cursor within the help area and presses Help. The system always searches the help area list for the first help area enclosing the cursor (in this example, area D).

The help format for help area C appears when the operator presses the Page Down or Page Up key because it follows the same naming convention as the help formats for the other help areas.

## Showing Help Formats for Different Help Areas

The system tries to show any other help formats defined for a help area when the operator presses the Page Down or Page Up key while a help format appears. The system first searches the display file for the help format with the next higher or lower last 2 characters in its name. If a help format with the highest or lowest last 2 characters appears, and the operator presses the Page Down or Page Up key again, the system searches the rest of the help area list. The system stops searching when it finds a help area definition that differs from the current help area in any of the following ways:

- Format name has different characters in the first 6 positions.
- Display file name differs.
- Library name differs.

The system searches a smaller part of the help area list, according to the preceding rules, if any boundary indicators are set on in the H specifications within the help area list.

If the system cannot find a help area that differs, only those help formats for the current help area appear. If the help format with the highest last two characters appears and the operator presses the Page Down key, the system shows the help format with the lowest last two characters. If the help format with the lowest last two characters appears and the operator presses the Page Up key, the system shows the help format with the highest last two characters.

You define the help areas identified by the letters **A** through **E** in the following figure by the optional H specifications for the display format.

The screenshot shows a mainframe-style text-based interface. At the top, it says "DISPLAY ITEM MASTER FILE". Below that, instructions read: "To display information in the item master file, type in an item number and press the Enter key." There are two input fields: "Item number:" and "Item description:". The "Item description:" field contains a list of items, each with a code (E, 50, H1, 115) and a price (250.00, 325.00). Annotations A through E point to specific parts of the interface: A points to the input field, B points to the list of items, C points to the prices, D points to the "Date record last maintained:" field, and E points to the bottom of the screen.

```
DISPLAY ITEM MASTER FILE

To display information in the item master file,
type in an item number and press the Enter key.

Item number:
Item description:

E
50
H1
115

250.00
325.00

Date record last maintained: 12/15/82

Press the Enter key to see the next record in the file
Cmd1 to change the information in the record that is displayed
Cmd7 to end this program and return to the previous menu

E
```

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## Clearing Part of the Display When Showing a Help Format

Input fields remain defined on the display if the operator clears less than the entire display when looking at a help format without input fields. The system positions the cursor as described in the D specification section (columns 32–34) of the display format. The operator can type data into these fields even though the control characters are covered. Typing data in these fields can cover the online help information.

If you must clear less than the entire display and you want to eliminate the previously defined input fields, define at least one input field in the help format. Protect this input field if you do not want the operator to enter data. Any data entered would be ignored because no input is allowed on help screens.

## Using Null Help Areas

The system creates a **null help area** when an H specification for a help area omits both the upper left row and column numbers, and the lower right row and column numbers. The operator cannot display the help formats of a null help area by pressing Help. Use the Page Down or Page Up key to show the help formats for a null help area.

You can create an H specification that defines a help area occupying the entire display format, followed by H specifications that define null help areas. The same help format appears whenever the operator presses Help for any display format, and different online help information appears for each display format if the operator presses the Page Down or Page Up key when the help format appears.

## Using Boundary Indicators

Use a **boundary indicator** to restrict the amount and kind of online help information available to an operator. A boundary indicator shows that an H specification and its help area and online help information are a beginning or an ending point for using the Page Up or Page Down key. If you specify one or more boundaries, the top and the bottom of the help area list also become boundaries. Without boundary indicators, the operator can see all the online help information for a display format no matter which help area contains the cursor.

Boundaries divide the help area list into sublists. If the operator presses Help while the cursor is in a help area defined by an H specification in one of the sublists, the system looks only at the H specifications within that sublist.

The following example describes the boundary indicators for a help area list with six H specifications labeled A through F. The boundary indicator for the H specification labeled D is ON. The help area defined by that H specification and the top and bottom of the help area list become the boundaries for using the Page Up or Page Down key.

```

A
B
C
----- D-----ON-----
E
F

```

You have divided the help list into two smaller sublists: A through D, and E through F. For example, if the operator presses Help while the cursor is in the help area defined by the H specification labeled B, the online help information for H specifications A through D only appear. If the operator presses Help while the cursor is in the help area defined by the H specification labeled E, the online help information for H specifications E and F only appear.

The online help information you can show for a help area becomes more restricted if you have more than one boundary, as shown in the following example:

```

A
----- B-----ON-----
C
----- D-----ON-----
E
F

```

Boundary indicators mark the end for using the Page Up or Page Down key within the help area list. They can only stop the operator from going from online help information for one help area, to online help information for another area (or from one sublist to the next). You cannot use boundary indicators to specify an end for using the Page Up and Page Down key in the help formats for a particular help area. They do not stop you from using the Page Up or Page Down key if all help formats for all help areas on a display format are in the same display file, and all of the help formats have the same first 6 characters in their names.

## Leaving Help Formats

The operator can use Enter or an active function key to leave a help format.

### Using Enter

The system does the following when the operator presses Enter to leave the help format and return to the display format:

1. Restores the display format and any data typed on the display format.
2. Returns control of the display station to the application program.
3. Returns the cursor to the position it was in when the operator pressed Help.
4. Unlocks the keyboard at a local display station. The operator can type data into the display format.

Locks the keyboard at a remote display station and requires the operator to press Error Reset before continuing.

### Using an Active Function Key

The operator can leave the help format and return to the application program by pressing a function key that is active on the help format and the display format. A message appears if a function key is not active on the help format or the display format.

The key mask for the help format defines which function keys the operator can use. Do the following when coding function key masks to allow the operator to use a function key to leave a help format:

1. Start all desired function keys on the S specification of the display format.
2. Start the same function keys, or a subset active for the display format, on the S specification of all help formats defined for the display format.

Supply a legend on the help format to identify which function keys the operator can use to return to the application.

## Restoring or Not Restoring a Display Format

**Note:** The following functions are not supported on the AS/400 system where the display format is always restored. If you indicate that you want to show the display format again, the entry is syntax checked and ignored by the \$SFGR compiler. However, these functions are important if you want to take your formats back to a System/36.

The application program accepts input from either the help format or the display format that appeared before the operator pressed Help. Indicate on the Restore Display Format portion of the H specification (columns 47 and 48) if you want to show the display format again and accept input from either the display format or the help format. The display format restores or the help format stays on the display.

The system examines the Restore Display Format entry when the operator uses a function key to leave a help format. The system does not examine a restore display format entry when the operator uses Enter to leave a help format.



## Accepting and Restoring Input from the Display Format

The following occurs if you indicate on the H specification that the system should restore the display format when the operator presses an active function key at a help format:

1. The keyboard locks.
2. The system reads any input field data on the display format and returns it to the program.

## Accepting Input from the Help Format and Not Restoring the Display Format

The following occurs if you indicate on the H specification that the system should not restore the display format when the operator presses an active function key at a help format:

1. The display format does not appear again.
2. SDA reads any input field data on the help format and returns it to the application program.
3. The application program regains control of the display station instead of the display format.
4. The keyboard locks.
5. The operator loses any input data that was on the display format.

Help formats should not define input fields. Consider the following if you accept input from the help format and do not restore the display format:

- The system loses input data on the display format.
- The application program must identify if the input data comes from the display format or from the help format. Do this by coding a nondisplay, protected, input/output field as the first field in the help format and the display format. The D specification for that first field should specify an output constant (a display ID) to identify the input data.
- The program must clear the help format and show a display format.
- Input data does not return from the help format if there are no input fields on the help format that appeared when the operator presses the function key.
- The following occurs if input fields exist on the help format that appeared when the operator pressed the function key:
  - The input data on the help format returns in place of the input data on the display format.
  - Multiple help formats appear for a display format when the operator presses the function key. The application program must determine if the data came from a help format, and from which help format it came. Identify the data by using a display ID.
  - The program input area must be large enough to accept input data from any help format with fields.

A help format does not have to clear the entire display format. Lines not cleared remain as they were before the operator pressed Help. The system loses any data that the operator typed into input fields on the help format or the remaining portion of the display format, when the operator leaves the help format and returns to the display format. See “Clearing Part of the Display When Showing a Help Format” on page 68 for additional information.

## Restriction on the Number of H Specifications

**Note:** These restrictions apply only if you are creating format members which you intend to take back to a System/36.

Each H specification in a display format requires at least 15 bytes of storage to retain the information for the help area. An H specification requires the following additional bytes of storage:

- 8 additional bytes if it specifies a display file name
- 8 additional bytes if it specifies a library name
- 4 additional bytes if it specifies one of the following:
  - Suppress selection indicator
  - Restore display format indicator
  - Boundary indicator.

Each H specification requires between 15 and 35 bytes of storage. You can use up to 4 084 bytes of storage for all the H specifications in a display format.

The system has a limited space in which to store the list of H specifications. The following rules ensure that the list of H specifications does not become too large:

- The system ignores any H specifications in the display format during an override operation.
- The system deletes the entire list of H specifications if the application program clears the entire display. The system adds to the list any H specifications indicated in the format that clears the display.
- The system removes some or all of the help areas if a display format clears one or more lines on the display. If the display format completely removes a help area, the system removes it from the list of the H specifications. The system removes any H specifications following a deleted H specification and define a null help area. The system does not delete null help areas at the top of the list unless the display format clears the entire display. If the lines that were just cleared partially enclose the help area, the system saves the help area and the H specification.
- The system removes a help area that completely encloses another help area specified by an H specification lower in the list. The system does not delete null help areas at the top of the list unless the entire display clears.
- The list of H specifications does not change if the application program causes all or part of the display to page up or down.
- No help list processing occurs if an assembler program issues an unformatted output operation. The system does not delete the help area list if the operator clears the display using an unformatted data stream.

---

## Chapter 5. Creating and Changing Menus

In the example in this chapter, you create and change the inventory menu INVM, in the library QGPL.

---

### Creating a Menu

In the following example, you select input library QGPL, and indicate that you want to create menu or command text for the menu INVM.

Use the exercise in this section to create a menu.

1. On the Screen Design Aid (SDA) menu, do the following:
  - a. Select option 1 (Design menus and help text) as shown in the following figure.

```
Screen Design Aid (SDA)

Select one of the following:

1. Design menus and help text
2. Design display formats and help text
3. Build RPG II WORKSTN file specifications
4. Edit source and procedure members
5. View display formats
6. Print display formats
7. Compile display formats

Selection
====> 1

F1=Help  F3=Exit  F4=Prompt  F9=Retrieve  F12=Cancel
(C) COPYRIGHT IBM CORP. 1981, 1994.
```

- b. Press Enter and the Menu Selection display appears.
  2. On the Menu Selection display, do the following:
    - a. Type QGPL in the *Input library* prompt.
    - b. Type INVM in the *Menu* prompt.
    - c. Type Y in the *Create or update menu and/or command text* prompt. The display appears as shown in the following figure.

Menu Selection		
Type choices, press Enter.		
Input library . . . . .	QGPL _____	Name
Menu . . . . .	INVM _____	Name, F4=List
Display text list . . . . .	N	Y=Yes, N=No
Create or update menu and/or command text . . . . .	Y	Y=Yes, N=No
Create, update, or delete help text . . . . .	__ - __	0-24
Delete old help text . . . . .	N	Y=Yes, N=No
Pattern new help text after this help text . . . . .	__ - __	0-24
Delete this menu and its text . . . . .	N	Y=Yes, N=No
F3=Exit SDA    F12=Cancel		

d. Press Enter. The Menu Text Definition display appears.

## Defining Menu Text and Command Text for a Menu

A menu consists of two different library members: the **menu text member** and the **command text member**:

- The menu text member describes what appears on the menu, such as option numbers and the name and title of the menu.
- The command text member describes which commands or statements run a job when the operator selects an option number.

A menu can be fixed-form or free-form. The Menu Text Definition display looks like a blank fixed-form menu. See “Reference Information” on page 80 for information on fixed-form and free-form menus.

The bottom three rows of information on the Menu Text Definition display do not appear on the menu you create. You can see the command text for the menu, one command at a time, on rows 22 and 23. You can see all the command texts by using the Page Down (Roll Up) or Page Up (Roll Down) key. The *Inquiry* and *Cmd1-Resume job* fields appear on the display only if the operator looks at this menu after pressing ATTN on a System/36.

In the following example, you define the text of the menu options and the commands or procedures for the fixed-form menu INVM. The title on line 1 is an SDA-supplied default and you can enhance it or replace it. If you want to change this title, you must define the menu text as a free-form format. To find out the areas of the display in which you can type text, press F11 to have underlining display the areas that are input-capable.

If you want your input to be uppercase only, press F13. This affects new input to the display only, not the existing source.

Use the following steps to help you define the menu text on the Menu Text Definition display:

**Note:** If error messages appear, press Enter to clear them before you continue.

1. Do the following on the Menu Text Definition display:
  - a. Type the text of the menu options as shown in the following figure.

COMMAND	MENU: INVM	INQUIRY
Select one of the following:		
1. Process orders		13.
2. Inquire into file information		14.
3. Maintain files		15.
4. Print reports		16.
5. List files		17.
6. Do monthly close		18.
7.		19.
8.		20.
9.		21.
10.		22.
11.		23.
12.		24.
Ready for option number or command 0001	Cmd1-Resume job	More...
F3=Exit	F6=Free form	F10=Cmd text
	F11=Underline	F13=Upper case

- b. Press F10 and the Command Text Definition display appears.

2. Do these steps on the Command Text Definition display:

- a. Type the commands or procedures for the menu options as shown in the following figure.

**Note:** For fixed-form menus, the menu text of the menu option appears above the command text line. The menu text does not appear for free-form menus. Underlines show you the number of characters you can type for each command text. Use the Page Down or Page Up key to see all the command texts for the menu.

```

                                Command Text Definition

Type command text, press F10 to continue.
0001  Process orders
      PRCORD_____

0002  Inquire into file information
      INQFINFO_____

0003  Maintain files
      MFILES_____

0004  Print reports
      PRTRPTS_____

0005  List files
      LFILES_____

0006  Do monthly close
      MCLOSE_____

F3=Exit  F10=Continue  F12=Menu text                                     More...

```

b. Press F10. The End of Menu/Command Text Options display appears.

## Saving a Menu

Use the following example to help you save the menu:

1. On the End of Menu/Command Text Options display, do the following:
  - a. Select option 2 (Save the work done), and the End of Menu/Command Text Options display appears as shown in the following figure.

**Note:** If you pressed F3 to leave the Menu or Command Text Definition displays while designing a menu, option 2 (Save the work done) is not displayed. Select option 1 (Return to prior text definition display) or option 3 (Disregard work done on this menu and command text).

```

                                End Of Menu/Command Text Options

Type choices, press Enter.

Option . . . 2  1=Return to prior text definition display
                2=Save the work done
                3=Disregard work done on this menu and command text

For option 2 only:

Print the menu image . . . . . N  Y=Yes, N=No
Print source specifications built for
  menu and command text . . . . . N  Y=Yes, N=No

F3=Exit  F12=Cancel

```

b. Press Enter and the Menu Options display appears as shown in the following figure.

```

                                Menu Options
Input library . . . . . : QGPL
Menu . . . . . : INVM

Type choices, press Enter.

Display text list . . . . . N      Y=Yes, N=No
Create or update menu
and/or command text . . . . . N      Y=Yes, N=No
Create, update, or
delete help text . . . . .  _ - _  0 - 24
Delete old help text . . . . . N      Y=Yes, N=No
Pattern new help text after
this help text . . . . .  _ - _  0 - 24
Delete this menu and its text . . . . . N      Y=Yes, N=No

F3=Exit menu  F12=Cancel

```

2. Press F12 on the Menu Options display after you complete your work. The End of Menu Options display appears.

3. Do the following on the End of Menu Options display:

a. Select option 2 (Save the work done) as shown in the following figure.

```

                                End of Menu Options

Type choices, press Enter.

Option . . . 2  1=Return to prior menu selection display
                2=Save the work done
                3=Disregard work done on all text for this menu

For option 2 only:

Output source members . . . . . :  INVM
                                INVM##

Output library . . . . . :  QGPL _____ Name
Compile menu source . . . . . :  Y      Y=Yes, N=No

F3=Exit  F12=Cancel

```

b. Press Enter and two messages appear. The first message indicates that SDA is compiling the member. The second message appears when the compilation is complete. The Menu Selection display then appears.

## Using a Menu

To call the menu you created, type MENU menu-name on a command line in the System/36 environment and press Enter. The menu you call must be in your current library list.

---

## Changing a Menu

In the following example, you select input library QGPL and indicate that you want to change menu or command text for the menu INVM.

1. On the Menu Selection display, do the following:
  - a. Type QGPL in the *Input library* prompt.
  - b. Press F4 with the cursor in the *Menu* prompt on the Menu Selection display to select a menu name. The Select Member Using SDA display appears.
2. On the Select Member Using SDA display, do these steps:
  - a. Type 1 in the *Opt* column for INVM as shown in the following figure:

Select Member Using SDA

File: QS36SRC      Library: QGPL

Position to . . . . . \_\_\_\_\_ Starting character(s)  
Subset . . . . . \*ALL\_\_\_\_\_ \*ALL, name, \*generic\*

Type option, press Enter.  
1=Select

Opt	Member	Type	Text
-	ACCRM	MNU36	_____
-	INVFRE	MNU36	_____
1	INVM	MNU36	_____
-	ORDDISPS	DSPF36	_____
-	ORDENT	MNU36	_____

F3=Exit    F5=Refresh    F12=Cancel

**Note:** Menu members that end in ## do not appear on the Select Member Using SDA display.

- b. Press Enter. The Menu Selection display appears.
3. Do the following on the Menu Selection display:
  - a. Type Y in the *Display text list* prompt.
  - b. Press Enter and the Menu, Command and Help Text List display appears as shown in the following figure.

The Menu, Command and Help Text List display lists the submembers of the menu.



```

                                Menu, Command and Help Text List
Input library . . . . . : QGPL
Menu . . . . . : INVM

Status   Text Name
        INVM##
        INVM

                                                Bottom

F3=Exit menu   F12=Cancel

```

4. Press Enter. The Menu Options display appears as shown in the following figure:

```

                                Menu Options
Input library . . . . . : QGPL
Menu . . . . . : INVM

Type choices, press Enter.

Display text list . . . . . N      Y=Yes, N=No
Create or update menu
and/or command text . . . . . N      Y=Yes, N=No
Create, update, or
delete help text . . . . .  — - —  0 - 24
Delete old help text . . . . . N      Y=Yes, N=No
Pattern new help text after
this help text . . . . .  — - —  0 - 24
Delete this menu and its text . . . . . N      Y=Yes, N=No

F3=Exit menu   F12=Cancel

```

5. On the Menu Options display, do these steps:
  - a. Type Y in the *Create or update menu and/or command text* prompt.
  - b. Press Enter. The Menu Text Definition display appears.

The Menu Text Definition display looks similar to the menu you want to change.
6. Change the text of the menu options as required.
 

**Note:** Press F6 to change a fixed-form menu to free-form. You cannot change a free-form menu to fixed-form.
7. Press F10. The Command Text Definition display appears.

8. Change the command text as required.
  9. Press F10. The End of Menu/Command Text Options display appears.
  10. Save the menu changes as described in “Saving a Menu” on page 76.
- Note:** SDA rebuilds the menu text source member by using the menu text currently on the display. If you use a system source editor to change a menu, SDA removes the field attributes when it saves the member. SDA does not save the old field attributes for comparison.

---

## Deleting a Menu

In the following example you select input library QGPL and indicate that you want to delete the menu INVM.

**Note:** Do not delete INVM until you have completed all the exercises in this manual. You need INVM for exercises that follow.

Use the Menu Selection display to delete the menu.

1. Type QGPL in the *Input library* prompt.
2. Type INVM in the *Menu* prompt.
3. Type Y in the *Delete this menu and its text* prompt.
4. Press Enter on the Menu Selection display. The Menu Options display appears with a message confirming that the menu is deleted.
5. Press F12 to complete your work as described in step 3a of “Saving a Menu” on page 76.

---

## Procedure Summary

Use the following steps to create or change a menu:

1. Select a menu to create or change.
2. Define the menu text.
3. Define the command text.
4. Save the new or changed menu.

---

## Reference Information

This section supplies additional information about menus.

### Fixed-Form Menus

A fixed-form menu contains two columns of menu option numbers, 1 through 24. The system determines the placement of all option numbers and their descriptions. The operator can select only the option numbers you have defined. “Defining Menu Text and Command Text for a Menu” on page 74 shows a fixed-form menu.

## Free-Form Menus

You determine how a free-form menu looks. You can use a large portion of the display format to supply descriptive text to the operator. When you create a free-form menu, you define the following:

- Up to 24 option numbers and descriptions
- The procedure statements, commands, or operation control language (OCL) statements for each option number.

A free-form menu looks very similar to a fixed-form menu. The title, option numbers, and text lines are displayed, and rows 1 through 23 are available for you to design your menu.

Do the following to clear the display so you can change the free-form menu:

- To clear row 1, move the cursor to the top of the menu and press Field Exit.
- To clear rows 2 through 19, position the cursor at the beginning of row 2 and press Field Exit.
- To clear row 21, move the cursor to the second position of row 21 and press Field Exit twice.

The following figure shows a free-form menu. The option numbers on this menu are the same as the option numbers shown on the fixed-form menu. The programmer chose the location of the numbers and their descriptions and supplied a descriptive title and more informative instructions.

The title that appears is an SDA-supplied default that you can enhance or replace. To find out the areas of the display in which you can type text, press F11 to display underlining.

If you want your input to be uppercase only, press F13. This affects new input to the display only, not existing source.

```
COMMAND                                MENU: INVM                                INQUIRY

                                Order Entry and Invoicing: Main Menu

Select one of the following:

    1. Process orders
    2. Inquire into file information
    3. Maintain files
    4. Print reports
    5. List files
    6. Do monthly close
    24. Sign off the system

HELP Key - Provides help information about this menu
Cmd12 - Displays previous menu
HOME Key - Displays sign-on menu

Ready for option number or command      Cmd1-Resume job
0001

F3=Exit    F10=Cmd text    F11=Underline    F13=Upper case
```

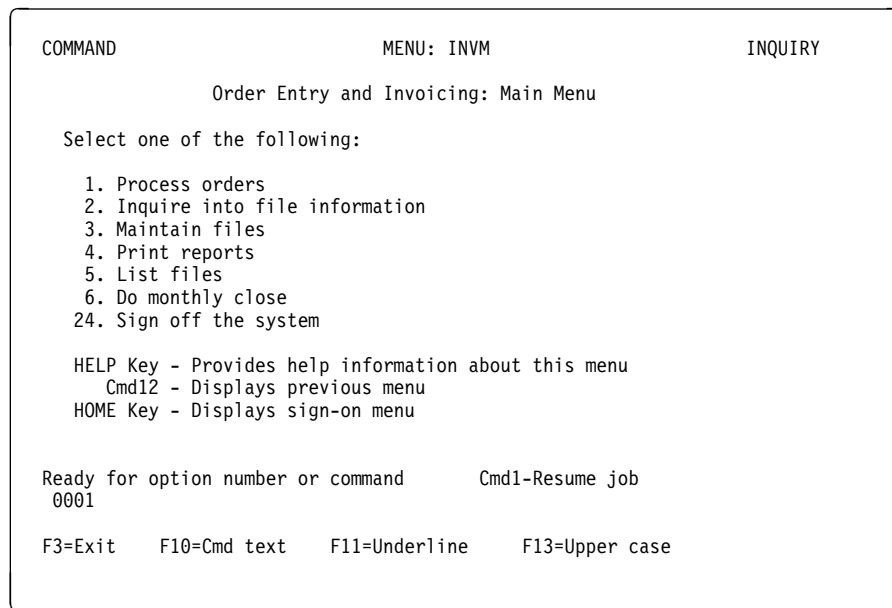
**Notes:**

1. Free-form menus can also use text that is alphanumeric-Katakana (A/N/K), double-byte character set (DBCS), or both. The text can extend beyond one line. To avoid errors with DBCS character strings longer than one line, make sure each line starts with a shift-out (SO) character and ends with a shift-in (SI) character.
2. Because DBCS characters are added in insert mode, any succeeding text on the display will be shifted by the inserted characters.
3. Keyboard error messages 0068 or 0069 can occur indicating a mismatch if a line of text is missing an SI character.

## Menu Chaining

**Menu chaining** helps organize your work by guiding the operator to the displays for a job. Menu chaining uses a main menu that lists other menus from which the operator selects a job.

The following figure shows the main menu in a chain of menus.



You chain the following menus to the INVM menu shown in the preceding figure:

- The Orders Menu is used to process orders. The operator reaches it through the ORDERS command by selecting option 1 (Process orders).
- The File Information Menu is used to inquire into file information. The operator reaches it through the ORDINF command by selecting option 2 (Inquire into file information).
- The File Maintenance Menu is used to maintain files. The operator reaches it through the ORDMNT command by selecting option 3 (Maintain files).
- The Reports Menu is used to print reports. The operator reaches it through the ORDREP command by selecting option 4 (Print reports).
- The File Lists Menu is used to list files. The operator reaches it through the ORDPRT command by selecting option 5 (List files).

When the operator selects option 1 from the main menu (MENU: INVM), the system runs the MENU control command and the Orders Menu appears. When the operator selects an option from the Orders Menu, the operator sees either another menu (if there are additional order processing categories to select) or a display on which to begin a job. The MENU OCL statement and the MENU control command are useful when you are building a menu chain.

Allow ways for an operator to redisplay the main menu. For example, on the Orders Menu, the operator can return to the main order entry and invoicing menu by pressing F12. Allow ways for experienced operators to bypass the menu chains and directly begin their jobs.

Consider the following ways an operator can respond to a menu:

- Enter an option number.
- Enter a control command, a procedure, or OCL statements.
- Press Help to request online help information for the menu or its options.
- Use F12 to return to the previously displayed menu.
- Press Dup (duplicate) or F9 to redisplay the previously entered control command, procedure, OCL statement, or menu option.

When the operator presses Dup, the command input field at the bottom of the menu fills with overscored asterisks (\*). The operator presses Enter to view the previously entered command, procedure, statement, or option number. If the operator presses Enter again, the system processes that command, procedure, statement, or option number.

## Considerations for Planning a Menu

Do the following when designing your menus:

**Note:** Menus are to appear as 24 by 80 formats only. Unpredictable results may occur if you specify a menu format as 27 by 132 capable.

- Use free-form menus. Free-form menus do not have unused option numbers which appear on the menu and confuse the operator. Avoid mixing free-form and fixed-form menus in the same application. For more information on free-form and fixed-form menus see “Fixed-Form Menus” on page 80 and “Free-Form Menus” on page 81.
- Write your menus in uppercase and lowercase letters to make them easier to read.
- Number your options beginning with 1. The system cannot use an option number of 0. If the operator enters 0 as an option number, the system displays a message saying that the specified menu option is incorrect.
- Place more frequently selected options near the top of the menu. Either place options in the sequence that they are selected or arrange option descriptions alphabetically.
- Make the menu titles and option descriptions clear and concise. Use words that describe simply and clearly what job is to be selected. For example, the option description Release Orders has more meaning than RELORD, the name of the program that releases orders.

- Use an action word, such as *list* or *print*, for the first word in the option description.
- Avoid using abbreviations.
- Provide online help information for the entire menu and for each of the menu options, and let the operator know it is available.
- Results are unpredictable if you do any of the following:
  - Use the 27-by-132-character attribute for the new or changed menu.
  - Use fields with user-supplied data on your menu.
  - Move the input field on your menu.

## Output Produced by SDA

The SDA listing is printed if you requested on the End of Menu/Command Text Options display that the menu image or the menu and command text source specifications be printed.

A partial \$SFGR listing is printed following any output if the system finds an error while compiling the menu. This \$SFGR listing consists of the display format source member name, and any warning or ending messages and the statements causing the messages.

---

## Chapter 6. Creating and Changing Online Help Information for Menus

In this chapter, you create and change online help information for options 1 through 3 of the INVM menu you created in Chapter 5, "Creating and Changing Menus."

---

### Beginning the Online Help Information for a Menu

In the following example you select input library QGPL and indicate that you want to create or change online help information for the INVM menu. Use the following steps to create or change online help information for a menu:

1. Do the following on the Screen Design Aid (SDA) menu:
  - a. Select option 1 (Design menus and help text) as shown in the following figure.

```
Screen Design Aid (SDA)

Select one of the following:

    1. Design menus and help text
    2. Design display formats and help text
    3. Build RPG II WORKSTN file specifications
    4. Edit source and procedure members
    5. View display formats
    6. Print display formats
    7. Compile display formats

Selection
====> 1

F1=Help  F3=Exit  F4=Prompt  F9=Retrieve  F12=Cancel
(C) COPYRIGHT IBM CORP. 1981, 1994.
```

- b. Press Enter and the Menu Selection display appears.
  2. On the Menu Selection display, do these steps:
    - a. Type QGPL in the *Input library* prompt.
    - b. Type INVM in the *Menu* prompt. If you want to choose from a list of members, press F4 with the cursor in the *Menu* prompt.
    - c. Type 01 - 03 in the *Create, update, or delete help text* prompt. The display appears as shown in the following figure.

Menu Selection		
Type choices, press Enter.		
Input library . . . . .	QGPL _____	Name
Menu . . . . .	INVM _____	Name, F4=List
Display text list . . . . .	N	Y=Yes, N=No
Create or update menu and/or command text . . . . .	N	Y=Yes, N=No
Create, update, or delete help text . . . . .	01 - 03	0-24
Delete old help text . . . . .	N	Y=Yes, N=No
Pattern new help text after this help text . . . . .	__ - __	0-24
Delete this menu and its text . . . . .	N	Y=Yes, N=No
F3=Exit SDA F12=Cancel		

d. Press Enter. The Menu Help Text Definition display appears.

## Defining Online Help Information for a Menu

The Menu Help Text Definition display is blank until you design or change online help information. SDA creates one page of online help information for each range of menu options specified on the Menu Selection display.

**Note:** SDA names the menu help formats for you. The naming convention is #Hxxyy where xx is the first option number for which the help is being created, and yy is the last option number for the help text range. For example, help for options 1 to 3 would be in #H0103.

The Menu Help Text Definition display looks similar to a free-form menu. You may clear the fields (row 1, the title line, row 21, the ready for option number, and the command for resume job line) as described in “Free-Form Menus” on page 81.

In the following example, you define online help information for options 1 through 3 of the INVM menu. Use the following steps to help you define online help information for the options of a menu:

1. Do the following on the Menu Help Text Definition display:
  - a. Type the information for each menu option as shown in the following figure.

**Note:** If error messages appear, press Enter to clear them before you continue.



```

COMMAND          HELP TEXT FOR MENU OPTIONS: 01 - 03          INQUIRY

Menu option 1 - Calls the programs to process orders.
                 With these programs you can handle all incoming
                 and outgoing orders. Orders will change inventory files.

Menu option 2 - Calls the programs to make inquiries into the inventory
                 files. This option does not allow any file updates.
                 This information is updated twice daily.

Menu option 3 - Calls the programs to allow maintenance of the inventory
                 files. All adjustments to inventory are made through this
                 option. Changes will be logged, and updates applied to
                 the inventory files twice daily.

Ready for option number or command      Cmd1-Resume job
0001 PRCORD

F3=Exit   F10=Continue   F11=Underline   F13=Upper case

More...
```

b. Press F10. The End of Help Text Options display appears.

---

## Saving the Online Help Information for a Menu

Use the following example to save the new or changed online help information.

1. On the End of Help Text Options display, do the following:

a. Select option 2 (Save the work done) as shown in the following figure.

**Note:** If during the online help information definition process you pressed F3 to leave the Menu Help Text Definition display, the system does not show you option 2 (Save the work done). Select option 1 (Return to prior help text definition display) or option 3 (Disregard work done on this help text).

```

                                End of Help Text Options

Type choices, press Enter.

Option . . . 2  1=Return to prior help text definition display
                2=Save the work done
                3=Disregard work done on this help text

For option 2 only:

Print the help text image . . . . . N  Y=Yes, N=No
Print source specifications
built for the help text . . . . . N  Y=Yes, N=No

F3=Exit   F12=Cancel
```

- b. Press Enter and the Menu Options display appears.
2. Press F12 on the Menu Options display. The End of Menu Options display appears.
3. Do the following on the End of Menu Options display:
  - a. Select option 2 (Save the work done) as shown in the following figure.

```

                                End of Menu Options

Type choices, press Enter.

Option . . . 2  1=Return to prior menu selection display
                2=Save the work done
                3=Disregard work done on all text for this menu

For option 2 only:

Output source members . . . . . :  INVM
                                   INVM##

Output library . . . . .         QGPL_____ Name
Compile menu source . . . . .    Y      Y=Yes, N=No

F3=Exit   F12=Cancel
```

- b. Press Enter to return to the Menu Selection display.

---

## Procedure Summary

Use the following steps to create or change online help information for a menu:

1. Select options on a menu for which you want to create or change online help information.
2. Define the online help information you are creating or changing.
3. Save the new or changed online help information.

---

## Displaying Online Help Information for a Menu

To display the online help information that you created for a menu, call the menu, and then type the menu selection number on the command line of the menu and press Help. For more information about calling a menu, see "Using a Menu" on page 78. To leave your online help information, press either Enter, Cmd 3, or Cmd 12.

---

## Deleting Online Help Information for a Menu

In the following example, you select input library QGPL and indicate that you want to delete the online help information you created for the options 01-03 for the INVM menu.

**Note:** Do not delete the online help information until after you complete all the exercises in this book. You need the online help information for exercises that follow.

Do the following on the Menu Selection display to delete online help information for a menu:

1. Type QGPL in the *Input library* prompt.
2. Type INVM in the *Menu* prompt.
3. Type 01-03 to indicate the numbers of the individual online help information options to be deleted in the *Create, update or delete help text* prompt.
4. Type Y in the *Delete old help text* prompt.
5. Press Enter. The Menu Options display appears with a message confirming that SDA deleted the help text.
6. Press F12 to complete your work as described in step 2 of “Saving the Online Help Information for a Menu” on page 87.

SDA deletes these items when you select option 2 (Save the work done) on the End of Menu Options display.

---

## Menu Security

You can use OS/400 menu security to limit the menus an operator can run. Define the operator’s default menu as mandatory to allow the operator to use only those jobs controlled by the mandatory menu, make selections from that menu only, and use only a few control commands. See *Security – Reference*, SC41-3302, for more information.



---

## Chapter 7. Creating RPG II Specifications

In the example in this chapter, you create RPG II WORKSTN file specifications for the display format ORDDE1 in the display format source member ORDENTRY for the RPG II program ORDNTSRP. For information about RPG II, see the *System/36-Compatible RPG II User's Guide and Reference*, SC09-1818.

SDA creates the following RPG II specifications:

- H specification (control header) with the program name
- F specification (file description) for a WORKSTN file, with continuation lines if required
- I specification (input) for each input field in the WORKSTN file
- O specification (output) for each execution-time output field in the WORKSTN file

---

### Creating RPG II WORKSTN File Specifications

In the following example, you select input library QGPL, display format source member ORDENTRY, and RPG II output source member and program name default ORDNTSRP to create RPG II WORKSTN file specifications for display format ORDDE1.

Use the following example to help you create RPG II WORKSTN file specifications.

1. On the Screen Design Aid (SDA) menu, do the following:
  - a. Select option 3 (Build RPG II WORKSTN file specifications) as shown in the following figure.

**Note:** If you enter an existing member name for the output source member name, SDA replaces it with the new RPG II specifications. SDA uses up to the first 6 characters that you specify as the default value for the name of the RPG II program.

Screen Design Aid (SDA)

Select one of the following:

1. Design menus and help text
2. Design display formats and help text
3. Build RPG II WORKSTN file specifications
4. Edit source and procedure members
5. View display formats
6. Print display formats
7. Compile display formats

Selection  
==> 3

F1=Help F3=Exit F4=Prompt F9=Retrieve F12=Cancel  
(C) COPYRIGHT IBM CORP. 1981, 1994.

- b. Press Enter and the RPG II Program Generation Selection display appears.
2. On the RPG II Program Generation Selection display, do these steps:
  - a. Type QGPL in the *Input library* prompt.
  - b. Press F4 with the cursor in the *Display format source member* prompt to select a member name. The Select Member Using SDA display appears.
3. Do the following on the Select Member Using SDA display:
  - a. Type 1 in the *Opt* column for ORDENTRY as shown in the following figure.

```

                                Select Member Using SDA
File:   QS36SRC      Library:  QGPL
Position to . . . . . _____ Starting character(s)
Subset . . . . . *ALL_____ *ALL, name, *generic*

Type option, press Enter.
1=Select

Opt      Member      Type      Text
-        ORDENT##    MNU36    _____
1        ORDENTRY    DSPF36   _____
-        ORDERS      MNU36    _____
-        ORDERS##    MNU36    _____
-        ORDFRE     MNU36    _____
-        ORDFRE##    MNU36    _____

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

- b. Press Enter to return to the RPG II Program Generation Selection display.

4. On the RPG II Program Generation Selection display, do the following:
  - a. Type ORDNTSRP in the *RPG output source member and program name default* prompt. The RPG II program name will be ORDNTS. The display appears as shown in the following figure.

RPG II Program Generation Selection

Type choices, press Enter.

Input library . . . . .	QGPL_____	Name
Display format source member . . . . .	ORDENTRY__	Name, F4=List
RPG II output source member and program name default . . . . .	ORDNTSRP__	Name

F3=Exit SDA    F12=Cancel

- b. Press Enter. The RPG II H and F Specifications Generation display appears.

---

## Defining RPG II H, F, and I Specifications

In the following example, you select program name ORDNTS to create the Control (H) Specification. You select WORKSTN file name WORKSTN to create WORKSTN file description (F) specifications. You indicate the number of decimal positions for each field on the display format ORDDE1 to create Input (I) specifications.

**Note:** For information about entries in the H and F specifications, see the *System/36-Compatible RPG II User's Guide and Reference*.

Use the following steps to define RPG II H, F, and I specifications.

1. On the RPG II H and F Specifications Generation display, do the following:
  - a. Type over ORDNTS in the *Program name* prompt if you want to change the program name.
  - b. Type WORKSTN in the *WORKSTN file name* prompt.
  - c. Type 250 in the *Record length* prompt. The display appears as shown in the following figure.

```

RPG II H and F Specifications Generation

Type choices, press Enter.

Control (H) specification entries
  Program name . . . . . ORDNTS

WORKSTN file description (F) specifications entries:
  WORKSTN file name . . . . . WORKSTN_
  Record length . . . . . 250__

Continuation (F) specifications entries:
  Number of display stations . . . . . __
  Number of indicators to save . . . . . __
  Name of data structure to save . . . . . _____
  Name of variable start line number field . . . . . _____
  Name of display station ID field . . . . . _____
  Name of display file . . . . . ORDENTRY__

F3=Exit   F10=Continue   F12=Cancel

```

d. Press F10. The RPG II I Specifications Generation display appears for input fields that allow numeric data on any of the display formats in the display format source member.

**Note:** The End of RPG II Program Generation Options display appears if there are no numeric input fields.

2. On the RPG II I Specifications Generation display, do the following:
  - a. Type 0 in the *Decimal Positions* column for CUSNO and ORDNO to allow no decimal positions. The display appears as shown in the following figure.

```

RPG II I Specifications Generation

Format Name . . . . . : ORDDE1

Type input numeric field specifications entries, press F10.

Field Names      Decimal Positions
CUSNO            0
ORDNO            0

Bottom

F3=Exit   F10=Continue   F12=Cancel

```

- b. Press F10. The End of RPG II Generation Options display appears.
 

**Note:** Press Page Down (Roll Up) or Page Up (Roll Down) to see additional pages of numeric input fields.



## Saving the RPG II Specification

You now select output source library QGPL and output source member ORDNTSRP to save the RPG II specifications for the display format ORDDE1.

In this example you save the RPG II specifications.

1. Do the following on the End of RPG II Generation Options display:
  - a. Select option 2 (Save the generated RPG II source specification) as shown in the following figure.

**Note:** If you pressed F3 while creating RPG II specifications, SDA does not show you option 2 to (Save the generated RPG II source specifications). Select option 1 (Return to prior RPG II Generation display) or option 3 (Discard the generated specifications).

```
End of RPG II Program Generation Options

Type choices, press Enter.

Option . . . 2  1=Return to prior RPG II generation display
                2=Save the generated RPG II source specification
                3=Discard the generated specifications

For option 2 only:

Output source library . . . . . QGPL_____ Name
Output source member . . . . . ORDNTSRP__ Name
Print generated source specifications . . . . . N Y=Yes, N=No

F3=Exit  F12=Cancel
```

- b. Press Enter to return to the RPG II Program Generation Selection display.

**Note:** The first 6 characters of the SDA field names must be unique if you select option 4 (Edit source and procedure members) from the Screen Design Aid (SDA) menu. SDA uses them to create RPG field names.

The following figure shows the program specifications created for the display formats in the display format source member ORDENTRY.

```

5738PW1 V3R1M0 94/09/09          IBM AS/400 SDA RPG II Source      09/09/94  09.39.33      Page 001
RPG II Program Name . . . . . ORDNTSRP
Source Member Name . . . . . ORDNTSRP
Library Name . . . . . QGPL
Directory Date . . . . . 09/09/94
Directory Time . . . . . 09.39

```

```

          IBM AS/400 SDA RPG II Source
          SOURCE
SEQNBR  ... 1 ... 2 ... 3 ... 4 ... 5 ... 6 ... 7 ... 8
100     H
200     FWORKSTN CP F 250          WORKSTN
300     F
400     IWORKSTN
500     I* FORMAT-ORDDE1
600     I
700     I
800     I* FORMAT-ORDDE2
900     I
1000    I
1100    I
1200    I
1300    I
1400    I
1500    I
1600    I* FORMAT-ORDDE3
1700    I
1800    I
1900    I
2000    I
2100    I
2200    I* FORMAT-ORDDE4
2300    I
2400    I
2500    OWORKSTN D
2600    0
2700    0
2800    0
2900    OWORKSTN D
3000    0
3100    0
3200    0
3300    0
3400    0
3500    0
3600    0
3700    0
3800    0
3900    0
4000    0
4100    0
5738PW1 V3R1M0 94/09/09          IBM AS/400 SDA RPG II Source      09/09/94  09.39.33      Page 002
4200    0
4300    0
4400    0
4500    OWORKSTN D
4600    0
4700    0
4800    0
4900    0
5000    0
5100    0
5200    0
5300    0
5400    0
5500    0
5600    0
5700    0
5800    0
5900    0
6000    0
6100    0
6200    0
6300    0
6400    0
6500    0
6600    OWORKSTN D
6700    0
6800    0
6900    0
7000    0
7100    0
7200    0
          K8 'ORDDE1 '
          CUSNO 6
          ORDNO 12
          K8 'ORDDE2 '
          CUSNO 6
          ORDNO 12
          CNAME 36
          SNAME 60
          CADDR 84
          SADDR 108
          CCITY 132
          CSTATE 134
          SCITY 158
          SSTATE 160
          CZIP 169
          SZIP 178
          CPONO 187
          CSLSNO 189
          K8 'ORDDE3 '
          CUSNO 6
          ORDNO 12
          CNAME 36
          SNAME 60
          CADDR 84
          SADDR 108
          CCITY 132
          CSTATE 134
          SCITY 158
          SSTATE 160
          CZIP 169
          SZIP 178
          CPONO 187
          CSLSNO 189
          LINE 195
          QTY 201
          DESC 231
          PRICE 240
          AMOUNT 250
          K8 'ORDDE4 '
          LINE 6
          QTY 12
          DESC 42
          PRICE 51
          AMOUNT 61
          * * * * * E N D   O F   S O U R C E   * * * * *

```

---

## Using SEU to Add Program Logic

You must use SEU to add the specifications, such as the C (calculation) specifications, in program logic. Select option 4 (Edit source and procedure members) from the Screen Design Aid (SDA) menu to edit the program and to add more logic to the application program. See Chapter 8, “Editing, Viewing, Printing, and Compiling Display Formats” for information about using option 4.

Use either the RPGONL, RPGC, or AUTO C procedure to compile the source specifications. For more information about these procedures and RPG II programs see the *System/36-Compatible RPG II User's Guide and Reference*.

---

## Procedure Summary

Use the following procedures to create RPG Specifications:

1. Select a source member to create RPG II specifications.
2. Define the H and F specifications for the RPG II program.
3. Define the I specifications for the RPG II program.
4. Save the RPG II specifications.



---

## Chapter 8. Editing, Viewing, Printing, and Compiling Display Formats

In the examples in this chapter, you do the following with the source member and display formats created in the previous chapters:

- Edit the source member ORDENTRY using the Source Entry Utility (SEU).
- See display formats in ORDENTRY.
- Print an image of display format ORDDE1.
- Compile ORDENTRY.

---

### Editing Source and Procedure Members

In the following example, you select input library QGPL, source member ORDENTRY, and member type DSPF36 to edit the source member ORDENTRY.

1. Do the following on the Screen Design Aid (SDA) menu:
  - a. Select option 4 (Edit source and procedure members) as shown in the following figure.

```
Screen Design Aid (SDA)

Select one of the following:

  1. Design menus and help text
  2. Design display formats and help text
  3. Build RPG II WORKSTN file specifications
  4. Edit source and procedure members
  5. View display formats
  6. Print display formats
  7. Compile display formats

Selection
====> 4

F1=Help  F3=Exit  F4=Prompt  F9=Retrieve  F12=Cancel
(C) COPYRIGHT IBM CORP. 1981, 1994.
```

- b. Press Enter and the Edit Selection display appears.
2. On the Edit Selection display, do the following:
    - a. Type QGPL in the *Input library* prompt.
    - b. Type ORDENTRY in the *Member* prompt.
    - c. Press Enter and the SEU Edit display appears.

If you are changing a member, SEU shows the source or procedure statement and prompts you for the statement number you want to change. You can also copy, move, or delete statements.

3. On the SEU Edit display, do the following:

- a. Type IP? in the sequence number of a record to insert a new record. Your display appears as shown in the following figure:

```

Columns . . . : 1 71          Edit                               QGPL/QS36SRC
====>
FMT FS .....SFmtname+..StCILR..A1FCBcEiOfSiNfCR.....Keymask+
***** Beginning of data *****
0001.00      SORDDE1          Y          99                      BG
0002.00      DFL0001          16 411Y                      CCustomer number
IP?3.00      DCUSNO            6 431Y  YN Y ZY          Y          Y
0004.00      DFL0003          13 611Y                      COrder number:
0005.00      DORDNO            6 631Y  YN Y B          Y          Y
0006.00      DFL0005          491211Y                     CType in the cus
0007.00      DFL0006          361311Y                     Cand press one o
0008.00      DFL0006          361311Y                     Cand press one o
0009.00      DFL0007          551512Y                     CEnter/Rec Adv -
0010.00      DFL0007          551512Y                     CEnter/Rec Adv -
0011.00      DFL0008          571621Y                     CCmd 2 - Allows y
0012.00      DFL0008          571621Y                     CCmd 2 - Allows y
0013.00      DFL0009          351721Y                     CCmd 7 - Ends the
0014.00      DFL0009          351721Y                     CCmd 7 - Ends the
0015.00      DFL0009          351721Y                     CCmd 7 - Ends the
0016.00      DERRMSG          7924 299                      99

F3=Exit    F4=Prompt  F5=Refresh    F9=Retrieve
F16=Repeat find  F17=Repeat Change  F24=More keys
(C) COPYRIGHT IBM CORP. 1981, 1994.

```

- b. Press Enter and the SEU Select Prompt display appears.

4. On the SEU Select Prompt display, do the following:

- a. Type FD in the *Prompt type* prompt to enter SFGR D specification source statements.
- b. Press Enter and the SEU Edit display appears as shown in the following figure.

```

Columns . . . : 1 71          Edit                               QGPL/QS36SRC
====>
FMT FD .....DFldname+Fld1LnHpOd. IDMSAPcDCAPfHiBfNdRiUnC.L....CConstantdata+++
0003.00      DCUSNO            6 431Y  YN Y ZY          Y          Y
*****
Prompt type . . . FD      Sequence number . . . ,,,,,,
Field      Field      Row      Column      Output      Allow      Data
Name      Length      Number      Number      Data      Input      Type
-----
-- Mandatory --      Self      Adjust/      Position      Enable
Fill      Entry      Check      Fill      Cursor      Dup Key
Controlled      Auto      Protect      High      Blink
Field Exit      Advance      Field      Intensity      Field
Reverse      -      Column      Allow
Image      Underline      Separators      Lowercase
Type      Constant      -      Continuation
-      -

F3=Exit    F4=Prompt  F5=Refresh    F11=Previous record
F12=Cancel  F23=Select Prompt  F24=More keys

```

5. On the SEU Edit display, do the following:
  - a. Make desired changes to the SFGR D specification source statements.
  - b. Press Enter and the SEU Edit display appears again with the SFGR prompt on the bottom of the screen.
  - c. Press Enter, and another blank D specification appears.
  - d. Press Enter to clear the prompt.
 

**Note:** For more information about D specifications refer to the *System/36 Environment Programming* manual.
  - e. Press F3. The SEU Exit display appears as shown in the following figure:

Exit		
Type choices, press Enter.		
Change/create member . . . . .	Y	Y=Yes, N=No
Member . . . . .	ORDENTRY__	Name
File . . . . .	QS36SRC__	Name
Library . . . . .	QGPL_____	Name
Text . . . . .		
<hr/>		
Resequence member . . . . .	Y	Y=Yes, N=No
Start . . . . .	0001.00	0000.01 - 9999.99
Increment . . . . .	01.00	00.01 - 99.99
Print member . . . . .	N	Y=Yes, N=No
Return to editing . . . . .	N	Y=Yes, N=No
Go to member list . . . . .	N	Y=Yes, N=No
F3=Exit            F5=Refresh            F12=Cancel		

6. Press Enter to return to the Edit Selection display.
7. Press F12 to return to the Screen Design Aid (SDA) menu, or continue to use SEU to enter or change another source or procedure member.

---

## Viewing Display Formats

When you look at display formats you can do the following:

- See a sequence of up to six compiled display formats from the same display file in any order
- See the help displays of the compiled display formats
- Select up to six display formats at one time and specify a different start line number for each
- Turn on specified indicators for each display format and see the results.

Now you view the display format ORDDE1 in display file ORDENTRY, from the QGPL library. In this exercise, you turn on specified indicators for format ORDDE1.

In this example, you view a display format.

1. On the Screen Design Aid (SDA) menu, do the following:
  - a. Select option 5 (View display formats).
  - b. Press Enter. The View Selection display appears.
2. On the View Selection display, do the following:
  - a. Type QGPL in the *Input library* prompt.
  - b. Press F4 with the cursor on the *Display file* prompt to select a display file name. The Display File List for View display appears.
3. On the Display File List for View display, do the following:
  - a. Type 1 in the *Opt* column for ORDENTRY as shown in the following figure:

```

                                Display File List for View
Input library . . . . : QGPL          Position list to . . . _____
Type option, press Enter.
 1=Select
Opt  File      Description
 1   ORDENTRY

```

Bottom

F3=Exit view F12=Cancel

- b. Press Enter and the View Selection display appears as shown in the following figure:



```

                                View Selection

Type choices, press Enter.

Input library . . . . . QGPL _____ Name
Display file . . . . . ORDENTRY _____ Name, F4=List
Display format . . . . . _____ Name, ALL, F4=List
Enable indicators . . . . . _____
Start line . . . . . _____ 1-24 or 1-27
Clear all lines
after each display . . . . . Y Y=Yes, N=No

F3=Exit SDA F12=Cancel

```

4. On the View Selection display, press F4 with the cursor on the *Display format* prompt to select a display format name. The Display Format List for View display appears.

**Note:** Type ALL as the display format name to see all display formats in the selected display file (if you do not have a display format named ALL).

5. On the Display Format List for View display, do these steps:

a. For ORDDE1, type 1 on the *Opt* column, and type 99 in the *Enable indicators* column. Indicator 99 is turned on for ORDDE1. The display appears as shown in the following figure:

```

                                Display Format List for View

Input library . . . . . : QGPL
Display file . . . . . : ORDENTRY

Type options/parameters, press Enter.
  1=Select  2,3,4,5,6=Additional display formats to view.

Opt  Display formats      Enable indicators      Start line
  1   ORDDE1              99 _____         _____

Bottom

F3=Exit view  F12=Cancel  F17=Subset

```

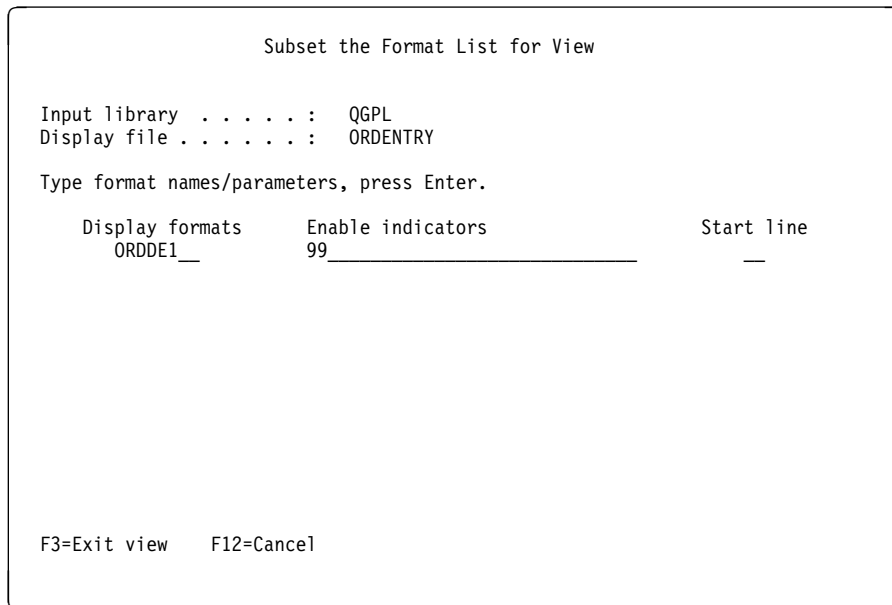
**Note:** To use a start line number, you must specify variable start in the display file.

b. Press F17. The Subset the Format List for View display appears

The Subset the Format List for View shows the selections that you make from the Display Format List For View display.

6. On the Subset the Format List for View display, do the following:

a. Type the information as it appears in the following figure. Type ORDDE1 on the first blank display format field so that you will see ORDDE1 without any indicators on.



b. Press Enter and the display formats you selected appear in the order you specified them.

c. Type data into input fields on the display formats to determine if the proper data type is allowed and the field formats correctly when the operator uses Field Exit.

d. Position the cursor and press Help to display the help formats of the displays for which you have inserted help definition (H) specifications into the display formats.

e. Press Enter to see the next display format. After you view all the display formats, you return to the Display Format List for View display.

7. Press F3 to return to the Screen Design Aid menu.

---

## Printing Images of Display Formats

In the following example, you select input library QGPL and source member ORDENTRY, and indicate that you want to print an image of, and the specifications for, display format ORDDE1.

In this example, you print an image of the display format.

1. Do the following on the Screen Design Aid (SDA) menu:

a. Select option 6 (Print display formats).

- b. Press Enter and the Print Selection display appears.
2. On the Print Selection display, do the following:
- a. Type QGPL in the *Input library* prompt.
  - b. Type ORDENTRY in the *Source member* prompt. The display appears as shown in the following figure.
- Note:** You can also press F4 with the cursor on the *Source member* prompt to select a member name. The Select Member Using SDA display appears. Type 1 in the *Opt* column for ORDENTRY and press Enter.

```

                                Print Selection

Type choices, press Enter.

Input library . . . . . QGPL      Name
Source member . . . . . ORDENTRY  Name, F4=List
Display format . . . . .           Name, ALL, F4=List
Print option . . . . . 1          1=Print image, specifications
                                   2=Print image
                                   3=Print specifications

F3=Exit SDA  F12=Cancel

```

- c. Press Enter. The Print Options display appears as shown in the following figure.

```

                                Print Options

Input library . . . . . : QGPL
Source member . . . . . : ORDENTRY

Type choices, press Enter.

Display format . . . . .           Name, ALL, F4=List
Print option . . . . . 1          1=Print image, specifications
                                   2=Print image
                                   3=Print specifications

F3=Exit print  F12=Cancel

```

3. On the Print Options display, press F4 while the cursor is on the *Display format* prompt to select a display format name. The Display Format List for Print display appears.

**Note:** Type ALL as the display format name to select all display formats in the member for printing (if you do not have a display format with the name All).

4. On the Display Format Name List for Print display, do the following:
  - a. Type 1 in the *Opt* column for ORDDE1 as shown in the following figure.

```
Display Format List for Print
Input library . . . . . : QGPL
Source member . . . . . : ORDENTRY

Type options, press Enter.
  1=Print image and specifications  2=Print image  3=Print specifications

Opt   Display formats
  1   ORDDE1

Bottom

F3=Exit print  F12=Cancel
```

- b. Press the Page Down and Page Up key to see additional display format names.
  - c. Press Enter and the End of Print Options display appears.
5. On the End of Print Options display, do the following:
  - a. Select option 2 (Print selected format images and specifications). The display appears as shown in the following figure.

```

                                End Of Print Options

Type choices, press Enter.

Option . . . 2  1=Return to prior print options display
                2=Print selected format images and specifications
                3=Disregard selections, no printing will be done

For option 2 only:

Print borders around display images . . . . . Y   Y=Yes, N=No
Indent all printed output . . . . . 2_  2-35

F3=Exit   F12=Cancel

```

- b. Press Enter to print the format image and specifications.
- c. Press either F12 to see the Screen Design Aid (SDA) menu or F3 to exit SDA.

---

## Compiling Display Format Source Members

Convert source members into display files by compiling the display format source specifications. In the following example, you select input and output library QGPL and display file ORDENTRY to compile source member ORDENTRY.

Use the following steps to compile the source member:

1. Do the following on the Screen Design Aid (SDA) menu:
  - a. Select option 7 (Compile display formats).
  - b. Press Enter and the Compile Selection display appears.
2. On the Compile Selection display, do the following:
  - a. Type QGPL in the *Input library* prompt.
  - b. Press F4 while the cursor is on the *Source member* prompt to select a member name. The Select Member Using SDA display appears.
3. On the Select Member Using SDA display, do the following:
  - a. Type 1 in the *Opt* column for ORDENTRY.
  - b. Press Enter. The Compile Selection display appears.
4. On the Compile Selection display, do the following:
  - a. Type QGPL in the *Output library* prompt.
  - b. Type ORDENTRY in the *Display file* prompt. The display appears as shown in the following figure.

```

                                Compile Selection

Type choices, press Enter.

Input library . . . . . QGPL      Name
Source member . . . . . ORDENTRY  Name, F4=List
Output library . . . . . QGPL      Name
Display file . . . . . ORDENTRY  Name
Print output . . . . . N          Y=Yes, N=No, P=Partial
Replace existing display file . . . . Y          Y=Yes, N=No
Number of formats to compile . . . . 255       1-255

F3=Exit SDA   F12=Cancel

```

**Note:** The input library cannot be QTEMP because the compile is submitted in batch as a separate job.

- c. Press Enter. SDA calls the Screen Format Generator (\$SFGR) utility program to compile the display file, and returns the Compile Selection display.

---

## Procedure Summary

- Use the following steps to edit source and procedure members:
  1. Select source or procedure member.
  2. Create or change the member by using SEU.
  3. Save your edited source or procedure member.
- Use the following steps to look at a display format:
  1. Select a display file containing display formats to look at.
  2. Look at the selected display formats.
- Use the following steps to print images of display formats:
  1. Select the display formats.
  2. Print the display formats.
- Use the following steps to compile a display format:
  1. Select a source member to change into a display file.
  2. Look at the message from \$SFGR to see if the display file was successfully compiled.

---

## Reference Information

The following sections supply reference information for editing and compiling source and procedure members, and viewing and printing display formats.

## Using SEU

You can use SEU to create or change source members, programs, procedures, menus, and display formats.

You can select option 4 (Edit source and procedure members) from the Screen Design Aid (SDA) menu (as described in “Editing Source and Procedure Members” on page 99), or leave SDA to reach SEU.

Use SEU through SDA when you change source and procedure members you normally would not change using SDA. For example, if you use SDA to shorten an input field in a format used by a COBOL program, you would have to use SEU to change the program source member. You can return to SDA and continue your work after you change the program source member.

Use the following example to help you enter SEU using System Request while in SDA:

1. Press the System Request key.
2. Press Enter and the System Request menu appears.
3. Select option 1 at the System Request menu.
4. Press Enter and the AS/400 sign-on display appears.
5. Sign on to the AS/400 system.
6. Type SEU when the AS/400 Main Menu appears.

Do the following to enter SEU by leaving SDA:

1. Type SEU at the bottom of any AS/400 menu.
2. Press Help.

See *ADTS/400: Source Entry Utility*, SC09-1774, for additional information about SEU.

## Considerations for Viewing Display Formats

Consider the following when you view display formats:

- F3 ends the display sequence if it is turned on or off by the display format.
- If a display format uses the **override fields** operation, it must appear with the override turned off (the indicator is off), and then with the override turned on (the indicator is on). Type N in the *Clear all lines after each display* prompt on the View Selection display. Unpredictable results occur if you do not follow this procedure.
- Turn off the erase input (the indicator is off) the first time the display format appears. The display format appears the second time with erase input turned on (the indicator is on). Type N in the *Clear all lines after each display* prompt on the View Selection display.

- The help displays for a help area with no H specification specified on the library name must be in the same library as the display you are looking at.
- When you look at a series of mixed format displays and go from 80- to 132-column processing, you must specify on the display control S specification that the 132-column display is to clear all lines. If you do not clear all lines, a message is issued which indicates that data that is not valid was sent to the display station.

When going from 132- to 80-column processing, you should specify in the S specification that the 80-column screen clear all lines. Go to the S specification and type your original data into the clear all lines prompt and recompile the format when you have finished.



---

## Appendix A. Recovering from an Interrupted Screen Design Aid Session

If your session is interrupted while you are working, SDA helps you to recover your work. An SDA session can be interrupted for the following reasons:

- A newly created or updated source member is put in a library with insufficient space to contain that source member.
- You are signed off your display station by the system operator.
- The display station you are working at is turned off.
- A system failure occurs.
- An electrical failure occurs.

SDA helps you to recover most of the work from an interrupted session.

### Recovery for System/36 Environment SDA

To recover, you must sign on to the same logical display station at which the interruption happened. When you sign on to the correct display station and run the SDA procedure, the Recover SDA Sessions display appears. This display is shown in place of the SDA Main Options menu whenever you return to SDA after an unplanned interruption.

Because the SDA recovery is based on the display station at which the interruption occurred, someone else could sign on to that display station, try to use SDA, and be shown the Recover SDA Session display. Try to recover your work with SDA immediately after the interruption occurs.

The Recover SDA Sessions display lists the following:

- SDA option that was interrupted
- Session library
- Member that was in use.

Choose between continuing the interrupted work, discarding the interrupted work, or delaying the recovery.

The following figure shows the display that appears if you have an interruption in the System/36 Environment.

```
                                SDA Recovery Options

SDA was interrupted after starting

Main option . . . . . : 2
Input library . . . . . : QGPL
Member . . . . . : ORDENTRY

Type choice, press Enter.

Recovery option . . . 1  1=Resume the interrupted work
                        2=Discard the work done and restart SDA
                        3=Retain the work done and exit SDA

F3=Exit SDA  F12=Cancel
```

Use the following options to recover from an interrupted session:

- Option 1 resumes the work that you were doing.
- Option 2 discards the work space and the work you were doing at the time of the interrupted session. A record of the interrupted work is not saved.
- Option 3 postpones the recovery until another time. The work space is saved, and you are signed off SDA. To use SDA at this display station you must either resume work on the recovered session (option 1) or discard the work space and the work that you were doing (option 2).

---

## Appendix B. Double-Byte Character Set Considerations

You can use double-byte character set (DBCS) characters for input data, output data, online help information, and menu text.

You can use DBCS characters to enter and display data, online help information, and menu text if you:

- Have the DBCS character function on the system
- Are signed on to a DBCS display
- Are in a DBCS type of operation.

### Specifying Input Attributes

Three types of input fields are:

**Open** You can type both alphanumeric-Katakana (A/N/K) and DBCS data.

**Only** You can type only DBCS data.

**Either** You can type either A/N/K or DBCS data, but not both.

DBCS input fields require an even number of input field characters to allow double-byte characters. An input field must be broken into multiple lines when necessary and have an even number of input character fields on each line to allow double-byte characters.

Open input fields must have a shift-out/shift-in (SO/SI) condition in the field. To enter data, position the cursor under the S/O or anywhere between S/O and S/I. If you want to enter DBCS data next to A/N/K data, press the OE/OF Generate key to insert the SO/SI characters at cursor position. If you press the Display OE/OF key, the S/O and S/I characters appear on the screen. S/O appears as X'0E' and S/I appears as X'0F'.

There is a difference in the use of space between DBCS and alphanumeric-Katakana (A/N/K) characters. As the following figure shows, DBCS data begins with an SO character in 1 column, followed by DBCS characters of 2 columns each, followed by an SI character of length 1.

S					S
	D	B	C	S	
O					I

CSDA022-1



---

## Appendix C. Differences between System/36 SDA and AS/400 System/36 Environment SDA

This appendix summarizes the differences in using Screen Design Aid (SDA) between the System/36 SDA and AS/400 System/36 environment SDA. System/36 environment SDA has a number of differences from System/36 SDA.

---

### Terminology Differences

The following table shows the differences in terminology between System/36 SDA and System/36 environment SDA:

<b>System/36</b>	<b>AS/400 System</b>
Browse help area	Display help area
End SDA	Exit SDA
Load format member	Display file
Member subtype FMT	DSPF36
Member subtype MNU	MNU36
Output load member library	Output library
Update help area	Change help area
Menu message source compiles into:	Menu message source compiles into:
Load member	Message file

---

### Functional Differences

Following is a summary of the functional differences between System/36 SDA and System/36 environment SDA.

- SDA uses UIS interface command keys in AS/400 System/36 environment SDA.
- SDA uses the CRTS36DSPF procedure in the AS/400 System/36 environment SDA instead of the FORMAT procedure.
- SDA uses the CRTS36MNU procedure in the System/36 environment instead of the BLDMENU procedure.
- SDA uses messages in a subfile in AS/400 System/36 environment SDA.
- Object names in AS/400 System/36 environment SDA are 10 positions. Limiting object names to 8 positions allows you to move them to System/36 SDA.

- AS/400 System/36 environment SDA uses the SDA procedure. The SDA procedure assumes the source file QS36SRC contains the Screen Format Generator (SFGR) source member. If this source file does not exist, it is automatically created for you.
- SDA uses AS/400 security for AS/400 System/36 environment SDA.
- SDA calls AS/400 SEU in AS/400 System/36 environment SDA.
- Subtypes FMT and MNU are replaced by subtypes DSPF36 and MNU36 in AS/400 System/36 environment SDA.
- SDA does not work with Work Station Utility (WSU) displays in AS/400 System/36 environment SDA.

---

## Appendix D. Using the FORMAT Procedure to Create Display Formats

This chapter describes how to create display formats and online help information by using the FORMAT procedure instead of Screen Design Aid (SDA). The FORMAT procedure is an OS/400 System/36 environment procedure which calls the Screen Format Generator (\$SFGR) utility program.

When you run the FORMAT procedure, the system uses the display format source member to create the display file and uses the display formats to show the displays used by the application programs or procedures.

---

### Arranging the Display Format

Use the IBM 5250 Display Station Keyboard Template Assignment Sheet and the Display Layout Sheet to arrange the display formats as they will appear on the display.

### Naming the Display Format

Follow a naming scheme when you identify display formats to help you keep track of them. You form the name of the display format ORDDE1 by combining the following:

- A 3-character abbreviation of the application (ORD).
- A character that identifies it as a display format (D).
- The 2-character display ID (E1). The first character of the display ID identifies the application (E means order entry); the second character identifies the order of the display in the application.

# Using the Keyboard Template Assignment Sheet

Use the template shown in the following figure as a work sheet for assigning function keys used by the application program.



5250 Information Display System  
Keyboard Template Assignment Sheet and  
Display Screen Layout Sheet

Format Name \_\_\_\_\_ Description \_\_\_\_\_

Job Name \_\_\_\_\_ Sheet \_\_\_\_\_ of \_\_\_\_\_

Originated by \_\_\_\_\_ Date \_\_\_\_\_

Display Mode	13	14	15	16	17	18	19	20	21	22	23	24	Clear
	1	2	3	4	5	6	7	8	9	10	11	12	Test Request

## Keyboard Template Assignments

1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
17	
18	
19	
20	
21	
22	
23	
24	

Address comments concerning this form to IBM Corporation, Department 245, Rochester, Minnesota 55901.

File No. S5250/S34/S38-89

GX21 9271-1 UM/050\*  
Printed in U.S.A.

\*Number of forms per pad could vary slightly.













## Creating a Display File

Create the display file ORDDISPS in the library ORDERLIB. The source member DISPLAYS, in the library ORDERLIB, contains the display format specifications. The source member contains the display format specifications for four display formats: ORDDE1, ORDDE2, ORDDE3, and ORDDE4. Type the following FORMAT procedure:

```
FORMAT CREATE,ORDDISPS,ORDERLIB,DISPLAYS,ORDERLIB,4
```

**Note:** Use caution when REPLACE is specified after the number of formats. \$SFGR issues a warning message if the load object that is being replaced is not a display file. If you take option 0 for this message, \$SFGR replaces a program or message file if it has the same name and library as the specified display file.

## Adding a Display Format to a Display File

Add the display format ORDDE5 to the display file ORDDISPS. The source member NEWSCRN contains the display format specifications for ORDDE5. The library ORDERLIB contains both the source member and the display file. Type the following FORMAT procedure:

```
FORMAT ADD,ORDDISPS,ORDERLIB,NEWSCRN,ORDERLIB,1
```

## Changing a Display File

Change the display file ORDDISPS stored in the library ORDERLIB. The source member containing the changed display format specification is MODSCRNS and is in the library ORDERLIB. The display file ORDDISPS is changed to reflect the changes made in the source member. Type the following FORMAT procedure:

```
FORMAT UPDATE,ORDDISPS,ORDERLIB,MODSCRNS,ORDERLIB
```

## Deleting a Display Format from a Display File

Delete the display format ORDDE4 from the display file ORDDISPS. The display file is in the library ORDERLIB. Type the following FORMAT procedure:

```
FORMAT DELETE,ORDDISPS,ORDERLIB,ORDDE4
```

## Output from the FORMAT Procedure

In addition to creating or changing the display file, the FORMAT procedure produces lists of the following:

- Source specifications
- Diagnostic or informational messages
- Indicators used
- Fields requiring output from the application program
- Input fields on the display
- The name and size of the display formats.

The system prints the source specifications in the order they appear in the source member. If the system finds an error when it processes the source specifications, it prints a message immediately following the statement that caused the error.

If the system finds a terminal error, it does not create the display file. Correct the problem and rerun the FORMAT procedure. Use the System/36 WSU/\$SFGR Debugging Template to help you correct specification errors.

Use the list of indicators when you code the programs that use the display formats. Those indicators can be turned ON and OFF by the program to control the operation of the display.

The lists produced by the FORMAT procedure determine how to code program statements that control input and output operations. For more information about coding the programs that use display formats, see the reference manual for the programming language you use.





---

## Appendix E. Using the Build Menu (BLDMENU) Procedure to Create a Menu

This appendix describes how to create fixed-form and free-form menus by using the Build Menu (BLDMENU) procedure instead of Screen Design Aid (SDA).

The BLDMENU procedure can create a menu from SFGR source or System/36 message source. To help BLDMENU distinguish between an option text source member containing SFGR source and one containing System/36 message source, use the naming conventions shown in the following table:

---

Option Text Member Name	Convention Comments
menu-name	The member must contain SFGR source.
menu-namedT	The member must contain message source.
other	The member can contain SFGR or message source. BLDMENU handles this by assuming that the member could contain SFGR and an SFGR compile (FORMAT procedure) is attempted. If the SFGR compile fails, BLDMENU assumes that the member contains System/36 message source. This method can take much longer to build a menu than when either of the other two names are specified.

---

### Creating a Menu from SFGR Source

Like SDA, the BLDMENU procedure can create a menu from an option text source member containing SFGR source. The source could have been either generated by SDA or entered by the user with an editor like SEU. If the option text source member contains SFGR source, it is best to name the source member the same as the menu name, but when you do this you must use the KEEP parameter. For example:

```
BLDMENU ORDFRE,ORDFRE,MAINLIB,MAINLIB,,KEEP
```

If the SFGR source member does not have the same name as the menu, use the KEEP parameter. When you specify a SFGR source member, the member name must **not** be menu-namedT, because this name is reserved for members containing System/36 message source.

### Creating a Menu from System/36 Message Source Only

BLDMENU can create a menu either from an option text source member containing System/36 message source, or from the command text source member when an option text source member name is omitted. Creating System/36 message source is much simpler than creating SFGR source and is ideal for creating simple menus quickly. The remainder of this chapter deals with the creation of a menu by using System/36 message source members only.

---

## Designing the Menu

Create a layout of the fixed-form or free-form menu on a blank piece of paper.

### Designing a Fixed-Form Menu

A fixed-form menu has two columns of menu options, 1 through 24, with 30 positions of alphanumeric text for each option description. The system determines the options that appear on rows 1 through 4, such as: the display operation, the display station identification (ID), and the menu name. Rows 17 through 24 are reserved for operator input and system messages.

When you use double-byte character set (DBCS) characters, you can enter 30 A/N/K characters, 14 DBCS characters, or a combination of both. The total length cannot exceed 30 bytes.

The following figure shows descriptive text for each option.

COMMAND	MENU: ORDFIX
Select one of the following:	
1. Progress orders	13.
2. Inquire into file information	14.
3. Maintain files	15.
4. Print reports	16.
5. List files	17.
6. Do monthly close	18.
7.	19.
8.	20.
9.	21.
10.	22.
11.	23.
12.	24. Sign off the system
Ready for option number or command	

See "Fixed-Form Menus" on page 80 for additional information on fixed-form menus.

### Designing a Free-Form Menu

A free-form menu allows you to determine the placement and number of options in rows 3 through 20. The text appears in columns 2 through 76 of the menu. You cannot have more than 75 columns of information for each row on the menu. The system determines what options appear on rows 1 and 2, such as the display operation, the display station ID, and the menu name. The system reserves rows 21 through 24 for operator input and system messages.

You can use A/N/K characters, DBCS characters, or both, for free-form menus. The text can extend beyond one row. You must bracket each DBCS character string on each row with a shift-out (SO) and a shift-in (SI) character. For example, if the last character on one row and the first character on the next row are DBCS, type an SI character to end the first row and an SO character to start the next row.

The following figure shows descriptive text for each option.

```
COMMAND                                MENU: ORDFRE

                                Order Entry and Invoicing: Main Menu

Select one of the following:

    1. Progress orders
    2. Inquire into file information
    3. Maintain files
    4. Print reports
    5. List files
    6. Do monthly close

HELP key - Supplies help information about this menu
Cmd12 key - Displays previous menu
HOME key - Displays sign-on menu

Ready for option number or command
```

See “Free-Form Menus” on page 81 for additional information on free-form menus.

---

## Coding the Menu Option Source Members

You can use two types of source members as input to the BLDMENU procedure:

- The **menu option text source member** is optional for fixed-form menus, but is required for free-form menus. It defines the text that appears on the menu. If no option text source member name is specified, the menu option text is taken from the command text member.
- The **command text source member** is required for both fixed-form and free-form menus. It contains the command or procedure processed when the operator selects an option from the menu.

## Coding the Menu Option Text Source Member for a Fixed-Form Menu

The first statement of the menu option text source member identifies the name of the option text message file, which must be identical to the name of the source member. In the same statement, after the name, the character ,1 or ,2 can be specified. The number indicates whether the source is for first or second level text. For example, using the BLDMENU naming convention, the first statement for the menu ORDFIX is ORDFIXDT,1.

The system identifies each statement in the menu option text source member by a 4-digit number (with leading zeros) that represents an option on the menu, followed by one blank. For example, statement 0004 is option 4 of the menu. You do not have to supply descriptive text for each option number.

You must supply text for each option you define in the command text source member, and you may supply a menu option text source member as input to the BLDMENU procedure. If you do not, BLDMENU uses the first 30 characters of each statement in the command text source member as the text for the options.







## Output from the BLDMENU Procedure

The BLDMENU procedure produces a listing containing the following:

- The option numbers and statements from the command text source member
- The menu option text to appear on the menu.

**Note:** If you are using the DBCS version of OS/400 and you specify *IGC* on the BLDMENU procedure, the menu and the command line with the *Ready for option number or command* prompt appear on the display in DBCS characters.





---

## Appendix F. Creating Help Displays and Help Documents

While creating a display format, you can create online help information for the display format in the following ways:

- By creating help information when you create the display format
- By creating a help display that provides help information for the display format
- By creating a help document that provides help information for the display format.

You can supply help information for the display format by using any combination of the three methods.

You use SDA to create a help display, while you use the OfficeVision/400\* product to create a help document.

For more information on using SDA to create a help display, see Chapter 4, "Creating and Changing Online Help Information for Display Formats." For more information on using the OfficeVision/400 product to create a help document, see the *Office Services Concepts and Programmer's Guide*, SH21-0703.



---

## Bibliography

The following publications are listed with their full titles and base order numbers. When these publications are referred to in the text, a shortened version of the titles is used.

The related Application Development ToolSet/400 publications are:

- *ADTS/400: Advanced Printer Function*, SC09-1766
- *ADTS/400: Character Generator Utility*, SC09-1769
- *ADTS/400: Data File Utility*, SC09-1773
- *ADTS/400: File Compare and Merge Utility*, SC09-1772
- *ADTS/400: Interactive Source Debugger*, SC09-1897
- *ADTS/400: Programming Development Manager*, SC09-1771
- *ADTS/400: Report Layout Utility*, SC09-1767
- *ADTS/400: Screen Design Aid*, SC09-1768
- *ADTS/400: Source Entry Utility*, SC09-1774
- *Introducing Application Development ToolSet/400 and the AS/400 Server Access Programs*, SC09-1939

The orderable features of 5763-PW1 are:

- *ADTS/400: Application Development Manager/400 Introduction and Planning Guide*, GC09-1807

- *ADTS/400: Application Development Manager/400 User's Guide*, SC09-1808
- *ADTS/400: Application Dictionary Services/400 Self-Study Guide*, SC09-1904
- *ADTS/400: Application Dictionary Services/400 User's Guide*, SC09-1860

The related IBM AS/400 publications are:

- *CL Reference*, SC41-3722
- *Data Management*, SC41-3710
- *DDS Reference*, SC41-3712
- *Office Services Concepts and Programmer's Guide*, SH21-0703
- *Publications Reference*, SC41-3003
- *Security – Reference*, SC41-3302
- *Software Installation*, SC41-3120
- *System Operation*, SC41-3203
- *System Startup and Problem Handling*, SC41-3206
- *Using OfficeVision/400 Word Processing*, SH21-0701

The related System/36 publications are:

- *System/36-Compatible RPG II User's Guide and Reference*, SC09-1818
- *System/36 Environment Programming*, SC41-3730
- *System/36 Environment Reference*, SC41-3731



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on recycled paper containing 10%  
recovered post-consumer fiber.

SC09-1893-00

