

AS/400



# Application Development ToolSet for AS/400 Screen Design Aid

*Version 4*



AS/400



# Application Development ToolSet for AS/400 Screen Design Aid

*Version 4*

**Note!**

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

**First Edition (February 1998)**

This edition applies to Version 4, Release 2, Modification Level 0, of IBM Application Development ToolSet for AS/400 (Program 5769-PW1) and to all subsequent releases and modifications until otherwise indicated in new editions. Make sure you are using the correct edition for the level of the product.

Order publications through your IBM representative or the IBM branch office serving your locality. Publications are not stocked at the address given below.

A form for readers' comments is provided at the back of this publication. If the form has been removed, address your comments to:

IBM Canada Ltd. Laboratory  
Information Development  
2G/345/1150/TOR  
1150 Eglinton Avenue East  
North York, Ontario, Canada. M3C 1H7

You can also send your comments by facsimile (attention: RCF Coordinator), or you can send your comments electronically to IBM. See "Communicating Your Comments to IBM" for a description of the methods. This page immediately precedes the Readers' Comment Form at the back of this publication.

When you send information to IBM, you grant IBM a nonexclusive right to use or distribute the information in any way it believes appropriate without incurring any obligation to you.

© **Copyright International Business Machines Corporation 1994, 1998. All rights reserved.**

Note to U.S. Government Users — Documentation related to restricted rights — Use, duplication or disclosure is subject to restrictions set forth in GSA ADP Schedule Contract with IBM Corp.

---

# Contents

<b>Notices</b> . . . . .	vii
Trademarks and Service Marks . . . . .	vii
<b>About This Book</b> . . . . .	ix
Who Should Use This Book . . . . .	ix
Summary of Changes . . . . .	x
<b>Chapter 1. Screen Design Aid Overview</b> . . . . .	1
SDA Advantages . . . . .	1
SDA Concepts and Terminology . . . . .	1
Relationship between Display Files, Records, and Fields . . . . .	1
Description of Terms Used in SDA . . . . .	2
Special Considerations for Menus . . . . .	3
SDA Considerations . . . . .	3
Using Existing Data Description Specifications with SDA . . . . .	4
Starting and Ending SDA . . . . .	5
Using the STRSDA (Start Screen Design Aid) Command . . . . .	6
Command Syntax . . . . .	6
Starting AS/400 SDA . . . . .	8
Starting System/38 Environment SDA . . . . .	8
Starting SDA from the Programming Development Manager (PDM) . . . . .	8
Ending SDA . . . . .	9
<b>Chapter 2. SDA Work Screen Functions</b> . . . . .	11
Functions Common to All SDA Work Screens . . . . .	11
Adding Constants to the Work Screen . . . . .	11
Changing a Constant on the Work Screen . . . . .	12
Changing the Length of a Constant . . . . .	12
Adding a Message Constant . . . . .	12
Displaying Attribute Positions . . . . .	12
Centering Fields . . . . .	12
Deleting Fields . . . . .	13
Moving Fields . . . . .	13
Copying Fields . . . . .	14
Making Multiple Changes . . . . .	15
Specifying Display Attributes . . . . .	15
Removing Display Attributes . . . . .	15
Deleting Display Attributes . . . . .	16
Specifying Color . . . . .	16
Removing Color from a Field . . . . .	16
Functions Unique to the Design Image Work Screen . . . . .	17
Displaying Database Fields on the Work Screen . . . . .	17
Multiple-Field Mode . . . . .	17
Single-Field Mode . . . . .	18
Switching between Multiple-Field and Single-Field Mode . . . . .	18
Deleting Fields on the Bottom Row on the Work Screen . . . . .	18
Using Symbols to Place a Database Field on the Work Screen . . . . .	18
Displaying Field Name, Length, and Text Description . . . . .	19
Changing a Field Name . . . . .	20
Changing the Length of an Unreferenced Named Field . . . . .	20

Changing the Length of a Referenced Named Field . . . . .	20
Scanning for a Field Name . . . . .	20
Adding Fields to the Work Screen . . . . .	21
Sorting Fields . . . . .	21
Defining Field Length and Number of Decimal Positions . . . . .	21
Defining Numeric Fields . . . . .	22
Adding Numeric Fields with the Ruler Displayed . . . . .	22
Deleting Multiple Fields . . . . .	23
Changing Field Types . . . . .	23
Specifying Color Keywords . . . . .	23
Specifying Display Attributes without Color . . . . .	24
Specifying Display Attributes with Color Keywords . . . . .	25
Entering System Commands . . . . .	26
Working with the Condition Work Screen Display . . . . .	26
<b>Chapter 3. Creating Simple Displays . . . . .</b>	<b>29</b>
Considerations for Using SDA Displays . . . . .	29
Creating a New Record . . . . .	30
Selecting Fields from a Database File . . . . .	31
Positioning the Ruler on the Design Image Work Screen . . . . .	31
Placing Constants on the Design Image Work Screen . . . . .	32
Placing Database Fields on the Design Image Work Screen . . . . .	33
Specifying Display Attributes and User-Defined Fields on the Design Image Work Screen . . . . .	34
Editing a Field . . . . .	35
Adding a Message Identifier . . . . .	36
Saving the Data Description Specifications and Creating the Display File . . . . .	37
Copying a Record . . . . .	37
Renaming a Record . . . . .	38
Deleting a Record . . . . .	38
Deleting a Display Source Member Using Program Development Manager . . . . .	38
<b>Chapter 4. Creating Complex Displays . . . . .</b>	<b>41</b>
Selecting File-Level Keywords . . . . .	41
Selecting Record-Level Keywords . . . . .	43
Selecting Fields from a Database File . . . . .	44
Designing the Display on the Design Image Work Screen . . . . .	45
Placing Fields and Adding Constants on the Work Screen . . . . .	46
Creating Overlapping Fields . . . . .	49
Moving a Field on the Design Image Work Screen . . . . .	51
Selecting Field-Level Keywords . . . . .	52
Deleting Fields from the Design Image Work Screen . . . . .	53
Designing a Second Display by Using the First Display . . . . .	54
Overlaying a Display . . . . .	55
Defining Fields for the Second Display . . . . .	56
Adding User-Defined Fields on the Design Image Work Screen . . . . .	57
Printing the Work Screen Image . . . . .	60
Saving the Data Description Specifications and Creating the Display File . . . . .	60
<b>Chapter 5. Creating Subfiles . . . . .</b>	<b>63</b>
Creating a Subfile Record . . . . .	63
Selecting Record-Level Keywords for the Subfile Record . . . . .	64
Selecting Database Fields for the Subfile Control Record . . . . .	67
Designing the Display on the Design Image Work Screen . . . . .	68

Positioning Fields from a Database File . . . . .	71
Selecting Field-Level Keywords . . . . .	72
Saving the Data Description Specifications and Creating a Display File . . . . .	73
<b>Chapter 6. Testing Display Files . . . . .</b>	<b>75</b>
Selecting a Record to Test . . . . .	75
Testing Output and Both Data Fields . . . . .	76
Viewing Input Fields and Buffers . . . . .	76
<b>Chapter 7. Creating a Menu . . . . .</b>	<b>79</b>
AS/400 SDA Menu . . . . .	79
Creating a Source File for a Menu . . . . .	80
Understanding the Define Menu Image Work Screen . . . . .	81
Defining Prompts for the Menu Image Work Screen . . . . .	82
Defining the Menu Commands . . . . .	83
Using the Define Menu Commands Display . . . . .	84
Using the Command Area . . . . .	85
Restricting Access to the Command Line and Saving the Menu . . . . .	86
Testing the Menu That You Created . . . . .	87
Changing a Menu . . . . .	88
Updating a Menu . . . . .	88
Creating a Subset of the Menu List . . . . .	88
Creating a Default Menu Image . . . . .	88
Deleting a Menu . . . . .	89
Deleting a Menu Source Member by Using the Programming Development Manager . . . . .	89
Creating System/38 Environment Menus . . . . .	90
Starting System/38 Environment SDA . . . . .	91
Creating a Menu Member . . . . .	91
Using Control Characters to Define Options and Prompts . . . . .	91
Using Control Characters to Copy a Line . . . . .	92
Saving the Generated DDS and Creating the Display File . . . . .	97
Testing a System/38 Environment Menu . . . . .	97
<b>Chapter 8. Creating Online Help Information . . . . .</b>	<b>99</b>
Creating Online Help Information for a Display . . . . .	99
Defining File-Level Keywords . . . . .	100
Defining Help Areas for Specific Fields . . . . .	101
Defining File-Level Online Help Information . . . . .	102
Defining Record-Level Online Help Information . . . . .	103
Saving the Data Description Specifications for the Display Help . . . . .	106
Creating Online Help Information for a Menu . . . . .	106
Creating a New Help Record . . . . .	107
Copying a Help Record . . . . .	109
Updating the Copied Help Record . . . . .	109
Deleting a Help Record . . . . .	110
Saving and Compiling Help Records . . . . .	110
Using Your Help Records . . . . .	110
Creating an Online Help Information Document . . . . .	110
<b>Chapter 9. Creating a Window . . . . .</b>	<b>113</b>
Creating a Window Record . . . . .	113
Selecting Window Keywords . . . . .	114
Viewing the Window on the Design Image Work Screen . . . . .	115

<b>Chapter 10. Creating a Pull-Down Menu</b> . . . . .	117
Creating a Pull-Down Record . . . . .	117
Creating a Menu-Bar Record . . . . .	118
Defining the Menu-Bar Field . . . . .	118
Defining a Pull-Down Field . . . . .	119
Saving the Data Description Specifications and Creating the Display File . . . . .	121
Testing the Pull-Down Menus . . . . .	121
<b>Appendix A. Recovering from an Interrupted Session</b> . . . . .	123
<b>Appendix B. Restricting Access to the Command Entry Line on AS/400 Menus</b> . . . . .	125
<b>Appendix C. Using Double-Byte Character Set Characters</b> . . . . .	127
Understanding DBCS Symbols . . . . .	127
Defining DBCS Constants on a Work Screen . . . . .	128
Specifying Input Attributes . . . . .	128
Specifying the Field-Level Keyword IGCALTTYP . . . . .	129
Specifying the File-Level Keyword IGCCNV . . . . .	129
Considerations for the Work Screen . . . . .	129
<b>Appendix D. Screen Flow Diagrams</b> . . . . .	131
Design Screens - Screen Flow Diagram . . . . .	131
File-Level Keywords - Screen Flow Diagram . . . . .	132
Record-Level Keywords - Screen Flow Diagram . . . . .	133
Field-Level Keywords - Screen Flow Diagram . . . . .	134
Window Keywords - Screen Flow Diagram . . . . .	135
Pull-Down Keywords - Screen Flow Diagram . . . . .	136
Menu-Bar Keywords - Screen Flow Diagram . . . . .	137
Design Image Work Screen - Screen Flow Diagram . . . . .	138
Design Menus (AS/400 Environment) - Screen Flow Diagram . . . . .	139
Design Menus (System/38 Environment) - Screen Flow Diagram . . . . .	140
Test Display Files - Screen Flow Diagram . . . . .	141
<b>Appendix E. Differences between System/38 SDA and AS/400 System/38 Environment SDA</b> . . . . .	143
<b>Appendix F. Keyword Reference Information</b> . . . . .	145
Data Description Source for QCUSDATA . . . . .	145
Data Description Source for QORDHGRP . . . . .	146
DDS Keyword and Parameter Organization . . . . .	147
<b>Bibliography</b> . . . . .	155
<b>Index</b> . . . . .	157



---

## Notices

Any reference to an IBM licensed program in this publication is not intended to state or imply that only IBM's licensed program may be used. Any functionally equivalent product, program or service that does not infringe any of IBM's intellectual property rights may be used instead of the IBM product, program, or service. Evaluation and verification of operation in conjunction with other products, except those expressly designated by IBM, is the user's responsibility.

IBM may have patents or pending patent applications covering subject matter in this document. The furnishing of this document does not give you any license to these patents. You can send license inquiries, in writing, to the IBM Director of Licensing, IBM Corporation, 208 Harbor Drive, Stamford, Connecticut, USA 06904-2501.

This publication contains examples of data and reports used in daily business operations. To illustrate them as completely as possible, the examples include the names of individuals, companies, brands, and products. All of these names are fictitious and any similarity to the names and addresses used by an actual business enterprise is entirely coincidental.

---

## Trademarks and Service Marks

The following terms, denoted by an asterisk (\*), used in this publication, are trademarks or service marks of International Business Machines Corporation in the United States or other countries:

Application System/400	OS/400
AS/400	OfficeVision/400
IBM	PROFS
IBMLink	400
Operating System/400	



---

## About This Book

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

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

- Displays
- Menus
- Online help information
- Windows
- Pull-down menus and menu-bars.

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

You may need to refer to other IBM\* books for more specific information about a particular topic. The *Publications Reference*, SC41-5003, provides more information on all the publications in the AS/400 library.

For a list of related publications, see the "Bibliography" on page 155.

---

## Who Should Use This Book

This book is intended for application programmers and system programmers who work in an AS/400 environment.

To use this book effectively, you must know how to use your workstation, understand and use messages, and have a general knowledge of the AS/400 system. If you are unfamiliar with your workstation, refer to the specific book for it.

Three versions of SDA are available to you:

- AS/400 environment  
Use this version to develop and process displays to be used in the AS/400 environment.
- System/38 environment  
Use this version to develop displays to be used on a System/38 or in the System/38 environment of the AS/400 system. You also use this version to process displays migrated from a System/38.
- System/36 environment  
Use this version to develop displays to be used on a System/36 or in the System/36 environment of the AS/400 system. You also use this version to process displays migrated from a System/36.

---

## Summary of Changes

The following enhancements have been made to SDA in the AS/400 environment:

- You can now press F4 (Display Selected Keywords) to view a list of the file-level, record-level, or field-level keywords that you have defined.
- You can now press F4 when the cursor is in the *Choice number* prompt of various displays to view, and select for editing, the following keywords: CHOICE, MNUBARCHC, MNUBARDSP, MNUBARSEP, RTNCSRLOC, and WDWBORDER. For more information, see “Defining a Pull-Down Field” on page 119.
- External support for the following DDS keywords has been added: EDTMSK, ENTFLDATR, FLDCSRPRG, MNUBAR, MNUBARCHC, MNUBARDSP, MNUBARSEP, MNUBARSW, MNUCNL, NOCCSID, SFLCSRPRG, SFLEND(\*SCRBAR), and SFLPGMQ(276). You use these keywords to create GUI constructs, such as menu bars, pull-down menus, and choice fields. You can manipulate these GUI constructs on the work screens.
- For AS/400 and System/38 environments, SDA now supports users whose display device differs from their job CCSID.

---

## Chapter 1. Screen Design Aid Overview

You can use the screen design aid (SDA) to perform the following tasks:

- Design a menu to present a list of options from which the user makes a selection
- Design a display to help the user navigate through an application program
- Create online help information for displays and menus.

**Note:** You cannot create online help information in the System/38 environment.

---

### SDA Advantages

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

- Creates data description specifications (DDS). You do not need extensive knowledge of the DDS coding forms, keywords, or syntax to use SDA.
- Presents displays in functional groups to make DDS keyword selection easier at the file, record, or field level.
- Allows you to select fields from existing database files to design a display.
- Allows you to see the display you are designing or changing as you work on it.
- Allows you to test displays with the data and status of the condition indicators specified for each test.
- Allows you to create the menus and the message files that Application System/400\* (AS/400\*) environment SDA uses to run the menus.
- Allows you to create the menus and the control language (CL) programs that System/38 environment SDA uses to run the menus.
- Allows you to create a display file from the DDS source statements that SDA creates.
- Supplies error messages with explanations. Diagnostics are supplied for conflicting source statements when you select DDS keywords.

---

### SDA Concepts and Terminology

This section describes the concepts and terminology used in SDA, such as the:

- Relationship between display files, records, and fields
- Terms used in SDA
- Special considerations for menus.

### Relationship between Display Files, Records, and Fields

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

The following figure shows the relationship between files, records, and fields. It shows a field in a record and records in a file.

## Description of Terms Used in SDA

The following is a brief explanation of some of the terms that you encounter while using SDA. The terms described here are:

- Keyword
- Field
- Record
- Member
- File.

For a more complete description, refer to *DB2 for AS/400 Database Programming*, SC41-5701, *Data Management*, SC41-5710, and *DDS Reference*, SC41-5712.

### Keyword

You use keywords to define displays, fields, records, and files:

- When defining a field, you use field-level keywords.
- When defining a display (record), you use record-level keywords.
- When defining a file (all the records), you use file-level keywords.

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

### Field

The term *field* is used in two different ways:

- In DDS, a *field* is an item that you specify for defining a display.
- In a database file, a *field* is an item that you define for storing data.

### Record

The term *record* is used in two different ways:

- In DDS, all the fields on a display are grouped in a *record*. To DDS, a record represents a display. When you define a display, SDA prompts you for a record name to be used for the display. When you compile your DDS to create a display file, you reference each display in the display file by its record name. When you test a display file, SDA prompts you for the record name within the display file that you want to test.
- In a database file, a *record* is a group of fields and their definitions. The record also stores data from the fields. The record itself is in a database file. When you retrieve field definitions from a database file, SDA prompts you for the name of the record and the database file.

## Member

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

## File

The term *file* is used in three different ways:

- For a database file containing data definitions.
- For a database source file that contains the DDS source member.
- For a display file that contains compiled DDS. SDA produces DDS for the displays that you define. You must compile the DDS into a display file before you can use the display.

## Special Considerations for Menus

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

- A display file
- A message file.

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

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

---

## SDA Considerations

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

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

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

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

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

---

## Using Existing Data Description Specifications with SDA

Consider the following when using existing DDS with SDA:

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

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

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

SDA retains no other comment lines.

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

- SDA is designed for standard 92-byte records. The first 12 bytes contain the sequence number and date, and the last 80 bytes contain the DDS source.
- When you select a member from a database file to change or add new information, DDS checks the keyword syntax and drops any incorrect keywords. On the SDA Work with Display Records display, each record with errors and incorrect keywords has \*ERROR in the *DDS Error* column. If you create DDS in the SDA session, these dropped DDS statements will not be in your new DDS. To avoid dropping incorrect keywords:
  - Do not save your source.
  - Sign off SDA.
  - Use the CRTDSPF command to determine the errors.
  - Use the source entry utility (SEU) to correct the errors.
- When you save a changed display, any invalid fields are dropped. To avoid dropping invalid fields, compile the display source, check the source listing for errors, and correct them before saving the display.
- The text fields in the existing DDS source must be 50 characters or fewer, including embedded quotation marks. SDA drops any characters after the first 50.
- SDA, like source entry utility (SEU), can process up to 32764 lines of DDS source. When you use SDA to create, change, or add new information to a source member, the sequence numbers start at .10 and increment by a default value of .10. You can change the sequence numbers and the increment values on the Specify Additional Options display.
- The Design menus option accepts up to 148 DDS records for each menu, one record for the menu image and up to 147 records of menu help. The Design screens option accepts up to 149 DDS records for each display.

For more information about keywords and the displays they are associated with, see “DDS Keyword and Parameter Organization” on page 147.



---

## Starting and Ending SDA

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

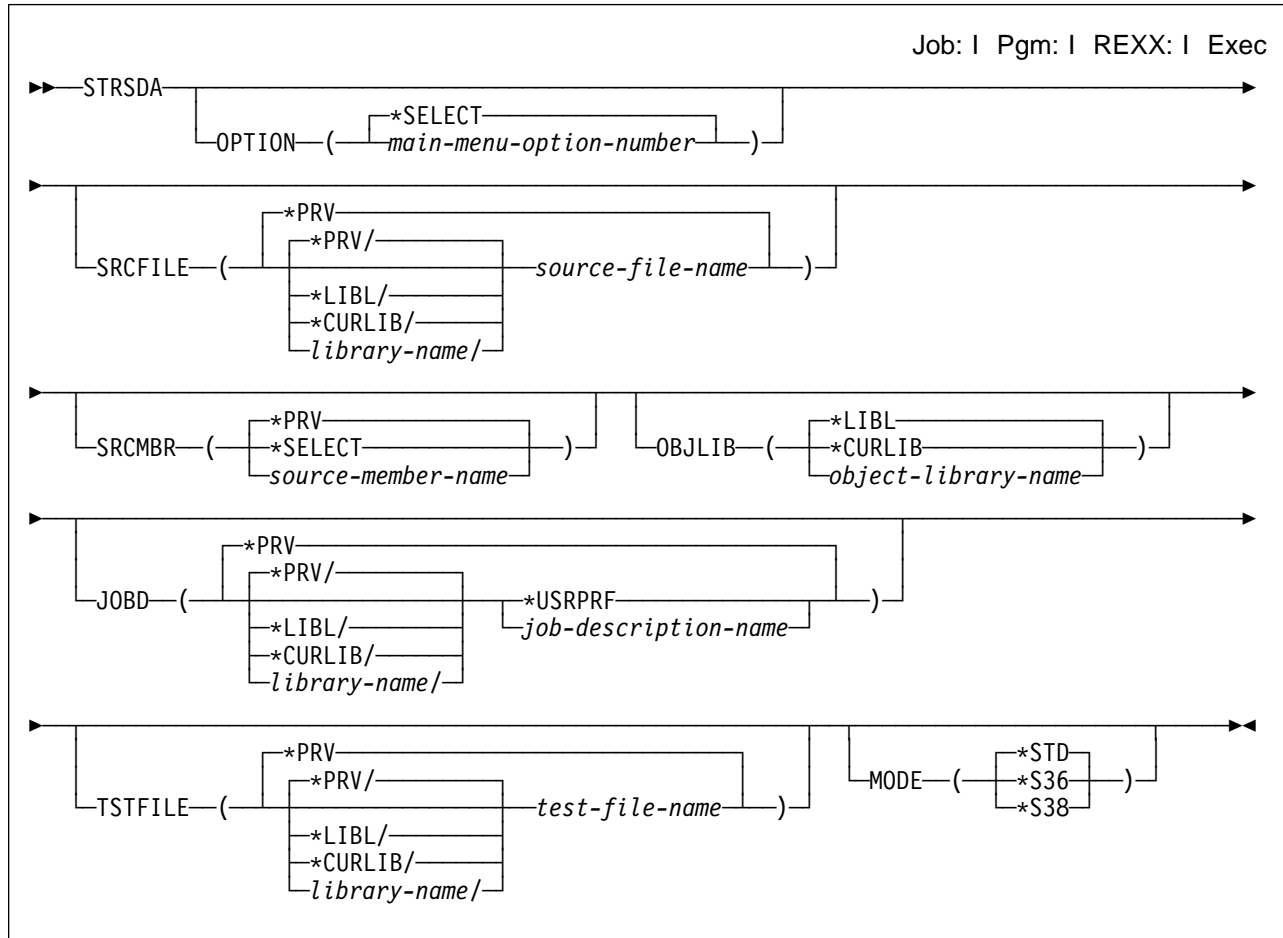
### Notes:

1. The display that appears after you type your password depends on your authority and the data processing procedures at your installation. For a description of the user profiles that can start SDA and a description of object existence authority, see *System Operation*, SC41-4203, and *System Startup and Problem Handling*, SC41-3206.
2. You can also press F4 (Prompt) to receive system prompting. For more information on commands and parameters, see the online help information for the command.

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

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

### Command Syntax



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

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

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

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

**\*PRV:** 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:** 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.

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

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

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

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

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

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

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

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

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

### Example

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

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

---

## Starting AS/400 SDA

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

---

## Starting System/38 Environment SDA

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

### Notes:

1. The default mode is the AS/400 environment (\*STD).
2. The command line in System/38 environment SDA only accepts AS/400 syntax. System/38 syntax is supported on the System/38 environment Command Entry display.

---

## Starting SDA from the Programming Development Manager (PDM)

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

---

## Ending SDA

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

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



---

## Chapter 2. SDA Work Screen Functions

This chapter describes the functions available on the SDA work screens and shows the following:

- Functions common to all SDA work screens
- Functions unique to the Design Image work screen.

---

### Functions Common to All SDA Work Screens

You can do the following on all SDA work screens:

- Add constants to the work screen
- Change constants on the work screen
- Change the length of a constant
- Add message constants
- Display attribute positions
- Center fields
- Delete fields
- Move fields
- Copy fields
- Make multiple changes
- Specify display attributes
- Remove display attributes
- Delete display attributes
- Specify color
- Remove color from a field.

---

### Adding Constants to the Work Screen

A constant is a value that does not change and is used in processing the application program. Only a value is required for each constant. You do not need operators for constants.

A constant can consist of one word or more than one word:

- If you enclose the words with single quotation marks, a constant that contains all the words is created.
- If you type the words without enclosing them in single quotation marks, a constant for each word is created.

Constants can contain the symbols &, +, ?, <, >, -, or = only if they are enclosed by single quotation marks when typed on the work screen.

The \*DATE, \*TIME, \*USER, and \*SYSNAME constants are special output constants. You can specify edit values for them:

- \*DATE is a 6-digit edited number. The default form is DD/DD/DD (month/day/year).
- \*TIME is an 8-digit edited number. The form is TT:TT:TT (hours:minutes:seconds).

- \*USER is a 10-character field. The form is UUUUUUUUUU.
- \*SYSNAME is an 8-character field. The form is SSSSSSSS.

---

## Changing a Constant on the Work Screen

When you change a constant, do not enclose it in single quotation marks:

- To change a constant that contains two or more words into two or more single constants, type a double quotation mark between the words and a single quotation mark at either end.

For example, 'two"three' would become the constants two and three.

- To change a constant that contains an apostrophe, type the constant without the apostrophe, and then change the constant to contain the apostrophe.

---

## Changing the Length of a Constant

To change the length of a constant:

1. Type a single quotation mark (') where you want the field to begin.
2. Type a single quotation mark (') where you want the field to end.
3. Press Enter.

---

## Adding a Message Constant

To add a message constant to a display, do one of the following:

- Type +MMM, where MMM is the length of the constant.
- Type +M(nnn), where nnn is the length of the constant.

To change a message field, type a question mark (?) in the attribute position of the field on the Define Message Constant display, and press Enter.

**Note:** The attribute position is the space directly in front of a field. It is also known as the attribute byte of a field. Press F19 (Back Tab) to go to the attribute position of the previous field. Press F18 (Tab) to go to the attribute position of the next field.

SDA prompts you for a message file, library, and identifier.

---

## Displaying Attribute Positions

To display the attribute position of a field, press F20 (Reverse). SDA highlights the field to show the start and end of constants that contain leading or trailing blanks.

To turn off the highlighting, press F20 (Reverse) again.

---

## Centering Fields

To center a field in the same row, type ac in the attribute position of the field and press Enter. If the name of the field begins with a C, for example, Customer List, type A (or a) alone in the attribute position and press Enter to center the field.



---

## Deleting Fields

To delete fields from the work screen, do one of the following:

- Blank out the entire field position starting from the attribute position.
- Type D (or d) in the attribute position of the field.

---

## Moving Fields

To move fields, type the minus sign (-) in the attribute position of the field and the equals sign (=) where you want the field to appear.

Do not use the Del/Ins key to move fields on a work screen or to make fields longer or shorter. Using the Del/Ins key alters the starting position of the fields, and the results are unpredictable.

To move more than one field:

1. Type a minus sign (-) in the upper left corner of the block of fields.
2. Type a minus sign (-) in the lower right corner of the block.
3. Type an equals sign (=) in the upper left corner of the receiving location. The display looks like the following:

```
... .. 1 ... .. 2 ... .. 3 ... .. 4 ... .. 5 ... .. 6 ... .. 7 ... .. 8
1          CUSTOMER MASTER FILE MAINTENANCE/INQUIRY
2
3-Customer Number: BBBB
4 Customer Name: BBBB
5 Street Address: BBBB
6           City: BBBB
7           State: BB
8           Zip Code: 99999-
9
10=
11
12
13
14
15
16
```

4. Press Enter.

The position of the first minus sign (-) is moved to the position of the equals sign (=). All the characters between the minus signs are moved.

**Note:** Fields that completely or partially overlap, are not moved. The results are unpredictable for fields that overlap.

The display now looks like the following.

```

... .. 1 ... .. 2 ... .. 3 ... .. 4 ... .. 5 ... .. 6 ... .. 7 ... .. 8
1      CUSTOMER MASTER FILE MAINTENANCE/INQUIRY
2
3
4
5
6
7
8
9
10 Customer Number: BBBB
11 Customer Name: BBBBBBBBBBBBBBBBBBBB
12 Street Address: BBBBBBBBBBBBBBBBBBBB
13           City: BBBBBBBBBBBBBBBBBBBB
14           State: BB
15           Zip Code: 99999
16

```

If the first minus sign is to the right of the second minus sign, as shown in the following display, the boundary of the block wraps beyond the right side of the screen to mark the lower right corner:

```

... .. 1 ... .. 2 ... .. 3 ... .. 4 ... .. 5 ... .. 6 ... .. 7 ... .. 8
1      CUSTOMER MASTER FILE MAINTENANCE/INQUIRY
2
3 Customer Number: BBBB
4 Customer Name: BBBBBBBBBBBBBBBBBBBB
5 Street Address: BBBBBBBBBBBBBBBBBBBB
6           City: BBBBBBBBBBBBBBBBBBBB
7           State: BB
8           Zip Code: 99999-
9
10=
11
12
13
14
15
16

```

Fields entirely within the boundary or fields with both beginning and end within the boundary are moved. You can also use this method to copy or delete blocks.

---

## Copying Fields

To copy a field:

1. Type a minus sign (-) in the attribute position of the field to be moved.
2. Type two equals signs (==) in the attribute position of the receiving location.
3. Press Enter.

To copy more than one field:

1. Type a minus sign (-) in the upper left corner of the block.
2. Type a minus sign (-) in the lower right corner of the block.
3. Type two equals signs (==) in the upper left corner of the receiving location.
4. Press Enter.

When you press Enter, the position of the first minus sign (-) is copied to the position of the two equals signs (==). All the characters in between are also copied. Completely or partially overlapping fields are not copied.

---

## Making Multiple Changes

You can make multiple changes on the work screen simultaneously to save time. For example, you can set up the following actions and complete them simultaneously when you press Enter:

- Select a field to move
- Select a field to delete
- Add a constant on the work screen.

The results of some changes can be unpredictable, such as moving a block of fields and deleting a field within the block at the same time.

---

## Specifying Display Attributes

To specify display attributes, type one of the following codes in the attribute position of a field:

Type	Display Attribute Requested	Valid Work Screens
B or b	Blink	All
S or s	Column separators	Design Image
H or h	Highlight	All
R or r	Reverse image	All
U or u	Underline	All
N or n	Nondisplay	Design Image

**Note:** On the Select Border Display Attributes display, you specify Y (Yes) for the display attribute you want for the window border.

---

## Removing Display Attributes

To remove a display attribute from a field:

1. Type a minus sign (-) in the attribute position of the field.
2. Type the display attribute to be deleted over the first character.

**Note:** If you type -A or -a, all attributes for the field are deleted.

3. Press Enter.

You can use either uppercase or lowercase attribute codes; however, if the first letter of the field is the same as the attribute code that you are using, the attribute code must be in the opposite case. For example, if the field name is Allowance and you want to remove all its attributes, type -a instead of -A in the attribute position.

---

## Deleting Display Attributes

On the Design Image work screen, if you specify a display attribute by using the CHGINPDFT keyword, you cannot delete it on the work screen. To delete the attribute:

1. Type an asterisk (\*) in the attribute position of the field.
2. Press Enter to see the Select Field Keywords display.
3. Type Y (Yes) in the *Input keywords* prompt.
4. Delete the display attribute specified at the field level. The CHGINPDFT specification at the field level overrides specifications at higher levels. If the attributes to be deleted are not specified at the field level, override the attributes specified at the record and file levels by defining CHGINPDFT at the field level.

---

## Specifying Color

To request a color, type C in the attribute position, followed by the first letter of a valid color name, as follows:

You Type	Color Requested
CB	Blue
CG	Green
CP	Pink
CR	Red
CT	Turquoise
CW	White
CY	Yellow

You can use any combination of uppercase and lowercase characters.

### Notes:

1. The Design Image work screen allows you to specify more than one color for each field. If you specify more than one color, SDA creates COLOR keywords in the order specified. You must specify condition indicators for each color. If you do not, the DDS compile fails. For more information on specifying COLOR indicators, see "Specifying Color Keywords" on page 23.
2. On the Select Border Color display, you specify Y (Yes) for the color you want for the window border.

---

## Removing Color from a Field

To remove color from a field:

1. Type a minus sign (-) in the attribute position of the field.
2. Type the color code over the first two characters of the field. For example, to remove a blue color from a field, type -CB.
3. Press Enter.

If you type –CA, all colors specified for that field are removed. The field color defaults to the color determined by the display attributes for that field.

---

## Functions Unique to the Design Image Work Screen

In addition to the common functions, you can do the following unique functions on the Design Image work screen:

- Display database fields on the work screen
- Switch between multiple and single-field mode
- Delete fields on the bottom row
- Use symbols to place database fields on the work screen
- Display field name, length, and text description
- Change a field name
- Change the length of an unreferenced named field
- Change the length of a referenced name field
- Scan for a field name
- Add fields to the work screen
- Define field length and the number of decimal positions
- Define numeric fields
- Add numeric fields with the ruler displayed
- Delete multiple fields
- Change field types
- Specify color keywords.

You can also perform the following functions using the Design Image work screen:

- Enter system commands
- Work with the Condition Work Screen display.

---

## Displaying Database Fields on the Work Screen

When you select fields from the Select Database Fields display, SDA lists the field names on the bottom row of the work screen. Fields selected from a database are *referenced* fields. Unless you specify single-field mode on the Condition Work Screen display, the names are displayed in multiple-field mode.

### Multiple-Field Mode

In multiple-field mode, up to 9 fields appear on the bottom row of the work screen. The following is an example of a multiple-field mode:

```
1:FIELD1 2:FIELD2 3:FIELD3 4:FIELD4 5:FIELD5 6:FIELD6 7:FIELD7 8:FIELD8 9:FIELD9
```

Any fields that you delete from the work screen also appear on the bottom row.

If more than 9 fields are available for you to place on the work screen, a plus sign (+) appears at the bottom of the work screen. To see the additional fields, press Page Up or Page Down.



The following table shows the symbols that you can use. The n is the number of the field.

Single-Field Mode	Multiple-Field Mode	Meaning
&	&n	Place the database field and its associated attributes in this position.
&L or &l	&nL or &nl	Place the database field in this position with the column heading to the left of the data field with a colon (:) following the column heading. The column heading and the data field are separated by two blanks.
&R or &r	&nR or &nr	Place the database field in this position, with the column heading to the right of the data field. The column heading and the data field are separated by two blanks.
&C or &c	&nC or &nc	Place the database field in this position with the column heading above the data field. The column heading is left-aligned with alphabetic fields and right-aligned with numeric fields.
&P or &p	&nP or &np	Place only the column heading from the database field in this position. Use the column heading for the prompt.

In multiple-field mode, position the fields on the work screen as follows:

1. Type the work screen symbol where you want the field or prompt to be positioned, and type the number of the field or prompt.
2. Continue to position the fields until you have positioned all the displayed fields. You do not have to position all the fields at one time.
3. Press Enter.

The entries are processed, and the next group of fields appears on the bottom row of the work screen.

In single-field mode, position the field on the work screen as follows:

1. Type the work screen symbol where the field or prompt is to be positioned.
2. Press Enter.

The entry is processed, and the next field appears on the bottom row of the work screen.

---

## Displaying Field Name, Length, and Text Description

To see the name, length, and text descriptions of each named field on the work screen, type a question mark (?) in the attribute position of the field, and press Enter.

If you type a question mark (?) in front of more than one field and then press Enter, the last field that is found appears on the bottom row of the work screen.

---

## Changing a Field Name

To change a field name:

1. Type a question mark (?) in front of the field and press Enter. The field name, length, and text description are shown.
2. Type the new field name where the existing field name appears and press Enter.

You can also change a field name as follows:

1. Press F4 (Prompt) on the work screen. The Work With Fields display appears.
2. Type the new name over the existing name in the *Field* prompt, and press Enter.

**Note:** The new name cannot be the same as that of an existing field.

---

## Changing the Length of an Unreferenced Named Field

To change the length of an unreferenced named field:

1. Type a question mark (?) in the attribute position of the field, and press Enter. The field name, length, and text description are shown.
2. Type the new field length where the existing field length appears, and press Enter.

**Note:** You cannot change the length of single-choice or multiple-choice fields with this method.

---

## Changing the Length of a Referenced Named Field

To change the length of a referenced named field (a database field):

1. Type an asterisk (\*) in the attribute position of the field, and press Enter. The Select Field Keywords display is shown.
2. Type Y (Yes) in the *Database reference* prompt, and press Enter. The Define Database Reference display is shown.
3. Type the new field length in the *New field length* prompt and press Enter.
4. Press Enter again to return to the work screen.

---

## Scanning for a Field Name

If you are using single-field mode, you can scan for a field name that has not been placed on the work screen.

To scan for a field name, type the entire field name on the bottom row of the work screen, and press Enter. The field name, length, and description appear on the bottom row.



---

## Adding Fields to the Work Screen

To add fields or constants to the work screen:

1. Type a plus sign (+) one position before where the field is to be located on the work screen. The + is the leading attribute byte.
2. Type one of the characters shown in the following table after the + and press Enter. These characters determine the field type.

Character	Field Type
3	Numeric input field
6	Numeric output field
9	Numeric both field (input and output)
I or i	Alphabetic input field
O or o	Alphabetic output field
B or b	Alphabetic both field (input and output)
M or m	MSGCON field

---

## Sorting Fields

After adding new fields to the work screen it is recommended that you use the Sort by row/column function in the Work with Fields display. This will sort the list of fields in the Work with Fields display based on the row and column each field occupies on the work screen. The sort option also reorganizes how the fields appear in your source file.

If you do not sort the fields it may be more difficult to locate a field in your source file. For example, one of the last fields you created was placed near the top of the work screen. Without sorting the fields, this field would appear toward the end of both the Work with Fields display and your source file. By using the Sort function this field will be located at the beginning of the Work with Fields display and the source file, matching its location on the work screen more closely.

To sort fields by row/column:

1. Press F4 (Prompt) on the work screen. The Work With Fields display appears.
2. Press F6 (Sort by row/column). The fields will automatically be sorted in numerical order by row and column.

---

## Defining Field Length and Number of Decimal Positions

Optional parentheses following a field definition indicate the length or the number of decimal positions. To define field length and number of decimal positions, do one of the following:

- Type +9(7,2) to define the field as a numeric both field with a length of 7 and a decimal position count of 2 and press Enter.
- Type +iiii to define the field as an alphabetic input field with a length of 4 and press Enter.

- Type +B(9) to define the field as an alphabetic both field with a length of 9 and press Enter.

You can type a decimal point and commas in a numeric field. Only the digits 3, 6, and 9 are valid. All other numbers default to a numeric both field (9).

---

## Defining Numeric Fields

Numeric fields can be defined as either single (E) or double (D) precision floating-point form on the work screen. You can then retrieve these fields from a database and display them on the work screen. SDA does not allow you to define floating-point fields for a 16 x 64 display size.

**Note:** You can only specify the 16 x 64 display size in the System/38 environment.

You can specify the data type in either uppercase or lowercase letters. The following table shows some of the numeric fields that you can define.

You type	SDA displays
+3(5,4)E	-3.3333E-333
+33.333d	-33.333D-333
+9(5,4)D	-9.9999D-999
+6(4,3)e	-6.666E-666

Embedded blanks are not allowed in a character field because blanks are used as field delimiters. If you type a character other than I, O, B, or M, the character defaults to an alphabetic both field (B).

A blank position at the end of a user-defined field indicates the end of the field. When you press Enter, SDA:

- Aligns the fields after the plus sign (+)
- Determines the field type and length according to the contents of the field
- Creates an edit word for numerics (if specified) for output and both fields
- Defaults to a field usage of B (both) or 9 (numeric) if a usage character is not typed in the first position
- Assigns a field name (FLDxxx), starting with FLD001 or with the next highest value if previous field names were assigned.

---

## Adding Numeric Fields with the Ruler Displayed

To add a numeric field with a decimal position while the ruler is displayed, make sure the decimal point does not coincide with a dot that is part of the ruler. If it does coincide, remove the ruler before you add the field. Otherwise, SDA issues an error message because it cannot distinguish between control information and the dots of the ruler.

---

## Deleting Multiple Fields

To delete more than one field:

1. Type two minus signs (--) in the upper-left corner of the block of fields.
2. Type two minus signs (--) in the lower-right corner of the block.
3. Press Enter. The work screen is displayed with dots marking the boundary of the block to be deleted if there are no double-byte character set (DBCS) constants on the display.
4. Press Enter to delete the block or F12 (Cancel) to cancel the deletion.

If any fields completely or partially overlap, the field that overlaps is not deleted.

You can combine multiple deletions with other operations. On the Design Image work screen, deleted named fields are added to the list of field names displayed on the bottom row.

---

## Changing Field Types

You can change the field type of a previously selected and displayed field on the work screen:

- To change character fields, type I (input), O (output), or B (both) in the attribute position of the field.
- To change numeric fields, type 3 (input), 6 (output), or 9 (both) in the attribute position of the field.

---

## Specifying Color Keywords

Use the Select Colors display to specify color for constant, input, output, both, and message fields:

```
                          Select Colors
Constant . . . : tttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttt
Length . . . : nnnnn                      Row . . . : XX Column . . . : XXX
Type choices, press Enter.
```

	Keyword	Order (1-7)	Indicators/+
Colors:	COLOR		
Blue . . . . .	BLU	-	___ ___
Green . . . . .	GRN	-	___ ___
Pink . . . . .	PNK	-	___ ___
Red . . . . .	RED	-	___ ___
Turquoise . . . . .	TRQ	-	___ ___
White . . . . .	WHT	-	___ ___
Yellow . . . . .	YLW	-	___ ___

To select a color, type an order number from 1 to 7. When the display file is used, the order of color is determined by the order of the indicators selected, if the indicators are on. If all indicators are on or off, the order is determined by the order of the color in the source DDS. The first color that you specify is the first color used.

## Specifying Display Attributes without Color

Display files created for noncolor display stations can be used with color display stations. If the COLOR keyword is not specified in the DDS that is used to create the display file, the column separators (CS), high intensity (HI), blink (BL), underline (UL), and reverse image (RI) attributes produce the colors and attributes as indicated in the following table.

To determine the color and display attributes, scan this table from top to bottom and from left to right until you arrive at the line satisfying all your conditions.

Display Attribute					Color Produced on a Color Display Station
CS	HI	BL	UL	RI	
No	No	No	No	No	Green
No	No	No	No	Yes	Green, reverse image
No	No	No	Yes	No	Green, underlined
No	No	No	Yes	Yes	Green, underlined, reverse image
No	No	Yes	No	No	Red
No	No	Yes	No	Yes	Red, reverse image
No	No	Yes	Yes	No	Red, underlined
No	No	Yes	Yes	Yes	Red, underlined, reverse image
No	Yes	Yes	No	No	Red, blinking
No	Yes	Yes	No	Yes	Red, blinking, reverse image
No	Yes	Yes	Yes	No	Red, blinking, underlined
No	Yes	No	No	No	White
No	Yes	No	No	Yes	White, reverse image
No	Yes	No	Yes	No	White, underlined
Yes	No	No	No	No	Turquoise, column separators
Yes	No	No	No	Yes	Turquoise, reverse image, column separators
Yes	No	No	Yes	No	Turquoise, underlined, column separators
Yes	No	No	Yes	Yes	Turquoise, underlined, reverse image, column separators
Yes	No	Yes	No	No	Pink
Yes	No	Yes	No	Yes	Pink, reverse image
Yes	No	Yes	Yes	No	Pink, underlined
Yes	No	Yes	Yes	Yes	Pink, underlined, reverse image
Yes	Yes	No	No	No	Yellow, column separators
Yes	Yes	No	No	Yes	Yellow, reverse image, column separators
Yes	Yes	No	Yes	No	Yellow, underlined, column separators
Yes	Yes	Yes	No	No	Blue
Yes	Yes	Yes	No	Yes	Blue, reverse image
Yes	Yes	Yes	Yes	No	Blue, underlined
No	Yes	Yes	Yes	Yes	Nondisplay on all terminals
No	Yes	No	Yes	Yes	Nondisplay on all terminals
Yes	Yes	Yes	Yes	Yes	Nondisplay on all terminals

## Specifying Display Attributes with Color Keywords

Use the following table to determine the display attributes allowed. In the table, CS, HI, BL, UL, ND, and RI refer to column separators, high intensity, blinking, underlining, nondisplay, and reverse imaging, respectively.

COLOR	DSPATR	Effect
Any Any Any	ND (nondisplay) HI (high intensity) CS (column separators)	All colors are ignored HI is ignored CS is ignored <sup>1</sup>
GRN WHT TRQ YLW PNK BLU	BL BL BL BL BL BL	BL is ignored <sup>2</sup> BL is ignored <sup>2</sup> BL is ignored <sup>2</sup> BL is ignored <sup>2</sup> BL is ignored <sup>2</sup> BL is ignored <sup>2</sup>
RED	RI and BL and UL	UL is ignored <sup>3</sup>
YLW BLU WHT	RI and UL RI and UL RI and UL	RI is ignored RI is ignored RI is ignored
<p><b>Notes:</b></p> <ol style="list-style-type: none"> <li>1. Turquoise and yellow fields have column separators even if DSPATR(CS) is not specified. (The column separators appear as small blue dots between characters on color displays. They disappear when the display station user sets the color display station for reduced line spacing.)</li> <li>2. The only color that can blink is red.</li> <li>3. Underlines are also removed from input-capable fields, which are underlined by default on an AS/400 system.</li> </ol>		

For example, if COLOR(YLW) and DSPATR(HI) are both selected for an output operation, the field is yellow but not high intensity.

If you specify a display attribute that is not allowed for a given color, the attribute is ignored. For example, if you specify condition indicators for a field with the color green, only the following attribute combinations are allowed:

- Reverse image only
- Underline only
- Reverse image and underline.

If you specify column separators, highlighting, or blinking with the color green, those attributes are ignored.

**Notes:**

1. Although some display attributes are ignored when colors are specified, they are still inserted into the DDS source file. If the explicitly defined color is removed, or if conditioning for it is not satisfied, a default color is used from the table in “Specifying Display Attributes without Color” on page 24.
2. COLOR keywords are ignored on noncolor displays.

For guidelines on using color displays, see the specific guide for the color display station that you are using. For more information on display attributes and color, see the *DDS Reference*.

---

## Entering System Commands

You can enter AS/400 system commands from the SDA Design Image work screen. Press F22 (System command) to display a window in which you can type an AS/400 system command as follows:

```
... .. 1 ... .. 2 ... .. 3 ... .. 4 ... .. 5 ... .. 6 ... .. 7 ... .. 8
: ..... System Command .....
:
:
: ==>
: F4=Prompt F9=Retrieve F12=Cancel
: (C) COPYRIGHT IBM CORP. 1981, 1998.
: .....
8
9
10 Customer Number: BBBB
11 Customer Name: BBBBXXXXXXXXXXXXXXXX
12 Street Address: BBBBXXXXXXXXXXXXXXXX
13 City: BBBBXXXXXXXXXXXXXXXX
14 State: BB
15 Zip Code: 99999
16
```

Depending on the cursor location, the System Command window may appear in the top part or in the bottom part of the display. You cannot type data on the work screen while the System Command window is displayed. For help on selecting a system command, press F4 (Prompt) without typing anything in the window. For help on entering a system command, type the command in the window and press F4 (Prompt).

For online help information on a system command, type the command and press the Help key.

System/36 and System/38 commands cannot be entered here but you can set the Attention key to show the Command Entry display.

**Note:** System commands such as SIGNOFF (in the AS/400 system) end the SDA session abruptly. When you reaccess the member on which you were working, the Recover SDA Session display is displayed.

---

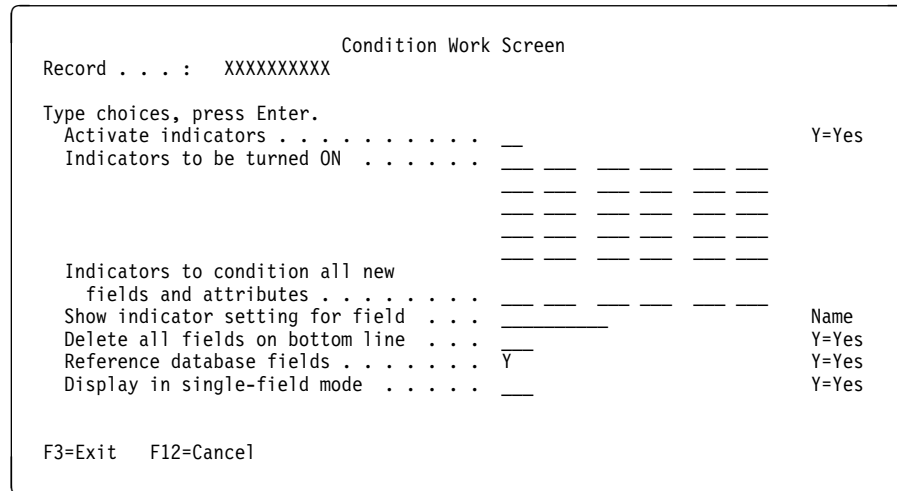
## Working with the Condition Work Screen Display

The Condition Work Screen display specifies condition indicators for fields and their attributes to control the fields and constants that are displayed on the work screen. You can also use this display to:

- Specify selected database fields as reference fields
- Specify single-field or multiple-field mode
- Request a condition indicator setting for a field.

To see the Condition Work Screen display, press F6 (Condition) on the Design Image work screen. SDA displays the record name that you typed on the Design

Screens or on the Work With Records display on the Condition Work Screen as shown in the following figure.



To control fields and constants that are displayed on the work screen, use the following prompts on the Condition Work Screen display:

- Type Y (Yes) in the *Activate indicators* prompt to turn on the indicators.
- Type the condition indicator for the field or constant in the *Indicators to be turned ON* prompt.

An indicator is any 2-digit number between 01 and 99. You can specify up to 30 indicators for each display.

When you turn on condition indicators, the following appear:

- All unconditioned fields and constants
- All conditioned fields and constants that match the condition setting
- All conditioned attributes that match the condition setting

If you type Y (Yes) in the *Activate indicators* prompt without including the indicator in the *Indicators to be turned ON* list, no conditioning of the indicator will be specified.

If you type anything other than Y (Yes) in the *Activate indicators* prompt, all conditioned and unconditioned fields and constants that can be displayed appear on the work screen. All indicator conditioning is ignored.

- Type the condition indicators in the *Indicators to condition all new fields and attributes* prompt for:
  - New fields or constants that you are adding to the work screen
  - New attributes for the new or existing fields
- Type the name in the *Show indicator setting for field* prompt to request a condition indicator setting associated with a field. The indicators appear in the *Indicators to be turned ON* prompt. You can use the displayed indicators to condition the work screen.
- Type Y (Yes) in the *Delete all fields on bottom line* prompt to delete all fields from the bottom row of the Design Image work screen.
- Type the default value Y (Yes) to reference all database fields to be placed on the work screen.

If you add the field to your record on the work screen, SDA creates a REFFLD keyword. Set the *Reference database fields* prompt to blank if you do not want to generate the REFFLD keyword for all new database fields on the work screen. All keywords will be explicitly copied to the field on the work screen.

- Type Y (Yes) in the *Display in single-field mode* prompt to display fields in single-field mode. To display fields in multiple-field mode, leave the prompt blank. With multiple-field mode, you can display as many as 9 fields on the bottom row of the work screen at one time.



---

## Chapter 3. Creating Simple Displays

This chapter shows how to create a simple display. In the example in this chapter, you create an inquiry into a customer master file in which the user can check the following customer information:

- Accounts receivable balance
- Credit limit.

The fields that you select from a database file for the display already have attributes defined for them.

In this chapter, you do the following to design and create the example New Customer Inquiry display:

1. Create a new record.
2. Select fields from a database file.
3. Position the ruler on the Design Image work screen.
4. Place constants on the Design Image work screen.
5. Place database fields on the Design Image work screen.
6. Specify display attributes and user-defined fields on the Design Image work screen.
7. Edit a field.
8. Add a message identifier.
9. Save the DDS and create the display file.

This chapter also shows how to:

- Copy a record
- Rename a record
- Delete a record.

Before you can create the New Customer Inquiry display in this example and save the source file, you need the following authorities to the libraries and source files supplied by IBM:

- \*CHANGE authority to the QGPL library
- \*CHANGE, \*OBJMGT, and \*OBJEXIST authority to the QDDSSRC source file
- \*USE authority to the QPDA library and the QCUSDATA file.

---

### Considerations for Using SDA Displays

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

- When indicators are allowed on a display, you can access an indicators display by typing + in the *Indicators* prompt anywhere in SDA.
- When duplicate keywords (such as INDTXT) are allowed, scroll through those keywords by typing + or – in the *More/Roll* prompt for the keyword.

- When long parameters are allowed (with the EDTWRD keyword), you can get extension space by typing + in the *More* prompt for the keyword. The *More* prompt does not appear if the field length is less than the standard input field for the keyword.
- When you press F3 (Exit) or F12 (Cancel) on a display, you lose all the input from the display. SDA does no processing.
- Keywords that are not valid for the record or file type being processed do not appear on the displays.

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

---

## Creating a New Record

To create a new record:

1. Select option 1 (Design screens) from the Screen Design Aid (SDA) menu and press Enter. The Design Screens display appears.
2. Specify the name of the source file, library, and member on the Design Screens display:
  - a. Type QDDSSRC in the *Source file* prompt.
  - b. Type QGPL in the *Library* prompt.
  - c. Type CUSMASTER in the *Member* prompt.
  - d. Press Enter.

The Work with Display Records display appears.

3. Indicate that you want to create a new record on the Work with Display Records display:
  - a. Type 1 (Add) in the *Opt* column.
  - b. Type INQUIRY in the *Record* column.
  - c. Press Enter.

The Add New Record display appears.

4. Press Enter again. The Design Image work screen appears. A message indicates that the new record has been created.

You use the Design Image work screen to design the displays for a user. The first time you see the work screen, a message appears at the bottom.

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

You can add fields to the last row if it is not being used for an SDA prompt or message.

To see the online help information available on the Design Image work screen, press the Help key. You can browse through the online help information by pressing the Rollup key. Press F12 (Cancel) to return to the work screen.

5. To begin creating the record, press F10 (Database). The Select Database Files display appears.

You can now select fields from a database file from the Select Database Files display.

---

## Selecting Fields from a Database File

To select fields from a database file:

1. Specify the database file from which you want to select fields on the Select Database Files display:
  - a. Type 1 (Display database field list) in the *Option* column.
  - b. Type QCUSDATA in the *Database File* column.
  - c. Type QPDA in the *Library* column.
  - d. Position the cursor in the *Record* column and press F4 (Prompt).

The Select Database Records display appears with the names of the database file, library, and a list of records.

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

2. Type 1 (Select) in the *Option* column for the record CUSMST on the Select Database Records display and press Enter. The Select Database Fields display appears.
3. Specify the fields that you want to use for designing the display on the Select Database Fields display:
  - a. Type 2 (Select for input) in the *Option* column for the CUST field.
  - b. Type 3 (Select for output) in the *Option* column for the NAME field.
  - c. Press Page Down (Roll Up) to see more fields.
  - d. Type 3 (Select for output) in the *Option* column for the ARBAL field.
  - e. Type 3 (Select for output) in the *Option* column for the CRDLMT field.
  - f. Press Enter.

The Select Database Files display reappears. A message indicates that the database fields have been selected for the record CUSTMST.

4. Press Enter on the Select Database Files display. The Design Image work screen is displayed, containing the fields that you selected on the bottom row of the work screen. You can now position the ruler and place constants on the work screen.

---

## Positioning the Ruler on the Design Image Work Screen

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

To position the ruler on the Design Image work screen, for example, place the cursor on row 3, column 1 and press F14 (Ruler). The ruler is displayed on row 3, column 1.

You can type data over the ruler. The ruler does not delete data.

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

---

## Placing Constants on the Design Image Work Screen

To place constants on the work screen:

1. Type the output constant \*TIME starting at row 1, column 2. The constant supplies the system time provided by DDS.
2. Type the output constant \*DATE starting at row 1, column 61. The constant supplies the date on which the current session started. The system time and the date appear whenever you use the NEW CUSTOMER INQUIRY application.

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

3. Type the constant 'NEW CUSTOMER INQUIRY' beginning at row 2, column 1 as the display heading and press Enter.

The heading you typed is displayed and the quotation marks are removed. The time and date constants appear at the top of the display as the 6-digit edited numbers TT:TT:TT and DD/DD/DD.

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

4. To center the heading, type ac in the attribute position of the heading as shown in the following display and press Enter.

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

The heading on the Design Image work screen is centered.

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

## Placing Database Fields on the Design Image Work Screen

To add prompts and data fields to the work screen, type work-screen symbols to position the database fields as follows:

1. Type the following symbols on the Design Image work screen to position the database fields:
  - a. &1L beginning at row 7, column 20
  - b. &2L beginning at row 9, column 25
  - c. &3L beginning at row 11, column 25
  - d. &4L beginning at row 13, column 25.

The & indicates the starting position of the data field, the number specifies the database field to use from the list at the bottom of the display, and the L indicates the position of the prompt which is to the left of the data field. You can also place the prompt to the right of the data field or above the data field.

With screen symbols, the work screen looks like the following:

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

2. Press Enter to place the prompts and data fields in the locations that you specified. The database field names that you selected no longer appear at the bottom of the work screen. With the database fields displayed, the work screen looks like the following:

```
TT:TT:TT                                DD/DD/DD
2                                         NEW CUSTOMER INQUIRY
... .. 1 ... .. 2 ... .. 3 ... .. 4 ... .. 5 ... .. 6 ... .. 7 ... .. 8
4
5
6
Customer Number:  I I I I I
8
9       Customer Name:  00000000000000000000
10
11  Accts Rec Balance:  666,666.66-
12
13       Credit Limit:  66666666
14
```

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

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

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

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

To specify display attributes and user-defined fields:

1. Press F19 (Back Tab) repeatedly to tab backward to the Customer Number prompt.
2. Type the attribute character H immediately preceding the Customer Number prompt to highlight the prompt.
3. Press F18 (Tab) to tab forward to the attribute position of the data field IIIII.
4. Type S immediately before the data field to specify column separators.
5. Type Adjustment: +3(8,2) beginning at row 15, column 12. The constant Adjustment: is the prompt, and +3(8,2) is the data field. The + specifies a user-defined field, 3 specifies that the field is an input numeric field, and 8,2 specifies a field length of 8 with 2 decimal positions.

The work screen with user-defined fields and display attributes looks like the following:

```
TT:TT:TT                                DD/DD/DD
2                                     NEW CUSTOMER INQUIRY
... .. 1 ... .. 2 ... .. 3 ... .. 4 ... .. 5 ... .. 6 ... .. 7 ... .. 8
4
5
6
HCustomer Number: SIIIII
8
9   Customer Name: 00000000000000000000
10
11 Accts Rec Balance: 666,666.66-
12
13   Credit Limit: 66666666
14
15   Adjustment: +3(8,2)
```

The default for numeric fields is signed numeric. Only input and both (input and output) fields show the minus sign at the end of the field. The 666,666.66- data field appears with a trailing minus sign because of its definition in the database file.

6. Press Enter. The display attributes are processed, and then the Design Image work screen is as follows.

```

TT:TT:TT                                DD/DD/DD
2                                         NEW CUSTOMER INQUIRY
... .. 1 ... .. 2 ... .. 3 ... .. 4 ... .. 5 ... .. 6 ... .. 7 ... .. 8
4
5
6
Customer Number:  I I I I I
8
9   Customer Name:  00000000000000000000
10
11 Accts Rec Balance:  666,666.66-
12
13   Credit Limit:    66666666
14
15   Adjustment:     333333.33

```

The Customer Number prompt is displayed as highlighted. The data field I I I I I now has column separators and the Adjustment prompt and the data field 333333.33 are displayed.

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

You can now edit fields on the work screen.

---

## Editing a Field

Edit the 666,666.66- data field to show commas, zero balances, and no sign. To edit it, you specify an edit code for the data field. The edit code specifies how the numeric value is displayed. To edit a field on the Design Image work screen:

1. Type an asterisk (\*) immediately before the 666,666.66- data field and press Enter. The Select Field Keywords display appears.
2. To specify that you want to edit keywords, type Y (Yes) in the *Editing keywords* prompt and press Enter. The Select Editing Keywords display appears. The name of the field that you selected with the asterisk appears at the top of the display, along with the field usage, length, and position. To see the available edit codes, press F1 (Help).
3. To change the edit code to show commas, zero balances, and no sign for the data field, type 1 in the *Edit code* prompt and press Enter.
4. Select the EDTCDE keyword for most numeric fields and the EDTWRD keyword for fixed-format fields, such as currency symbols and asterisks.  
  
You can select the currency symbol (\$) or the asterisk for the EDTCDE keyword to replace leading zeros. You can define your own text for the edit code by typing the text in the *Edit word* prompt for the EDTWRD keyword.  
  
The Select Field Keywords display reappears.
5. Press Enter on the Select Field Keywords display. The Design Image work screen reappears. The 666,666.66 data field no longer has a trailing minus sign. The completed New Customer Inquiry display looks like the following.

TT:TT:TT	NEW CUSTOMER INQUIRY	DD/DD/DD
<b>Customer Number:</b> IIIII		
Customer Name:	00000000000000000000	
Accts Rec Balance:	666,666.66	
Credit Limit:	66666666	
Adjustment:	333333.33	

You can now add a message identifier to the display.

## Adding a Message Identifier

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

To add a message identifier:

1. Type an asterisk (\*) immediately before the 66666666 data field on the Design Work image screen and press Enter. The Select Field Keywords display appears.
2. To specify that you want to define a message ID, type Y (Yes) in the *Message ID (MSGID)* prompt on the Select Field Keywords display and press Enter. The Define Message ID display appears. The name of the field that you selected with the asterisk appears at the top of the display, along with the field usage, length, and position.
3. Do the following on the Define Message ID display:
  - a. Type MSG in the *Message prefix* prompt.
  - b. Type 0001 in the *Message identifier* prompt. The message prefix and message identifier make up the identifier used in the message file.
  - c. Type USRMSGs in the *Message file* prompt. The message file contains the messages you are using.
  - d. Type USRL in the *Library* prompt to specify the library.
  - e. Press Enter. The Select Field Keywords display reappears.
4. Type Y (Yes) in the *Message ID (MSGID)* prompt on the Select Field Keywords display and press Enter. The Work with Message ID Keyword display appears with the message you defined.
5. Press F12 (Cancel) until the Work with Display Records display reappears.



---

## Saving the Data Description Specifications and Creating the Display File

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

1. Press Enter on the Work with Display Records display. The Save DDS - Create Display File display appears.
2. To indicate that you want to specify additional options for creating the display file, type Y (Yes) in the *Specify additional save or create options* prompt and press Enter. The Specify Additional Options display appears. If you want, you can change the defaults on this display. In this example, the defaults are not changed.
3. Press Enter or F12 (Cancel) to return to the Save DDS - Create Display File display.
4. Press Enter. The following occurs:
  - The DDS source created by SDA is saved.
  - The display file CUSMASTER is created from the DDS source.
  - The CUSMASTER file is submitted as a batch job. (If you leave the *Submit create job in batch* prompt blank, SDA creates the display file CUSMASTER interactively.)

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

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

5. Press Enter to return to the Design Screens display.

---

## Copying a Record

A copied record can serve as a template that you modify to create a new display. In this example, you create a copy of the INQUIRY record.

1. Specify where the record is stored on the Design Screens display:
  - a. Type QDSSRC in the *Source file* prompt.
  - b. Type QGPL in the *Library* prompt.
  - c. Type CUSMASTER in the *Source Member* prompt.
  - d. Press Enter.

The Work with Display Records display appears.

2. Type 3 (Copy) in the *Opt* column for INQUIRY on the Work with Display Records display and press Enter. The Copy Records display appears. The name of the file, the library, the member, and the source type appear at the top of the display.
3. To specify a name for the new record, type INQUIRY2 in the *New Name* column, and press Enter. The Work with Display Records display reappears with a message indicating that the record was copied. The copied record appears in the list of records on the display.

4. To indicate that you want to modify the image of the new record, type 12 (Design image) in the *Opt* column for the record INQUIRY2 on the Work with Display Records display, and press Enter. The Design Image work screen appears. The record INQUIRY2 is displayed on the work screen.
5. Make any modifications to the image of the record INQUIRY2 on the Design Image work screen.
6. When you finish modifying the image, press F12 (Cancel). The Work with Display Records display is shown.

---

## Renaming a Record

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

1. Type 7 (Rename) in the *Opt* column for the record INQUIRY2 on the Work with Display Records display and press Enter. The Rename Records display appears.
2. Type NEWINQUIRY in the *New Name* column as the new name for the record INQUIRY2 on the Rename Records display and press Enter. The Work with Display Records display reappears and shows the renamed record in the list on the display.

---

## Deleting a Record

When you no longer require a record, you can delete it. To delete, for example, the record NEWINQUIRY:

1. Type 4 (Delete) in the *Opt* column for the record NEWINQUIRY on the Work with Display Records display and press Enter. The Confirm Delete of Records display appears.
2. Press Enter on the Confirm Delete of Records display to confirm that you want to delete NEWINQUIRY. The NEWINQUIRY record is deleted and the Work with Display Records display reappears. A message confirms that the record is deleted.

---

## Deleting a Display Source Member Using Program Development Manager

To delete a display source member in program development manager (PDM), use the following steps:

1. Type STRPDM on the command line of any AS/400 display and press Enter. The AS/400 Programming Development Manager (PDM) menu appears.
2. Select option 3 (Work with members) on the PDM menu and press Enter. The Specify Members to Work With display appears.
3. Do the following on the Specify Members to Work With display:
  - a. Type the name of the file to be deleted in the *File* prompt.
  - b. Type the library name in the *Library* prompt.
  - c. Type the name of the member in the *Name* prompt.
  - d. Type the member type in the *Type* prompt.
  - e. Press Enter.

The Work with Members Using PDM display reappears.

4. Do the following on the Work with Members Using PDM display:
  - a. Type 4 (Delete) in the *Opt* column for the member that you want to delete.
  - b. Press Enter to delete the member.
  - c. Press Enter again to confirm the deletion.
  - d. Press F12 (Cancel) until you return to the display on which you typed the STRPDM command.

**Note:** If you delete the display source member, you should also delete the display file object by using option 2 (Work with objects) on the programming development manager (PDM) menu.



---

## Chapter 4. Creating Complex Displays

The example in this chapter shows you how to create complex displays. It shows how to:

- Select file-level, record-level, and field-level keywords
- Define fields and constants to create the Customer Master File Maintenance (CUSMAINT) display

You then use CUSMAINT as a template from which you create the Customer Master File Inquiry (CUSTINQ) display.

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

Use the following steps to design and create two displays:

1. Select file-level keywords for the display file.
2. Select record-level keywords for the display file.
3. Select database fields from the reference file.
4. Design the displays on the Design Image work screen.
5. Specify condition indicators and attributes.
6. Design a second display using the first display.
7. Save the DDS and create the display file.

This chapter also describes how to:

- Create overlapping fields
- Move a field on the Design Image work screen
- Delete fields from the Design Image work screen
- Print the work screen image

Before you can create the Customer Master File Maintenance display in this example and save the source file, you need the following authorities to the libraries and source files supplied by IBM:

- \*CHANGE authority to the QGPL library
- \*CHANGE, \*OBJMGT, and \*OBJEXIST authority to the QDDSSRC source file
- \*USE authority to the QPDA library and the QCUSDATA file

---

### Selecting File-Level Keywords

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

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

To select file-level keywords:

1. Select option 1 (Design screens) from the Screen Design Aid (SDA) menu and press Enter. The Design Screens display appears.

2. Specify the source file, a library and a member name on the Design Screens display:
  - a. Type QDDSSRC in the *Source file* prompt.
  - b. Type QGPL in the *Library* prompt.
  - c. Type CUSMASTER in the *Source Member* prompt.
  - d. Press Enter. The Work with Display Records display appears.
3. Press F14 (File-level keywords) on the Work with Display Records display. The Select File Keywords display appears.
4. Indicate the keywords that you want to select on the Select File Keywords display:
  - a. Type Y (Yes) in the *General keywords* prompt to define general file-level keywords.
  - b. Type Y (Yes) in the *Indicator keywords* prompt to define keywords for condition indicators.
  - c. Type Y (Yes) in the *Print keywords* prompt to select the PRINT keyword and enable the user to print the display.
  - d. Type Y (Yes) in the *Alternate keywords* prompt to define keys for alternative keywords.

You can select more than one option at a time on the display. SDA processes the selections one after another until finished.

The Select File Keywords display with the keywords you selected looks like the following:

```

                                     Select File Keywords
Member . . . : CUSMASTER
Type choices, press Enter.

                                     Y=Yes
General keywords . . . . . Y
Indicator keywords . . . . . Y
Print keywords . . . . . Y
Help keywords . . . . . -
Display sizes . . . . . -
Alternate keywords . . . . . Y
DBCS conversion . . . . . -
Window borders . . . . . -
Menu-bar keywords . . . . . -

```

- e. Press Enter. The Select General Keywords display appears.
5. Select the database file that you want to use as a reference file on the Select General Keywords display:
  - a. Press the Page Down key.
  - b. Type QCUSDATA in the *Reference database file* prompt.
  - c. Type QPDA in the *Library* prompt.
  - d. Type CUSMST in the *Record* prompt.
  - e. Press Enter. The Define Indicator Keywords display appears.
6. Define the function key CF12 and the HELP keyword on the Define Indicator Keywords display:
  - a. Type CF12 in the *Keyword* column, 12 in the *Resp* column, and End of job indication for all displays in file in the *Text* column.

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

- b. Type HELP in the *Keyword* column, 17 in the *Resp* column, and Enable help key in the *Text* column.
- c. Press Enter.

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

7. Press Enter again. The Define Print Keywords display appears.
8. To select the PRINT keyword, type Y (Yes) in the *Enable keyword* prompt on the Define Print Keywords display and press Enter. Because PRINT is selected, the user can print the Customer Inquiry display. The Define Alternate Keywords display appears.
9. Specify CA17 as the alternate help key on the Define Alternate Keywords display:
  - a. Type Y (Yes) in the *Alternative help* prompt.
  - b. Type CA17 in the *Alternative key* prompt. The CA keyword defines an alternate function for a function key.

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

- c. Press Enter.

The Select File Keywords display reappears.

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

You can now create a new record and specify record-level keywords on the Work with Display Records display.

---

## Selecting Record-Level Keywords

Record-level keywords define functions available for the display that you are designing. To select record-level keywords:

1. Type 1 (Add) in the *Opt* column on the Work with Display Records display to indicate that you want to add a new record, and press Enter. The Add New Record display appears. The display shows the filename, library, member, and source type at the top of the display.
2. To specify a name for the new record, type CUSMAINT in the *New record* prompt on the Add New Record display and press Enter. The Design Image work screen appears.
3. Press F12 (Cancel) on the Design Image work screen to return to the Work with Display Records display.

4. To indicate that you want to select record-level keywords for the record CUSMAINT, type 8 (Select keywords) in the *Opt* column for the record CUSMAINT on the Work with Display Records display and press Enter. The Select Record Keywords display appears.
5. Type Y (Yes) in the *Indicator keywords* prompt on the Select Record Keywords display and press Enter. The Define Indicator Keywords display appears.
6. Define function keys CF04, CF07, CF08, and CF10 on the Define Indicator Keywords display:
  - a. Type CF04 in the *Keyword* column, 04 in the *Resp* column, and Use search code to search for customer number in the *Text* column.
  - b. Type CF07 in the *Keyword* column, 07 in the *Resp* column, and Update customer record with data keyed in the *Text* column.
  - c. Type CF08 in the *Keyword* column, 08 in the *Resp* column, and Add a new customer master record in the *Text* column.
  - d. Type CF10 in the *Keyword* column, 10 in the *Resp* column, and Delete this customer master record in the *Text* column.
  - e. Press Enter. The Select Record Keywords display reappears.
7. To indicate that you want to select an output keyword, type Y (Yes) in the *Output keywords* prompt on the Select Record Keywords display and press Enter. The Select Output Keywords display appears.
8. To indicate that you want the cursor to blink on the display, type Y (Yes) in the *Blink cursor* prompt on the Select Output Keywords display and press Enter. The Select Record Keywords display reappears.
9. Press Enter on the Select Record Keywords display. The Work with Display Records display appears with a message indicating that the keywords for the record CUSMAINT have been updated.
10. Do the following on the Work with Display Records display:
  - a. Press F11 (Display text) to display the *Text* column for the records.  
**Note:** If you press F11 (Display text) again, you see the *Related Subfile*, *Date*, and *DDS Error* columns.
  - b. Type 12 (Design image) in the *Opt* column for CUSMAINT to define the fields for this display.
  - c. Press Enter. The Design Image work screen appears.
11. Press F10 (Database) on the Design Image work screen to see the Select Database Files display. You see the names of the database file, library, and record that you specified on the Select General Keywords display.

---

## Selecting Fields from a Database File

You can now select fields from a database file to place in the record CUSMAINT. To select fields from a database file:

1. Type 1 (Display database field list) in the *Option* column for QCUSDATA on the Select Database Files display and press Enter. The Select Database Fields display appears. The display shows the field names, lengths, types, and column headings of fields in the file QCUSDATA.



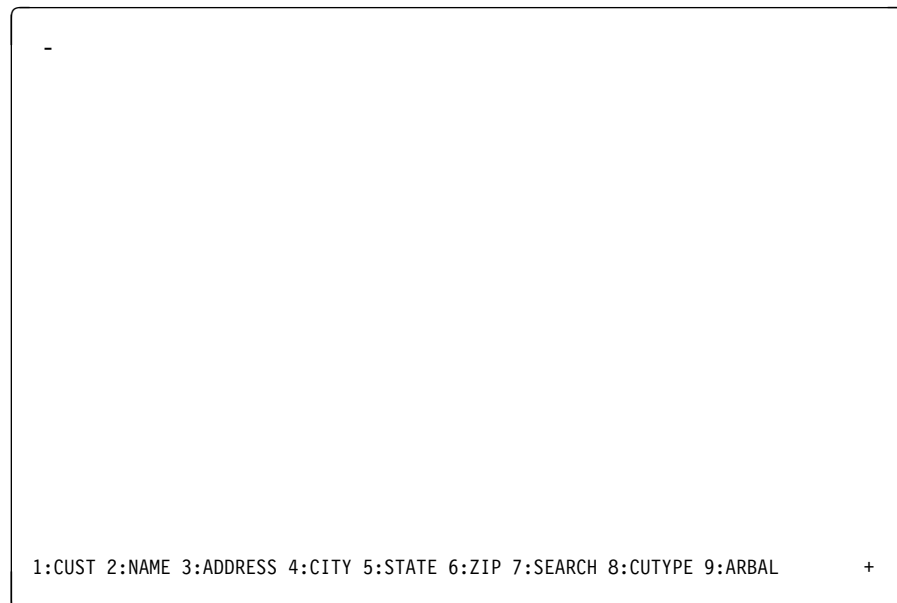
2. Do the following on the Select Database Fields display:
  - a. Type 4 (Select for both) in the *Option* column for all the displayed fields.  
The fields you select from the Select Database Fields display will appear on the bottom row of the Design Image work screen, and the application will use these fields for input and output.
  - b. Press Page Down to display more database fields.
  - c. Type 3 (Select for output) in the *Option* column for the ARBAL field.
  - d. Type 3 (Select for output) in the *Option* column for the ORDBAL field.
  - e. Type 4 (Select for both) in the *Option* column for the CRDLMT field.
  - f. Press Enter. The Select Database Files display reappears with a message indicating that the database field list for the record CUSMST is selected.
3. Press Enter on the Select Database Files display to return to the Design Image work screen.

---

## Designing the Display on the Design Image Work Screen

You use the Design Image work screen to design your Customer Master File Maintenance/Inquiry display. The fields that you selected on the Select Database Fields display appear in multiple-field mode at the bottom of the Design Image work screen; that is, more than one field name appears at the bottom of the work screen.

The Design Image work screen with database field names appears similar to the following:



The cursor automatically goes to row 1, column 2. The + at the end of the list of field names indicates that there are more field names. Press Page Down to display additional field names. Press Page Up to display the initial field names.

---

## Placing Fields and Adding Constants on the Work Screen

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

To place fields and add constants on the work screen:

1. Press F14 (Ruler) to display the ruler on row 1, column 2 on the Design Image work screen.
2. Beginning at row 2, column 19, type the heading constant 'CUSTOMER MASTER FILE MAINTENANCE/INQUIRY' on the work screen.

**Notes:**

- a. If you enclose a constant in single quotation marks, SDA treats the entire string as one constant. If you do not use the single quotation marks, SDA treats each word in the string as a separate constant.
  - b. You can center the heading by typing ac in the attribute position of the heading.
3. Type &1L starting at row 4, column 23. The & indicates the starting position of the data field. The 1 specifies the CUST database field. The L indicates that the prompt appears to the left of the data field.

The Design Image work screen, showing the heading and customer field specified, now looks like the following:

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

4. Press Enter to position the prompt and data field for CUST on the work screen. Because the CUST field has been moved into position, each remaining field adjusts its number accordingly on the bottom row.
5. To position the SEARCH field with the prompt to the left of the data field, type &6L beginning at row 3, column 51.

6. Starting from row 5, column 23, type &1L, &2L, &3L, &4L, and &5L in successive rows below the BBBB data field to place these fields on the work screen. The B means that this is both an input and output field.
7. Type &7L in the same column, but leave a space between this entry and &5L.
8. Type &8C beginning at row 20, column 6 to place the ARBAL field on the Design Image work screen with the column heading above the data field. The work screen with the customer entries now looks like the following:

```

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

```

9. Press Enter to place the prompts and data fields on the work screen. The ORDBAL and CRDLMT fields are at the bottom of the work screen.
10. To place the CRDLMT field on the work screen with its prompt to the left of the data field, type &2L beginning at row 13, column 23.
11. Type the constant '1-Gov, 2-School, 3-Business, 4-Pvt, 5-Other' beginning at row 11, column 32. The work screen, with the customer type constant specified, now looks like the following.

```

... .. 1 ... .. 2 ... .. 3 ... .. 4 ... .. 5 ... .. 6 ... .. 7 ... .. 8
2          CUSTOMER MASTER FILE MAINTENANCE/INQUIRY
3          Search Code: BBBB
4 Customer Number: BBBB
5 Customer Name: BBBB
6 Street Address: BBBB
7           City: BBBB
8           State: BB
9           Zip Code: 9999-
10
11          Cust Type: B      '1-Gov, 2-School, 3-Business, 4-Pvt, 5-Other'
12
13          &2L
14
15
16
17
18 Accts Rec
19 Balance
20 666,666.66-
21
22
23
1:ORDBAL 2:CRDLMT

```

12. Press Enter to place the fields and constant on the work screen.
13. Type the constant 'Over' beginning at row 13, column 40. The work screen, with the credit limit displayed, now looks like the following:

```

... .. 1 ... .. 2 ... .. 3 ... .. 4 ... .. 5 ... .. 6 ... .. 7 ... .. 8
2          CUSTOMER MASTER FILE MAINTENANCE/INQUIRY
3          Search Code: BBBB
4 Customer Number: BBBB
5 Customer Name: BBBB
6 Street Address: BBBB
7           City: BBBB
8           State: BB
9           Zip Code: 9999-
10
11          Cust Type: B      1-Gov, 2-School, 3-Business, 4-Pvt, 5-Other
12
13          Credit Limit: 99999999-      'Over'
14
15
16
17
18 Accts Rec
19 Balance
20 666,666.66-
21
22
23
1:ORDBAL

```

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

After placing fields on the work screen, you can select field-level keywords that affect how the fields are displayed.

## Creating Overlapping Fields

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

- If the credit limit is exceeded by a customer, `Over` blinks in reverse image.
- If the customer account is close to the credit limit, `Close to limit` is displayed in high intensity.

To specify a condition indicator for the constant `Over`:

1. Type an asterisk (\*) immediately before the constant `Over` on the Design Image work screen. The work screen looks like the following:

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

2. Press Enter. The Select Field Keywords display appears.
3. To indicate that you want to change a display attribute for the constant, type Y (Yes) in the *Display attributes* prompt on the Select Field display and press Enter. The Select Display Attributes display appears.
4. Specify an indicator and display attributes for the constant `Over`:
  - a. Type 31 in the *Indicators/+* column on the Select Display Attributes display, so that the constant `Over` appears when the condition indicator 31 is on.
  - b. Type Y (Yes) in the *Reverse image* prompt.
  - c. Type Y (Yes) in the *Blink* prompt.
  - d. Press Enter. The Select Field Keywords display reappears.
5. To return the Design Image work screen, press Enter on the Select Field Keywords display. The Design Image work screen reappears. The constant `Over` blinks in reverse image, as in the following, because SDA assumes all condition indicators are on.

```

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

```

6. To turn off the constant `Over`, press `F6` (Condition) on the Design Image work screen. The Condition Work Screen display appears.
7. Do the following on the Condition Work Screen display to condition the Design Image work screen with the specified indicator:
  - a. Type `Y` (Yes) in the *Activate indicators* prompt.
  - b. Type `32` in the *Indicators to be turned ON* prompt.
  - c. Press `Enter`.

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

8. To specify the constant `Close to limit` as an overlapping field, type '`Close to limit`' beginning on row 13, column 40. The constant `Over` is displayed here when indicator `31` is on. The work screen, showing overlapping constants, looks like the following:

```

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

```

9. Press `Enter` to position the constant.
10. To indicate that you want to specify keywords for the constant, type an asterisk (\*) immediately preceding `Close to limit`. The work screen looks like the following.

```

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

```

11. Press Enter. The Select Field Keywords display appears.
12. Type Y (Yes) in the *Display attributes* prompt on the Select Field Keywords display and press Enter. The Select Display Attributes display appears.
13. Do the following on the Select Display Attributes display to specify an indicator and highlighting for the constant Close to limit:
  - a. Type 32 in the *Indicators/+* column.
  - b. Type Y (Yes) in the *High intensity* prompt.
  - c. Press Enter. The Select Field Keywords display reappears.
14. Press Enter on the Select Field Keywords display to return to the Design Image work screen.

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

---

## Moving a Field on the Design Image Work Screen

If you are not satisfied with the position of a field on the work screen, you can move the field. When moving fields, do not use the Del/Ins key because the results are unpredictable.

To move the BBBBBB data field on the Design Image work screen 8 places to the right, do the following:

1. Type eight greater-than signs (>>>>>>>>) immediately following the the BBBBBB data field. The work screen, showing a field selected for moving, looks like the following:

```

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

```

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

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

2. Press Enter. The data field `BBBBBB` moves 8 positions to the right.
3. To move the Search Code prompt eight positions to the right, type eight greater-than signs (`>>>>>>>>`) immediately following the Search Code prompt. The work screen, showing a prompt selected for moving, now looks like the following:

```

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

```

4. Press Enter. The Search Code prompt moves to the right as in the following:

```

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

```

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

---

## Selecting Field-Level Keywords

To specify field-level keywords for the `SEARCH` and `CUTYPE` fields, do the following:

**Note:** The keyword that you specify for `SEARCH` places the cursor in the data field when the display appears. The keyword that you specify for `CUTYPE` causes the OS/400 system to check the data that the operator types in the `Cust Type` data field.

1. On the Work with Fields display:
  - a. Type 1 (Select keywords) in the *Option* column for the `SEARCH` field.
  - b. Press the Page Down key two times.
  - c. Type 1 (Select keywords) in the *Option* column for the `CUTYPE` field.



- d. Press Enter. The Select Field Keywords display for the SEARCH field appears.
2. Type Y (Yes) in the *Display attributes* prompt on the Select Field Keyword display and press Enter. The Select Display Attributes display for the SEARCH field appears.
 

**Note:** When more than one field is selected, the field located first on the Work with Fields display appears first.
3. Do the following on the Select Display Attributes display:
  - a. Type 32 for the *Field Conditioning* prompt in the *Indicators/+* column.
  - b. Type Y (Yes) in the *Position cursor* prompt to position the cursor at the SEARCH field.
  - c. Press Enter to process the information that you typed.
  - d. Press Enter again. The Select Field Keywords display for the CUTYPE field appears.
4. To indicate that you want the OS/400 system to perform a validity check on data typed in the Cust Type data field, type Y (Yes) in the *Validity check* prompt on the Select Field Keywords display and press Enter. The Define Validity Check Keywords display appears.
 

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

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

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

When the user works with the Customer Master File Maintenance/Inquiry display, the OS/400 system checks the Cust Type field to verify that the data the operator types is within the valid range.
5. Press Enter on the Define Validity Check Keywords display. The Select Field Keywords display appears.
6. Press Enter on the Select Field Keywords display to process the entries on the display.
7. Press Enter. The Design Image work screen is displayed.

---

## Deleting Fields from the Design Image Work Screen

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

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

1. Type d immediately preceding the column heading and the data field.

The work screen showing the ARBAL field marked for deletion looks like the following.

```

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

```

2. Press Enter. The ARBAL field is deleted from the display, moved from row 20 and placed in the list of fields with ORDBAL at the bottom of the Design Image work screen as in the following:

```

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

```

3. To display the original list of database fields, press F11 (Nondisplay selected fields) on the work screen. The work screen, with the original list of database fields, is as follows. The + at the end of the list indicates there are more field names.

```

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

```

You have now completed the CUSMAINT display.

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

You can now design the CUSINQ display. When you design CUSINQ, you use the two remaining fields, ORDBAL and ARBAL.

---

## Designing a Second Display by Using the First Display

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

To design the second display, CUSINQ, do the following:

1. Type 1 (Add) in the *Opt* column on the Work with Display Records display and press Enter. The Add New Record display appears.
2. To specify a name for the new record, type CUSINQ in the *New record* prompt on the Add New Record display and press Enter. The Design Image work screen appears.

3. To return the Work with Display Records display, press F12 (Cancel) on the Design Image work screen.

---

## Overlaying a Display

To enable displays to appear simultaneously, you specify the OVERLAY keyword. Displays can only be overlaid one on top of the other, so that you see one display at a time.

To specify that you want the CUSMAINT display and the CUSINQ display to appear simultaneously, do the following:

1. Type 8 (Select keywords) in the *Opt* field for the record CUSINQ on the Work with Display Records display and press Enter. The Select Record Keywords display appears.
2. Type Y (Yes) in the *Overlay keywords* prompt on the Select Record Keyword display and press Enter. The Select Overlay Keywords display appears.
3. To select the OVERLAY keyword, type Y (Yes) in the *Overlay without erasing* prompt on the Select Overlay Keywords display and press Enter. The Select Record Keywords display reappears.
4. Press Enter on the Select Record Keywords display. The Work with Display Records display reappears with a message indicating that keywords are updated for the CUSTINQ record.
5. To indicate that you want to design the image for the CUSINQ record, type 12 (Design image) in the *Opt* column for the CUSINQ record and press Enter. The Design Image work screen appears.
6. To see the Select Additional Records display, press F9 (Select additional records) on the Design Image work screen.
7. To select the record CUSMAINT on the Select Additional Records for Display display, type 1 (Select for display as additional record) in the *Option* column for CUSMAINT and press Enter. The Design Image work screen reappears with a message indicating the additional record has been selected.

In this example, the bottom row on the work screen specifies that the record CUSMAINT is the additional record selected. You cannot change the information in the CUSMAINT record, because it is an additional record, not the primary record.

The work screen looks similar to the following.

```

... .. 1 ... .. 2 ... .. 3 ... .. 4 ... .. 5 ... .. 6 ... .. 7 ... .. 8
2          CUSTOMER MASTER FILE MAINTENANCE/INQUIRY
3
4 Customer Number: BBBB          Search Code: BBBB
5 Customer Name:  BBBB
6 Street Address: BBBB
7           City: BBBB
8           State: BB
9           Zip Code: 9999-
10
11          Cust Type: B          1-Gov, 2-School, 3-Business, 4-Pvt, 5-Other
12
13 Credit Limit: 9999999-        Close to limit
14
15
16
17
18
19
20
21
22
23
Additional record(s) selected: CUSMAINT

```

You can now define the fields for the second display.

---

## Defining Fields for the Second Display

Use the CUSMAINT record as a template to define the fields for the second display on the Design Image work screen.

To design the new display:

1. Press F6 (Condition) on the Design Image work screen. The Condition Work Screen display appears.
2. Do the following on the Condition Work Screen display:
  - a. Type a blank space in the *Activate indicators* prompt to display the Design Image work screen without indicator settings.
  - b. Type Y (Yes) in the *Display in single-field mode* prompt, and press Enter.

Single-field mode displays the data field length and column heading of the database field. With single-field mode, you can place one database field at a time on the Design Image work screen and review the field length and column heading.

The Design Image work screen appears. The ORDBAL field appears on the bottom row of the work screen. The constant Over is blinking and in reverse image because you cleared the *Activate indicators* prompt on the Condition Work Screen display.

3. Do the following on the Design Image work screen:
  - a. Press Page Down to display the ARBAL field.
  - b. Type &C beginning at row 20, column 6 to place the ARBAL field on the Design Image work screen.

The C indicates that the column heading is placed immediately above the data field. The work screen looks as shown here. The ARBAL field is displayed in single-field mode.

```

18
19
20  &C
21
22
23
ARBAL      Length: 08,02  COLHDG: Accts Rec Balance

```

c. Press Enter to position the ARBAL column heading and data field on the Design Image work screen. The ORDBAL field appears on the bottom row of the work screen and is displayed in single-field mode as in the following:

```

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

```

d. To place the ORDBAL column heading and data field on the work screen, type &C beginning at row 20, column 24 and press Enter.

## Adding User-Defined Fields on the Design Image Work Screen

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

1. Do the following on the Design Image work screen to create the column heading and the data field:

- a. Type the constant Total beginning at row 18, column 43.
- b. Type the constant Balance beginning at row 19, column 41.
- c. Type +6(8,2) beginning at row 20, column 38 to specify the data field.

The 6 specifies that the data field is an output numeric field. The (8,2) specifies a field length of 8 positions with 2 decimal places.

The work screen looks as shown here. The Total Balance field is specified.

```

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

```

- d. Press Enter to position the column heading Total Balance and the output data field 666666.66.
- e. To indicate that you want to specify a field-level keyword for the field, type an asterisk (\*) immediately preceding the data field 666666.66. The work screen is as follows. It shows that the Total Balance field is selected for editing.

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

- f. Press Enter. The Select Field Keywords display appears.
2. To indicate that you want to specify an edit code for the data field, type Y (Yes) in the *Editing keywords* prompt on the Select Field Keywords display and press Enter. The Select Editing Keywords display appears.
3. Do the following on the Select Editing Keywords display:
  - a. Type J in the *Edit code* prompt. The J specifies that the data field is displayed with commas, zero balances, and a minus sign if the number is negative.
  - b. Clear the *Edit word* prompt.
  - c. Press Enter. The Select Field Keywords display reappears.
4. To indicate that you want to specify error messages, type Y (Yes) in the *Error messages* prompt on the Select Field Keywords display and press Enter. The Define Error Messages display appears.
5. Do the following on the Define Error Messages display to define a message for indicators 20 and 21:
  - a. Type 20 in the *Indicators/+* prompt, \$5,000 credit limit for business exceeded in the *ERRMSG - Message Text* prompt, and 40 in the *Ind* prompt.
  - b. Type 21 in the *Indicators/+* prompt, \$2,000 credit limit for private exceeded in the *ERRMSG - Message Text* prompt, and 41 in the *Ind* prompt.

If indicator 20 or 21 is set on by the application program using this display, the associated message is displayed. The Define Error Messages display with indicators and messages looks like the following.

```

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

Type parameters, press Enter.

Indicators/+  ERRMSG - Message Text      More  Ind
_20 ___ ___  $5,000 credit limit for business exceeded_____ - 40
_21 ___ ___  $2,000 credit limit for private exceeded_____ - 41

```

- c. Press Enter. The Select Field Keywords display reappears.
- 6. Press Enter on the Select Field Keywords display to return to the Design Image work screen.
- 7. Do the following on the Design Image work screen:
  - a. Type the following constant beginning at row 22 column 5:  
'CF keys: 4-Search, 7-Update, 8-Add, 10-Delete, 12-End'

The Design Image work screen with the constant displayed looks like the following:

```

17
18 Accts Rec      A/R Amt in      Total
19 Balance      Order File      Balance
20 666,666.66-  666,666.66-  666,666.66-
21
22 'CF keys: 4-Search, 7-Update, 8-Add, 10-Delete, 12-End'
23
24

```

- b. Press Enter to remove the single quotation marks.
  - c. Press F14 (Ruler) to remove the ruler.
- Note:** You do not have to remove the ruler: it does not appear to the person using this display.

The Design Image work screen with the completed Customer Master File Maintenance/Inquiry display looks like the following.

```

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

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

Credit Limit: 9999999-   Over

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

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

```

You have now completed the CUSINQ display.

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

You can now print the work screen image.

---

## Printing the Work Screen Image

You can print the work screen image with or without a field listing. To print the work screen image with a field listing, press F17 (Print) from the Work with Display Records display. The work screen image and a field listing are printed by default.

To print the work screen image without the field listing, do the following:

1. Press F13 (Change Defaults) from the Work with Display Records display to see the Change Defaults display. You can also press F13 (Change Defaults) from the Design Image work screen to access the Change Defaults display.
2. Type N in the *Include field definitions* prompt on the Change Defaults display and press Enter. This setting stays until it is changed again. The Work with Display Records display reappears.
3. Type 12 next to the CUSINQ record to display the record on the work screen.
4. Press F17 (Print) to print the customer inquiry display.
5. When the completion message appears, press F12 (Cancel) to return to the Work with Display Records display.

---

## Saving the Data Description Specifications and Creating the Display File

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

1. Press F3 (Exit) on the Work with Display Records display. The Save DDS - Create Display File display appears.



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

- Save the DDS source generated by SDA.
- Re-create the display file CUSMASTER from the generated DDS source. (You created this display file in the example in Chapter 3, “Creating Simple Displays” on page 29.)
- Submit CUSMASTER as a batch job. (If you leave the *Submit create job in batch* prompt blank, SDA creates the display file CUSMASTER interactively.)

SDA displays a completion message.

3. Press Enter to return to the Design Screens display.

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



---

## Chapter 5. Creating Subfiles

A subfile is a group of records with the same record name. The group is read from and written to a display device in one operation. A subfile consists of a subfile record and a subfile control record.

A subfile record:

- Selects keywords to process the data
- Defines fields

A subfile control record defines:

- Size of the subfile
- User messages
- Control keys that the user can use when looking at the display
- Fixed portions of the display

In the example in this chapter, you create a subfile record and a subfile control record to examine line items from a database file on an order entry display. The subfile holds 60 records and displays 17 records at a time.

You use the following steps to create a subfile:

1. Create a subfile record.
2. Select record-level keywords for the subfile record.
3. Select database fields for the subfile control record.
4. Design the display on the Design Image work screen.
5. Position fields from a database file.
6. Select field-level keywords for the subfile record.
7. Save the DDS and create the display file.

Before you can create the subfile in this example and save the source file, you need the following authorities to the libraries and source files supplied by IBM:

- \*CHANGE authority to the QGPL library
- \*CHANGE, \*OBJMGT, and \*OBJEXIST authority to the QDDSSRC source file
- \*USE authority to the QPDA library, the QCUSDATA file, and the QORDHDRP file

---

### Creating a Subfile Record

You create the subfile record and the subfile control record by indicating that you want to design a screen. To create a subfile record:

1. Select option 1 (Design screens) on the Screen Design Aid (SDA) menu and press Enter. The Design Screens display appears.
2. Do the following on the Design Screens display:
  - a. Type QDDSSRC in the *Source file* prompt.
  - b. Type QGPL in the *Library* prompt.
  - c. Type EXAMPLE in the *Source Member* prompt.
  - d. Press Enter. The Work with Display Records appears.

You can now select record-level keywords for the subfile record.

---

## Selecting Record-Level Keywords for the Subfile Record

The record-level keywords specify how SDA processes the subfile records. To select record-level keywords:

1. Type 1 (Add) in the *Opt* column on the Work with Display Records display and press Enter. The Add New Record display appears.
2. To indicate that you want to create a subfile record and a subfile control record on the Add New Record display:
  - a. Type SUBFILE in the *New record* prompt.
  - b. Type SFL in the *Type* prompt.
  - c. Press Enter to see the *Subfile control record* prompt.
  - d. Type SUBFCTL in the *Subfile control record* prompt.
  - e. Press Enter.

The Select Subfile Keywords display appears.

3. To indicate that you want to specify keywords and a description of the subfile on the Select Subfile Keywords display:
  - a. Type Y (Yes) in the *General keywords* prompt.
  - b. Type Definition for record: SUBFILE in the *TEXT keyword* prompt.
  - c. Press Enter.

The Select General Keywords display appears.

4. Type Y (Yes) in the *Allow blanks* prompt on the Select General Keywords display and press Enter. The Select Subfile Keywords display reappears. You have now completed selecting the subfile record keywords.
5. Press Enter on the Select Subfile Keywords display. The Select Subfile Control Keywords display reappears.
6. Do the following on the Select Subfile Control Keywords display:
  - a. Type Y (Yes) in the *General keywords* prompt.
  - b. Type Y (Yes) in the *Subfile display layout* prompt.
  - c. Type Y (Yes) in the *Subfile messages* prompt.
  - d. Type Y (Yes) in the *Select record keywords* prompt.
  - e. Type SUBFILE CONTROL RECORD FOR EXAMPLE in the *TEXT keyword* prompt.
  - f. Press Enter.

The Define General Keywords display appears.

7. Do the following on the Define General Keywords display:
  - a. Type Y (Yes) in the *Display subfile records* prompt to select the keyword SFLDSP. This value is required. You cannot remove the SFLDSP keyword.
  - b. Type N50 in the *Indicators/+* column for the SFLDSP keyword. The N specifies that when indicator 50 is off, the subfile is displayed.

**Note:** The entries you type in the *Indicators/+* columns control when the subfile is displayed.
  - c. Type Y (Yes) in the *Display control record* prompt to select the SFLDSPCTL keyword.
  - d. Type N50 in the *Indicators/+* column for the SFLDSPCTL keyword.
  - e. Type 50 in the *Indicators/+* for the SFLCLR keyword to clear the subfile when indicator 50 is on.

**Note:** When you press Page Down (Roll Up) on the Define General Keywords display, you see the prompts that you use to specify the SFLDROP, SFLFOLD, and SFLENTER keywords.

f. Press Enter.

The Define Display Layout display appears.

8. To specify that the subfile contains 60 records and displays 17 records at a time on the Define Display Layout display:

- a. Type 60 in the *Records in subfile* prompt.
- b. Type 17 in the *Records per display* prompt.
- c. Press Enter.

The Define Subfile Messages display appears.

9. To specify indicators and message text for the subfile on the Define Subfile Messages display:

- a. Type 60 in the *Indicators/+* column, Item not found in the *SFLMSG - Message Text* column, and 77 in the *Ind* column as the response indicator.

When indicator 60 is true, the message appears and DDS returns the response indicator 77 to the application program.

- b. Type 61 in the *Indicators/+* column, and No stock available for this item in the *SFLMSG - Message Text* column.
- c. Type 62 in the *Indicators/+* column, and Partial stock available in the *SFLMSG - Message Text* column.
- d. Type 64 in the *Indicators/+* column, and No line items for this order in the *SFLMSG - Message Text* column.
- e. Type 65 in the *Indicators/+* column, and Invalid to change item number in the *SFLMSG - Message Text* column.

The Define Subfile Messages display with the message entries looks like the following:

Define Subfile Messages			
Subfile control record . . . . . : SUBFCTL			
Type values, press Enter.			
Indicators/+	SFLMSG - Message Text	More	Ind
60	Item not found	-	77
61	No stock available for this item	-	
62	Partial stock available	-	
64	No line items for this order	-	
65	Invalid to change item number	-	

f. To specify more indicators and message text, move the cursor to the top half of the display and press Page Down.

**Note:** If you do not move the cursor back to the section you are working on before you press Page Down, the wrong half of the display will be paged.

- g. Type 68 in the *Indicators/+* column, and No lines entered in the *SFLMSG - Message Text* column.

The Define Subfile Messages display, with additional message entries, looks like the following:

```

                                Define Subfile Messages
Subfile control record . . . . . : SUBFCTL
Type values, press Enter.

Indicators/+   SFLMSG - Message Text           More   Ind
_68 _ _ _     No lines entered_____         -     _

```

h. Press Enter.

The Select Record Keywords display appears.

10. Type Y (Yes) in the *Indicator keywords* prompt on the Select Record Keywords display and press Enter. The Define Indicator Keywords display appears.
11. To specify the keyword HELP, the keyword SETOF, and the function key CA13 on the Define Indicator Keywords display:
  - a. Type HELP in the *Keyword* column, 99 in the *Resp* column, and Help key in the *Text* column.
  - b. Type CA13 in the *Keyword* column, 92 in the *Resp* column, and End of order in the *Text* column.
  - c. Type SETOF in the *Keyword* column, 30 in the *Resp* column, and Any error on display in the *Text* column.
  - d. Type SETOF in the *Keyword* column, 50 in the *Resp* column, and Display control in the *Text* column.

Response indicators 30 and 50 are set off at the start of input operations. The Define Indicator Keywords display, with the function keys defined, looks like the following:

```

                                Define Indicator Keywords
Record . . . : SUBFCTL
Type keywords and parameters, press Enter.
  Conditioned keywords:   CFnn CAnn CLEAR PAGEDOWN/ROLLUP PAGEUP/ROLLODOWN
                           HOME HELP HLPRTN
  Unconditioned keywords:  INDTXT VLDCMDKEY SETOF CHANGE

Keyword  Indicators/+  Resp  Text
HELP____ _ _ _ _    99  Help key_____
CA13____ _ _ _ _    92  End of order_____
SETOF____ _ _ _ _   30  Any error on display_____
SETOF____ _ _ _ _   50  Display control_____

```

e. Press Enter.

The Select Record Keywords display reappears.

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

You can now select database fields for the subfile control record.

---

## Selecting Database Fields for the Subfile Control Record

To select fields that you want to appear in the subfile control record from records in the QCUSDATA and QORDHDRP database files:

1. Type 12 (Design image) in the *Opt* column for the SUBFCTL record on the Work with Display Records display and press Enter. The Design Image work screen appears with a message that the subfile is displayed as an additional record.
2. Press F10 (Database) on the Design Image work screen. The Select Database Files display appears.
3. To indicate that you want to select fields from two database files on the Select Database Files display:
  - a. Type 1 (Display database field list) in the *Option* column.
  - b. Type QCUSDATA in the *Database File* column.
  - c. Type CUSMST in the *Record* column.
  - d. Type 1 (Display database field list) in the *Option* column.
  - e. Type QORDHDRP in the *Database File* column.
  - f. Type ORDERFMT in the *Record* column.
  - g. Press Enter.

The Select Database Fields display for the record CUSMST appears.

4. To select fields from the record CUSMST on the Select Database Fields display:
  - a. Type 4 (Select for both) in the *Option* column for the CUST field.
  - b. Type 3 (Select for output) in the *Option* column for the NAME field.
  - c. Press Enter. The Select Database Fields display for the record ORDERFMT appears.
  - d. Type 4 (Select for both) in the *Option* column for the ORDER field.
  - e. Type 4 (Select for both) in the *Option* column for the SHIP field.
  - f. Press Page Down to see more fields.
  - g. Type 4 (Select for both) in the *Option* column for the QTY field.
  - h. Type 4 (Select for both) in the *Option* column for the ITEM field.
  - i. Type 4 (Select for both) in the *Option* column for the PRICE field.
  - j. Type 4 (Select for both) in the *Option* column for the DESCRP field.
  - k. Press Page Down to see more fields.
  - l. Type 4 (Select for both) in the *Option* column for the EXTENS field.
  - m. Type 4 (Select for both) in the *Option* column for the AVAIL field.
  - n. Press Enter.

The Select Database Files display reappears. On the Select Database Files display, a message states that the database field list for the record CUSMST has been selected.

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

The field names that you selected on the Select Database Fields display appear at the bottom of the Design Image work screen. The + at the end of the list indicates not all the fields fit on the line at the bottom of the screen.

---

## Designing the Display on the Design Image Work Screen

To design the subfile control record on the work screen:

1. Move the cursor to the top left corner of the work screen as in the following display:



2. Press F14 (Ruler) to display the ruler where the cursor is positioned.
3. Type the title 'ORDER ENTRY' beginning at row 1, column 28.

**Notes:**

- a. You can also center the title by typing the attribute ac as described on page 32.
  - b. If you enclose a constant in single quotation marks, SDA treats the entire string as one constant. If you do not use the single quotation marks, SDA treats each word in the string as a separate constant.
4. Type the following work screen symbols to position the CUST, ORDER, and NAME prompts and data fields with the prompt to the left of the data field:
    - a. &1L beginning at row 3, column 19.
    - b. &3L beginning at row 3, column 38.
    - c. &2L beginning at row 3, column 61.
  5. Type the following work screen symbols to place the ITEM, QTY, SHIP, DESCRP, PRICE, and EXTENS column headings and data fields:
    - a. &6C beginning at row 7, column 2.
    - b. &5C beginning at row 7, column 14.
    - c. &4C beginning at row 7, column 24.
    - d. &8C beginning at row 7, column 30.
    - e. &7C beginning at row 7, column 49.
    - f. &9C beginning at row 7, column 61.

The work screen now looks like the following:



```

... .. 1 ... .. 2 ... ..'O R D E R   E N T R Y' ... .. 6 ... .. 7 ... .. 8
2
3           &1L           &3L           &2L
4
5
6
&6C           &5C           &4C   &8C           &7C           &9C
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
1:CUST 2:NAME 3:ORDER 4:SHIP 5:QTY 6:ITEM 7:PRICE 8:DESCRP 9:EXTENS          +

```

6. Press Enter to place the prompts, constants, and data fields on the work screen.
7. To position the AVAIL field, type &1C beginning at row 7, column 74. The work screen, with constants, prompts and fields, looks like this:

```

... .. 1 ... .. 2 ... ...O R D E R   E N T R Y ... .. 6 ... .. 7 ... .. 8
2
Customer Number: BBBB Order No.: 9999- Customer Name: 00000000000000000000
4
  ITEM  QUANTITY  QUANTITY  ITEM          ITEM
NUMBER  ORDERED    SHIPPED  DESCRIPTION    PRICE    EXTENSION
99999-   999-      999-    BBBB          99999-   999999-   &1C
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
1:AVAIL

```

8. Press Enter to place the AVAIL prompt and data field on the work screen.
9. Because you want only column headings to appear in the subfile control record, you must delete the data fields. The data fields were placed in the subfile control record to show the alignment of the subfile record fields.  
  
To delete the data fields, type d immediately before each data field as shown on the following work screen.

```

... .. 1 ... .. 2 ... .. O R D E R   E N T R Y   ... .. 6 ... .. 7 ... .. 8
2
Customer Number: BBBB Order No.: 9999- Customer Name: 00000000000000000000
4
ITEM QUANTITY QUANTITY ITEM ITEM
NUMBER ORDERED SHIPPED DESCRIPTION PRICE EXTENSION AVAILABLE
d99999- d999- d999- dBBBBBBBBBBBBBBB d99999- d999999- d99999-
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24

```

10. Press F14 (Ruler) to remove the ruler and the fields from the work screen. The data fields are removed from the display and appear at the bottom of the work screen. The completed subfile control record looks like this:

```

O R D E R   E N T R Y
Customer Number: BBBB Order No.: 9999- Customer Name: 00000000000000000000
ITEM QUANTITY QUANTITY ITEM ITEM
NUMBER ORDERED SHIPPED DESCRIPTION PRICE EXTENSION AVAILABLE
1:ITEM 2:QTY 3:SHIP 4:DESCRP 5:PRICE 6:EXTENS 7:AVAIL

```

**Note:** You can also use the work screen symbol &p to place only the prompt from the database field on the display; you do not have to delete the data fields. The symbol &c, however, centers every word in the prompt and the prompt uses the least amount of horizontal space, while &p positions the prompt horizontally beginning from the &p symbol. For more information, see “Using Symbols to Place a Database Field on the Work Screen” on page 18.

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

You can now position fields from a database file on the Work with Display Records display.

## Positioning Fields from a Database File

To position the database fields and create the subfile record:

1. Type 12 (Design image) in the *Opt* column for the subfile record on the Work with Display Records display and press Enter.

**Note:** The subfile record has the type SFL.

The Design Image work screen appears. The work screen shows the Order Entry display.

2. Position the cursor on row 8, column 1 on the Design Image work screen, and press F14 (Ruler) to display the ruler.
3. Type the following symbols, on row 7, to place the data fields for ITEM, QTY, SHIP, DESCRP, PRICE, EXTENS, and AVAIL:
  - a. &1 beginning at column 3.
  - b. &2 beginning at column 13.
  - c. &3 beginning at column 23.
  - d. &4 beginning at column 31.
  - e. &5 beginning at column 51.
  - f. &6 beginning at column 61.
  - g. &7 beginning at column 73.

The work screen, with positional markers displayed, looks like this:

```

1          O R D E R   E N T R Y
2
3 Customer Number: BBBB Order No.: 9999- Customer Name: 00000000000000000000
4
5 ITEM QUANTITY QUANTITY ITEM          ITEM
  NUMBER ORDERED  SHIPPED DESCRIPTION      PRICE  EXTENSION AVAILABLE
7&1  &2      &3      &4          &5      &6      &7
... .. 1 ... .. 2 ... .. 3 ... .. 4 ... .. 5 ... .. 6 ... .. 7 ... .. 8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
  1:ITEM 2:QTY 3:SHIP 4:DESCRP 5:PRICE 6:EXTENS 7:AVAIL

```

4. Press F14 (Ruler) to remove the ruler and to place the data fields on the Design Image work screen.

The fields that you selected appear on the Design Image work screen. Each subfile column displays 17 records because you specified 17 in the *Records per display* prompt on the Define Display Layout display in step 8 on page 65.

You can now edit the data columns on the Design Image work screen.

## Selecting Field-Level Keywords

To edit the data column under ITEM PRICE so that it is displayed with a decimal point and either a minus or a plus sign:

1. Type an asterisk (\*) in front of the first data field of the ITEM PRICE column on the Design Image work screen. This indicates that you want to add an edit code for the field. The underline disappears when you type the asterisk (\*), because you type over the attribute byte. The work screen, with the records displayed, looks like this:

ORDER ENTRY						
Customer Number: BBBB Order No.: 9999- Customer Name: 000000000000000000						
ITEM NUMBER	QUANTITY ORDERED	QUANTITY SHIPPED	ITEM DESCRIPTION	ITEM PRICE	EXTENSION	AVAILABLE
99999-	999-	999-	BBBBBBBBBBBBBB	*99999-	99999-	99999-
99999-	999-	999-	BBBBBBBBBBBBBB	99999-	99999-	99999-
99999-	999-	999-	BBBBBBBBBBBBBB	99999-	99999-	99999-
99999-	999-	999-	BBBBBBBBBBBBBB	99999-	99999-	99999-
99999-	999-	999-	BBBBBBBBBBBBBB	99999-	99999-	99999-
99999-	999-	999-	BBBBBBBBBBBBBB	99999-	99999-	99999-
99999-	999-	999-	BBBBBBBBBBBBBB	99999-	99999-	99999-
99999-	999-	999-	BBBBBBBBBBBBBB	99999-	99999-	99999-
99999-	999-	999-	BBBBBBBBBBBBBB	99999-	99999-	99999-
99999-	999-	999-	BBBBBBBBBBBBBB	99999-	99999-	99999-
99999-	999-	999-	BBBBBBBBBBBBBB	99999-	99999-	99999-
99999-	999-	999-	BBBBBBBBBBBBBB	99999-	99999-	99999-
99999-	999-	999-	BBBBBBBBBBBBBB	99999-	99999-	99999-
99999-	999-	999-	BBBBBBBBBBBBBB	99999-	99999-	99999-
99999-	999-	999-	BBBBBBBBBBBBBB	99999-	99999-	99999-
99999-	999-	999-	BBBBBBBBBBBBBB	99999-	99999-	99999-
99999-	999-	999-	BBBBBBBBBBBBBB	99999-	99999-	99999-
99999-	999-	999-	BBBBBBBBBBBBBB	99999-	99999-	99999-
99999-	999-	999-	BBBBBBBBBBBBBB	99999-	99999-	99999-
99999-	999-	999-	BBBBBBBBBBBBBB	99999-	99999-	99999-
99999-	999-	999-	BBBBBBBBBBBBBB	99999-	99999-	99999-
99999-	999-	999-	BBBBBBBBBBBBBB	99999-	99999-	99999-

2. Press Enter. The Select Field Keywords display appears.
3. Type Y (Yes) in the *Editing keywords* prompt on the Select Field Keywords display and press Enter. The Select Editing Keywords display appears.
4. To change the edit code for the data field, type J in the *Edit code* prompt on the Select Editing Keyword display.
 

**Note:** The J specifies that the field is displayed with commas, zero balances, and a minus sign when the number is negative. The *CR Sign* column refers to the credit sign.
5. Press Enter twice to return to the Design Image work screen. The work screen shows the completed subfile record. The ITEM PRICE data column appears with the editing changes you specified as follows.

ORDER ENTRY						
Customer Number: BBBB Order No.: 99999- Customer Name: 000000000000000000						
ITEM NUMBER	QUANTITY ORDERED	QUANTITY SHIPPED	ITEM DESCRIPTION	ITEM PRICE	EXTENSION	AVAILABLE
99999-	999-	999-	BBBBBBBBBBBBBB	999.99-	999999-	99999-
99999-	999-	999-	BBBBBBBBBBBBBB	999.99-	999999-	99999-
99999-	999-	999-	BBBBBBBBBBBBBB	999.99-	999999-	99999-
99999-	999-	999-	BBBBBBBBBBBBBB	999.99-	999999-	99999-
99999-	999-	999-	BBBBBBBBBBBBBB	999.99-	999999-	99999-
99999-	999-	999-	BBBBBBBBBBBBBB	999.99-	999999-	99999-
99999-	999-	999-	BBBBBBBBBBBBBB	999.99-	999999-	99999-
99999-	999-	999-	BBBBBBBBBBBBBB	999.99-	999999-	99999-
99999-	999-	999-	BBBBBBBBBBBBBB	999.99-	999999-	99999-
99999-	999-	999-	BBBBBBBBBBBBBB	999.99-	999999-	99999-
99999-	999-	999-	BBBBBBBBBBBBBB	999.99-	999999-	99999-
99999-	999-	999-	BBBBBBBBBBBBBB	999.99-	999999-	99999-
99999-	999-	999-	BBBBBBBBBBBBBB	999.99-	999999-	99999-
99999-	999-	999-	BBBBBBBBBBBBBB	999.99-	999999-	99999-
99999-	999-	999-	BBBBBBBBBBBBBB	999.99-	999999-	99999-
99999-	999-	999-	BBBBBBBBBBBBBB	999.99-	999999-	99999-
99999-	999-	999-	BBBBBBBBBBBBBB	999.99-	999999-	99999-
99999-	999-	999-	BBBBBBBBBBBBBB	999.99-	999999-	99999-
99999-	999-	999-	BBBBBBBBBBBBBB	999.99-	999999-	99999-
99999-	999-	999-	BBBBBBBBBBBBBB	999.99-	999999-	99999-
99999-	999-	999-	BBBBBBBBBBBBBB	999.99-	999999-	99999-
99999-	999-	999-	BBBBBBBBBBBBBB	999.99-	999999-	99999-

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

### Saving the Data Description Specifications and Creating a Display File

To save the DDS that SDA created for the subfile record and subfile control record and create the display file:

1. Press F3 (Exit) or Enter on the Work with Display Records display to see the Save DDS - Create Display File display.
2. Press Enter on the Save DDS - Create Display File display to:
  - Save the DDS source SDA created.
  - Re-create a display file EXAMPLE from the created DDS source.
  - Submit the making of EXAMPLE as a batch job. (If you leave the *Submit create job in batch* prompt blank, SDA creates the display file EXAMPLE interactively. If the interactive job fails, SDA displays a spooled listing.)

SDA displays a completion message.
3. Press Enter to return to the Design Screens display.
4. Press F3 (Exit) to return to the Screen Design Aid (SDA) menu.



---

## Chapter 6. Testing Display Files

The example in this chapter presents some of the SDA functions that you can use to test the records in a display file. The display file can either be for a display or a menu. The testing process can be used on any type of record except for user-defined and subfile message records.

As you work through the example, you become familiar with the SDA displays and functions used to test the display file.

You test display files to:

- See how they appear on the display
- Test the validity checking of input fields
- Test output fields and condition indicators
- Display the contents of the input buffer passed to the application program

In the example, you test the CUSMASTER display file that you created in Chapter 4, “Creating Complex Displays” on page 41, by testing output and both (input and output) data fields. You also test a condition indicator.

In this chapter, you use the following steps to test a display file:

1. Select the record to be tested.
2. Test the output and both (input and output) fields.
3. View the input and both fields and the input buffer.

To test the display file in this example, you need the following authorities:

- \*CHANGE authority to the QGPL library
- \*USE authority to the CUSMASTER display file

---

### Selecting a Record to Test

To select a record for testing:

1. Select option 3 (Test display files) on the Screen Design Aid (SDA) menu and press Enter. The Test Display File display appears.
2. To specify the display file that you want to test on the Test Display File display:
  - a. Type CUSMASTER in the *Display file* prompt.
  - b. Type QGPL in the *Library* prompt.
  - c. Type CUSMAINT in the *Record to be tested* prompt.
  - d. Press Enter.

The Set Test Output Data display appears.

You can now use the Set Test Output Data display to test the output and both fields.

---

## Testing Output and Both Data Fields

To test output and both data fields (input and output), using sample data, and to turn on condition indicators for the display file:

1. Type 1 in the *\*IN31* prompt to turn condition indicator 31 on on the Set Test Output Data display.
2. Type C W COURTNEY in the *NAME* prompt.
3. Press Enter. The Customer Master File Maintenance/Inquiry display appears. The customer name appears on the display and the constant Over blinks in reverse image because condition indicator 31 is on.
4. Type 1022 SIDNEY LANE in the *Street Address* prompt on the Customer Master File Maintenance/Inquiry display. The display looks like this:

```
CUSTOMER MASTER FILE MAINTENANCE/INQUIRY
Customer Number: BBBB          Search Code: BBBB
Customer Name: C W COURTNEY
Street Address: 1022 SIDNEY LANE
City: BBBB
State: BB
Zip Code: 99999
Cust Type: B      1-Gov, 2-School, 3-Business, 4-Pvt, 5-Other
Credit Limit: 99999999      Over
```

5. Press Enter. The Display Test Input Data display appears.

You can now view the data for input and both fields.

---

## Viewing Input Fields and Buffers

The Display Test Input Data display lists data for each input or both the input and output fields in the file. The data that appears on the display is the data specified in the record being tested.

To view the input fields and buffers:

1. Press Page Down on the Display Test Input Data display to see all of the other fields. The condition indicators, input fields, address, and customer name appear as follows.



```

                                Display Test Input Data
Record . . . : CUSMAINT
View indicators and input field values.

Field          Value
*IN12          0:
*IN17          0:
*IN04          0:
*IN07          0:
*IN08          0:
*IN10          0:
CUST           BBBB:
SEARCH         BBBB:
NAME           C W COURTNEY
ADDRESS        1022 SIDNEY LANE
CITY           BBBB BBBB BBBB BBBB BBBB:
STATE         BB:
More...

Press Enter to continue

F3=Exit  F12=Cancel  F14=Display input buffer

```

2. Press F14 (Display input buffer). The Display Test Input Buffer display appears as follows. The display acts like the input buffer created for a high-level language application program.

```

                                Display Test Input Buffer

      .... 1.... 2.... 3.... 4.... 5.... 6.... 7
1  0000BBBBBBBB C W COURTNEY      1022 SIDNEY LANE  BBBB BBBB BBBB
2  BBBB BBBB 9999B9999999999B
3
4
5
6
7
8
9
10
11
12
13
14
15
16
Bottom

Press Enter to continue.

F3=Exit  F12=Cancel

```

3. Press Enter on the Display Test Input Buffer display to return to the Display Test Input Data display.
4. Press F12 (Cancel) on the Display Test Input Data display to return to the Test Display File display.
5. Press F12 (Cancel) on the Test Display File display to return to the Screen Design Aid (SDA) menu.



---

## Chapter 7. Creating a Menu

This chapter shows how to create menus and is divided as follows:

- If you are using AS/400 SDA, refer to “AS/400 SDA Menu.”
- If you are using the System/38 environment, see “Creating System/38 Environment Menus” on page 90.

**Note:** If you use SDA to change a menu that was not created by using SDA the results are unpredictable.

A menu is a list of options from which the user makes a selection. Each option is a brief description of the job that is run when the user makes that selection. The system runs the job associated with the option number on the menu. The user only has to know when to make a selection and how to run a command. By selecting an option number, the user does not have to know the name of the command. Menus can reduce the amount of typing and the chance of error.

---

### AS/400 SDA Menu

An AS/400 SDA menu definition consists of two different source file members. The following members are automatically created by SDA in the source file that you specify:

- The DDS source member
- The command source member

The DDS source member shows the user what the selected option number does, and describes what appears on the display when the menu appears. This definition includes any descriptive text associated with an option number, the placement of the option numbers, and the name and title of the menu. The menu source member also holds the online help source for the menu.

**Note:** In Release 1 of AS/400 SDA, the Design Menus function created screen format generator routine (SFGR) source. Release 1 AS/400 SDA menus are converted to DDS for you by subsequent versions of SDA. You cannot, however, convert System/36 environment SDA menus to AS/400 SDA menus.

The command source member tells the system which commands or statements to use to run a job when the user selects an option number.

The following restrictions apply to AS/400 SDA menus:

- You cannot change the size of the menu (24 x 80).
- All menu objects are created in the object library designated on the Exit SDA Menu display.
- Menu names cannot be longer than 8 characters.

In the example in the following section, you create a menu that provides library list functions. You use the following steps to create the menu:

1. Create a source file for the menu.
2. Define prompts for the menu image.

3. Define the command source for the menu.
4. Save the menu and command source.

This chapter also shows how to:

- Work with the Define Menu Image work screen
- Test a menu
- Change a menu display
- Update a menu
- Create a subset of the menu list
- Create a default menu image
- Delete a menu
- Delete a menu using PDM

---

## Creating a Source File for a Menu

To create the source file for a menu:

1. Type CRTSRCPF on the Screen Design Aid (SDA) menu and press F4 (Prompt). The Create Source Physical File (CRTSRCPF) display appears.
2. Do the following on the Create Source Physical File (CRTSRCPF) display to create a source file named SRCFILE in library QGPL:
  - a. Type SRCFILE in the *File* prompt.
  - b. Type QGPL in the *Library* prompt.
  - c. Press Enter.

The Screen Design Aid (SDA) menu reappears with a message indicating that a source file was created.

3. Select option 2 (Design menus) on the Screen Design Aid (SDA) menu and press Enter. The Design Menus display appears.

**Note:** You can access the Design Menus display or the Specify Menu Functions display directly by doing one of the following:

- Type STRSDA 2. Press Enter to see the Design Menus display.
  - Type STRSDA 2 LIBRARY-NAME/FILE-NAME MENU-NAME. Press Enter to see the Specify Menu Function display.
  - Select option 17 (Change Using SDA) from the Work with Members Using PDM display for members of type MNUCMD or MNUDDS. Press Enter to see the Specify Menu Functions display.
4. Do the following on the Design Menus display:
    - a. Type SRCFILE in the *Source file* prompt.
    - b. Type QGPL in the *Source library* prompt.
    - c. Type LSTFUNC in the *Menu* prompt.
    - d. Press Enter.

SDA creates and looks for the specified DDS source member for the menu. The source member always has the same name as the compiled menu created by SDA, but the source member may be in a different library (see the Exit Menus display). If the source member is in a different library, specify the library in which the menu source exists, not the menu object. If the menu does not exist, SDA creates it for you.

The Specify Menu Functions display appears. A message indicates that the menu LISTFUNC is a new menu.

5. Type Y (Yes) in the *Work with menu image and commands* prompt on the Specify Menu Functions display and press Enter. The Define Menu Image work screen appears.

You can now use the Define Menu Image Work screen to define the menu image.

---

## Understanding the Define Menu Image Work Screen

You use the Define Menu Image work screen, as follows, to define menus:

```
LSTFUNC                                LSTFUNC Menu
Select one of the following:
1.
2.
3.
4.
5.
6.
7.
8.
9.
10.

Selection or command
F3=Exit                               F10=Work with commands      F12=Cancel
F13=Command area                       F20=Reverse                 F24=More keys
Press Help for a list of valid operations.
```

Lines 1 through 20 are the menu body. When you create a new menu, the menu name and the title on line one, and the menu outline on lines 3 to 18, are all SDA defaults. They may be changed or deleted. Lines 19 and 20 can be used if the Display function keys prompt is set to \*NO on the Create Menu display.

**Note:** The first position (line 01, column 01) is reserved by SDA as an attribute position. You cannot place anything in this position. To use special editing attributes or color attributes against a constant on line 01, column 02, you must first shift the constant right.

For more information on the editing attributes and the color characters available on this work screen, see “Functions Common to All SDA Work Screens” on page 11.

The command line prompt is on row 21. SDA treats the command line prompt as a single constant. You can change the text of the command line prompt up to a maximum of 38 characters. To change color and attributes for this entire area, type an asterisk (\*) on line 21 column 43 and press Enter to see the Set Field Attributes display. No editing attributes or color characters are recognized in this field.

Rows 22 and 23 contain either the function keys or the command area. Press F13 to alternate between these two functions.

When the command area is displayed, the command source for the options appears for one option at a time. You can use this area either to change commands or to add new commands. You can move through the commands either by using the Page Up and Page Down keys, or by using the *Position to* prompt.

When your menu is used by a user, the bottom rows will contain a one or two line command line and, optionally, function key descriptions. You can specify these with the CRTMENU command by using F4 to prompt it from the Exit Menus display. The prompt defined on line 21 will always be on the line above the command line.

**Note:** On the Define Menu Image work screen, you can press:

- F11 (Underline) to underline the areas of the display in which you can type text. The underlining is for your information only and does not appear on the menu that the user sees.
- F14 (Ruler) to display the ruler on the work screen. The ruler does not appear on the menu that the user sees.

---

## Defining Prompts for the Menu Image Work Screen

Items such as the menu title, option descriptions, and highlighting attributes define a menu image. To define a menu image, do the following:

1. Do the following on the Define Menu Image work screen:
  - a. Type 'Display library list' as option 1.
  - b. Type 'Add QGPL to library list' as option 2.
  - c. Type 'Remove QGPL from library list' as option 3.
  - d. Type 'Display current library' as option 4.
  - e. Delete option numbers 5 through 10 by positioning the cursor to the left of the number, pressing Field Exit, and then pressing Enter.
  - f. Type 90.'Sign off' in the same position that you deleted 10. The Define Image Work screen, with the sample menu entries, looks like this:

```
LSTFUNC                                LSTFUNC Menu
Select one of the following:
  1.'Display library list'
  2.'Add QGPL to library list'
  3.'Remove QGPL from library list'
  4.'Display current library'

90.'Sign off'

Selection or command
F3=Exit                    F10=Work with commands    F12=Cancel
F13=Command area          F20=Reverse               F24=More keys
```

**Note:** For more information about the items that you can add to your menu, see “Adding Constants to the Work Screen” on page 11.

g. Press Enter to remove the single quotation marks.

2. Press F20 (Reverse) to display the attribute positions of the fields. The attribute position is the first byte to the left of the field. (The reverse-imaging is for your information only, and does not appear on the menu that the user sees.)

**Note:** The menu identification in the upper-left corner has no attribute position. You must shift it to the right to change it, because the first position is protected. To shift the identification, type > to the right of it and press Enter. Type the new identification, and then type < to the left of it to move it back to the first position.

3. To create a title for the menu and delete the default title, type d in the attribute position of the default title and press Enter.

4. Type 'Library List Management' as the new title, and press Enter to remove the single quotation marks.

5. Type ac in the attribute position of the title to center the title, and press Enter.

6. Type h in the attribute position of the title to highlight the title, and press Enter.

7. Press F20 (Reverse) to remove the reverse image. The Define Menu Image Work screen now look like this:

```
LSTFUNC                Library List Management
Select one of the following:
    1. Display library list
    2. Add QGPL to library list
    3. Remove QGPL from library list
    4. Display current library

90. Sign off

Selection or command   F10=Work with commands   F12=Cancel
F3=Exit                F20=Reverse              F24=More keys
F13=Command area
```

You can now define the commands for the menu that you are creating.

---

## Defining the Menu Commands

You can define menu commands using one of the following:

- Define Menu Commands Display
- Command area on the Define Menu Image work screen

The system processes the command specified for a menu option when the user selects the menu option.

## Using the Define Menu Commands Display

To define menu commands:

1. Press F10 (Work with commands) on the Define Menu Image work screen. The Define Menu Commands display appears.
2. To define the command for each menu option on the Define Menu Commands display:
  - a. Type DSPLIBL in the *Command* column for 01.
  - b. Type ADDLIBLE LIB(QGPL) POSITION(\*LAST) in the *Command* column for 02.
  - c. Type RMVLIBLE in the *Command* column for 03.
  - d. Type DSPLIB LIB(\*CURLIB) in the *Command* column for 04.

**Note:** You can use the Page Down and Page Up keys, or the *Position to menu option* prompt to move through the commands for your menu.

The Define Menu Commands display, with command entries, now looks like this:

Define Menu Commands

Menu . . . . . : LSTFUNC                      Position to menu option . . . . .    \_\_\_

Type commands, press Enter.

Option	Command
01	DSPLIBL_____
02	ADDLIBLE LIB(QGPL) POSITION(*LAST)_____
03	RMVLIBLE_____
04	DSPLIB LIB(*CURLIB)_____
05	_____
06	_____
07	_____

More...

F3=Exit              F11=Defined only options              F12=Cancel              F24=More keys

- e. Place the cursor on one of the two lines associated with option 03, and press F4 (Prompt) to prompt for the RMVLIBLE command.

The Remove Library List Entry (RMVLIBLE) display appears.

3. Type QGPL in the *Library* prompt on the Remove Library List Entry and press Enter. The Define Menu Commands display reappears. The display shows the library parameter added to the RMVLIBLE command.
4. Specify the command for option 90 on the Define Menu Commands display:
  - a. Type 90 in the *Position to menu option* prompt, and press Enter.
  - b. Type SIGNOFF in the *Command* column for option 90, and press Enter.



- c. Press F11 (Defined only options) to display only the options for which you have defined commands. The Define Menu Commands display, in defined-only mode, looks like this:

```

                                Define Menu Commands
Menu . . . . . : LSTFUNC           Position to menu option . . . . .  _
Type commands, press Enter.
Option  Command
 01    DSPLIBL_____
-----
 02    ADDLIBLE LIB(QGPL) POSITION(*LAST)_____
-----
 03    RMVLIBLE LIB(QGPL)_____
-----
 04    DSPLIB LIB(*CURLIB)_____
-----
 90    SIGNOFF_____
-----

F3=Exit      F11=Show all options    F12=Cancel      Bottom
                                           F24=More keys

```

- d. Press F12 (Cancel) to return the Define Menu Image work screen.

## Using the Command Area

You can now add another option to the list of options by using the command area on the Define Menu Image work screen:

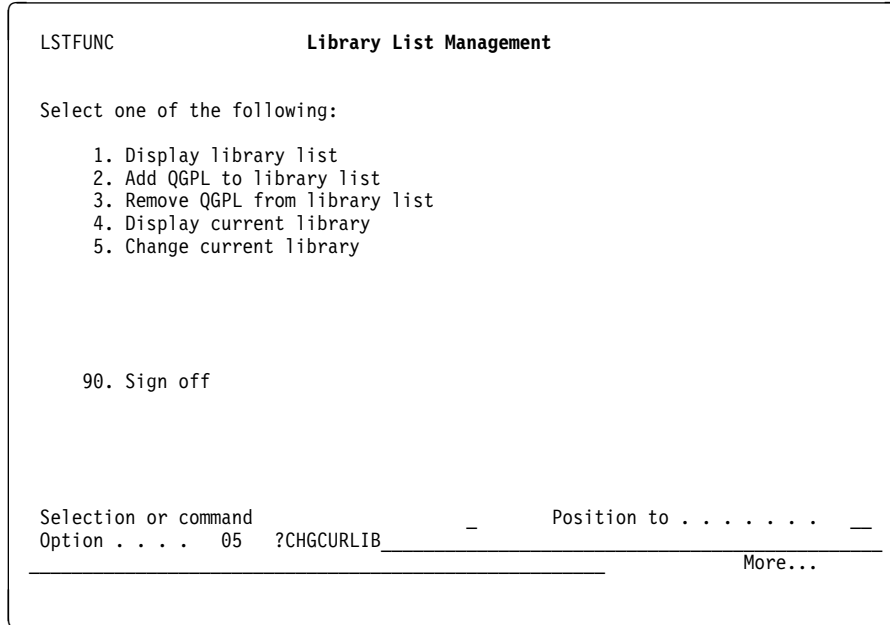
1. Press F13 (Command area) to display the command area. The function key descriptions are replaced by a command line.

**Note:** You can use system prompts (F4) on this command line.

2. Type 5. 'Change current library' following option 4.
3. Type 5 in the *Position to* prompt and press Enter.
4. Type the command ?CHGCURLIB on the command line as the command for option 5.

**Note:** The question mark (?) before the command causes the system to prompt the command when the user selects that option. For more information about CL prompting, press F13 (How to use this display) and scroll to the bottom of the information.

The Define Menu Image work screen, in command mode, looks like the following.



5. Press F13 (Command area) again to display the function keys.
6. Press F12 (Cancel) to return the Specify Menu Functions display.

**Note:** F12 (Cancel) displays the Work with Menu Help Records display if you typed Y (Yes) in both the *Work with menu image and commands* and the *Work with menu help* prompts on the Specify Menu Functions display. If you typed Y (Yes) in these prompts, press F3 (Exit) to return the Specify Menu Functions display.

---

## Restricting Access to the Command Line and Saving the Menu

To restrict access to the command line, then save and compile the menu image that you created:

1. Press either F3 (Exit) or F12 (Cancel) on the Specify Menu Functions display to see the Exit SDA Menus display.

If you typed N (No) in both the *Work with menu image and commands* and the *Work with menu help* prompts, the Exit Menus display appears when you press Enter.

The DDS member name is the name of your menu (LSTFUNC). The commands member has the same name as the menu with QQ at the end (LSTFUNCQQ). You cannot change either of these names at this point because the naming convention is required by the menu function of SDA.

2. To indicate that you want to change parameters for the compiled menu, type Y (Yes) in the *Prompt for parameters* prompt on the Exit SDA Menus display and press Enter. The Create Menu display appears. You cannot change the menu name or menu type on the Create Menu (CRTMNU) display.
3. To suppress the command line on the menu on the Create Menu display:
  - a. Type \*NONE in the *Command line* prompt.

**Note:** If you change the value in the *Command line* prompt or the *Display function keys* prompt, SDA keeps the changes in your profile.

b. Press Enter to compile and save the menu.

**Note:** If you use the CRTMNU command or Create Menu (CRTMNU) display to create the menu, you can specify \*LIBL as the library in which the display file and message file objects are stored. When you use the GO command to run the menu, the library list is searched for the display file and message file objects.

When the menu is compiled and saved, you see the Design Menus display.

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

**Notes:**

1. You can change the source file and the library if you specify an existing library or source file to which you have sufficient authority, and that has a record length between 92 and 132 inclusive.

If the defaults of the source file or source library are successfully changed, and either of the source members MENU or MENUQQ exist in the new file, the existing members must have the correct type (MNUDDS for member MENU, MNUCMD for member MENUQQ). If the members do not have the correct type, SDA displays an error message.

2. You can change the text from the default. Whatever text is typed here applies to both members as well as to the created menu object.

3. Authorities will be affected when message and menu files are changed using SDA.

For more information about restricting access to the command line, see Appendix B, "Restricting Access to the Command Entry Line on AS/400 Menus" on page 125.

You can now test the menu that you created.

---

## Testing the Menu That You Created

Unlike testing displays, you actually run the commands when you test the menu. To test your menu:

1. Type GO QGPL/LSTFUNC on the command line of the Screen Design Aid (SDA) menu and press Enter. The Library List Management menu appears.
2. To run option 5 on the Library List Management Menu, select option 5 (Change current library) and press Enter. The Change Current Library display appears.
3. Do one of the following on the Change Current Library display:
  - a. Type a new current library and press Enter, or press F3 (Exit) to leave the current library unchanged.
  - b. Press F3 (Exit) to exit from the menu.
4. Repeat these steps for each menu option you are testing.

You can now change a menu display, update a menu, or create a subset of the menu list.

---

## Changing a Menu

To change a menu display, select file QDDSSRC and member MENU on the Design Screens display. Use the Design Menu Image work screen to change the constants, fields, and attributes, or to add constants, as described in Chapter 3, “Creating Simple Displays” on page 29.

You can neither change the menu option numbers, nor add input, output, or both (input and output) fields on the work screen. If you do, the changes are lost when you re-create the display file using the *Design menu* option on the Screen Design Aid (SDA).

---

## Updating a Menu

If you want to update a menu but do not remember the name of the menu, press F4 (Prompt) with the cursor in the *Menu* prompt on the Design Menus display.

The Select Menu Using SDA display lists all the menu image source members in the specified source file. You can select one of the listed menu source members or specify a new one on the Design Menus display. For each menu, SDA also creates a second member called MENU-NAMEQQ to store the source for the menu commands. These members are not listed here. The MENU-NAME variable is the name you used for the menu.

---

## Creating a Subset of the Menu List

You can create a subset of the menu list by typing a generic name in the *Subset* prompt on the Select Menu Using SDA display. You can also create a subset list of menus by typing a generic name qualified with an asterisk (\*). Use a generic name such as Lib1\*, L\*, or L\*1st. When you Press F4 (Prompt), you display the LSTFUNC. (The menu must already exist for it to appear on the list.)

If you select a member from the Select Menu Using SDA display, press Enter to return to the Design Menus display. You cannot change the size of a menu.

---

## Creating a Default Menu Image

You can use an existing menu image as a default for creating other menus by copying it and working with the new menu image. To create a default menu image:

1. Type STRPDM and press Enter to see the AS/400 Programming Development Manager (PDM) menu.
2. Select option 3 (Work with members) on the Programming Development Manager (PDM) menu and press Enter. The Specify Members to Work With display appears.
3. Do the following on the Specify Members to Work With display:
  - a. Type the name of the file that contains the menu in the *File* prompt.
  - b. Type the library name in the *Library* prompt.
  - c. Press Enter.

The Work with Members Using PDM display appears.

4. Type 3 in the *Opt* column next to the menu image member on the Work with Members Using PDM display and press Enter.  
**Note:** The menu image has the type MNUDDS.  
The Copy Members display appears.
5. Type a name for the member in the *New Name* column on the Copy Members display and press Enter. The Work with Members Using PDM display appears.
6. Type 17 (Change Using SDA) in the *Opt* column beside the new member on the Work with Members Using PDM display and press Enter. The Specify Menu Functions display reappears.

You can now delete a menu.

---

## Deleting a Menu

To delete a menu and all of its associated objects, use the system command DLTMNU:

1. Type DLTMNU on any AS/400 command line and press F4. The Delete Menu (DLTMNU) display appears.
2. Do the following on the Delete Menu display:
  - a. Type the name of the menu to be deleted in the *Menu* prompt.  
**Note:** You can type the name of the menu or you can use a generic name. A generic name is a prefix with an asterisk (\*) after the prefix. If you use a generic name, all menus that have a prefix that matches that of the generic name are deleted.
  - b. Type the name of the library in the *Library* prompt.
  - c. Press Enter.

A message appears at the bottom of the display and the program, display file, and menu message file are deleted.

When you delete a menu, you should also delete the DDS source member MENU-NAME, as well as the command source member named MENU-NAMEQQ. MENU-NAME is the name of the menu you want to delete.

For more information about the DLTMNU command, see the *CL Reference*, SC41-5722.

---

## Deleting a Menu Source Member by Using the Programming Development Manager

You cannot use SDA to delete the menu source. To delete menu source file members using the programming development manager (PDM):

1. Type STRPDM on the command line of any AS/400 display and press Enter. The AS/400 Programming Development Manager (PDM) menu appears.
2. Select option 3 (Work with members) on the Programming Development Manager (PDM) Menu and press Enter. The Specify Members to Work With display appears.

3. Do the following on the Specify Members to Work With display:
  - a. Type the name of the file in the *File* prompt.
  - b. Type the name of the library in the *Library* prompt.
  - c. Type the name of the member to be deleted in the *Member* prompt.
  - d. Press Enter.

The Work with Members Using PDM display appears.

4. Do the following on the Work with Members Using PDM display:
  - a. Type 4 (Delete) in the *Opt* column for the member you want to delete. For each menu, SDA creates two source members MENU-NAME and MENU-NAMEQQ.
  - b. Press Enter to delete the member.
  - c. Press Enter again to confirm the deletion.
5. Press F12 (Cancel) repeatedly to return to the display on which you typed the STRPDM command.

You can also use the command line and CL commands to delete menu source file members.

---

## Creating System/38 Environment Menus

The sample customer menu you create in this section:

- Displays the library list
- Queries the customer master file for specific customers
- Checks the last date that the master file was saved
- Changes the master list
- Displays the AS/400 Command Entry display

You use the following steps to create a System 38/Environment menu:

1. Create a menu member.
2. Define options and prompts for the menu.
3. Use control characters to prompt for a command and to copy and insert a line on the menu.
4. Define additional menu options by repeating steps 1 to 3.
5. Save DDS source and create the display file.
6. Save the CL source and create a CL program.

To create the menu in this example, you need the following authorities to the libraries and source files supplied by IBM:

- \*CHANGE authority to the QGPL library.
- \*CHANGE, \*OBJMGT, and \*OBJEXIST authority to the QDDSSRC (the DDS source file) and QCLSRC (the CL source file) or equivalent. Both files are in the library QGPL.

---

## Starting System/38 Environment SDA

To start System/38 environment SDA, type `STRSDA MODE(*S38)` on the Command Entry display and press Enter. The Screen Design Aid (SDA) menu appears.

### Notes:

1. The default mode is the AS/400 environment (\*STD).
2. You can only use AS/400 syntax on the command line in System/38 environment SDA. System/38 syntax is supported on the System/38 environment Command Entry display.

---

## Creating a Menu Member

To create the customer menu in the System/38 environment:

1. Select option 2 (Design menus) on the Screen Design Aid (SDA) menu and press Enter. The Design Menus display appears.
2. To specify that you want to create a new menu on the Design Menus display:
  - a. Type MENU as the name of a new menu member in the *Menu member* prompt. If you type a name that has already been used, SDA changes the previous menu and does not create a new menu.
  - b. Type QCLSRC in the *Source file* prompt.
  - c. Type QGPL in the *Library* prompt.
  - d. Type CUSTOMER MENU in the *Menu title* prompt. The menu title is automatically centered on the menu.
  - e. Press Enter.

The Define Menu Entries display appears.

You can now define options and prompts on the menu.

---

## Using Control Characters to Define Options and Prompts

Use the following procedure to define the options and prompts on the menu that you are creating. The title is copied from the menu title that you typed on the Design Menus display.

1. Do the following on the Define Menu Entries display to specify the Display Library List command:
  - a. Type P (Prompt) in the *Cmd* column to specify the parameters for the Display Library List (DSPLIBL) command.  
**Note:** Instead of typing P to display the command parameter, you can position the cursor on the same line as the command and press F4 (Prompt).
  - b. Type 1 in the *Menu Opt* column as the option that the operator can select from the menu.
  - c. Type Display Library List in the *Menu Entry* column. This text will be displayed on the menu.

- d. Type C (Command) in the *Type* column.
- e. Type the command DSPLIBL in the *Pgm/Cmd* column. Option 1 runs the CL command DSPLIBL. The Define Menu Entries display, with the program DSPLIBL entries, looks like this:

```

                                Define Menu Entries
CUSTOMER MENU                                00  options of  20
Type menu entry definitions, press Enter.
  Cmd: I=Insert C=Copy A=After      Type: P=Program L=Program with parms
        D=Delete P=Prompt          C=Command  E=Prompt at run time

      Menu
  Cmd  Opt  Menu Entry                                Type  Pgm/Cmd
  P    1__  Display Library List_____            C    DSPLIBL__
  -    -__  _____
  -    -__  _____

```

- f. Press Enter.

The Display Library List (DSPLIBL) display appears.

Because you specified P for the DSPLIBL command, you can specify parameters for the command.

2. Type \*LIST in the *Output* prompt on the Display Library List (DSPLIBL) display and press Enter.

The Define Menu Entries Display reappears. You can now use control characters to copy a line on the menu.

## Using Control Characters to Copy a Line

To copy a line, using control characters, and specify another menu option:

1. Do the following on the Define Menu Entries display:
  - a. Type C (Copy) in the *Cmd* column for option 1.
  - b. Type A (After) in the *Cmd* column just below the C to copy the first menu option to this line.
  - c. Press Enter to copy the first row to the second row.
  - d. Type P (Prompt) in the *Cmd* column for option 2 to specify parameters for the command.
  - e. Type 2 in the *Menu Opt* column, Change Library List in the *Menu Entry* column, and CHGLIBL in the *Pgm/Cmd* column. This option runs the CL command DSPLIBL. The Define Menu Entries display, with the program CHGLIBL specified, looks like the following.



```

                                Define Menu Entries

CUSTOMER MENU                                01  options of  20

Type menu entry definitions, press Enter.
  Cmd: I=Insert C=Copy A=After      Type: P=Program L=Program with parms
        D=Delete P=Prompt          C=Command E=Prompt at run time

      Menu
  Cmd  Opt  Menu Entry                                Type  Pgm/Cmd
  --  --  -
  1   1   Display Library List                        C     DSPLIBL__
  P   2   Change Library List                        C     CHGLIBL__
  -   -   -
  -   -   -

```

f. Press Enter.

The Change Library List (CHGLIBL) display appears.

2. Do the following on the Change Library List (CHGLIBL) display:

- a. Type CUSTLIB in the *Libraries for current job* prompt.
- b. Type QGPL in the *+ for more values* prompt.
- c. Press Enter.

The Define Menu Entries display reappears.

3. To define the options 3 through 7 on the Define Menu Entries display:

- a. Type 3 in the *Menu Opt* column, Customer Master File Inquiries in the *Menu Entry* column, E (Prompt at run time) in the *Type* column, and OVRPRTF in the *Pgm/Cmd* column. This option displays the *OVRPRTF* command prompt.
- b. Type 4 in the *Menu Opt* column, Customer Master Last Date Saved in the *Menu Entry* column, E (Prompt at run time) in the *Type* column, and DSPOBJD in the *Pgm/Cmd* column. This option displays the *DSPOBJD* command prompt.
- c. Type 5 in the *Menu Opt* column, Customer Master File List Program in the *Menu Entry* column, P (Program) in the *Type* column, and CUSTLIST in the *Pgm/Cmd* column. This option runs the CUSTLIST program.
- d. Type 6 in the *Menu Opt* column, Customer Master File Update Program in the *Menu Entry* column, L (Program with parms) in the *Type* column, and CUSTUPDT in the *Pgm/Cmd* column.

**Note:** When you specify L, SDA creates a parameter line on the menu (an area to type parameters).

This option runs the CUSTUPDT program and passes a parameter that the operator types the parameter on the *Parm* line of the menu.

- e. Type 7 in the *Menu Opt* column, Command Entry Display in the *Menu Entry* column, P (Program) in the *Type* column, and QCL in the *Pgm/Cmd* column. This option displays the AS/400 Command Entry display, in which the operator can type commands.

The Define Menu Entries display with the options you typed looks like the following.

Define Menu Entries				
CUSTOMER MENU			02	options of 20
Type menu entry definitions, press Enter.				
Cmd: I=Insert C=Copy A=After		Type: P=Program L=Program with parms		
D=Delete P=Prompt		C=Command E=Prompt at run time		
Cmd	Menu Opt	Menu Entry	Type	Pgm/Cmd
-	1	Display Library List	C	DSPLIBL
-	2	Change Library List	C	CHGLIBL
-	3	Customer Master File Queries	E	OVRPRTF
-	4	Customer Master Last Date Saved	E	DSPOBJD
-	5	Customer Master File List Program	P	CUSTLIST
-	6	Customer Master File Update Program	L	CUSTUPDT
-	7	Command Entry Display	P	QCL
-	-	-	-	-
-	-	-	-	-

- f. To specify parameters for the CL command OVRPRTF, type P (Prompt) in the *Cmd* column for option 3 and press Enter. The Override with Printer File (OVRPRTF) display appears.
4. Do the following on the Override with Printer File (OVRPRTF) display:
    - a. Press F11 (Keywords) to see the keyword format for the display. With the function key F11 (Keywords), you can toggle between the prompt format and the keyword format of a display.
    - b. Type QSYSVRT in the *File being overridden* prompt.
    - c. Type FILE in the *Overriding to printer file* prompt.
    - d. Type \*LIBL in the *Library* prompt.
    - e. Press Enter.

The Define Menu Entries display appears.
  5. Move the cursor to option 5, and press F4 (Prompt). The Call Program (Call) display appears.
  6. Type CUSTLIB in the *Library* prompt on the Call Program (Call) display and press Enter. The Define Menu Entries display reappears.
  7. Type P in the *Cmd* column for option 6 on the Define Menu Entries display and press Enter. The Call Program (Call) display reappears.
  8. Type CUSTLIB in the *Library* prompt on the Call Program (Call) display and press Enter. The Define Menu Entries display reappears.
  9. Do the following on the Define Menu Entries display:
    - a. Type I (Insert) in the *Cmd* column for option 3.
    - b. Press Enter to add the blank line.
    - c. Type C (Command) in the *Type* column on the new line.
    - d. Type QRYDTA in the *Pgm/Cmd* column on the new line. When the operator selects option 3, the QRYDTA command runs after the operator is prompted for OVRPRTF.

- e. Type P (Prompt) in the *Cmd* column to specify parameters for the QRYDTA command. The Define Menu Entries display, with the entries for the QRYDATA command, looks like this:

Define Menu Entries				
CUSTOMER MENU			07	options of 20
Type menu entry definitions, press Enter.				
Cmd:		I=Insert C=Copy A=After	Type:	P=Program L=Program with parms
		D=Delete P=Prompt		C=Command E=Prompt at run time
Menu	Cmd	Opt	Menu Entry	Type Pgm/Cmd
-	1		Display Library List	C DSPLIBL
-	2		Change Library List	C CHGLIBL
-	3		Customer Master File Queries	E OVRPRTF
P				C QRYDTA
-	4		Customer Master Last Date Saved	E DSPOBJD
-	5		Customer Master File List Program	P CUSTLIST
-	6		Customer Master File Update Program	L CUSTUPDT
-	7		Command Entry Display	P QCL
-				-
-				-

Option 3 now occupies two rows on the display because it contains the two *Pgm/Cmd* prompts OVRPRTF and QRYDTA.

- f. Press Enter.

The Query Data display appears.

- 10. Do the following on the Query Data display:

- a. Type CUSTAPP in the *Application-program name* prompt.
- b. Type CUSTLIB in the *Library name* prompt.
- c. Press Enter.

The Define Menu Entries display reappears.

- 11. To copy option 3 and place it below option 6, do the following on the Define Menu Entries display:

- a. Type C (Copy) in the *Cmd* column for option 3.
- b. Type A (After) in the *Cmd* column for option 6. The Define Menu Entries display, showing the copy command, looks like the following.

```

                                Define Menu Entries

CUSTOMER MENU                                07  options of  20

Type menu entry definitions, press Enter.
  Cmd: I=Insert C=Copy A=After      Type: P=Program L=Program with parms
        D=Delete P=Prompt          C=Command E=Prompt at run time

  Menu
  Cmd  Opt  Menu Entry                                Type  Pgm/Cmd
  -    1__  Display Library List_____                C     DSPLIBL__
  -    2__  Change Library List_____                  C     CHGLIBL__
  C    3__  Customer Master File Queries_____        E     OVRPRTF__
  -    -    -_____                                C     QRYDTA__
  -    4__  Customer Master Last Date Saved_____    E     DSPBJD__
  -    5__  Customer Master File List Program_____  P     CUSTLIST__
  A    6__  Customer Master File Update Program_____ L     CUSTUPDT__
  -    7__  Command Entry Display_____              P     QCL_____
  -    -    -_____                                -     -_____
  -    -    -_____                                -     -_____

```

- c. Press Enter to copy option 3.
- 12. To delete both lines for the original option 3, type D (Delete) in the *Cmd* column. The Define Menu Entries display showing the delete command looks like this:

```

                                Define Menu Entries

CUSTOMER MENU                                07  options of  20

Type menu entry definitions, press Enter.
  Cmd: I=Insert C=Copy A=After      Type: P=Program L=Program with parms
        D=Delete P=Prompt          C=Command E=Prompt at run time

  Menu
  Cmd  Opt  Menu Entry                                Type  Pgm/Cmd
  -    1__  Display Library List_____                C     DSPLIBL__
  -    2__  Change Library List_____                  C     CHGLIBL__
  D    3__  Customer Master File Queries_____        E     OVRPRTF__
  -    -    -_____                                C     QRYDTA__
  -    4__  Customer Master Last Date Saved_____    E     DSPBJD__
  -    5__  Customer Master File List Program_____  P     CUSTLIST__
  -    6__  Customer Master File Update Program_____ L     CUSTUPDT__
  -    3__  Customer Master File Queries_____        E     OVRPRTF__
  -    -    -_____                                C     QRYDTA__
  -    7__  Command Entry Display_____              P     QCL_____
  -    -    -_____                                -     -_____
  -    -    -_____                                -     -_____

```

- 13. Press Enter to delete the option.
- 14. Renumber the menu options so that your display matches the following.

Define Menu Entries				
CUSTOMER MENU		07 options of 20		
Type menu entry definitions, press Enter.				
Cmd: I=Insert C=Copy A=After		Type: P=Program L=Program with parms		
D=Delete P=Prompt		C=Command E=Prompt at run time		
Menu	Cmd	Opt	Menu Entry	Type Pgm/Cmd
	-	1	Display Library List	C DSPLIBL
	-	2	Change Library List	C CHGLIBL
	-	3	Customer Master Last Date Saved	E DSPOBJD
	-	4	Customer Master File List Program	P CUSTLIST
	-	5	Customer Master File Update Program	L CUSTUPDT
	-	6	Customer Master File Queries	E OVRPRTF
	-			C QRYDTA
	-	7	Command Entry Display	P QCL
	-			-
	-			-

15. Press Enter to process the menu definition.

16. Press F10 (Save) to see the Save DDS - Create Display File display.

---

## Saving the Generated DDS and Creating the Display File

You use the Save DDS - Create Display File display to save the source statements, create a display file, save the CL statements, and create a CL program. The member name appears on the display.

1. Press Enter on the Save DDS - Create Display File display to save the generated DDS and to create the display file. A completion message appears.
2. Press Enter to clear the message and to see the Save CL - Create CL Program display. The Save CL - Create CL Program display shows the member name.
3. Press Enter on the Save CL - Create CL Program display to save the generated CL and to create a CL program. A completion message appears.
4. Press Enter to return to the Design Menus display.
5. Press F12 (Cancel) to return to the Screen Design Aid (SDA) menu.

---

## Testing a System/38 Environment Menu

To test the menu that you created:

1. Press F3 (Exit) to exit from SDA.
2. Type either CALL MENU.QGPL on the System/38 environment Command Entry display, or type CALL QGPL/MENU on the AS/400 Command Entry display.

**Note:** You must create the CL program before you can use or select CALL MENU.

3. Press Enter. The Customer Menu that you created appears as follows.

```
01/09/94                CUSTOMER MENU                15:37:17

Select one of the following:
 1. Display Library List
 2. Change Library List
 3. Customer Master Last Date Saved
 4. Customer Master File List Program
 5. Customer Master Update Program
 6. Customer Master File Queries
 7. Command Entry Display

Option:____ Parm: _____
```

4. Select either option 1 (Display Library List) or option 7 (Command Entry Display) on the Customer Menu, and type the option number in the *Option* prompt.

**Note:** You must type the same value that you typed when you created the menu. For example, if you label an option 001, type 001 to select that option.

- 5. Press Enter. The prompt for the Display Library List (DSPLIBL) command or the prompt for the System/38 Command Entry display appears.
- 6. Press the exit key to return the menu.
- 7. Press F1 to exit the menu.

---

## Chapter 8. Creating Online Help Information

This chapter shows how to specify online help information for the AS/400 displays and menus that you create. The online help information describes either all, or a portion of, a display or menu that a user sees when running an application program. You can also define help information at both the file and the record level.

File-level online help information is more general and defines the default help for the file. You specify file-level online help information directly on the Select Help Keywords display. File-level online help information appears when the user presses Help and the cursor is outside all of the defined help areas. You can define only one file-level help display.

Record-level online help information is more specific. Record-level help information is specified on displays, and is associated with a field or a set of fields on a display. When the user presses Help and the cursor is in a defined help area, the user sees the record-level online help information. You can define more than one set of help displays for a record.

---

### Creating Online Help Information for a Display

You can define areas within the display called help areas. Each help area is defined by a specification in the application format called an **H specification**. Help areas provide information that can be kept on the system separate from the application program. You can add online help information to an existing application program by changing existing displays and creating the help displays.

When the user presses Help on a display, the online help information that you created for the display appears. The user can page through the various help displays by using the Page Up and Page Down keys. The user leaves the help function by pressing Enter, and returns to the display from where the Help key was pressed. The display is unchanged.

**Note:** This function is available in AS/400 SDA only.

In the example in this section, you define online help information for the Customer Inquiry display that you created in Chapter 3, "Creating Simple Displays." You define both file-level and record-level online help information. File-level help information appears whenever the user presses Help in an area of the Customer Inquiry display that is not defined as a help area. Record-level online help information appears when the user presses Help on the Accts Rec Balance field, the Credit Limit field, or the Adjustment field.

You use the following steps to create online help for a display:

1. Define file-level keywords.
2. Define help areas for specific fields.
3. Define file-level help information.
4. Define record-level help information.
5. Save the DDS and create the display file.

---

## Defining File-Level Keywords

To specify the record containing the file-level or general online help information.

1. Select option 1 (Design screens) on the Screen Design Aid (SDA) menu and press Enter. The Design Screens display appears.
2. Do the following on the Design Screens display:
  - a. Type QDDSSRC in the *Source file* prompt.
  - b. Type QGPL in the *Library* prompt.
  - c. Type CUSMASTER in the *Source Member* prompt.
  - d. Press Enter.

The Work with Display Records display appears.

3. Press F14 (File-level keywords) on the Work with Display Records display. The Select File Keywords display appears.
4. Indicate that you want to specify indicator and help keywords on the Select File Keywords display:
  - a. Type Y (Yes) in the *Indicator keywords* prompt.
  - b. Type Y (Yes) in the *Help keywords* prompt.

**Note:** If you are creating application help, the HELP keyword must be specified at either the file or the record level. If you specify file-level application help, the HELP keyword must be specified at the file level.

- c. Press Enter.

The Define Indicator Keywords display appears.

5. Type HELP in the *Keywords* prompt on the Define Indicator Keywords display and press Enter. The Select Help Keywords display appears.
6. Specify the record that contains the online help information on the Select Help Keywords display:
  - a. Type Y (Yes) in the *Help text in record* prompt to select the HLPRCD keyword. The HLPRCD keyword indicates that the help information is in a record.
  - b. Type GENINQ in the *Record or document* prompt.

**Note:** Documents are created using the OfficeVision/400\* word processing function.

- c. Type CUSMASTER in the *File* prompt.
- d. Type QGPL in the *Library* prompt.
- e. Press Enter.

The Select File Keywords display appears. You have now defined the HLPRCD file-level keyword.

7. Press Enter on the Select File Keywords display to return to the Work with Display Records display.

**Note:** You can specify that your online help information is in a UIM panel group by pressing F9 (Select HLPPNLGRP keyword) on the Define Application Help display. You can only specify one type of help.



---

## Defining Help Areas for Specific Fields

You can now define help areas for the *Accts Rec Balance*, *Credit Limit*, and *Adjustment* fields. These fields appear on the *New Customer Inquiry* display. The *Accts Rec Balance* field is one help area. The *Credit Limit* and *Adjustment* fields together are the second help area. When the user presses *Help* and the cursor is in either of the help areas, the online help information that you specify appears on the display.

The two help areas that you define are:

- Help for field for the *Accts Rec Balance* field
- Row 13, column 10 to row 15, column 35 for the *Credit Limit* and *Adjustment* fields

To specify the record that contains the record-level online help information.

1. Type 8 (Select keywords) in the *Opt* column for the record *INQUIRY* on the *Work with Display Records* display and press *Enter*. The *Select Record Keywords* display appears. To indicate that you want to specify help for the application:
2. Type Y (Yes) in the *Application help* prompt on the *Select Record Keywords* display and press *Enter*. The *Define Application Help* display appears.
3. To specify that the help information is in a record on the *Define Application Help* display:
  - a. Type Y (Yes) in the *Help text in record* prompt.
  - b. Type *HPACBAL* in the *Record or document* prompt for the record with which the *HLPRCD* keyword will be associated.
  - c. Type *CUSMASTER* in the *File* prompt.
  - d. Type *QGPL* in the *Library* prompt.
  - e. Type Y (Yes) in the *Define help area* prompt.
  - f. Press *Enter*.

**Note:** You can specify that your help is in a UIM panel group by pressing *F9* (Select *HLPPNLGRP* keyword) on the *Define Application Help* display. You can only specify one type of help.

The *Define Help Area* display appears. The display shows the help number you are defining. In this example, the number is help number 1.

4. To specify the help area for the *Accts Rec Balance* field on the *Define Help Area* display:
  - a. Type *ARBAL* in the *Help for field* prompt. The *\*FLD* parameter in the *Help for field* prompt specifies that the help is displayed for the identified field. Alternatively, you can specify the exact coordinates of the help area using the *Row/column boundaries* prompt. The *\*RCD* parameter in the *Entire record is one area* prompt specifies that the help area is defined as the entire record. The *\*NONE* parameter in the *Secondary help only* prompt specifies that the help is not displayed until the user presses *Page Down* (*Roll Up*) after pressing *F1* (*Help*). The *\*CNST* parameter in the *Help for constant* prompt specifies that the help is displayed for the identified constant.
  - b. Press *Enter*.

The Define Application Help display appears. The parameters that you defined for the previous help number appear on the display.

5. To specify help for help number 2, type 2 in the *Next help number* prompt on the Define Application Help display and press Enter. The parameters defined for the previous help number are blanked out on the display.

**Note:** You can page through existing specifications by typing the next help number.

6. To specify the record that contains the online help information for the *Credit Limit* and *Adjustment* fields on the Define Application Help display:
  - a. Type Y (Yes) in the *Help text in record* prompt.
  - b. Type HPCRLT in the *Record or document* prompt as the record with which the HLPKCD keyword will be associated.
  - c. Type CUSMASTER in the *File* prompt.
  - d. Type QGPL in the *Library* prompt.
  - e. Type Y (Yes) in the *Help boundary* prompt.
  - f. Type Y (Yes) in the *Define help area* prompt.
  - g. Press Enter.

The Define Help Area display appears. You are now finished creating H specifications for the record INQUIRY.

7. To specify the help area for the *Credit Limit* and *Adjustment* fields on the Define Help Area display:
  - a. Type 13 and 10 as the initial coordinates in the *Row/column boundaries* prompt.
  - b. Type 15 and 35 as the final coordinates in the *Row/column boundaries* prompt.
  - c. Press Enter. The Define Application Help display reappears.
  - d. Press Enter on the Define Application Help display. The Select Record Keywords display appears.
8. Press Enter to return the Work with Display Records display.

A message on the Work with Display Records display indicates that the keywords have been updated for the record.

---

## Defining File-Level Online Help Information

To create the general online help information that the user sees after pressing Help on the Customer Inquiry display:

1. Type 1 (Add) in the *Opt* column on the Work with Display Records display and press Enter. The Add New Records display appears.
2. To specify the new record, type GENINQ in the *New record* prompt on the Add New Records display and press Enter. The Design Image work screen for the new record appears.

3. Type the following general online help information on the Design Image work screen:

```
'CUSTOMER INQUIRY'
```

```
'To view the customer record, enter a valid customer number.'  
'The name, balance, credit limit, and adjustment fields will  
be shown.'
```

```
'Press Enter to go back to the application program.'
```

**Notes:**

- a. You can enclose all the online help information in single quotation marks so that all the online help information is created as a single field for editing purposes.
- b. You can type the attribute `ac` to center the title of the online help information. You can also specify highlighting attributes for the online help information because it is created as a field.

The work screen with general online help information displayed looks like the following:

```
'CUSTOMER INQUIRY'  
  
'To view the customer record, enter a valid customer number.'  
'The name, balance, credit limit, and adjustment fields will  
be shown.'  
  
'Press Enter to go back to the application program.'
```

4. Press Enter to remove the single quotation marks.
5. Press F12 (Cancel) on the Design Image work screen.

The Work with Display Records display reappears. You can now define record-level online help information.

---

## Defining Record-Level Online Help Information

The fields for which you supply specific online help information are the Accts Rec Balance, Credit Limit, and Adjustment fields. To define record-level online help information:

1. Type 1 (Add) in the *Opt* column on the Work with Display Records display and press Enter to create a new record. The Add New Record display appears.
2. To specify the record that contains the online help information, type HPACBAL in the *New record* prompt on the Add New Record display and press Enter. The Design Image work screen appears.

3. Type the following online help information for the *Accts Rec Balance* field on the Design Image work screen:

'Accts Rec Balance'

'The Accts Rec Balance field can be up to six digits long'  
'and is a signed numeric field. It indicates the accounts'  
'receivable balance for this customer.'

'Press Enter to go back to the application program.'

The work screen with record-level online help information displayed looks like the following:

'Accts Rec Balance'

'The Accts Rec Balance field can be up to six digits long'  
'and is a signed numeric field. It indicates the accounts'  
'receivable balance for this customer.'

'Press Enter to go back to the application program.'

4. Press Enter to remove the single quotation marks.
5. Press F12 (Cancel) to return to the Work with Display Records display.
6. Type 8 (Select keywords) in the *Opt* column for the record HPACBAL on the Work with Display display and press Enter. The Select Record Keywords display appears.
7. Type Y (Yes) in the *Help keywords* prompt on the Select Record Keywords display and press Enter. The Define Help Keywords display appears.
8. Do the following on the Define Help Keywords display:
  - a. Type INQ in the *Help group name* prompt.
  - b. Type 1 in the *Help sequence number* prompt. The value in the *Help sequence number* prompt determines the order in which help for the records appears in secondary help. If the user presses Page Down while viewing the online help information for the Credit Limit field, the user sees the help information for the Accts Rec Balance field.
  - c. Press Enter.The Select Record Keywords display reappears.
9. Press Enter on the Select Record Keywords display to return to the Work with Display Records display.
10. To add a new record to contain the online help information for the Credit Limit and Adjustment fields, type 1 (Add) in the *Opt* column on the Work with Display Records display and press Enter. The Add New Record display appears.
11. To specify the name of the new record, type HPCRLT in the *New record* prompt on the Add New Record display and press Enter. The Design Image work screen appears.

12. Type the following online help information for the help area on the Design Image work screen:

'Credit Limit'

'The Credit Limit field can be up to eight digits long.'  
'It is the maximum amount that this customer can charge.'

'Adjustment'

'The Adjustment field can be up to six digits with two decimal'  
'places. This field is used to change the credit limit for'  
'a customer.'

'Press Enter to go back to the application program.'

The work screen with online help information displayed now looks like the following:

```
'Credit Limit'  
  
'The Credit Limit field can be up to eight digits long.'  
'It is the maximum amount that this customer can charge.'  
  
'Adjustment'  
  
'The Adjustment field can be up to six digits with two decimal'  
'places. This field is used to change the credit limit for'  
'a customer.'  
  
'Press Enter to go back to the application program.'
```

13. Press Enter to remove the single quotation marks.
14. Press F12 (Cancel) to return to the Work with Display Records display.
15. Type 8 (Select keywords) in the *Opt* column for the record HPCRLT on the Work with Display Records display and press Enter. The Select Record Keywords display appears.
16. To indicate that you want to specify a help keyword, type Y (Yes) in the *Help keywords* prompt on the Select Record Keywords display and press Enter. The Define Help Keywords display appears.
17. Do the following on the Define Help Keywords display:
- a. Type INQ in the *Help group name* prompt.
  - b. Type 2 in the *Help sequence number* prompt.
  - c. Press Enter.

The Select Record Keywords display reappears.

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

---

## Saving the Data Description Specifications for the Display Help

To save the DDS for the online help information:

1. Press either F3 (Exit) or Enter on the Work with Display Records display to see the Save DDS - Create Display File display.
2. Press Enter on the Save DDS - Create Display File display to:
  - Save the DDS source SDA created.
  - Create the display file CUSMASTER from the DDS source.
  - Submit the making of CUSMASTER as a batch job. (If you leave the *Submit create job in batch* prompt blank, SDA creates the display file CUSMASTER interactively.)SDA displays a completion message.
3. Press Enter to return to the Design Screens display.

---

## Creating Online Help Information for a Menu

In this example, you create online help information for the menu that you created in “AS/400 SDA Menu” on page 79.

You use the following steps to create online help information for a menu:

1. Select options to create or change online help information.
2. Define the menu help source and options.
3. Save the menu help source.
4. Compile the menu to create the menu objects.
5. Use the help records you created.

This section also shows how to:

- Copy an existing help record
- Modify a help record
- Delete a help record

To create online help information for options 1 through 3 of the LIBLST menu in the library QGPL:

1. Select option 2 (Design menus) on the Screen Design Aid (SDA) menu and press Enter. The Design Menus display appears.
2. Do the following on the Design Menus display:
  - a. Type SRCFILE in the *Source file* prompt.
  - b. Type QGPL in the *Library* prompt.
  - c. Type LIBLST in the *Menu* prompt.
  - d. Press Enter.

The Specify Menu Functions display appears.

3. To indicate that you want to work with online help information for the menu, type Y (Yes) in the *Work with menu help* and press Enter. The Work with Menu Help Records display reappears.

## Creating a New Help Record

---

To create the record that contains the online help information:

1. Type 1 (Create) in the *Opt* column on the Work with Menu Help Records display and press Enter. The Create Menu Help Record display appears.
2. Specify the menu options for which you want to create online help information on the Create Menu Help Record display:
  - a. Type 1 in the *From menu option* prompt.
  - b. Type 3 in the *To menu option* prompt.
  - c. Press Enter.

The Define Menu Help Record work screen appears as follows:

HELP	Help for Menu Options 01 - 03	
F3=Exit	F10=Display commands	F12=Cancel
F13=Command area	F20=Reverse	F24=More keys
Press Help for a list of valid operations.		

You use this display to create the menu online help information that the user will see.

- The first position (row 01, column 01) of the work screen is reserved by SDA as an attribute byte. Any attempt to type in this position results in a keyboard error.
- The title on line 1 is an SDA supplied default that you can either enhance or replace.
- Rows 01 through 20 are input capable fields. All editing attributes and color characters are recognized in this area. For more information on the editing attributes and the color characters, see Chapter 2, "SDA Work Screen Functions" on page 11.
- Lines 22 and 23 show the function keys that you can use on the work screen. These function keys do not become part of the help record that you are creating.

3. Do the following on the Define Menu Help Record work screen:

- a. Press F20 (Reverse) to display the attribute position of the title.
- b. Type d (Delete) in the attribute position of the default title and press Enter to delete the title.
- c. Type the following text for the menu online help information:

'Library List Management Help for 01 - 03'

'Help for options:'

'1. Use this option to display all libraries currently on your library list.'

'2. Use this option to add library QGPL to the bottom of the library list. Once on the library list all commands and programs in it can be immediately accessed and run.'

'3. Use this option to remove library QGPL from the library list. This will prevent any commands and programs in it from being immediately accessible or operable.'

The Define Menu Help Record work screen with online help information looks like the following:

```
HELP                'Library List Management Help for 01 - 03'  
  
'Help for options:'  
  
  '1. Use this option to display all libraries currently on your  
    library list.'  
  
  '2. Use this option to add library QGPL to the bottom of  
    the library list. Once on the library list all commands  
    and programs in it can be immediately accessed and run.'  
  
  '3. Use this option to remove library QGPL from the library  
    list. This will prevent any commands and programs in it  
    from being immediately accessible or operable.'  
  
F3=Exit            F10=Display commands        F12=Cancel  
F13=Command area  F20=Reverse                    F24=More keys
```

**Note:** If you type information on the work screen and press F12 (Cancel) before pressing Enter, the information that you type is not saved.

- d. Press Enter to remove the single quotation marks.
- e. Type h (Highlight) in the attribute position of your new title, and press Enter to highlight the title.
- f. Press F12 (Cancel) to return the Work with Menu Help Records display.



---

## Copying a Help Record

You can copy a help record to use as online help information for options on the menu. To copy the help record you just created, and to specify that the help information is for option 1 only:

1. Type 3 (Copy) in the *Opt* column next to the help record that you just created on the Work with Menu Help Records display and press Enter. The Copy Menu Help Records display appears. To specify that the new online help information is for option 1 only:
2. Type 01 - 01 in the *New Range* column on the Copy Menu Help Records display and press Enter. The record is copied and the Work with Menu Help Records display reappears.

**Note:** If you specify a new range that is the same as an existing range, you see the Confirm Copy of Help Record display.

---

## Updating the Copied Help Record

To modify the help record that you just copied, do the following on the Work with Menu Help Records display:

1. Type 12 (Update) in the *Opt* column.
2. Type Help for Menu Option 01 in the *Text* column. The Work with Menu Help Records display now looks like the following:

```
Work with Menu Help Records
File . . . . . : SRCFILE          Menu . . . . . : LIBLST
Library . . . . : QGPL
Type options (and Range), press Enter.
1=Create      3=Copy      4=Delete      12=Update
Opt  Range    Text
12  01 - 01   Help for Menu Option 01
_   01 - 03   Help for Menu Options 01 - 03
```

**Note:** The records on this display are sorted by the *Range* option.

3. Press Enter. The Define Menu Help Record work screen appears.
4. To modify the record on the Define Menu Help Record work screen:
  - a. Press F20 (Reverse) to determine the location of the attribute positions.
  - b. Type d (Delete) in the attribute positions of the title, option 2 help, and option 3 help.
  - c. Press Enter to delete the information.
  - d. Type a new title and highlight it.
  - e. Press Enter to save your changes.
  - f. Press F12 (Cancel) to return the Work with Menu Help Records display.

---

## Deleting a Help Record

To delete the help for option 1 that you created in the previous sections:

1. Type 4 (Delete) in the *Opt* column beside the option 1 help on the Work with Menu Help Records display and press Enter. The Confirm Delete of Help Records display appears.
2. Press Enter to delete the help record for option 1. The Work with Menu Help Records display reappears.

**Note:** If you do not want to delete all of the listed choices, press F12 (Cancel) to return the Work with Menu Help Records display.

3. Press F3 (Exit) or F12 (Cancel) to return the Specify Menu Functions display.

---

## Saving and Compiling Help Records

To save and compile the help record that you created:

1. Press either F3 (Exit) or F12 (Cancel) on the Specify Menu Functions display to see the Exit Menus display.

**Note:** If you type N (No) in the *Work with menu image and commands* and the *Work with menu help* prompts on the Specify Menu Functions display and press Enter, you see the Exit Menus display.

2. Press Enter to compile the menu source and return the Design Menus display. See "Restricting Access to the Command Line and Saving the Menu" on page 86 for more information about the Exit Menus display.
3. Press F3 (Exit) to return the Screen Design Aid (SDA) menu.

---

## Using Your Help Records

To use the help records that you just created:

1. Type G0 QGPL/LIBLST and press Enter to see your new menu.
2. To see the help you specified, select one of the menu options and press Help.

**Note:** If you created general help, you can see it by typing 0 as your option, or by leaving the *Selection or command* line blank and pressing Help.

---

## Creating an Online Help Information Document

You can use documents created by the OfficeVision/400 word processing function to contain the online help information for your displays.

To use documents for online help information, specify them in the DDS source for your application display. When you create your document, use online help information labels to mark the specific location in the document where the information is located.

To create an online help document:

1. Create a document to contain the help information source.
2. Place a help information label instruction at the beginning of the document for general information about the application display.

3. Type general information about the display for which you are creating information. This information appears when the Help key is pressed and the cursor is not on one of the help areas defined in the DDS for the display.
4. Do the following for each prompt in the display for which you are writing the help information:
  - a. Insert a help information label instruction with a label name that describes the prompt (for example, CUSTNBR, NAME, ADDR, and STATE).
  - b. Type the help information for the prompt immediately following the information label.
  - c. If you want, insert help information label instructions for the table of contents and index.

The resolved document is your online help information document. Refer to *Application Display Programming*, SC41-5715, for more information about creating online help information. Refer to *Office Services Concepts and Programmer's Guide*, SH21-0703, for information about using documents in applications.



---

## Chapter 9. Creating a Window

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

You use the following steps to create and view a window display:

1. Create a window record.
2. Define the DDS record-level keywords for the window.
3. View the window on the Design Image work screen.

Before you can create the window in this example, you must have \*CHANGE, \*OBJMGT, and \*OBJEXIST authority to the DDS source file QDDSSRC, and \*CHANGE authority to the library QGPL, supplied by IBM.

---

### Creating a Window Record

To create a window record:

1. Select option 1 (Design screens) on the Screen Design Aid (SDA) menu and press Enter. The Design Screens display appears.
2. Specify the source file, and a library and member name on the Design Screen display:
  - a. Type QDDSSRC in the *Source file* prompt.
  - b. Type QGPL in the *Library* prompt.
  - c. Type WDW1 in the *Member* prompt.
  - d. Press Enter until the Work with Display Records display appears.
3. To indicate that you want to create a new record, type 1 (Add) in the *Opt* column on the Work with Display Records display and press Enter. The Add New Record display appears.
4. To specify a name and type for the new window record on the Add New Record display:
  - a. Type WINDOW01 in the *New record* prompt.
  - b. Type WINDOW in the *Type* prompt to specify that the record is a window.

**Note:** To create a window record with a subfile, you can type WDWSFL in the *Type* prompt. For more information about window subfiles, see Chapter 5, "Creating Subfiles" on page 63.
  - c. Press Enter.

The new window record is added and the Select Window Keywords display appears.

---

## Selecting Window Keywords

To select keywords for the window record:

1. Type Y (Yes) in the *General keywords* prompt on the Select Window Keywords display and press Enter. The Select General Keywords display appears. In this display, you choose from the following four record-level window keywords:

**WINDOW** Displays a record format inside a window. The parameters for the **WINDOW** keyword can be position attributes or the name of the record that specifies the window attributes. Because this is a window record, this keyword is automatically specified.

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

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

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

**Note:** In this display, the **WINDOW** keyword is a default. You can edit it, but you cannot remove it. The other keywords are not defaults. To change the parameters for any keyword, type Y in the appropriate *Select parameters* prompt.

2. Type Y (Yes) in the *Select parameters* prompts located under the *Window parameters* and *Window borders* prompts on the Select General Keywords display and press Enter. The Define Window Parameters display appears.
3. On the Define Window Parameters display, you define the position and size of the window. You can specify the parameters in two ways:
  - Identify the record name that specifies the window attributes. This is the Referenced Window format.
  - Identify the window as a Window Definition by specifying the window attributes, which are the position of the upper-left corner of the window border and the number of rows and columns within the window.
4. Press Enter on the Define Window Parameters display to accept the default values. The Define Window Border Parameters display appears.
5. Do the following on the Define Window Border Parameters display:
  - a. Type Y (Yes) in the *Define parameters* prompt under the *Color* prompt.
  - b. Type Y (Yes) in the *Define parameters* prompt under the *Display Attributes* prompt.
  - c. Type Y (Yes) in the *Define parameters* prompt under the *Border Characters* prompt.
  - d. Press Enter.

The Select Border Color display appears.

6. Type Y (Yes) next to the color that you want to specify for the window border on the Select Border Color display and press Enter.

**Note:** You can only choose one color.

The Select Border Display Attributes display appears.

7. Type Y (Yes) next to the display attributes that you want to specify for the window border on the Select Border Attributes display and press Enter.

The Select Border Characters display appears. On the Select Border Characters display, you specify the characters that you want to use for the parts of the window border in the *CHARACTER* column.

8. Press Enter to use the defaults.

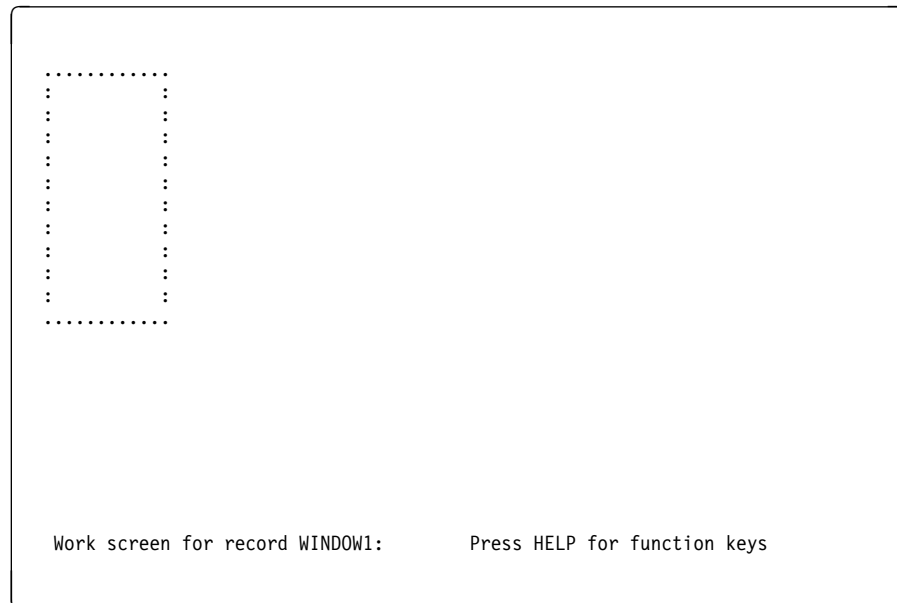
The Define Window Border Parameters display reappears.

---

## Viewing the Window on the Design Image Work Screen

To see the window you created with the Design Image work screen:

1. Press Enter on the Define Window Border Parameters display until the Work with Display Records display appears.
2. Type 12 in the *Opt* column for the WINDOW1 record and press Enter. The Design Image work screen, with the window, appears as follows:



The window is empty, because no fields were created for the display. You can now work with the display to define fields for the window.

The procedure for editing keywords and parameters for a window is the same as the procedure used for editing keywords and parameters for other records and files.

- To edit record-level keywords and parameters for an existing window, type 8 (Select keywords) in the *Opt* column on the Work with Display Records display, and press Enter.
- To edit file-level window border keywords and parameters, press F14 (File-level keywords) on the Work with Display Records display.





---

## Chapter 10. Creating a Pull-Down Menu

This chapter shows how to create a menu-bar and pull-down menus. You use the following steps to create and test pull-down menus:

1. Select the Design screens option.
2. Create pull-down records.
3. Create a menu-bar record.
4. Define the fields for the menu-bar and pull-down records.
5. Test the pull-down menus.

Before you can create the pull-down menus in this example, you need the following authorities to the libraries and source files supplied by IBM:

- \*CHANGE authority to the QGPL library
- \*CHANGE, \*OBJMGT, and \*OBJEXIST authority to the QDDSSRC source file
- \*USE authority to the QPDA library and the QCUSDATA file

---

### Creating a Pull-Down Record

To create a pull-down record:

1. Select option 1 (Design screens) on the Screen Design Aid (SDA) menu and press Enter. The Design Screens display appears.
2. Specify the source file, and a library and member name on the Design Screens display:
  - a. Type QDDSSRC in the *Source file* prompt.
  - b. Type QGPL in the *Library* prompt.
  - c. Type PDN1 in the *Member* prompt.
  - d. Press Enter.

The Work with Display Records display appears.

3. To indicate that you want to create a new record, type 1 (Add) in the *Opt* column on the Work with Display Records display and press Enter. The Add New Record display appears.
4. To specify a name and type for the new pull-down record on the Add New Record display:
  - a. Type FPULDWN in the *New record* prompt.
  - b. Type PULDWN in the *Type* prompt. This specifies that the record is a pull-down.

**Note:** To create a pull-down record with a subfile, you can type PDNSFL in the *Type* prompt.
  - c. Press Enter to add the new pull-down record. The Select Pull-Down Record Keywords display appears.
  - d. Press Enter again. The Work with Records display appears.
5. To copy the FPULDWN record to create a second pull-down record, type 3 (Copy) in the *Opt* column next to the FPULDWN record on the Work with Display Records display and press Enter. The Copy Records display appears.

6. To create the new record, type EPULDWN in the *New name* column on the copy Records display and press Enter. The Work with Display Records display reappears. A message indicates that the record has been copied.

---

## Creating a Menu-Bar Record

To create a menu-bar record and define keywords for the record:

1. Type 1 (Add) in the *Opt* column on the Work with Display Records display and press Enter to indicate that you want to create another new record. The Add New Record display appears.
2. To specify a name and type for the new menu-bar record on the Add New Record display:
  - a. Type MNUBAR1 in the *New record* prompt.
  - b. Type MNUBAR in the *Type* prompt to specify that the record is a menu bar.
  - c. Press Enter.

The Select Menu-Bar Record Keywords display appears.

3. Type Y (Yes) in the *General keywords* prompt on the Select Menu-Bar Record Keywords display and press Enter. The Define General Keywords display appears. The menu-bar display separator is the default. If the separator is not required, blank out the Y (Yes) in the MNUBARDSP prompt.
4. To select keywords for the menu-bar record on the Define General Keywords display:
  - a. Type Y (Yes) in the *Select parameters* prompt for the MNUBARDSP keyword.
  - b. Type Y (Yes) in the *Menu-cancel key* prompt.
  - c. Type 12 in the *CA key* prompt to define F12 as the cancel key for the menu bar.
  - d. Press Enter.

The Define Menu-Bar Display Keywords display appears.

5. To select the MNUBARDSP keyword, type Y (Yes) in the *Menu-bar display parameter* prompt and press Enter.
6. Press Enter again on the Define Menu-Bar Display Keywords display. The Define General Keywords display appears.
7. Press Enter twice to return to the Work with Display Records display. A message on the Work with Display Records display indicates that the MNUBAR1 record has been added.

---

## Defining the Menu-Bar Field

When you create a menu-bar record, a field is created automatically. You cannot change the values for the field, but you can work with it to create menu-bar choices.

To create menu-bar choices for the MNUBAR1 record:

1. Type 12 (Design image) in the *Opt* column next to the MNUBAR1 record on the Work with Display Records display and press Enter. The Design Image work screen appears.
2. Type an asterisk (\*) in row 1 column 2 on the Design Image work screen and press Enter. The Select Field Keywords display appears.
3. Type Y (Yes) in the *Menu-bar keywords* prompt on the Select Field Keywords display and press Enter. The Select Menu-Bar Keywords display appears.
4. To define menu-bar choices, type Y (Yes) in the *Select parameters* prompt for the menu-bar choice keyword on the Select Menu-Bar Keywords display and press Enter. The Define Menu-Bar Choice Keyword display appears.
5. Do the following on the Define Menu-Bar Choice Keyword display:
  - in the *Choice number to update* prompt.
    - a. Type Y (Yes) in the *Menu-bar choice* prompt.
    - b. Type FPULDWN in the *Pull-down record* prompt.
    - c. Type 'File' in the *Text* prompt. This is the name of the FPULDWN pull-down record on the menu-bar.
    - d. Press Enter.
6. Do the following on the Define Menu-Bar Choice Keyword display:
  - a. Type + in the *Choice number to update* prompt and press Enter. A 2 is displayed in the *Choice number* prompt because you are defining the second keyword.
  - b. Type Y (Yes) in the *Menu-bar choice* prompt.
  - c. Type EPULDWN in the *Pull-down record* prompt.
  - d. Type 'Edit' in the *Text* prompt. This is the name of the EPULDWN pull-down record on the menu-bar.
  - e. Press Enter to define the keyword.
7. Press Enter until the Design Image Work Screen appears. You can see what your menu bar looks like.
8. Press F12 (Cancel) and the Work with Display Records display reappears. A message on the Work with Display Records display indicates that the image for the record MNUBAR1 has been updated.

---

## Defining a Pull-Down Field

When creating pull-down records, you have to create a field for each record before you can create pull-down choices. To create fields and define choices for the pull-down menus:

1. Type 12 (Design image) in the *Opt* column next to the FPULDWN record on the Work with Display Records display and press Enter. The Design Image work screen appears.
2. To create an input field, type +99 at row 3, column 3 on the Design Image work screen and press F4 (Work with Fields). The Work with Fields display appears, showing the new field at row 1, column 1 of the pull-down menu.

3. Type 1 in the *Option* column next to the *FLD001* field on the Work with Fields display and press Enter. The Select Field Keywords display appears.
4. Type Y (Yes) in the *Keying options* prompt on the Select Field Keywords display and press Enter. The Select Keying Options display appears.
5. Type Y (Editable numeric) in the *Keyboard shift attribute* prompt on the Select Keying Options display and press Enter. The Select Field Keywords display reappears. The *Choice keywords* prompt is now displayed.
6. Type Y (Yes) in the *Choice keywords* prompt on the Select Field Keywords display and press Enter. The Select Choice Keywords display appears. The number 1 (SNGCHCFLD) is displayed in the *Choice Selection Type* prompt.
7. Type Y (Yes) in the *Define choice keywords* prompt for the CHOICE keyword, and press Enter. The Define Choice Keywords display appears. The number 1 appears in the *Choice number* prompt by default.
8. Do the following on the Define Choice Keywords display:
  - a. Type Y (Yes) in the *Selection field choice* prompt.
  - b. Type 'Open' in the *Text* prompt. This is the text for the first choice in the File pull-down menu.
  - c. Press Enter.
9. To define another choice for the File pull-down menu, do the following on the Define Choice Keywords display:
  - a. Type + in the *Choice number* prompt and press Enter. A 2 appears in the *Choice number* prompt.
  - b. Type Y (Yes) in the *Selection field choice* prompt.
  - c. Type 'Exit' in the *Text* prompt. This is the text for the second choice in the File pull-down menu.
  - d. Press Enter to define the keyword.
 

**Note:** To view a list of the choices you have defined, press F4 when the cursor is in the *Choice number* prompt. The Select Keyword window appears. You can select a defined choice from this list to edit it.
  - e. Press Enter to return to the Select Choice Keywords display.
10. Press Enter until the Work with Design Image display appears, on which you can see what your pull-down menu looks like on a 5250 terminal.
11. To see the pull-down menu with your menu bar, do the following:
  - a. Press F9 (Select additional records). The Select Additional Records for Display screen appears.
  - b. Type 1 (Select for display as additional record) beside the MNUBAR1 record and press Enter. The Work with Design Image display appears, showing the menu bar and your pull-down menu.
12. Press F12 (Cancel) and the Work with Display Records display reappears.

Repeat these steps to define choices for the Edit pull-down menu.

---

## Saving the Data Description Specifications and Creating the Display File

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

1. Press Enter on the Work with Display Records display to see the Save DDS - Create Display File display.
2. Press Enter on the Save DDS - Create Display File display to:
  - Save the DDS source created by SDA.
  - Create the display file PDN1 from the DDS source.
  - Submit PDN1 as a batch job.

When SDA displays a completion message, you are finished creating the display.

3. Press F12 (Cancel) to return the Design Screens display.

---

## Testing the Pull-Down Menus

To view the pull-down menus that you created, test the PDN1 display file as follows:

1. Press F12 (Cancel) on the Design Screens display to return the Screen Design Aid (SDA) menu.
2. Select option 3 (Test display files) on the Screen Design Aid (SDA) menu and press Enter. The Test Display File display appears.
3. Do the following on the Test Display File display:
  - a. Type PDN1 in the *Display file* prompt.
  - b. Type QGPL in the *Library* prompt.
  - c. Type MNUBAR1 in the *Record to test* prompt.
  - d. Press Enter.

The Set Test Output Data display appears.

4. Press Enter on the Set Test Output Data display. You see a menu-bar containing the File and Edit pull-down menus.
5. Press Enter on the File menu to display the following pull-down choices:

```
File  Edit
-----
: _ 1. Open :
: ^ 2. Exit :
:.....:

```

6. Press F12 (Cancel) to clear the pull-down menu. You defined this key on the Define General Keywords display for the MNUCNL keyword.
7. Press Enter to return to the Set Test Output Data display.
8. Press F12 (Cancel) until you see the Screen Design Aid (SDA) menu.



---

## Appendix A. Recovering from an Interrupted Session

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

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

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

The following Recover SDA Session display appears for AS/400 SDA and System/38 environment SDA:

```
                                Recover SDA Session
Member . . . . :  NEWMEN
File . . . . . :  QMENSRC
Library . . . . :  USERLIB

The previous SDA session for the member shown
abnormally ended.

Select one of the following:

    1. Recover changes made in the previous SDA session
    2. Discard changes and start a new session

Selection
  1
F3=Exit  F12=Cancel
```

Use either of the following options to recover from an interrupted session:

- Select option 1 (Recover changes made in the previous SDA session) to resume the work that you were doing.
- Select option 2 (Discard changes and start a new session) to discard the changes that you made at the time of the interrupted session and start a new session. A record of the interrupted work is not saved.





## Appendix B. Restricting Access to the Command Entry Line on AS/400 Menus

You can restrict users from using the command entry line on active AS/400 menus. To restrict access to the command entry line:

1. Create or adapt your menu.
2. Press F3 (Exit) to save the menu. The Specify Menu Functions display appears.
3. Press F3 (Exit). The Exit SDA Menus display appears.
4. Type Y (Yes) in the *Prompt for parameters* prompt on the Exit SDA Menus display and press Enter. The Create Menu (CRTMNU) display, showing default values, appears as follows:

```

                                Create Menu (CRTMNU)

Type choices, press Enter.

Menu . . . . . > LIBLST      Name
  Library . . . . . > QGPL      Name, *CURLIB
Menu type . . . . . > *DSPF     *DSPF, *PGM
Display file . . . . . > LIBLST  Name, *MENU
  Library . . . . . > QGPL      Name, *LIBL, *CURLIB
Message file . . . . . > LIBLST  Name, *MENU
  Library . . . . . > QGPL      Name, *LIBL, *CURLIB
Command line . . . . . > *LONG   *LONG, *SHORT, *NONE
Display function keys . . . . . > *YES   *NO, *YES
Current library . . . . . > *NOCHG  Name, *NOCHG, *MNULIB...
Product library . . . . . > *NOCHG  Name, *NOCHG, *NONE
Text 'description' . . . . . > *BLANK

-----

                                Bottom
F3=Exit  F4=Prompt  F5=Refresh  F10=Additional parameters  F12=Cancel
F13=How to use this display  F24=More keys
  
```

5. To compile and save the menu, type \*NONE in the *Command line* prompt on the Create Menu (CRTMNU) display and press Enter.

When you restrict the user from using the command line, F3 (Exit), F12 (Cancel), F13 (User support) and F16 (System main menu) are the only function keys that are available on the menu. You can prevent these function keys from appearing on the menu by typing \*N0 in the *Display function keys* prompt on the Create Menu (CRTMNU) display.

After you save and compile your menu, you should edit the user profile by using the CL commands CRTUSRPRF (for new users) or CHGUSRPRF (for existing users). Type the name of the menu that you created in the *Initial Menu* prompt. Type the name of the library where the menu is stored. When the user signs on to the system, the menu that you named in the *Initial Menu* prompt appears and the user is restricted from access to the command entry line.

If you change the value in the *Limit Capabilities* prompt to \*YES, the user will be unable to use any of the CL commands interactively, and the function keys F13 (User support) and F16 (System main menu) will no longer be available.

For more information on CL commands, see the *CL Reference* manual.

---

## Appendix C. Using Double-Byte Character Set Characters

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

When you use bracketed-DBCS characters (data types J, O, and E), ensure that the number of characters between the shift-out and shift-in characters is even; otherwise, the rightmost DBCS character is truncated.

The first byte of a bracketed-DBCS field is protected and contains a shift-out character. The first DBCS character starts after the shift-out character; therefore, the attribute byte is two positions to the left of the DBCS character.

You can specify more than one line of DBCS characters, but you cannot split a DBCS character across lines.

If you have the DBCS character function on your system, are signed on to a DBCS display, and have a DBCS source file, you can:

- Use DBCS constants on work screens
- Specify the keyboard shift attributes (J, O, E, and G)
- Specify the field-level keyword IGCALTTYP
- Specify the file-level keyword IGCCNV

### Notes:

1. SDA work screens do not support the shift-out and shift-in key.
2. Selection and Command prompts and the command lines on work screens support the shift-out and shift-in key.
3. SBCS displays will support the selection of DBCS keywords.
4. Graphic data (type G) strings do not use shift-out and shift-in characters.
5. You can work on a DBCS source file using non-DBCS displays, but the DBCS data is not displayed the same as on a DBCS-capable display. Shift-out and shift-in characters of a DBCS field other than a DBCS-graphic are no longer protected. If any of these characters are removed, they cannot be replaced using an SBCS display. Unpredictable results can occur in the DDS source when you exit SDA with the save option, so you must follow the DBCS rules when changing DBCS data on an SBCS display.

---

## Understanding DBCS Symbols

The following table defines the symbols that you can use to define DBCS constants on a work screen.

Symbol	Definition
@	Represents the @ character
c	Represents any character including blanks
x	Represents any nonblank character
*	Represents the field attribute

Symbol	Definition
(	Represents the shift-out character
)	Represents the shift-in character
Kn	Represents a double-byte character where <i>n</i> is a numeric value
A B ...	Represent single-byte characters

## Defining DBCS Constants on a Work Screen

To define bracketed-DBCS data on an SDA work screen, do the following:

1. Type:

```
'@cccccc@cc@cc@cccc'
```

You can define the same constant without single quotation marks by typing nonblank characters:

```
@xxxxxx@xx@xx@xxxx
```

**Note:** If the CCSID of your display and job differ, the @ character may not work because it may be translated to another character.

2. Press Enter and the constant is displayed as:

```
*(___)cc(__)cccc*
```

**Note:** DBCS constants are prefilled with underline characters by SDA.

3. Type DBCS characters between the shift-out and shift-in characters as follows:

```
*(K1K2K3)AB(K4)CDEF*.
```

4. Press Enter.

You can expand an existing DBCS constant by typing @ where you want new shift-out and shift-in characters. For example, to expand the DBCS portion of the mixed constant \*ABC(K1K2K3)DEF\*:

1. Type @ over the B and the E to delimit the expanded DBCS portion.

2. Type single quotation marks on both sides of the constant:

```
'A@C(K1K2K3)D@F'.
```

3. Press Enter. The DBCS string expands as follows:

```
*A(__K1K2K3__)F*
```

## Specifying Input Attributes

The four types of input field are:

- J (DBCS-only)** Double-byte character string only. The character string starts with a shift-out (SO) character and ends with a shift-in (SI) character.
- O (DBCS-open)** Both double-byte and single-byte character string. You can type both alphanumeric-Katakana (A/N/K) and DBCS data.
- E (DBCS-either)** Either double-byte or single-byte character string. You can type either A/N/K or DBCS data, but not both.

**G (DBCS-graphic)** Double-byte character string only. The character string does not contain shift-out (SO) and shift-in (SI) characters.

To specify your input attributes, use the Select Keying Options display and type J, O, E, or G as the keyboard shift attribute in the BOTH and INPUT fields.

### **Specifying the Field-Level Keyword IGCALTTYP**

To specify the field-level keyword IGCALTTYP, select the keyword on the Select General Keywords display.

### **Specifying the File-Level Keyword IGCCNV**

To specify the file-level keyword IGCCNV, select the keyword and define parameters on the Define IGC Conversion display.

### **Considerations for the Work Screen**

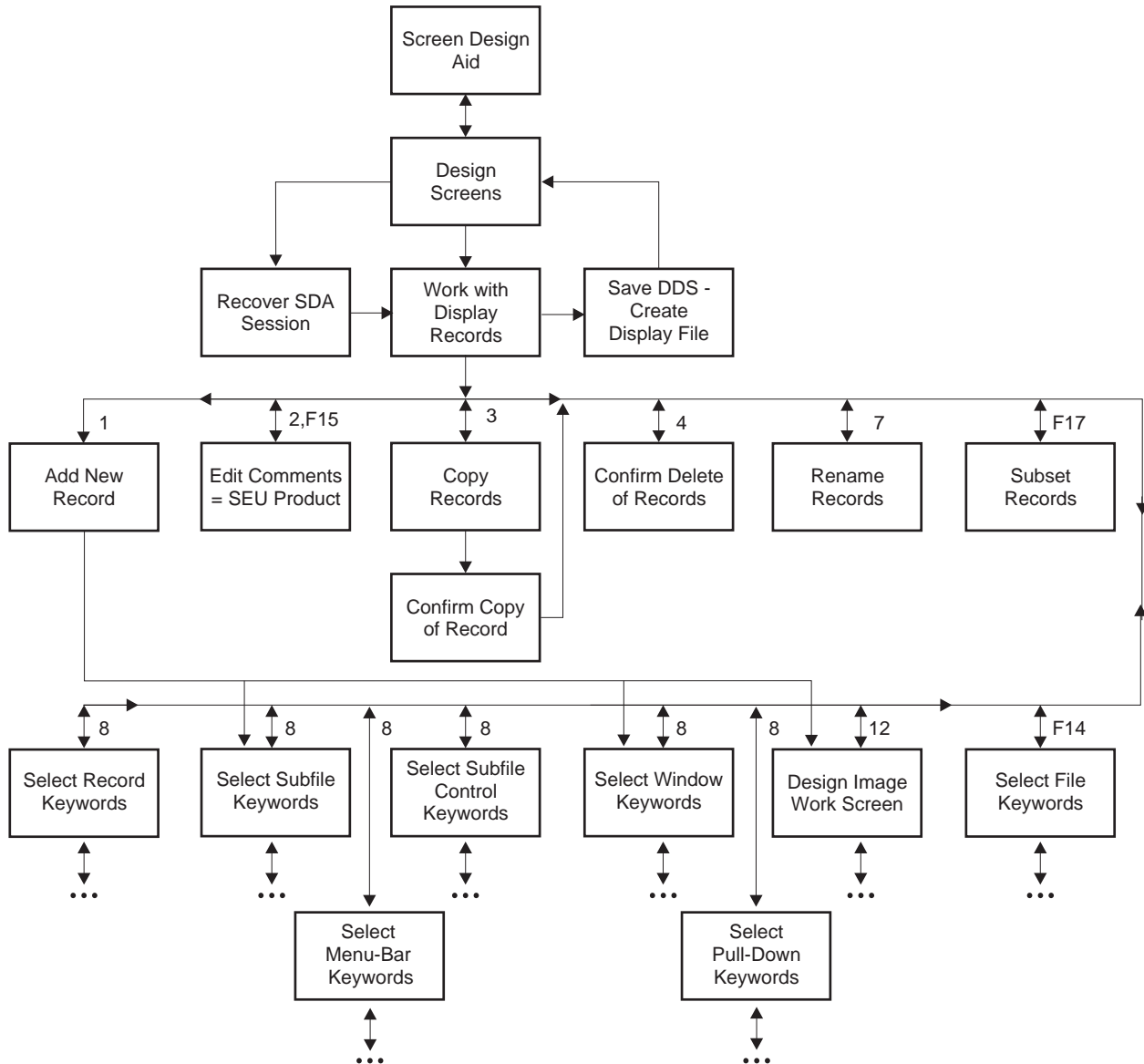
If you define message constants that contain DBCS characters, you must ensure that DBCS characters are not split and that shift-in characters are not truncated.



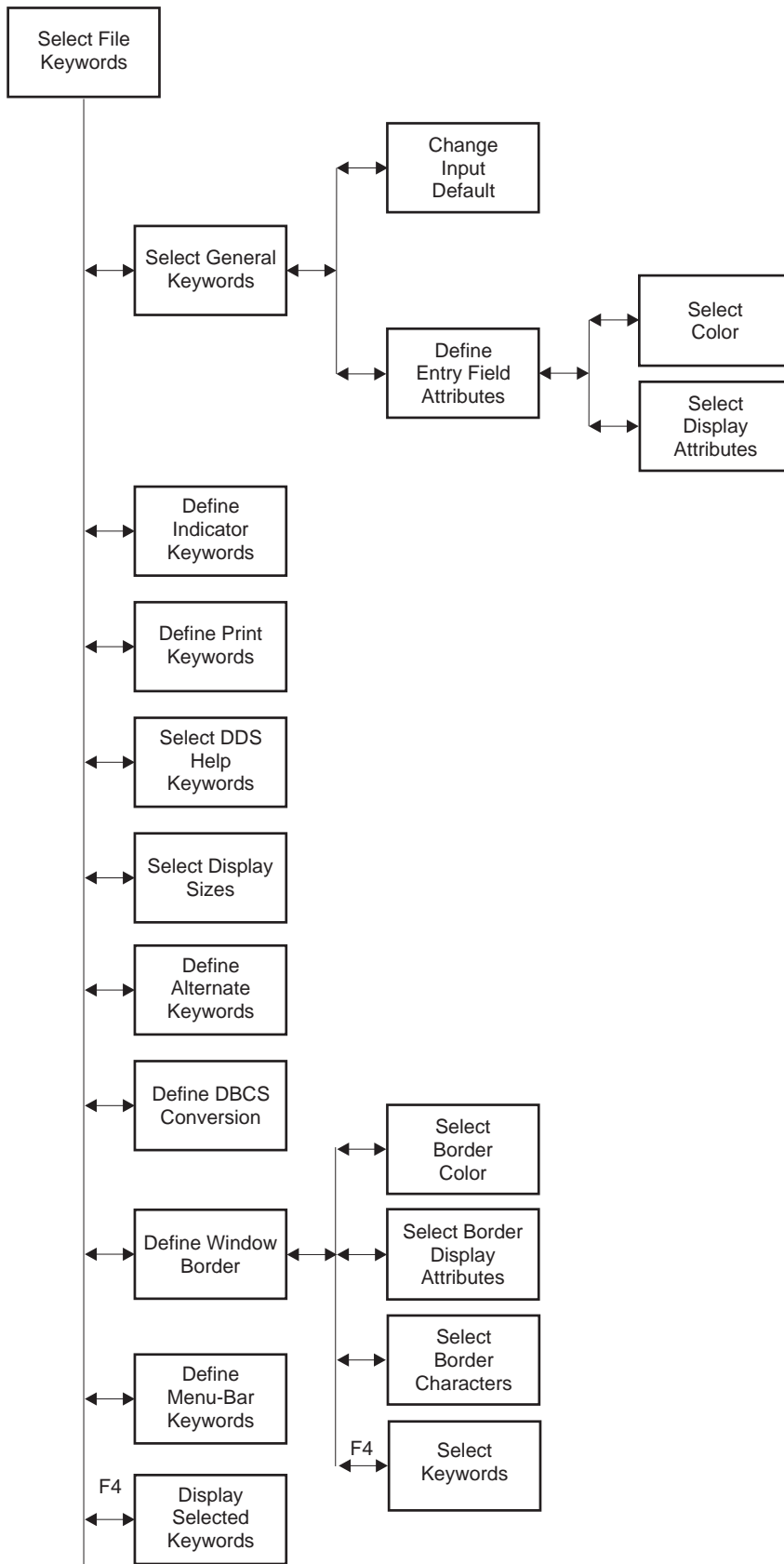
# Appendix D. Screen Flow Diagrams

This appendix contains diagrams that show the general flow of SDA screens.

## Design Screens - Screen Flow Diagram

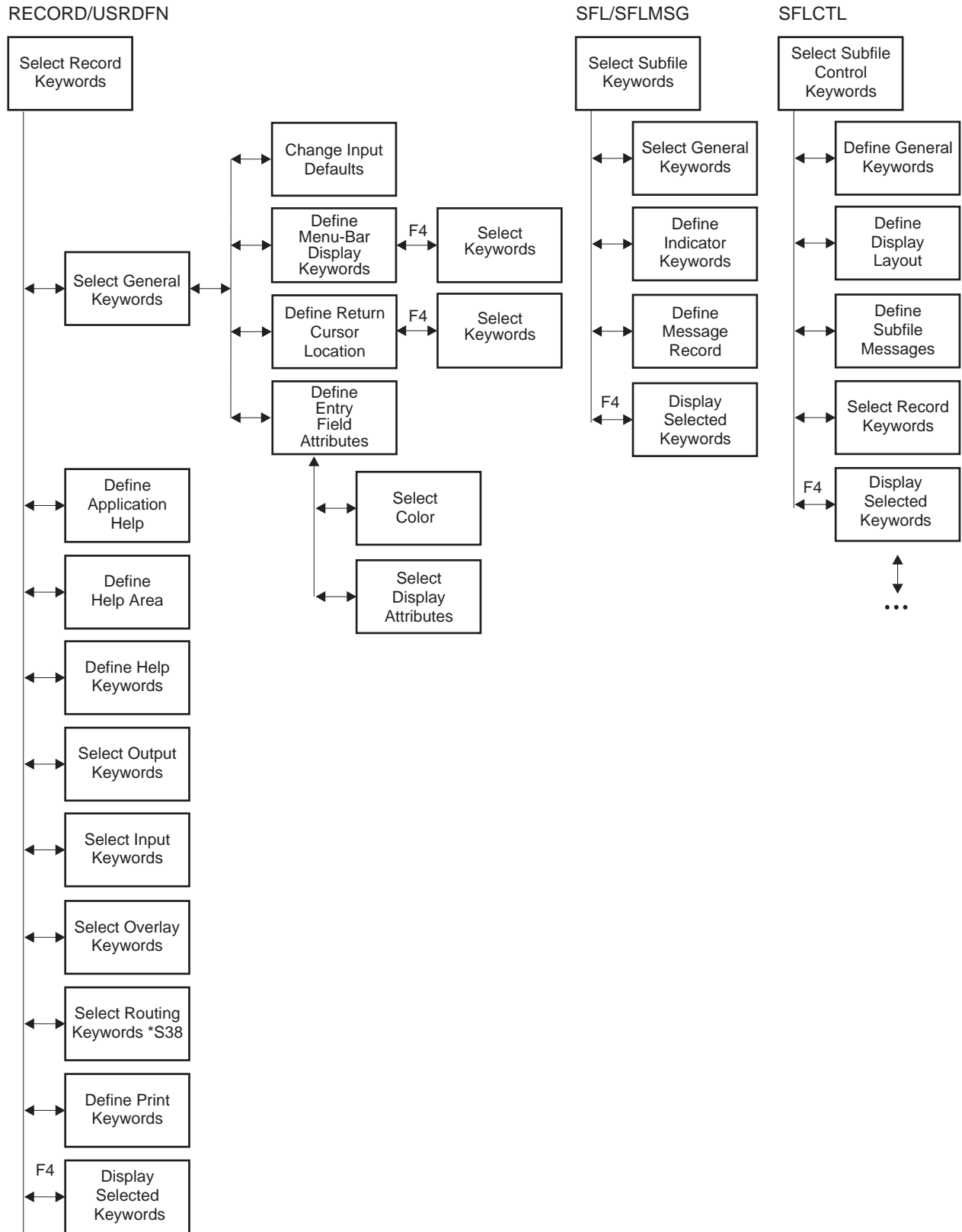


# File-Level Keywords - Screen Flow Diagram

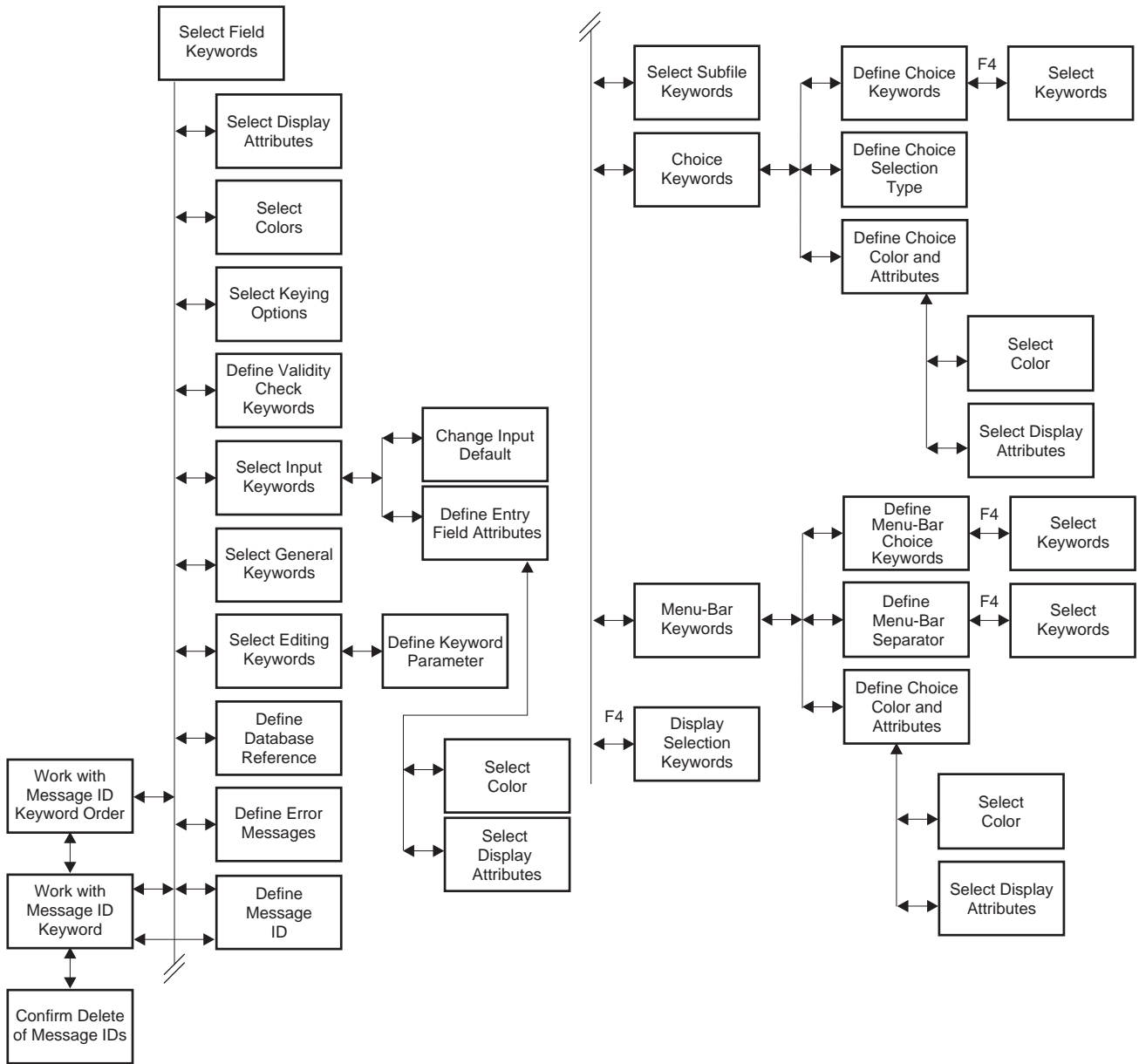




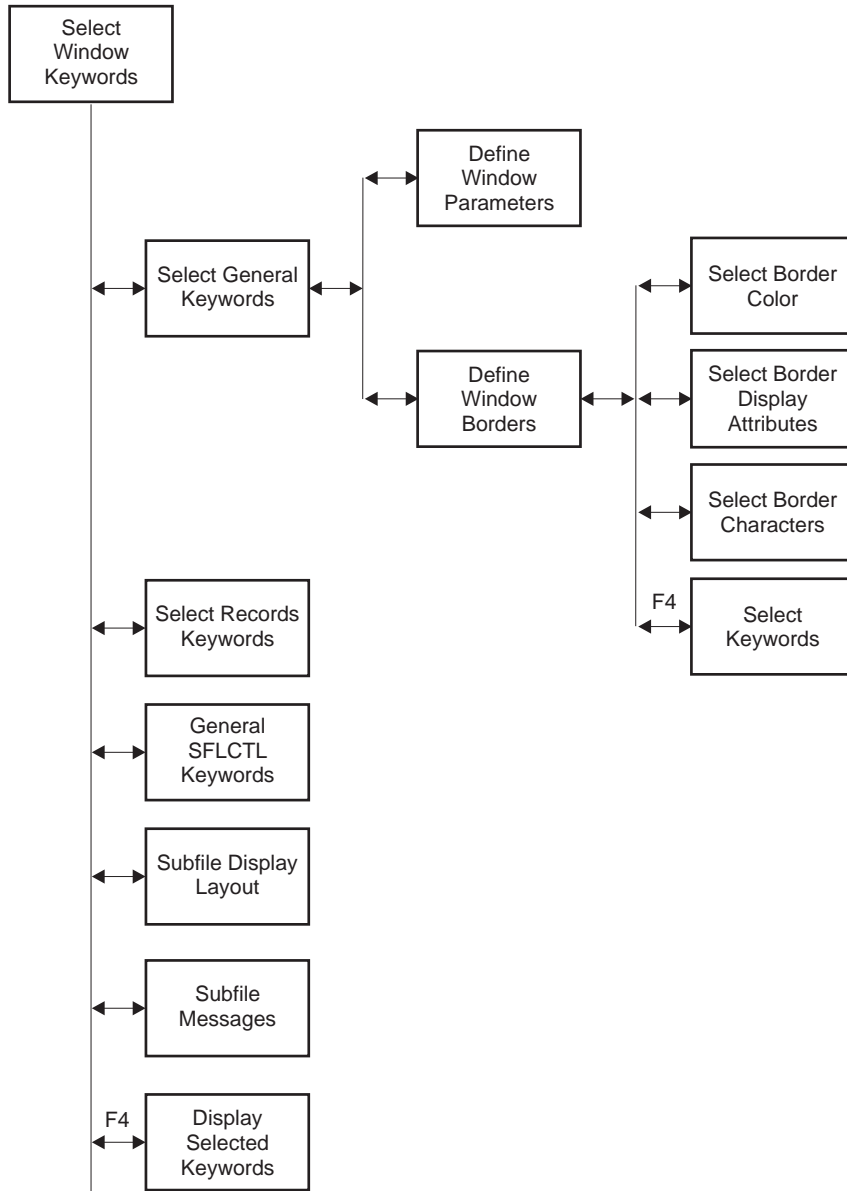
# Record-Level Keywords - Screen Flow Diagram



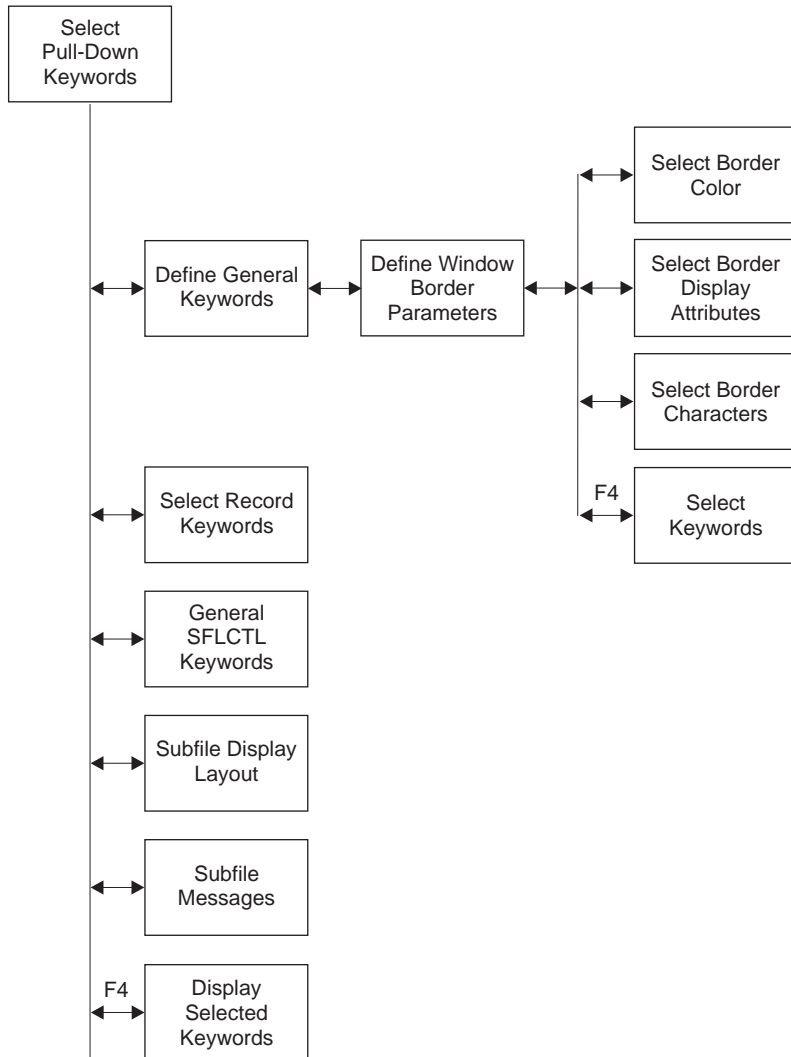
# Field-Level Keywords - Screen Flow Diagram



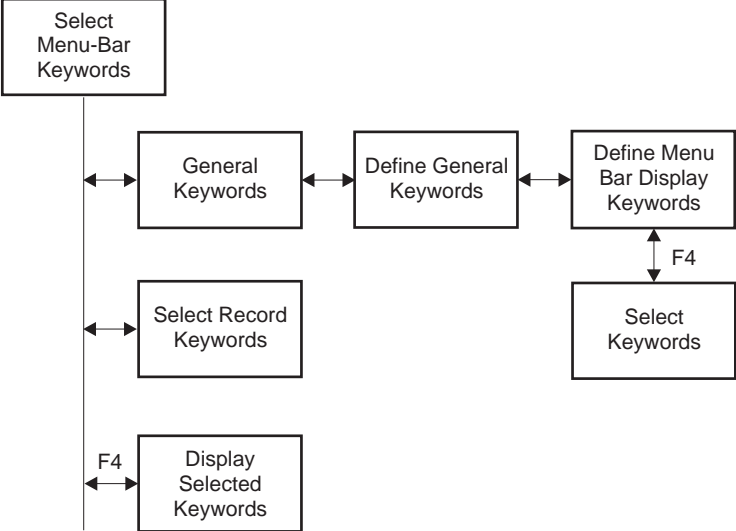
# Window Keywords - Screen Flow Diagram



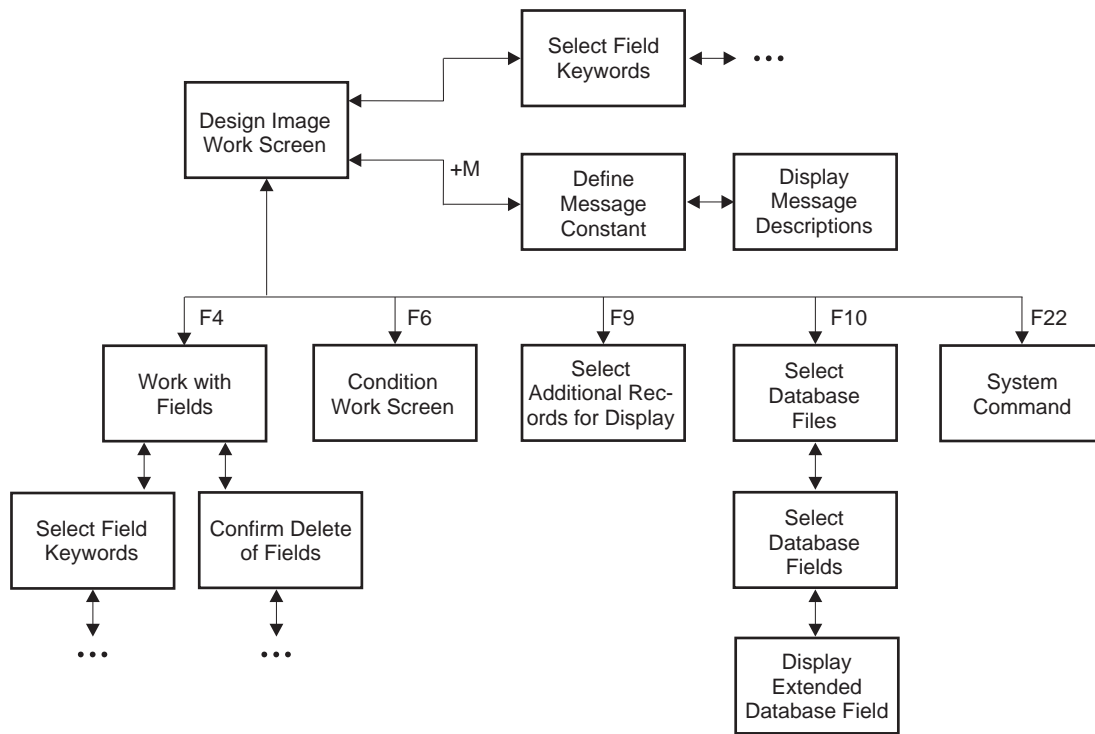
## Pull-Down Keywords - Screen Flow Diagram



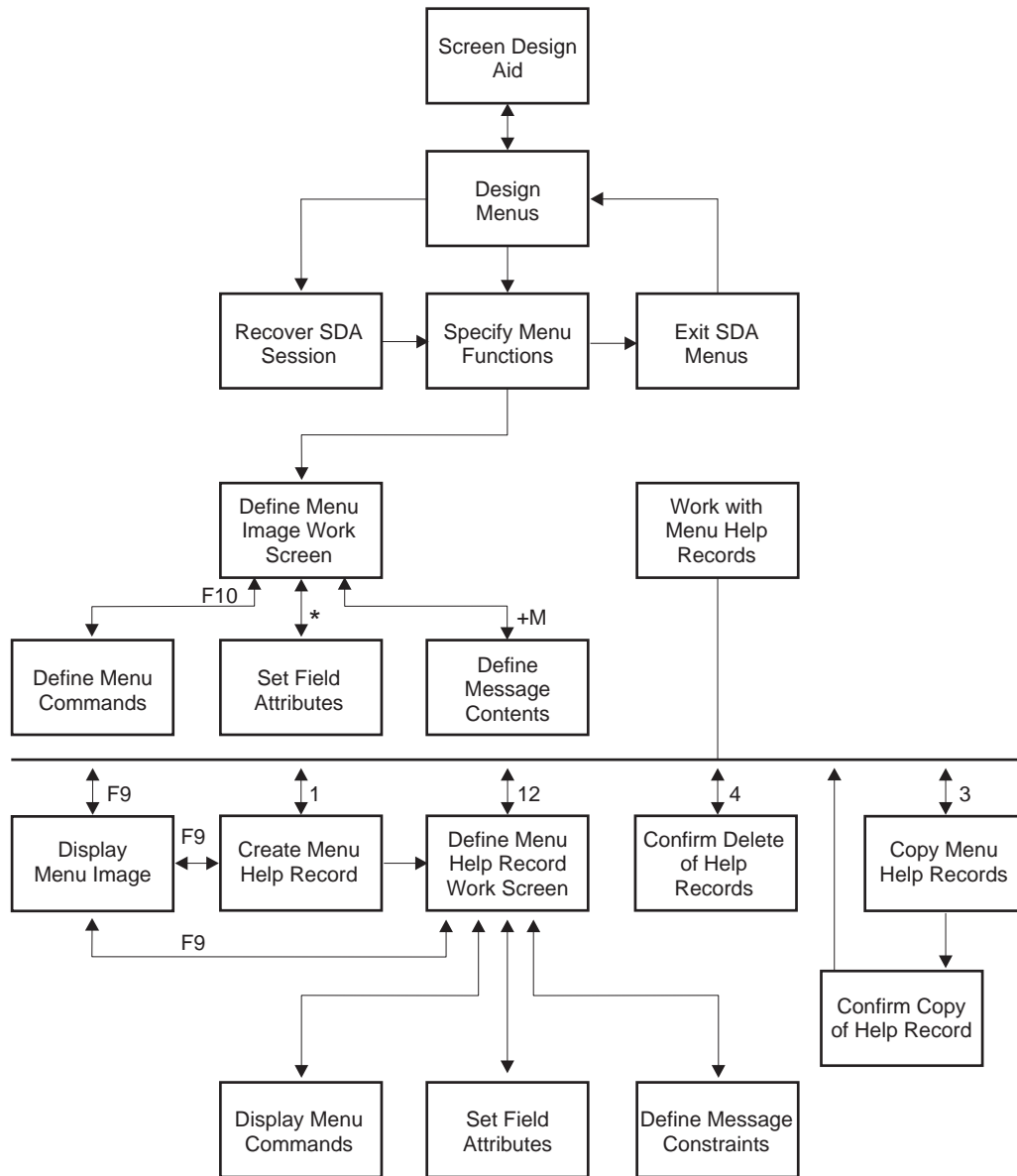
# Menu-Bar Keywords - Screen Flow Diagram



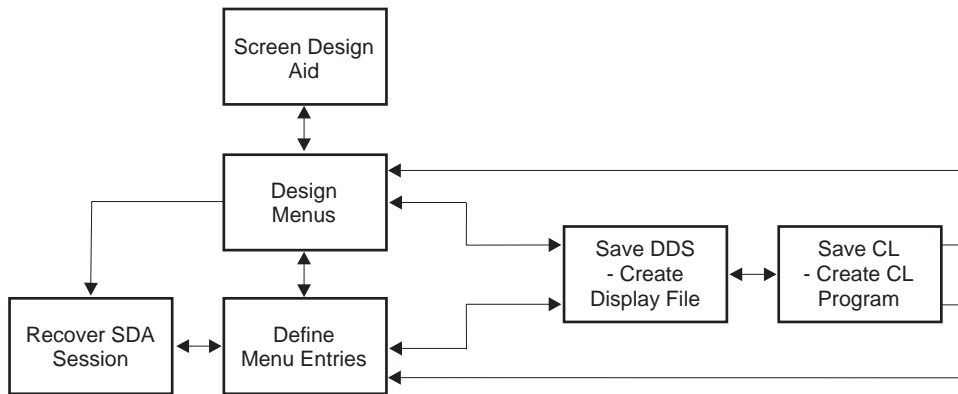
# Design Image Work Screen - Screen Flow Diagram



# Design Menus (AS/400 Environment) - Screen Flow Diagram

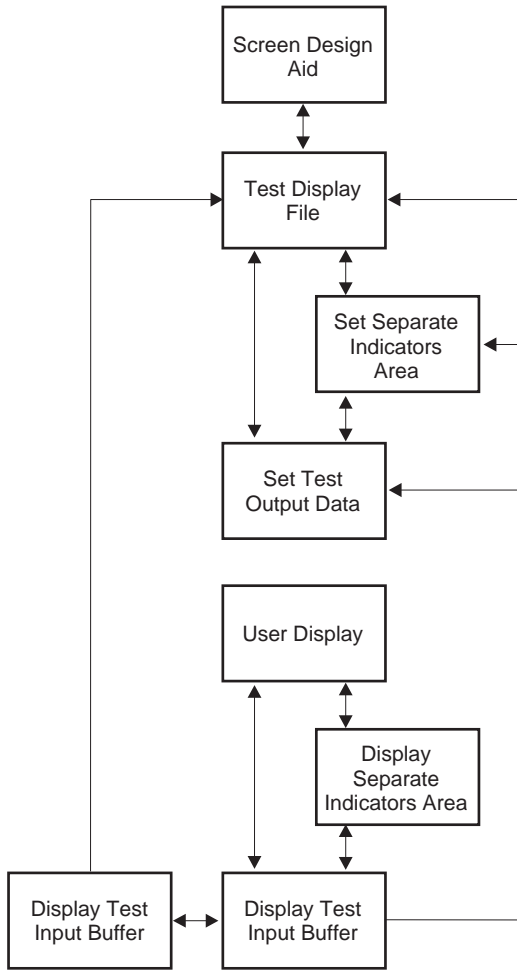


## Design Menus (System/38 Environment) - Screen Flow Diagram





# Test Display Files - Screen Flow Diagram





---

## Appendix E. Differences between System/38 SDA and AS/400 System/38 Environment SDA

The following is a summary of the functional differences between System/38 SDA and AS/400 System/38 environment SDA:

- In the AS/400 System/38 environment SDA, you type option selections on the command line on main options displays.
- DBCS is supported in AS/400 System/38 environment SDA when designing screens only; however, DBCS is not supported in menu function. DBCS-graphic (data type G) is not supported in AS/400 System/38 environment SDA.
- Cursor-sensitive help is available in AS/400 System/38 environment SDA.
- SDA uses User Interface Standard (UIS) interface command keys in AS/400 System/38 environment SDA.

The AS/400 System/38 environment SDA does not support many DDS keywords. Refer to “DDS Keyword and Parameter Organization” on page 147 for a list of keywords used in AS/400 System/38 environment SDA.



---

## Appendix F. Keyword Reference Information

This chapter shows the data description source (DDS) listings as well as DDS keyword and parameter organization.

---

### Data Description Source for QCUSDATA

The data description source for QCUSDATA is as follows:

A	R CUSMST		TEXT('Customer Master Record')
A	CUST	5	CHECK(MF)
A			COLHDG('Customer' 'Number')
A	NAME	20	COLHDG('Customer' 'Name')
A	ADDRESS	20	COLHDG('Street Address')
A	CITY	20	COLHDG('City')
A	STATE	2	CHECK(MF)
A			COLHDG('State')
A	ZIP	5 0	CHECK(MF)
A			COLHDG('Zip' 'Code')
A	SEARCH	6	
A			COLHDG('Search' 'Code')
A			TEXT('Customer Number Search Code')
A	CUTYPE	1	RANGE('1' '5')
A			COLHDG('Cust' 'Type')
A			TEXT('Customer Type')
A	ARBAL	8 2	COLHDG('Accts Rec' 'Balance')
A			EDTCDE(J)
A	ORDBAL	8 2	COLHDG('A/R Amt in' 'Order File')
A			EDTCDE(J)
A	LSTAMT	8 2	COLHDG('Last' 'Amount' 'Paid')
A	LSTDAT	6 0	COLHDG('Last' 'Date' 'Paid')
A			EDTCDE(Y)
A			TEXT('Last Date Paid in A/R')
A	CRDLMT	8 2	COLHDG('Credit' 'Limit')
A			TEXT('Customer Credit Limit')
A	SLSYR	10 2	COLHDG('Sales' 'This' 'Year')
A			TEXT('Customer Sales This Year')
A	SLSLYR	10 2	COLHDG('Sales' 'Last' 'Year')
A			TEXT('Customer Sales Last Year')

## Data Description Source for QORDHDRP

The data description source for QORDHDRP is as follows:

A	R ORDERFMT			TEXT('PHYSICAL FILE FOR ORDERS')
A	ORDER	5	0	COLHDG('Order' 'No.')
A	ORDDAT	6	0	EDTCDE(Y)
A				COLHDG('ORDER' 'DATE')
A				TEXT('DATE ORDER WAS ENTERED')
A	CUSORD	15		COLHDG('CUSTOMER ORDER')
A				TEXT('CUSTOMER ORDER NUMBER')
A	SHIPVIA	15		COLHDG('SHIPPING' 'INSTRUCTIONS')
A	SHIP	3	0	COLHDG('QUANTITY' 'SHIPPED')
A	ORDSTS	1	0	COLHDG('ORDER' 'STATUS')
A				TEXT('ORDER STATUS 1PCS 2CNT 3CHK 4-
A				RDY 5PRT 6PCK 7INV 9C')
A	OPRNAM	10		COLHDG('OPERATOR' 'NAME')
A				TEXT('OPERATOR NAME WHO ENTERED -
A				THE ORDER')
A	ORDAMT	8	2	COLHDG('ORDER' 'AMOUNT')
A				TEXT('TOTAL DOLLAR AMOUNT -
A				ORDER')
A	INVNUM	5	0	COLHDG('INVOICE' 'NUMBER')
A	PRTDAT	6	0	COLHDG('PRINTED' 'DATE')
A				EDTCDE(Y)
A				TEXT('DATE ORDER WAS PRINTED')
A	QTY	3	0	COLHDG('QUANTITY' 'ORDERED')
A				TEXT('NUMBER OF ITEMS ORDERED')
A	ITEM	5	0	COLHDG('ITEM' 'NUMBER')
A				TEXT('ITEM NUMBER OF THIS PART')
A	PRICE	5	2	COLHDG('ITEM' 'PRICE')
A				TEXT('PRICE PER ITEM')
A	DESCRP	15		COLHDG('ITEM' 'DESCRIPTION')
A				TEXT('DESCRIPTION OF ITEM ORDERED')
A	OPNSTS	1	0	COLHDG('OPEN' 'STATUS')
A				TEXT('ORDER OPEN STATUS 1=OPEN, 2=-
A				CLOSED, 3=CANCELLED')
A	TOTLEN	3	0	COLHDG('TOTAL' 'LINES')
A				TEXT('TOTAL LINE ITEMS IN THE ORDER-
A				')
A	ACTMNT	2	0	COLHDG('ACCT' 'MTH')
A				TEXT('ACCOUNTING MONTH OF SALE')
A	ACTYR	2	0	COLHDG('ACCT' 'YEAR')
A				TEXT('ACCOUNTING YEAR OF SALE')
A	LINNUM	3	0	COLHDG('LINE' 'NO.')
A				TEXT('LINE NUMBER OF LINE ORDER')
A	EXTENS	6	2	COLHDG('EXTENSION')
A				TEXT('EXTENSION AMOUNT OF QTYORD X-
A				PRICE')
A	OVRAMT	8	2	COLHDG('AMOUNT' 'OVER' 'LIMIT')
A				TEXT('AMOUNT OVER CREDIT LIMIT')
A	TOTBAL	8	2	COLHDG('TOTAL A/R' 'AMOUNT')
A				TEXT(' TOTAL A/R AMOUNT - SUM OF AR-
A				BAL + ORDBAL')
A	AVAIL	5	0	COLHDG('AVAILABLE')
A				TEXT('NET INVENTORY AVAILABLE = -
A				NET ON HAND - ALLOC')

## DDS Keyword and Parameter Organization

The following table shows the DDS keywords and parameters that can be used with SDA displays. The file, record, subfile record, subfile control record, field and system columns show which keywords can be used. The numbers refer to the SDA displays on which you can select the keyword. The numbers are matched with the corresponding displays shown in the legend that follows this table.

The keywords can be used in AS/400 SDA, in the System/38 environment, or in both as indicated in the last column of the table. For more information about keywords, see the *DDS Reference*.

DDS Keywords and Parameters	File Level	Record Level	Subfile Control Record	Subfile Record	Field Level	System Used
KBD SHIFT					FdL4	Both
ALARM		RL7				Both
ALTHELP	FL7					AS/400
ALIAS					FdL7	Both
ALTNAME		RL1				AS/400
ALTPAGEDWN	FL7					AS/400
ALTPAGEUP	FL7					AS/400
ALWGPH	FL1	RL7				Both
ALWROL		RL2				Both
ASSUME		RL2				Both
DSPRL	FL1					AS/400
BLANKS					FdL6	Both
BLINK		RL7				Both
BLKFOLD					FdL7	Both
CA01-CA24 CF01-CF24	FL2	RL3				Both
CHANGE		RL3	SR3		FdL6	Both
CHCACCEL					FdL15	AS/400
CHCAVAIL					FdL14	AS/400
CHCCTL					FdL14	AS/400
CHCSLT					FdL14	AS/400
CHCUNAVAIL					FdL14	AS/400
CHECK(AB)	FL1	RL8		SR2		Both
CHECK(ER)					FdL5	Both
CHECK(FE)					FdL4	Both
CHECK(LC)					FdL4	Both
CHECK(ME)					FdL4	Both
CHECK(MF)					FdL4	Both
CHECK(M10)					FdL5	Both
CHECK(M10F)					FdL5	AS/400

DDS Keywords and Parameters	File Level	Record Level	Subfile Control Record	Subfile Record	Field Level	System Used
CHECK(M11)					FdL5	Both
CHECK(M11F)					FdL5	AS/400
CHECK(RB)					FdL4	Both
CHECK(RL)	FL1	RL8		SR2	FdL4	Both
CHECK(RLTB)	FL1					Both
CHECK(RZ)					FdL4	Both
CHECK(VN)					FdL5	Both
CHECK(VNE)					FdL5	AS/400
CHGINPDFT	FL1	RL2		SR2	FdL6	Both
CHKMSGID					FdL5	AS/400
CHOICE					FdL14	AS/400
CHRID					FdL7	Both
CLEAR	FL2	RL3				Both
CLRL(*ALL)		RL7				AS/400
CLRL(*END)		RL7				AS/400
CLRL(*NO ###)		RL7				Both
CNTFLD					FdL7	AS/400
COLOR(BLU) (GRN) (PNK) (RED) (TRQ) (WHT) (YLW)		RL14			FdL3	Both
COMP(EQ)					FdL5	Both
COMP(GE)					FdL5	Both
COMP(GT)					FdL5	Both
COMP(LE)					FdL5	Both
COMP(LT)					FdL5	Both
COMP(NE)					FdL5	Both
COMP(NG)					FdL5	Both
COMP(NL)					FdL5	Both
CSRLOC		RL7				Both
*CURLIB						AS/400
DATE						Both
DFT					FdL7	Both
DFTVAL					FdL7	AS/400
DLTCHK					FdL10	Both
DLTEDT					FdL10	Both
DSPATR(BL)					FdL2	Both



DDS Keywords and Parameters	File Level	Record Level	Subfile Control Record	Subfile Record	Field Level	System Used
DSPATR(CS)					FdL2	Both
DSPATR(HI)					FdL2	Both
DSPATR(MDT)					FdL2	Both
DSPATR(ND)					FdL2	Both
DSPATR(OID)					FdL2	Both
DSPATR(PC)					FdL2	Both
DSPATR(p-field)					FdL2	AS/400
DSPATR(PR)					FdL2	Both
DSPATR(RI)					FdL2	Both
DSPATR(SP)					FdL2	Both
DSPATR(UL)					FdL2	Both
DSPMOD		RL7				Both
DSPMOD(supported-size)		RL7				Both
DSPSIZ	FL5					Both
DUP					FdL6	Both
EDTCDE					FdL8	Both
EDTMSK					FdL8	AS/400
EDTWRD					FdL8	Both
ENTFLDATR	FL1	RL2			FdL7	AS/400
ERASE		RL9				Both
ERASEINP(*ALL)		RL9				Both
ERASEINP(*MDTON)		RL9				Both
ERRMSG					FdL11	Both
ERRMSGID					FdL11	Both
ERRSFL	FL1					AS/400
FLDCSRRPG					FdL7	AS/400
FLTFIXDEC					FdL9	Both
FLTPCN						Both
FRCDTA		RL7				Both
GETRETAIN		RL8				Both
HELP	FL2	RL3				Both
HLPARA		RL6				AS/400
HLPBDY		RL5				AS/400
HLPCLR		RL4				AS/400
HLPCMDKEY		RL4				AS/400
HLPID					FdL7	AS/400
HLPDOC	FL4	RL5				AS/400
HLPBCD	FL4	RL5				AS/400
HLPRTN	FL2	RL3				AS/400

DDS Keywords and Parameters	File Level	Record Level	Subfile Control Record	Subfile Record	Field Level	System Used
HLPSEQ		RL4				AS/400
HOME	FL2	RL3				Both
IGCALTTYP					FdL7	Both
IGCCNV	FL6					Both
INDARA	FL1					Both
INDTXT	FL2	RL3		SR3	FdL7	Both
INVITE	FL2	RL7				Both
INZINP		RL9				Both
INZRCD		RL2				Both
KEEP		RL2		SR3		Both
LOCK		RL7				Both
LOGINP		RL8		SR3		Both
LOGOUT		RL7		SR3		Both
MDTOFF(*ALL)		RL9				Both
MDTOFF(*UNPR)		RL9				Both
MNUBAR		RL2				AS/400
MNUBARCHC					FdL15	AS/400
MNUBARDSP		RL18				AS/400
MNUBARSEP					FdL15	AS/400
MNUBARSW	FL10	RL18				AS/400
MNUCNL	FL10	RL18				AS/400
MSGALARM	FL1	RL7				AS/400
MSGCON						Both
MSGID					FdL13	AS/400
MSGLOC	FL5					Both
MLTCHCFLD					FdL14	AS/400
NOCCSID					FdL7	AS/400
OPENPRT	FL3					Both
OVERLAY		RL9				Both
OVRATR					FdL7	Both
OVRATR		RL9				AS/400
OVRDTA					FdL7	Both
OVRDTA		RL8				AS/400
PAGEDOWN	FL2	RL3				AS/400
PAGEUP	FL2	RL3				AS/400
PASSRCD	FL1					Both
PRINT	FL2, FL3					Both
PRINT		RL11				AS/400

DDS Keywords and Parameters	File Level	Record Level	Subfile Control Record	Subfile Record	Field Level	System Used
PRINT(*PGM)	FL3					AS/400
PROTECT		RL9				Both
PULLDOWN		RL2				AS/400
PUTOVR		RL9				Both
PUTRETAIN		RL9			FdL8	Both
RANGE					FdL5	Both
REF	FL1					Both
RETLCKSTS		RL8				AS/400
REFFLD					FdL10	Both
RETCMDKEY		RL2				AS/400
RETKEY		RL2				AS/400
RMVWDW		RL2				AS/400
ROLLDOWN	FL2	RL3				Both
ROLLUP	FL2	RL3				Both
RTGAID		RL10				System/38
RTGCON		RL10				System/38
RTGDEV		RL10				System/38
RTGDEVCLS		RL10				System/38
RTGFIRST		RL10				System/38
RTGFLD					FdL6	System/38
RTGFMT		RL10				System/38
RTGPOS		RL10				System/38
RTNCSRLOC		RL2				AS/400
RTNDDTA		RL8				Both
SETOF		RL3		SR3		Both
SFL						Both
SFLCLR			SC2			Both
SFLCSRRRN			SC2			AS/400
SFLCSRPRG					FdL7	AS/400
SFLCTL			SC2			Both
SFLDLT			SC2			Both
SFLDROP			SC2			Both
SFLDSP			SC2			Both
SFLDSPCTL			SC2			Both
SFLEND			SC2			Both
SFLEND(*MORE)			SC2			AS/400
SFLEND(*PLUS)			SC2			AS/400
SFLEND(*SCRBAR)			SC2			AS/400
SFLENTER			SC2			Both

DDS Keywords and Parameters	File Level	Record Level	Subfile Control Record	Subfile Record	Field Level	System Used
SFLFOLD			SC2			AS/400
SFLINZ			SC2			Both
SFLLIN			SC3			Both
SFLMODE			SC2			AS/400
SFLMSG			SC4			Both
SFLMSGID			SC4			Both
SFLMSGKEY				SR4		Both
SFLMSGRCD				SR4		Both
SFLNXTCHG				SR2		Both
SFLPAG			SC3			Both
SFLPGMQ			SC2	SR4		Both
SFLPGMQ(10)			SC2	SR4		AS/400
SFLPGMQ(276)			SC2	SR4		AS/400
SFLRCDNBR					FdL12	Both
SFLRCDNBR(*TOP)					FdL1	AS/400
SFLRNA			SC2			Both
SFLROLVAL					FdL12	Both
SFLSIZ			SC3			Both
SFLSIZ(p-field)			SC3			AS/400
SLNO(*VAR) (##)		RL7				Both
SNGCHCFLD					FdL14	AS/400
SYSNAME						AS/400
TEXT		RL1	SC1	SR1	FdL1	Both
TIME						Both
UNLOCK(*ERASE)		RL8				Both
UNLOCK(*MDTOFF)		RL8				Both
USER						AS/400
USRDFN						Both
USRDSMGT	FL1					AS/400
USRRSTDSP		RL2				AS/400
VALUES					FdL5	Both
VLDCMDKEY	FL2	RL3				Both
WDWBORDER	FL1	RL2				AS/400
WINDOW		RL2				AS/400

The following is the legend for the preceding table:

<b>Keyword</b>	<b>Number</b>	<b>Display Title</b>
File Level	FL1	Select General Keywords
	FL2	Define Indicator Keywords
	FL3	Define Print Keywords
	FL4	Select Help Keywords
	FL5	Select Display Sizes
	FL6	Define IGC Conversion
	FL7	Define Alternate Keywords
	FL8	Define Window Border Parameters
	FL9	Define Choice Keywords
	FL10	Define Menu Bar Keywords
Record Level	RL1	Select Record Keywords
	RL2	Select General Keywords
	RL3	Define Indicator Keywords
	RL4	Define Help Keywords
	RL5	Define Application Help
	RL6	Define Application Help Area
	RL7	Select Output Keywords
	RL8	Select Input Keywords
	RL9	Select Overlay Keywords
	RL10	Define Routing Keywords
	RL11	Define Print Keywords
	RL12	Define Window Parameters
	RL13	Define Window Border Parameters
	RL14	Select Border Color
	RL15	Select Border Display Attributes
	RL16	Select Border Characters
	RL17	Select Pull-Down Record Keywords
	RL18	Define General Keywords
Subfile Control	SC1	Select Subfile Control Keywords
	SC2	Define General Keywords
	SC3	Define Display Layout
	SC4	Define Subfile Messages
Subfile Record	SR1	Select Subfile Keywords
	SR2	Select General Keywords
	SR3	Define Indicator Keywords
	SR4	Define Message Record
Field Level	FdL1	Select Field Keywords
	FdL2	Select Display Attributes
	FdL3	Select Colors
	FdL4	Select Keying Options
	FdL5	Define Validity Check Keywords
	FdL6	Select Input Keywords
	FdL7	Select General Keywords
	FdL8	Select Editing Keywords
	FdL9	Edit Floating Point Field
	FdL10	Define Database Reference
	FdL11	Define Error Messages
	FdL12	Select Subfile Keywords
	FdL13	Define Message IDs
	FdL14	Select Choice Keywords
	FdL15	Select Menu-Bar Keywords



---

## 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 title is used.

The related IBM 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
- *&db2635.*, *&db2635n.*
- *ADTS/400: Screen Design Aid for the System/36 Environment*, SC09-1893
- *ADTS for AS/400: Source Entry Utility*, SC09-2605
- *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 Introduction and Planning Guide*, GC09-1807
- *ADTS/400: Application Development Manager User's Guide*, SC09-2133
- *ADTS/400: Application Dictionary Services Self-Study*, SC09-1904
- *ADTS/400: Application Dictionary Services User's Guide*, SC09-2087

The related IBM AS/400 publications are:

- *CL Programming*, SC41-5721
- *CL Reference*, SC41-5722
- *Data Management*, SC41-5710
- *DB2 for AS/400 Database Programming*, SC41-5701
- *Application Display Programming*, SC41-5715
- *DDS Reference*, SC41-5712
- *IDDU Use*, SC41-5704
- *Office Services Concepts and Programmer's Guide*, SH21-0703
- *Publications Reference*, SC41-5003
- *System Operation*, SC41-4203
- *System Startup and Problem Handling*, SC41-3206





---

# Index

## Numerics

92-byte records 4

## A

### adding

- commands 81
- fields on the work screen 21, 57
- message IDs 36
- numeric fields with ruler displayed 22
- record-level keywords 43
- records 43

adding message constants 12

additional records 55

### application help

See help

asterisk (\*) 49, 72

### attribute

See also color

- attribute characters 34
- byte 30
- changing 81
- color keywords 24
- defining display 15
- deleting 16
- displaying positions 12
- field attributes
  - moving 52
  - selecting 53
- list of codes 15
- position 12
- removing 15
- specifying for display 15
- user-defined fields 21
- window 114

### authorization

- creating a display 29
- source file QDDSSRC 29

## B

border characteristics of windows 114

buffer 76

## C

centering field 12

### changing

- commands 81
- defaults with Specify Additional Options display 37
- edit codes 35
- field names 20

### changing (continued)

- field types 23
- menus 79
- reference named field 20
- referenced named field length 20
- unreferenced named field 20
- workscreen, multiple 15

changing a menu 88

### characteristics

See attribute

### characters

- control 92
- double-byte character set 127

CHGINPDFT keyword 16

CL (control language) 1

### color

- adding to a field 16
- characters 81
- deleting from a field 16
- display attributes 25
- keywords 23
- removing 16

### command

- CRTDSPF 4
- CRTMNU 87
- CRTS36DSPF 3
- CRTS36MNU 3
- CRTSRCPF 80
- DSPLIBL 91
- entering 26
- GO 87
- STRSDA 5

command area 85

command entry line 125

command key in subfiles 66

command line prompt 81

comment line 4

compiling help record 110

### condition indicator

See also indicator

- Condition Work Screen display 26
- new attributes 27
- new constants 27
- new fields 27
- selecting keywords 42
- size limits 27

Condition Work Screen display 26

conditioned fields 27

conditioned keywords 66

### constants

- adding work screen constants 31
- changing length 12

**constants** *(continued)*

- copying 14
- DATE 11
- definition 11
- deleting 13, 23
- moving 13
- output 32
- restricted symbols 11
- SYSNAME 12
- TIME 11
- USER 12

**control character**

- copying a line on a menu 92
- defining options and prompts 91

**control language (CL) 1****copying**

- fields and constants 14
- help records 109
- records 37

**creating**

- default menu image 88
- displays
  - complex 41
  - pull-down menu 117
  - simple 29
  - using a database file 29
  - window 113
- help
  - documents 110
  - records 107
- menu
  - AS/400 environment 79
  - default image 88
  - System/38 environment 90
- online help information 99
- overlapping fields 49
- subfile record 63
- subfiles 63
- subsets 88
- windows 113

**CRTDSPF command 4****CRTMNU command 87****CRTS36DSPF command 3****CRTS36MNU command 3****CRTSRCPF command 80****cursor position 52****D****data description source**

- QCUSDATA 145
- QORDHDRP 146

**data description specifications (DDS)**

- description 2
- keywords 145
- listings 145

**data description specifications (DDS)** *(continued)*

- parameter organization 145

**data type for user-defined fields 22****database file**

- creating displays 29
- fields
  - position 71
  - selecting 67
  - subfile control record 67

**DATE constant 11, 32****DBCS (double-byte character set)**

- defining constants on a work screen 128
- graphic data type 129
- specifying input attributes 128
- symbols 127
- using DBCS characters 127
- work screen considerations 129

**DDS**

- See data description specifications (DDS)

**defining**

- alternate keywords 42
- bracketed DBCS-characters 127
- constants 41
- DBCS constants 128
- decimal positions on the work screen 21
- display attributes 15, 34
- field length on the work screen 21
- fields 41
- file-level help 102
- floating point fields 22
- general help 100
- general keywords 42
- help areas 101
- indicator keywords 42
- menu commands 83
- message ID 36
- online help information 99
- print keywords 42
- pull-down menus 117
- record-level help 103
- windows 113

**deleting**

- color from field 16
- constants or fields 13, 23
- display attributes 16
- fields from work screen 13, 53
- fields on the bottom row 18
- help records 110
- member 38, 89
- menu source members 89
- menus 89
- multiple fields 23
- records 38

**Design Image work screen**

- adding constants 46
- database fields 17

## **Design Image work screen** *(continued)*

- designing a display 30, 45
- placing fields 46

## **Design Screens display** 30

### **designing a display** 30

## **differences between System/38 SDA and AS/400**

### **System/38 environment SDA** 143

## **display**

- attributes with color specified 25
- color 25
- creating
  - complex display 41
  - help 99
  - online help information for displays 99
  - pull-down menu 117
  - using a database file 29
  - using keywords 41
  - windows 113
- designing
  - description 30
  - menu in AS/400 79
  - menu in System/38 90
  - online help for a menu 106

## **files**

- definition 3
- testing 75
- using 29
- viewing 75

## **noncolor** 24

- overlapping two displays 54
- specifying attributes 15
- testing a display 75
- viewing 35
- workstations

## **display attribute chart** 24

## **displaying attribute position** 12

## **displaying attributes with color specified** 25

## **displaying attributes without specifying color** 24

## **displaying field attributes**

- length 19
- name 19
- text description 19

## **double-byte character set (DBCS)**

- defining constants on a work screen 128
- graphic data type 129
- specifying input attributes 128
- symbols 127
- using DBCS characters 127
- work screen considerations 129

## **E**

### **edit code**

- changing 35
- fields 35
- subfile fields 72

### **edit word** 22

### **editing a field** 35

### **editing attributes** 81

### **editing window keywords and parameters** 115

### **EDTCDE keyword** 35, 72

### **EDTWRD keyword** 35

### **embedded blanks** 22

### **end-of-file-level-comments line** 4

### **ending SDA** 9

### **example**

- Customer Master File Maintenance/Inquiry 41
- Customer Menu 90
- New Customer Inquiry 29
- Online Help Information 99
- Order Entry 63
- testing a display file 75

### **exiting from SDA** 5

## **F**

### **field**

- adding
  - from database file 31, 33
  - second display 56
- adding to work screen 21
- centering 12
- changing 20, 23
- changing length 20
- changing types 23
- concept 2
- condition indicators 27
- copying 14
- database fields
  - multiple-field format 17
  - selecting fields 31
  - single-field mode 18
  - work screen symbols 19
- DDS 2
- defining field length 21
- defining number of decimal positions 21
- defining numeric fields 22
- deleting
  - color 16
  - fields 18
  - fields from work screen 53
- deleting from the bottom row 18
- editing 35, 72
- field name
  - display name 19
  - moving to work screen 33
- field type
  - floating point 22
  - number of decimal positions 21
  - numeric fields 22
  - user-defined fields 21
- fields from work screen 13

## **field** *(continued)*

- formats
  - multiple field 17
  - single field 18, 56
- input 76
- list display 52
- moving on work screen 13, 51
- output 76
- overlapping 49
- placing 46
- scanning for name 20
- selecting from Work with Fields display 52
- sorting from Work with Fields display 21
- testing 75
- user defined
  - data type 22
  - defining numeric fields 22
  - editing 58
  - on work screen 57
  - specifying attributes 21

## **field-level keyword**

- defining 67
- selecting 72
- subfile control record 67

## **file**

- database 3
- database source 3
- display
  - saving DDS 37, 121
  - testing 75
- mixed files in System/38 environment 3

## **file-level keyword**

- defining 41
- selecting 41

## **fixed-form menu** 3

## **floating point** 22

## **format**

- multiple field 17
- single field 18

## **free-form menu** 3

## **functional groups** 1

## **G**

**GO command** 87

**GO menu-name function** 3

## **H**

**H (Help) specifications** 99

## **help**

- creating
  - display 99
  - help document 110
  - menu 106
  - single field 103

## **help** *(continued)*

- defining
  - field level 101
  - file level 100
  - record level 103
- display attributes 34
- field level
  - defining 101
  - description 101
- file level
  - defining 102
  - description 99
- help areas 99
- information label 110
- keywords 100
- menu help
  - copying 109
  - creating 107
  - deleting 110
  - saving 110
  - updating 109
- record level
  - defining 103
  - description 99

## **I**

**IGCALTTYP keyword** 129

**IGCCNV keyword** 129

## **indicator**

- See also* condition indicator
- accessing display 29
- selecting keywords 42

**INDTXT keyword** 29

## **input field**

*See* field

## **input/output field**

*See* field

**interrupted session** 123

## **J**

**JOB parameter** 7

## **K**

## **keyword**

- DDS
  - attributes in source file 25
  - CHGINPDFT 16
  - defining 41
  - EDTCDE 35, 72
  - EDTWRD 35
  - keyword table 147
  - OVERLAY 55
  - PRINT 43
  - RANGE 53

**keyword** *(continued)*DDS *(continued)*

RMVWDW 114

save for subfiles 73

saving 60, 73

USRRSTDSP 114

WDWBORDER 114

window 114

editing 58

extended parameters 29

field level

check/validity 53

for subfile record 72

selecting attributes 53

selecting keywords 49

subfile control record 67

file level

indicator 42

print 43

selecting 41

help 100

record level

indicator 66

messages 65

output keywords 44

selecting 43

subfile record 64

reference 145

saving 37, 121

selecting color keywords 23

SFLDROP 65

SFLENTER 65

syntax checking 4

unconditioned 66

window

parameters 115

RMVWDW 114

USRRSTDSP 114

WDWBORDER 114

WINDOW 114

**L****leaving SDA** 5**M****making multiple changes** 15**member**

DDS 3

deleting 38, 89

description 3

**menu**

AS/400 environment

changing 88

command source member 79, 84

creating a default image 88

**menu** *(continued)*AS/400 environment *(continued)*

DDS source member 79

Define Menu Image work screen 82

defining commands 83

fast paths 80

menu source member 80

online help information 106

restrictions 79

saving 86

testing your menu 87

changing 79

components 3

creating

AS/400 environment 79

help 106

System/38 environment 90

default 88

defining 83

deleting 89

description 79

display file 3

fixed-form 3

free-form 3

highlighting descriptions 81

image 81, 86

listing existing menus 80

message file 3

option descriptions 81

options

copy 95

delete 96

entering 81

special considerations 3

System/38 environment 90

testing 75

title 81

updating 79

viewing 75

**message**

adding to a display 12

defining on work screen 58

subfile 65

**message ID** 12, 36**mode** 18, 56**MODE parameter** 8**moving a block of fields** 13**moving fields on work screen** 51**MSGCON keyword** 21**MSGID keyword** 36**multiple-field mode** 17, 18**N****New Customer Inquiry example** 29

**new range field** 109  
**numeric field default** 34

## O

**OBJLIB parameter** 7  
**online help information**  
See help  
**option number** 79  
**output**  
constants 32  
selecting keywords 44  
**output field**  
See field  
**overlapping fields** 49  
**OVERLAY keyword** 55  
**overlying a display** 55

## P

**PDM**  
See programming development manager (PDM)  
**placing constants** 32  
**placing database fields on a work screen** 33  
**placing fields** 46  
**positioning the ruler** 31  
**primary record** 55  
**PRINT keyword** 43  
**printing the work screen image** 60  
**programming development manager (PDM)**  
deleting  
display source member 38  
fields 23  
from work screen 53  
menu source member 89  
ending SDA 9  
fields 13  
starting SDA 8  
**pull-down menu** 117

## Q

**QDDSSRC source file** 29  
**quotation marks, single** 46, 83

## R

**range check** 53  
**RANGE keyword** 53  
**record**  
adding 43  
additional 55  
concept 2  
copying 37  
database 2  
DDS 2  
deleting 38

**record** (*continued*)  
primary 55  
renaming 38  
subfile 63  
**record-level keyword**  
adding 43  
selecting for subfile record 64  
**recover from interrupt**  
See screen design aid (SDA)  
**reference fields** 26  
**referencing database fields** 26  
**renaming record** 38  
**renaming source file** 87  
**requesting SDA**  
See screen design aid (SDA)  
**restricted symbols for constant** 11  
**restricting access to command line** 86, 125  
**RMVWDW keyword** 114  
**ruler**  
decimal positions within ruler 22  
description 31

## S

**saving**  
help records 110  
menus 86  
**saving DDS** 37, 97, 121  
**scanning for a field name** 20  
**screen design aid (SDA)**  
advantages 1  
concepts 1  
considerations 3  
display files 1  
displays 29  
ending 9  
environments 3  
existing DDS 4  
introduction 1  
menu 30  
recover from interrupt  
description 123  
System/38 environment and AS/400  
environments 123  
requesting  
AS/400 SDA 8  
System/38 environment 8  
terminology 1  
**screen flow diagrams** 131  
**screen format generator routine (SFGR)** 79  
**SDA**  
See screen design aid (SDA)  
**Select Field Keywords display** 35  
**Select Window Keywords display** 114  
**selecting**  
display attributes 49

**selecting** (*continued*)  
 field-level keywords 67  
 fields from a database file 31, 44  
 fields from Work with Fields display 52  
 file-level keywords 41

**session interrupt** 123

**SEU (source entry utility)** 4

**SFGR (screen format generator routine)** 79

**SFLDROP keyword** 65

**SFLENTER keyword** 65

**shift-in characters** 127

**shift-out characters** 127

**single quotation marks** 46, 83

**single-field mode** 18, 56

**sorting fields** 21

**source entry utility (SEU)** 4

**source file, renaming** 87

**source listing**  
 QCUSDATA 145  
 QORDHDRP 146

**source member library** 80

**special extensions** 29

**specifying**  
 color for a field 16  
 condition indicators 26  
 condition indicators for field attributes 26  
 display attributes 34  
 field-level keywords 35  
 user-defined fields 34

**specifying color keywords** 23

**SRCFILE parameter** 6

**SRCMBR parameter** 7

**starting SDA**  
 AS/400 environment 5, 8  
 from PDM 8  
 System/38 8  
 System/38 environment 5

**STRSDA command**  
 example 8  
 parameters 6  
 syntax 6

**subfile**  
 color for a field 16  
 description 63  
 display attributes 15  
 editing field 72  
 IGCALTTYP keyword 129  
 IGCCNV keyword 129  
 specifying  
 field keywords 67  
 user-defined fields 21  
 subfile control record  
 database fields 67  
 description 63  
 display layout 65  
 field-level keywords 67  
 indicator keywords 66

**subfile** (*continued*)  
 subfile control record (*continued*)  
 messages 65  
 view completed 70  
 subfile record  
 description 63  
 designing 63  
 field-level keywords 72  
 record-level keywords 64  
 view completed 72

**SYSNAME constant** 12

**system command** 26

**System/36 environment menu** 3

## T

**template** 41, 54

**testing**  
 display file 75  
 input and output fields 75  
 input fields 76  
 menus 87  
 output fields 76  
 view input fields 76

**TIME constant** 11, 32

**TSTFILE parameter** 7

## U

**UIM panel group** 100

**unconditioned fields** 27

**unconditioned keywords** 66

**unreferenced named field length** 20

**updating a menu** 88

**updating help record** 109

**USER constant** 12

**user-defined field**  
 adding to work screen 21  
 defining field length 21  
 defining number of decimal positions 21  
 defining numeric fields 22  
 specifying 34  
 specifying attributes 21

**using help records** 110

**using the command area** 85

**USRRSTDSP keyword** 114

## V

**validity checks** 53

**viewing**  
 both input and output fields 76  
 buffer 76  
 input fields 76  
 window 115

## W

**WDWBORDER keyword 114**

### window

- attributes 114
- border
  - characteristics 114
  - color 114
- creating 113
- defining 113
- keywords 114
- parameters 115
- viewing 115

**WINDOW keyword 114**

### work screen

- adding constants 11, 46
- adding fields 21
- adding numeric fields with ruler displayed 22
- changing constants 12
- copying fields and constants 14
- creating displays 29
- database fields 33
- defining field length 21
- defining messages 58
- defining numeric fields 22
- deleting fields and constants 13, 53
- deleting multiple fields 23
- designing on 45
- displaying field information 19
- entering system commands 26
- moving constants 51
- moving fields 46, 51
- moving fields and constants 13
- multiple changes 15
- printing the work screen image 60
- specifying condition indicators on Condition Work Screen 26
- specifying display attributes 15
- subfile display 68
- symbols
  - list of symbols 19
  - moving multiple-field modes 19
  - moving single-field modes 19
  - using 31
- user-defined fields 57

**Work with Display Records display 30**





---

# Communicating Your Comments to IBM

AS/400  
Application Development ToolSet  
for AS/400  
Screen Design Aid  
Version 4  
Publication No. SC09-2604-00

If there is something you like—or dislike—about this book, please let us know. You can use one of the methods listed below to send your comments to IBM. If you want a reply, include your name, address, and telephone number. If you are communicating electronically, include the book title, publication number, page number, or topic you are commenting on.

The comments you send should only pertain to the information in this book and its presentation. To request additional publications or to ask questions or make comments about the functions of IBM products or systems, you should talk to your IBM representative or to your IBM authorized remarketer.

When you send comments to IBM, you grant IBM a nonexclusive right to use or distribute your comments in any way it believes appropriate without incurring any obligation to you.

If you are mailing a readers' comment form (RCF) from a country other than the United States, you can give it to the local IBM branch office or IBM representative for postage-paid mailing.

- If you prefer to send comments by mail, use the RCF at the back of this book.
- If you prefer to send comments by FAX, use this number:
  - United States and Canada: 416-448-6161
  - Other countries: (+1)-416-448-6161
- If you prefer to send comments electronically, use the network ID listed below. Be sure to include your entire network address if you wish a reply.
  - Internet: [torrcf@ca.ibm.com](mailto:torrcf@ca.ibm.com)
  - IBMLink: [toribm\(torrcf\)](mailto:toribm(torrcf)@ca.ibm.com)
  - IBM/PROFS: [torolab4\(torrcf\)](mailto:torolab4(torrcf)@ca.ibm.com)
  - IBMMAIL: [ibmmail\(caibmwt9\)](mailto:ibmmail(caibmwt9)@ca.ibm.com)

---

# Readers' Comments — We'd Like to Hear from You

**AS/400**  
**Application Development ToolSet**  
**for AS/400**  
**Screen Design Aid**  
**Version 4**  
**Publication No. SC09-2604-00**

**Overall, how satisfied are you with the information in this book?**

	Very Satisfied	Satisfied	Neutral	Dissatisfied	Very Dissatisfied
Overall satisfaction	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**How satisfied are you that the information in this book is:**

	Very Satisfied	Satisfied	Neutral	Dissatisfied	Very Dissatisfied
Accurate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Complete	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Easy to find	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Easy to understand	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Well organized	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Applicable to your tasks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Please tell us how we can improve this book:**

Thank you for your responses. May we contact you?  Yes  No

When you send comments to IBM, you grant IBM a nonexclusive right to use or distribute your comments in any way it believes appropriate without incurring any obligation to you.

\_\_\_\_\_  
Name

\_\_\_\_\_  
Address

\_\_\_\_\_  
Company or Organization

\_\_\_\_\_  
Phone No.



Fold and Tape

Please do not staple

Fold and Tape

PLACE  
POSTAGE  
STAMP  
HERE

IBM Canada Ltd. Laboratory  
Information Development  
2G/345/1150/TOR  
1150 EGLINTON AVENUE EAST  
NORTH YORK ONTARIO CANADA M3C 1H7

Fold and Tape

Please do not staple

Fold and Tape





Program Number: 5769-PW1



Printed in the United States of America  
on recycled paper containing 10%  
recovered post-consumer fiber.

SC09-2604-00

