## 

@server
iSeries
Control Language (CL)

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## Control language (CL)

Control language (CL) allows system programmers and system administrators to write programs using operating system commands and other IBM-supplied commands.

## "What's new for V5R2"

Select this link to find out about major CL changes for V5R2.

## "Print these topics" on page 2

Select this link to print groups of CL commands or concepts.
"CL_ command finder" on page 3
Select this link to access the CL command finder, a tool that allows you to search for CL commands by name or description. You can even display an alphabetic list of all commands, all new commands, or all changed commands.

## "Alphabetic listing of commands" on page 3

Select this link to display an alphabetic list of all commands by description.
"Cl_ concepts and reference" on page 44
This topic describes the underlying concepts that you need to understand to effectively work with CL commands.

ERelated Information for CL" on page 199
This topic provides a list of manuals and other information of interest.

## What's new for V5R2

The following lists information that is new to the Control Language (CL) topic in the Information Center for V5R2. To print CL information, including command descriptions, see "Print these topics" on page 2 .

Following is a list of new object types and new system values.

## New Object Types

The following object type is new in the OS/400 licensed program for Version 5 Release 2 Modification 0 (V5R2M0):

- *IMGCLG (Image catalog)


## New and Changed Commands

Select the CL command finder link in the Information Center left navigation bar to access the CL command finder, a tool that allows you to search for CL commands by name or description. You can display an alphabetic list of commands, all new commands, or all changed commands.

The following products' commands have been added to the Information Center for Version 5 Release 2 Modification 0 (V5R2M0):

- System Manager (product ID 5722SM1)
- Managed System Services (product ID 5722MG1)

To find other information about what's new or changed this release, see the Memo to Users

## How to see what's new or changed:

To help you see where technical changes have been made to the CL information, this information uses:

- The

》
image to mark where new or changed information begins.

- The
<
image to mark where new or changed information ends.
In addition to the information about new or enhanced function listed above, the CL topic provides the following enhancements:
- A new CL command finder was added to make it easy to locate CL commands by description or by name.
- CL concepts and reference information was restructured for easier navigation.

To find other information about what's new or changed this release, see the Memo to Users .

## Print these topics

The following links provide the PDF versions of the basic CL information, as well as the CL commands. (For information about printing command information from your server, see "Printing command descriptions an the server" on page 199).

The PDF versions of the commands do not contain syntax diagrams, but they can be seen and printed from the HTML. To view or download a PDF, select one of the following links:

| CL Topic | $\begin{aligned} & \text { Page Count/ } \\ & \text { KB } \end{aligned}$ |
| :---: | :---: |
| Control_language (basic CL information) | 200/634 |
| Commands ADDACC - ADDPRBSIT | 322/804 |
| Commands ADDPRDCROA - CHGCLURCY | 244/628 |
| Commands CHGCRG - CHGFWLM | 316/756 |
| Commands CHGFTR - CHGNODGRPA | 356/885 |
| Commands CHGOBJIAUD - CHGTCPDMN | 338/820 |
| Commands CHGTCPHTF - CPYFRMIMPR | 210/556 |
| Commands CPYFRMPCD - CRTDEVSNU | 356/867 |
| Commands CRTDFVTAP - CRTPTFPKG | 422/1061 |
| Commands CRTOMFORM - DITJRN | 184/510 |
| Commands DLTJRNRCV - DSPAUTUSR | 124/383 |
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| Commands MRGTCPHT - QRYTIEB | 310/794 |
| Commands RCVDST - RMVLANADPT | 156/459 |
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| Commands RST - RUNRMTCMD | $262 / 659$ |
| :--- | :--- |
| Commands RUNSOLSTM - STRCLUNOD | $312 / 789$ |
| Commands STRCRG - STRUSA | $154 / 425$ |
| Commands SBMCRO - WRKDEVD | $188 / 511$ |
| Commands WRKDFVTBL - WRKINK | $100 / 315$ |
| Commands WRKOB.ILCK - WRKTAPCTG | $104 / 313$ |
| Commands WRKTCPSTS - WRKWTB | $10 / 70$ |

## Saving PDF files

To save a PDF on your workstation for viewing or printing:

1. Right-click the PDF in your browser (right-click the link above).
2. Click Save Target As...
3. Navigate to the directory in which you would like to save the PDF.
4. Click Save.

## Downloading Adobe Acrobat Reader

If you need Adobe Acrobat Reader to view or print these PDFs, you can download a copy from the Adobe Website (www.adobe.com/products/acrobat/readstep.html)

## CL command finder

Use the CL command finder to find information about control language commands. You can search for CL commands or show a list of all the CL commands.

## Alphabetic listing of commands

CL_command finderl Select this link to access the CL command finder, a tool that allows you to search for CL commands by name or description. You can even display an alphabetic list of all commands, all new commands, or all changed commands.


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## CL concepts and reference

This section describes concepts and provides reference information you may need when using Control Language (CL) commands.

- "Commands" on page 45
- "OS/400 objects" on page 137

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- "Commonly used parameters: Expanded descriptions" on page 144
- "Database and device files used by CL commands" on page 173
- "Printing command descriptions on the server" on page 199


## Commands

You can use Control Language (CL) commands to request system functions. See the following for command concepts.

- "Command names"
- "Commands operating_on_OS/400_objects
- "Commands operating_on multiple objects" on page 46
- "Command description format" on page 46
- "Syntax diagram format" on page 47
- "command parts" on page 57
- "CL programs" on page 71
- "Command definition statements" on page 87
- "Parameter values used for testing and debugging" on page 134


## Command names

Most command names consist of a combination of the verb and the object being acted on: (command = verb + object acted on). For example, you can create, delete, or display a library; so the verb abbreviations CRT, DLT, and DSP are joined to the abbreviation for library, LIB. The result is three commands that can operate on a library: CRTLIB, DLTLIB, and DSPLIB.

The conventions for naming the combination verb and object commands are as follows:

- The primary convention (as just shown) is to use three letters from each word in the descriptive command name to form the abbreviated command name that is recognized by the system.
- The secondary convention is to use single letters from the ending word or words in the command title for the end of the command name, such as the three single letters DLO on the DLTDLO (Delete Document Library Object) command.
- An occasional convention is to use single letters in the middle of the command name (usually between commonly used three-character verbs and objects), such as the letters CL in the CRTCLPGM (Create CL Program) command.

Some command names consist of the verb only, such as the MOV (Move) command, or an object only, such as the DATA (Data) command.

For a complete list of all abbreviations used in command (and keyword) names, see the Object Types Used by Commands Containing the OBJTYPE Parameter (Table 8 Object Types Used by Commands Containing the OBJJTYPF Parameter" on page 160) table.

A few commands have an OS/400 command name, and can also be called using one or more alternate names that may be familiar to users of systems other than the OS/400 system. An alternate name is known as an alias, such as the name CD is an alias for the CHGCURDIR (Change Current Directory) command. Aliases are presented in this topic with either the complete command description of the OS/400 command, or with a reference to the command name that presents the complete command description.

## Commands operating on OS/400 objects

Each of the OS/400 object types has a set of commands that operates on that object type. Most OS/400 object types have commands that perform the following actions:

- Create (CRT): Creates the object and specifies its attributes.
- Delete (DLT): Deletes the object from the system.
- Change (CHG): Changes the attributes and/or contents of the object.
- Display (DSP): Displays the contents of the object. Display commands cannot be used to operate on objects.
- Work with (WRK): Works with the attributes and/or contents of the object. Unlike display commands, work commands allow users to operate on objects and modify applications.

For additional information, see "Commands_operating_on_multiple_objects".

## Commands operating on multiple objects

In addition to the commands that operate on single object types, there are commands that operate on several object types. These commands are more powerful because they can operate on several objects of different types at the same time. For example:

- Display object description (DSPOBJD): Displays the common attributes of an object.
- Move object (MOVOBJ): Moves an object from one library to another.
- Rename object (RNMOBJ): Specifies the new name of an object.
- Save object (SAVOBJ): Saves an object and its contents on diskette, tape, optical media, or in a save file.
- Restore object (RSTOBJ): Restores a saved version of the object from diskette, tape, optical media, or from a save file.

The following table shows the commands that perform an action on many of the object types. Some of the commands, such as the Move Object (MOVOBJ) command, operate on only one object at a time, but that object can be any one of several OS/400 object types. For example, the MOVOBJ command can move a file or a job description.

## Table 1. Commands Operating on Multiple Object Types

| Item | Identifier | Actions |
| :--- | :--- | :--- |
| Object | OBJ | ALC, CHK, CPR, DCP, DLC, DMP, MOV, RNM, RST, SAV, WRK, CRTDUP, <br> SAVCHG |
| Object Access | OBJACC | SET |
| Object Auditing | OBJAUD | CHG |
| Object Authority | OBJAUT | DSP, EDT, GRT, RVK |
| Object Description | OBJD | DSP |
| Object Integrity | OBJITG | CHK |
| Object Lock | OBJLCK | WRK |
| Object Owner | OBJOWN | CHG, WRK |
| Object Primary Group | OBJPGP | CHG, WRK |

You can also can refer to the Object Types Used by Commands Containing the OBJTYPE Parameter "Table 8 Obiect Types Used_by Commands Containing_the_OBJTYPF Parameter" on page_160) table in "OBJTYPE parameter" on page 159 to see how these multiple-object commands affect specific object types.

For additional information, see "Commands operating on OS/400 objects" on page 45.

## Command description format

Each command description follows the same format and includes the parts discussed in the following paragraphs.

It should be noted that, because a command is an iSeries 400 object, each command can be authorized for specific users or authorized for use by the public (all users authorized in some way to use the system). Because this is true for nearly every command, it is not stated in each command description. The iSeries

Security Reference book, contains additional information about IBM-supplied user profiles and the commands authorized for each.

## Command syntax

The command syntax is presented in the syntax diagram. The syntax diagram shows all the parameters and values that are valid for the command. The parameters are divided into two groups: those that must be coded (required), and those that need not be coded (optional). Default values are indicated by their position above the base line. These default values are used by the system for parameters or parts of parameters that are not coded.

The ESyntax diagram format topic provides an detailed, in-depth discussion of command syntax.

## Command description

The general description of the command (under the heading "Purpose") briefly explains the function of the command and any relationships it has with a program or with other commands. If there are restrictions on the use of the command, they are described under the heading "Restrictions."

## Parameter descriptions

Parameter descriptions in the text are presented in the same order as in the syntax diagram. The syntax diagram shows the order in which the parameters must be specified if the values are specified in positional form (that is, without keywords). If a parameter has more than one value, the values are described in the same order as shown in the syntax diagram. The default value, if there is one, is always first and is shown as an underlined heading at the beginning of the text that describes the value.

The description of each parameter explains what the parameter means, what it specifies, and the dependent relationships it has with other parameters in the command. When the parameter has more than one value, the information that applies to the parameter as a whole is covered first, then the specific information for each of the values is described after the name of each value.

## Command coding examples

Each command description with parameters shows at least one coded example. Where necessary, several examples are provided for commands with many parameters and several logical combinations.

For clarity, each example is coded in keyword form only. The same examples could be coded either in positional form or in a combination of keyword and positional forms.

## Additional command considerations

A section called "Additional Considerations" follows the coded examples of some commands to present additional useful information about the command.

## Syntax diagram format

Syntax diagrams for each command show how you enter the command and its parameters and values in programs, in batch, or interactively on the command line.

See the following topics for information about syntax diagram format.

- "How to read syntax diagrams' briefly describes the basic rules you need to read syntax diagrams.
- "How syntax diagrams show command structure" on page 49 describes in more detail how syntax diagrams reflect CL command structure.
- "Syntax diagram_rules" nopage 4.9 provides both the rules, along with a graphic depiction, for syntax diagrams.

To view the syntax diagram for a specific command, see the Alphabetic_list_of_Commands or the command finder" on page 3 topic(s) in the navigation bar.

## How to read syntax diagrams

Syntax diagrams show the parameters and values used by each CL command. Each syntax diagram specifies, for one command, the parameters that can be coded in the command and the choice of values that are valid for each parameter. Refer to "How syntax diagrams show command structure" on page 49 for a more detailed description of syntax diagrams and how they reflect command structure. The following list describes the individual pieces of a syntax diagram and how to read them:

- Start here $\gg$ - and end here $-><$. This line with the starting and ending arrows is considered the syntax base line.
- When a parameter keyword is entered, its predefined value (values beginning with * or Q), or user-defined value must be entered with parentheses as shown below:

```
>>-KEYWORD(----+-*VALUE1------------+--)---------------------------
    +-*VALUE2------------+
    '-user-defined-value-'
```

- Required parameters must be specified. They are presented with the parameter keyword on the base line.
Optional parameters do not have to be entered. They are represented with the parameter keyword below the base line.
In this sample, you must enter KEYWORD1 with a value, but you do not have to enter KEYWORD2.

```
>>-KEYWORD1(--+-*VALUE1-+---)---------------------------------------
    '-*VALUE2-'
>-----+--------------------------------------------------------
    '-KEYWORD2(--+-*VALUE1---+---)--'
    '-any-value-'
```

- Default values do not have to be entered. They are used when you do not specify a parameter. In this sample, you can enter *VALUE1, *VALUE2, or nothing. If you enter nothing, *VALUE1 is assumed.

```
>>-+--------------------------+---------------------------------
    |
```

- Repeated values can be specified for some parameters. In this sample, the arrow moving from the right of the values, over the top of the values, and down the left of the values to the arrowhead, indicates that the values inside the path of the arrow can be repeated. The accompanying footnote indicates the maximum number of times that values can be specified (10 times).



## Note:

1. A maximum of 10 repetitions can be specified.

- Fragments allow you to label entire blocks of parameters or values and describe them in another section of the syntax diagram.
>>-KEYWORD(--| Fragment |---)--------------------------------------><
Fragment

```
    .-*VALUE1--.
|---+---------+--+-VALUE3------------------------------------------
    '-*VALUE2--' +-VALUE4-------+
    '-other-values-'
```


## How syntax diagrams show command structure

In addition to showing simple command structures such as parameter keywords and values, syntax diagrams also show more complicated command structures such as mutually exclusive parameters. The "Syntax diagram rules" section describes in more detail how the syntax diagrams show these command structures, and it shows the parameter syntax of a fictitious command named Sample Syntax Diagram (SMPSYNDGM).

## Syntax diagram rules

This sample syntax diagram shows several parameter structures and how those structures are represented on the syntax diagram. In addition, the sample syntax diagram contains additional information about the command, its parameters, and its values (such as where the command can be used, or whether it is threadsafe, see (1)). The rules on how to interpret this diagram follow this syntax diagram


The syntax diagrams for the CL commands are interpreted according to the following rules.

## (1) Entry Codes (Batch and Interactive)

The box insert in the upper right corner of each syntax diagram contains the entry codes that specify the environment in which the command can be entered. The codes indicate whether the command can be:

- Used in a job (outside a compiled program; Job:B and/or I). When used in this manner, the command is considered a separate entity inside the job, and is run by itself as a separate function in what is called the interpretive mode. That is, commands in batch mode and/or interactive jobs that are not in compiled programs are interpreted and run one at a time, one after the other. The function of one interpreted command in the job is completed before the next command is interpreted.
- Used in a compiled program (Pgm:B and/or I). In this case, the command is part of the program; the command is in compiled form with the rest of the program, and running the command depends upon when the program is called and upon the program's logic preceding the command. That is, a compiled command cannot be run unless the program it is in is run.
- Used in a CL ILE module only (Mod:B and/or I).
- Used in a REXX procedure (REXX:B and/or I). In this case, the command is part of the REXX procedure. Running the command depends upon when the REXX procedure is started with the Start REXX Procedure (STRREXPRC) command. That is, the command cannot be run unless the procedure containing it is started.

The explanations of the combinations of entry codes are shown in the following table:

## Table 9. Entry Codes (Batch and Interactive)

| Code | Representing <br> Job:B |
| :--- | :--- |
| Job:I | Interactive job |
| Job:B,I | Batch and interactive jobs |
| Pgm:B | Program, batch |
| Pgm:I | Program, interactive |
| Pgm:B,I | Program, batch and interactive |
| Mod:B | Module, batch |
| Mod:I | Module, batch and interactive |
| Mod:B,I | REXX, batch |
| REXX:B | REXX, interactive |
| REXX:I | REXX, batch and interactive |
| REXX:B,I | QCAPCMD and QCMDEXC processing |

## Meaning

Valid in batch input stream, external to compiled CL programs.
Valid for interactive entry, external to compiled CL programs.
Valid for batch and interactive entry, external to compiled CL programs.
Valid in a compiled CL program that is called from batch entry.
Valid in a compiled CL program that is called from interactive entry.
Valid in a compiled CL program that is called from batch or interactive entry.
Valid in a batch CL ILE module only.
Valid in an interactive CL ILE module only.
Valid in a CL ILE module that is called from batch or interactive entry.
Valid in a REXX procedure that is called from batch entry.
Valid in a REXX procedure that is called from interactive entry.
Valid in a REXX procedure that is called from batch or interactive entry.
Valid as a parameter on the CALL command; can be passed as a character string to the system programs QCAPCMD and QCMDEXC.

The box insert in the upper right corner of each syntax also indicates whether a command is threadsafe. Each command in this book has a threadsafe classification. The three types of threadsafe classifications are as follows:

- Threadsafe: Yes

This classification indicates that you can safely call the command simultaneously in multiple threads without restrictions. This classification also indicates that all functions called by this command are threadsafe.

- Threadsafe: Conditional

This classification indicates that not all functions provided by the command are threadsafe. The Restrictions section of the command provides information relating to thread safety limitations. Many commands are classified conditionally threadsafe because either some underlying system support is not threadsafe or the command can cause an exit point to be called. Some conditionally threadsafe commands may deny access under some circumstances. The command restriction section describes the conditions that cause the command to deny access.

- Threadsafe: No

This classification indicates that the command is not threadsafe and should not be used in a multithreaded program. While some thread unsafe commands may deny access, most thread unsafe commands do not. A diagnostic message, CPD000D, may be sent to the job log to indicate that a non-threadsafe command has been called. Whether or not the diagnostic message CPDOOOD is sent to the job log depends on the "multithreaded job action" attribute of the command; that attribute can be determined by using the Display Command (DSPCMD) command. The possible values and actions are:

- *SYSVAL - Action is based on system value QMLTTHDACN
- *RUN - Command runs. No messages are sent.
- *MSG - Diagnostic message CPD000D is sent to the job log. The command runs.
- *NORUN - Diagnostic message CPD000D is sent to the job log, and escape message CPF0001 is sent. The command does not run.

If the command is run, the results are unpredictable.

## (2) Command Name

The command name appears first in the diagram. In the sample syntax diagram, the name of the fictitious command is SMPSYNDGM.

## (3) Command Labels

The labels that may precede all coded commands are optional. Therefore, labels are not shown in the syntax diagrams. If used, a label must be followed by a colon (:) immediately after the last character in the label name.

## (4) Parameter Order

All parameters of the command are shown in the correct positional sequence up to the positional coding limit (see rule 12). The order goes left to right on each line and continues on the following line. To show the positional order of the parameters in the sample diagram, the representative parameter keyword names are named in alphabetic order, such as PARMA and PARMB. They are named in the same order in which they would have to be coded in positional form if this command actually existed.

Note: In the few cases where dependent parameter relationships are shown (see rule (19)), the positional parameter order may not be readily apparent. The parameter order may be specified in a note in the diagram, or it can be easily determined from the text where all parameters in the command are described in positional order.

When coding parameters in positional form, you must enter them in the order shown in the diagram. If you choose not to code a parameter and another positional parameter is coded after it, then you must enter * N to represent the uncoded parameter in the positional sequence.

Parentheses must be coded in each parameter that either has the keyword coded with its value (see rule (5)) or has multiple values in one parameter (see rule (17)).

## (5) Parameter Keywords

For each parameter, the keyword is always shown first, followed by the parameter values. Parameter keywords use uppercase letters; if you code them in lowercase, they will be changed to uppercase.

When a parameter is coded in keyword form, its associated values must be enclosed in parentheses as shown below:

This parameter is coded as follows:
PARMA(15)

## (6) User-Defined Values

User-defined values are shown with lowercase characters that describe the kind of value coded by the user. If more than one word is used to describe a single value, the words are connected by hyphens:
>>-PARMB(---message-identifier---)-------------------------------><

## (7) Choice of Values

For a parameter having a choice of values, only one of which can be specified (typed after the parameter keyword and enclosed in parentheses), the choices of values are shown on different branch lines that follow the parameter keyword (which is on the base line), as follows:

```
>>-PARMC(----+-*CHAR-+--)--------------------------------------------
    +-*DEC--+
    '-*LGL--'
```


## (8) Predefined Values

Predefined values are shown exactly as they must be coded. Predefined values usually begin with an * followed by all uppercase letters. ${ }^{*}$ CHAR and ${ }^{*}$ DEC are examples of predefined values. Predefined values can also begin with the letter Q. For example, an option for the SRCFILE parameter on the CRTCLPGM command is QCLSRC.

## (9) Optional Values

Optional values are shown by a blank line as shown below:


The blank line indicates that a value from the first group (which includes *LIBL, *CURLIB, and library-name) does not have to be entered as shown below:
PARMD (CLPGM)
If the blank line were missing, you would have to code the parameter as shown below:

```
PARMD(*LIBL/CLPGM) or
PARMD(*CURLIB/CLPGM) or
PARMD(MYLIB/CLPGM)
```


## (10) Default Values

If a parameter has a default value, it is indicated by its position above the base line. The value *LIBL (see (9)), is a default library qualifier on the PARMD parameter, and 00 is the default value on the PARMF parameter as shown below:

```
>>-+--------------------------------------------------------------------
    |
```

If 00 were not a default value, it would be shown as follows:

```
>>-+------------------------------------------------------------
    '-PARMF(--+-00------------+---)--'
    '-severity-code-'
```


## (11) Qualified Object Names

Qualified object names include the optional library qualifier followed by the object name. If the qualifier is not specified, the default (*LIBL in this case) is used. Usually, *LIBL is the default value for a qualified object name; it means the system is to search the library list associated with the job to find the object.

For PARMD, the syntax diagram shows that a name can be specified in qualified or unqualified form. See (9) for coded examples.

## (12) Positional Coding Limit and Key Parameter Limit

The point to which the command's parameters can be coded in positional form is indicated by a footnote number on the base line.

All parameters preceding the positional limit footnote can be coded without keywords (that is, in positional form); all parameters after the positional limit footnote must be coded with their keywords. If you attempt to code a parameter in positional form beyond this point, a syntax error will occur. When no parameters can be coded in positional form, a positional limit footnote either is not shown on the syntax diagram or it is shown directly following the command name.

A command can also have key parameters, which are the only significant parameters needed by the system to determine the actual values for other parameters on the command. Key parameters are the only parameters shown on the display when a user prompts for the command. After values are entered for the key parameters, the remaining parameters are shown with actual values instead of the default values (such as *SAME or *PRV).

Key parameters include all parameters preceding the key parameter limit, which is designated on the syntax diagram by a footnote number. If no key limit footnote is shown, or if it is shown directly following the command name, there are no key parameters on the command.

## (13) Optional Parameters and Required Parameters

Optional parameters do not have to be coded. Optional parameters are shown below the base line as follows:

```
>>-+---------------------------------+------------------------------><
    ' -PARME (--+-*BLANK---------+----)--'
    '-'message-text'-'
```

If this parameter were required, it would appear on the base line as follows:

```
>>-PARME(--+-*BLANK---------+---)----------------------------------
    '-'message-text'-'
```

In most cases, required parameters precede optional parameters on the syntax diagram.

## (14) Quoted Values

User-defined variables that must be enclosed in apostrophes are shown enclosed with apostrophes in the diagram. Apostrophes are shown where one or more special characters are normally expected to occur among alphanumeric characters.

The value specified for PARME requires apostrophes if more than one word is entered or if special characters are used. Blanks, such as between words, are not allowed in an unquoted character string. PARMJ requires apostrophes if a character other than an alphanumeric character is specified.

```
PARME('This is a quoted string')
PARME('10-24-78')
PARME(102478)
```

The first and second values require apostrophes because they have either blanks (spaces) or special characters (-). The third value is a date with no separator characters; therefore, apostrophes are not required.

## (15) Ordered List of Values

Ordered lists of values (that is, values that must be specified in a particular order) will be shown as follows:

Note: An ordered list of values can contain predefined values, see (17).
Both PARMG and PARMI show a list of two values that must be coded in the order shown when the parameter is coded. Parentheses are required around the list of values even if no keyword is used. PARMG and PARMI could be coded as:
PARMG(0 16) PARMI (1 9999)
(16) Unordered List of Values (with repetition)

A parameter that can have several values specified in no particular order (an unordered list of like values) is shown as follows:


## Notes:

1. A maximum of 3 repetitions.

The PARML parameter can be specified as one, two, or three of the values shown. As the syntax note shows, any combination of three values selected and a user-defined value can be specified in any order. The user-defined value could be any value allowed for that parameter. Any of the following could be coded:

```
PARML(*VALUE1 *VALUE3)
PARML(*VALUE3 *VALUE2 16)
PARML(16 3 12)
```

If PARML is not specified, the single value *NONE is the default used by the system. Note that if *NONE is specified, none of the other values can be specified.

## (17) Ordered List of Values (with repetition)

A parameter that can have more than one ordered list of values (a series of ordered lists) of values is shown below.


## Notes:

1. A maximum of 4 repetitions.

PARML can be specified as a single value (*NONE or *NO) or as a list of values, but not as both.
When PARML is coded as a list of values, the values must be specified in the order shown, and both elements in the list must be specified (in other words, *YES must always precede either a predefined or user-defined value). For example, PARML can be coded as follows (notice that two sets of parentheses are required for the elements):

```
PARML((*YES *VAL1))
PARML(*NONE)
PARML((*YES 50))
```

However, PARML cannot be coded as follows:

```
PARML((*NONE *VAL1))
PARML((*VAL1 *YES))
PARML(*VAL1)
PARML(*YES)
```

If repetition is used to specify more than one list of values for PARML, each list must be enclosed in parentheses. For example, three repetitions (the maximum for PARML) of lists of values could be coded as follows:
PARML((*YES *VAL2) (*YES *VAL1) (*YES 43))
Notice that a particular order is required for the elements in each list, but a particular order is not required for repeated lists. The value *YES must always precede the other values within the list, but (*YES *VAL1) does not have to be the first list specified for PARML.

For some commands, the second element is not required as shown below:

>-------------------------------------------------------------------------

## Notes:

1. A maximum of 3 repetitions.

Notice that in this example, that *NONE can be specified by itself, and the second element does not have to be specified. However, if the first element is coded by itself, the extra set of parentheses are required as shown below:

```
PARMQ((*NO) (*YES *VAL3) (*YES))
```


## (18) Ordered Lists of Values as Fragments

In this manual, fragments are used to show and reference long lists of values, as shown on (18) in the sample syntax diagram. If there are fewer than five elements, the structure shown for PARMN is used (see PARMN details on the sample syntax diagram). The structure of PARMN correctly shows that the elements must be coded in positional form. You cannot code *BLANK without coding the first three values or including the place holder, ${ }^{*} \mathrm{~N}$. The following could be entered:

```
PARMN(A)
PARMN(A B)
PARMN(A B GENVAL*)
PARMN(A *N GENVAL* *BLANK)
```

Note: You can use *N as a place holder.
However, the following would yield incorrect results because the elements are not coded in positional form.

```
PARMN(GENVAL* *BLANK)
PARMN (*BLANK)
PARMN(B 'User Object')
```

If a parameter contains five or more elements, the structure shown for PARMM is used (see PARMM details in the sample syntax diagram) because using the structure shown for PARMN for large numbers of elements makes the syntax diagram too complex. These elements are all shown as optional. However, they, like the elements in PARMN, must be coded in positional form.

Fragments can contain fragments as shown in PARMM details on the sample syntax diagram. PARMM details contains all of the PARMN details all of which must be specified in positional form.

## (19) Dependent Parameter Relationships

Some parameters or values have dependent relationships with other parameters or values. Parameters that depend on values are indicated by a footnote. Parameters that are mutually exclusive are shown in the example below:


## Notes:

1. PARMJ is required only when PARMI(*VALUE2) is specified.
2. PARMI and PARMK are mutually exclusive parameters; PARMI and PARMK cannot be coded on the same command. As the note shows, PARMJ is a dependent parameter which is valid only when *VALUE2 is specified for the PARMI parameter. Note that PARMJ cannot be specified if PARMK is specified. Also note that all of these parameters are optional because they appear below the base line.

## Command parts

This figure illustrates the parts of a command, which includes: command label (optional), command name (mnemonic), and one or more parameters. The parameter includes a keyword and a value.

## Parameter



CLRLIB


Command Name


For information about the parts of a command, see the following:

- "Command labelo
- "Command name'
- "Command parameters" on page 59

In addition, see the following for additional information about command coding:

- "Command syntax" on page 67
- "Command delimiters" on page 67
- "Command continuation" on page 69
- "Entering comments in commands" on page 69
- "Summary of general command coding rules" on page 70

For additional information about commonly used parameters, see Commonly used parameters: Expanded descriptions" on page 144.

## Command label

Command labels identify particular commands for branching purposes in a CL program. Labels can also be used to identify statements in CL programs that are being debugged. They can identify statements used either as breakpoints or as starting and ending statements for tracing purposes.

Typed just before the command name, the label can contain as many as 10 characters. The standard rules for specifying simple names (*SNAME) apply. The label, immediately followed by a colon and blanks (though not required), usually occurs between the colon and the command name. START: and TESTLOOP: are examples of command labels.

Command labels are not required, but a label can be placed on any command. Labels that are placed on commands that cannot be run (for example, the Declare CL Variable (DCL) command), the program branches to that label, the next command following the label is run. If the command following the label cannot be run, the program will move to the next command that can be run. Similarly, you can specify only one label on a line; if a command is not located on that line, the program will jump to the next command that can be run.

To specify multiple labels, each additional label must be on a separate line preceding the command as shown:
LABEL1:
LABEL2: CMDX
No continuation character (+ or -) is allowed on the preceding label lines.

## Command name

The command name identifies the function that will be performed by the program that is called when the command is run. The command name is an abbreviation of the command description. For example, the
name MOVOBJ identifies the CL command (Move Object) that moves an object from one library to another. Like other objects, a command name can be optionally qualified by a library name. See isimple and qualified object names" on page 139 for more information about object names.

For more information about how CL commands are named, see Kbject naming rules" on page 141.

## Command parameters

Most CL commands have one or more parameters that specify the objects and values used to run the commands. When a command is entered, the user supplies the command object name, the parameter keyword names, and the parameter values used by the command. The number of parameters specified depends upon the command. Some commands (like the DO (Do) command and the ENDBCHJOB (End Batch Job) command) have no parameters, and others have one or more.

The specification of a group of values on one parameter is described under Uist of values" on page 66.
In this topic, the word parameter usually refers to the combination of the parameter keyword and its value. For example, the Move Object (MOVOBJ) command has a parameter called OBJ that requires an object name to be specified. OBJ is the parameter keyword, and the name of the object is the value entered for the OBJ parameter.

See the following topics:

- "Required_optional_and key parameters"
- *Parameters in keyword and positional form
- "Parameter values" on page 60

Required, optional, and key parameters: A command can have parameters that must be coded (required parameters) and parameters that do not have to be coded (optional parameters). Optional parameters are usually assigned a system-defined default value if another value is not specified for the parameter when the command is entered.

A command can also have key parameters which are the only parameters shown on the display when a user prompts for the command. After values are entered for the key parameters, the remaining parameters are shown with actual values instead of the default values (such as *SAME or *PRV).

Note: Key parameters include all parameters preceding the key parameter limit, which is designated on the syntax diagram by the letter $\boldsymbol{K}$.

Parameters in keyword and positional form: You can specify parameters in CL using keyword (on bage 59) form, positional ( on page 59) form, or in a combination of the two.

## Parameters in keyword form

A parameter in keyword form consists of a keyword followed immediately by a value (or a list of values separated by blank spaces) enclosed in parentheses. You cannot use blanks between the keyword and the left parenthesis preceding the parameter value. You can place blanks between the parentheses and the parameter value. For example, LIB(MYLIB) is a keyword parameter specifying that MYLIB is the name of the library that is used in some way, depending upon the command in which this LIB parameter is used.

When command parameters are all specified in keyword form, they can be placed in any order. For example, the following two commands are the same:

```
CRTLIB LIB(MYLIB) TYPE(*TEST)
CRTLIB TYPE(*TEST) LIB(MYLIB)
```


## Parameters in positional form

A parameter in positional form does not have its keyword coded; it contains only the value (or values, if it is a list) whose function is determined by its position in the parameter set for that command. The parameter values are separated from each other and from the command name by one or more blank spaces. Because there is only one positional sequence in which parameters can be coded, the positional form of the previous CRTLIB (Create Library) command first example is:
CRTLIB MYLIB *TEST
If you do not want to enter a value for one of the parameters, the predefined value *N (null) can be entered in that parameter's position. The system recognizes * N as an omitted parameter, and either assigns a default value or leaves it null. In the previous CRTLIB command second example, if you coded * N instead of *TEST for the TYPE parameter, the default value *PROD is used when the command is run, and a production library named MYLIB is created with no public authority. The description of the CRTLIB command contains the explanation for each parameter.

Note: Parameters cannot be coded in positional form beyond the positional coding limit. If you attempt to code parameters in positional form beyond that point, the system returns an error message.

## Combining keyword and positional forms

A command may also have its parameters coded in a combination of keyword and positional forms. The following examples show three ways to code the Declare CL Variable (DCL) command.

Keyword form:
DCL VAR(\&QTY) TYPE(*DEC) LEN(5) VALUE(0)
Positional form:
DCL \&QTY *DEC 50
Positional and keyword forms together:
DCL \&QTY *DEC VALUE (0)
In the last example, because the optional LEN parameter was not coded, the VALUE parameter must be coded in keyword form.

I Note: You cannot specify parameters positionally after a parameter specified in keyword form.
For additonal information, see "Summary of general command coding rules" on page 70.
Parameter values: A parameter value is user-supplied information used during the running of a command. An individual value can be specified in any one of the following:

- "Constant value" on page 61 (its actual value): The types of constants are character string (includes names, date and hexadecimal values), decimal, and logical.
- "Variables" on page 65 name (the name of the variable containing the value): The types of variables are character string (includes names), decimal, and logical. Decimal and logical values must match the type of value expected for the parameter. Character variables can specify any type of value. For example, if a decimal value is expected, it can be specified by a character variable as well as by a decimal variable.
- "Expressions" on page 66 (the value used is the result of evaluating an expression): The types of expressions are arithmetic, character string, relational, and logical. Expressions can be used as a value for parameters in commands in CL programs only.
- "List of values" on page 66 (a list of values is one or more values that can be specified for a parameter): Not all parameters can accept a list of values. A list parameter can be defined to accept a specific set of multiple values that can be of one or more types. Values in the list must be separated by one or more blanks. Each list of values is enclosed by parentheses, indicating that the list is treated as a single
parameter. Parentheses are used even when a parameter is specified in positional form. To determine whether a list can be specified for a parameter, and what kind of list it can be, refer to the parameter description under the appropriate command description.

A parameter can specify one or a group of such values, depending on the parameter's definition in a command. If a group of values is specified, the parameter is called a list parameter because it can contain a list of values.

On commands with key and positional parameters, values can be specified in keyword form, positional form, or a combination of both forms. Parameter values must be enclosed in parentheses if any of the following conditions are true:

- A keyword precedes the value.
- The value is an expression.
- A list of values is specified.

Note: If only one value is specified for a list, no parentheses are required.
For additonal information, see "Summary of general command coding rules" on page 70.
Constant value: A constant value is an actual numeric value or a specific character string whose value does not change. Three types of constants can be used by the control language: character string (quoted or unquoted), decimal, and logical.

For more information about constant value, see the following:

- "Character string" on page 61
- "Decimal values" on page 64
- "Logical values" on page 64


## Character string

A character string is a string of any EBCDIC characters (alphanumeric and special) that are used as a value, including date and hexadecimal values. A character string can have two forms: quoted string or unquoted string. Either form of character string can contain as many as 5000 characters.

A quoted character string is a string of alphanumeric and special characters that are enclosed in apostrophes. For example, 'Credit limit has been exceeded' is a quoted character string.

The quoted string is used for character data that is not valid in an unquoted character string. For example, user-specified text can be entered in several commands to describe the functions of the commands. Those descriptions must be enclosed in apostrophes if they contain more than one word because blanks are not allowed in an unquoted string.

An unquoted character string is a string consisting of only alphanumeric characters and the special characters that are shown in the Unquoted String column in the Table 5 ( 0 n page 62). The table summarizes the main EBCDIC characters that are valid in unquoted and quoted character string values.
An $X$ in the last column indicates that the character on the left is valid; refer to the specific notes following the figure that indicate why the character is valid as described. The special characters allow the following to be unquoted character string values:

- Predefined values (* at the beginning)
- Qualified object names (/)
- Generic names (* at the end)
- Decimal constants (+, -- ., and ,)

Any of these unquoted strings can be specified for parameters defined to accept character strings. In addition, some parameters are defined to accept predefined values, names, or decimal values either singly or in combinations.

## Table 5. Quoted and Unquoted Character Strings

| Name of |  | Unquoted | Quoted |
| :---: | :---: | :---: | :---: |
| Character | Character | String | String |
| Ampersand | \& | See Note 5 | X |
| Apostrophe | , | See Note 7 | - |
| Asterisk (*) | * | See Notes 5, 6 | X |
| At sign | @ | X | X |
| Blank |  |  | X |
| Colon | : |  | X |
| Comma | , | See Note 1 | X |
| Digits | 0-9 | See Note 1 | X |
| Dollar sign | \$ | X | X |
| Equal | = | See Notes 5, 8 | X |
| Greater than | > | See Notes 5, 8 | X |
| Left parenthesis | ( | See Note 4 | X |
| Less than | < | See Notes 5, 8 | X |
| Letters (lowercase) | a-z | See Note 2 | X |
| Letters (uppercase) | A-Z | X | X |
| Minus | - | See Notes 1, 5 | X |
| Not | ᄀ | See Notes 5, 8 | X |
| Number sign | \# | X | X |
| Percent | \% |  | X |
| Period | . | See Notes 1, 11 | X |
| Plus | + | See Notes 1, 5 | X |
| Question mark | ? |  | X |
| Quotation marks | " " | See Note 10 | X |
| Right parenthesis | ) | See Note 4 | X |
| Semicolon | ; |  | X |
| Slash | 1 | See Notes 3, 5 | X |
| Underscore | - | See Note 9 | X |
| Vertical bar | 1 | See Notes 5, 8 | X |

## Notes:

1. An unquoted string of all numeric characters, an optional single decimal point (. or ,), and an optional leading sign (+ or -) are valid unquoted strings. Depending on the parameter attributes in the command definition, this unquoted string is treated as either a numeric or character value. On the CALL command or in an expression, this unquoted string is treated as a numeric value; a quoted string is required if character representation is desired. Numeric characters used in any combination with alphanumeric characters are also valid in an unquoted string.
2. In an unquoted string, lowercase letters are translated into uppercase letters unless the string is specified for a parameter that has the attribute CASE(*MIXED).
3. A slash can be used as a connector in qualified names and path names.
4. In an unquoted string, parentheses are valid when used to delimit keyword values and lists, or in expressions to indicate the order of evaluation.
5. In an unquoted string, the characters $+,-,{ }^{*}, /, \&, I, \neg,<,>$, and $=$ are valid by themselves. If they are specified on a parameter that is defined in the command definition with the EXPR(*NO) attribute, they are treated as character values. If they are specified on a parameter that is defined in the command definition with the EXPR(*YES) attribute, they are treated as expression operators.
6. In an unquoted string, the asterisk is valid when followed immediately by a name (such as in a predefined value) and when preceded immediately by a name (such as in a generic name). For further information on unquoted strings in expressions, see "Expressions" on page 66.
7. Because an apostrophe within a quoted string is paired with the opening apostrophe (delimiter) and is interpreted as the ending delimiter, an adjacent pair of apostrophes (") must be used inside a quoted string to represent an apostrophe that is not a delimiter. When characters are counted in a quoted string, a pair of adjacent apostrophes is counted as a single character.
8. In an unquoted string, the characters $<,>,=, \neg$, and I are valid in some combinations with another character in the same set. Valid combinations are: $<=,>=, \neg=, \neg>, \neg<,|I|<$,, and $\mid>$. If the combination is specified on a parameter that is defined in the command definition with the EXPR(*NO) attribute, it is treated as a character value. If it is specified on a parameter that is defined in the command definition with the EXPR(*YES) attribute, it is treated as an expression operator.
9. In an unquoted string, the underscore is not valid as the first character or when used by itself.
10. Quotation marks are used to delimit a quoted name.
11. A period is valid in a basic name, except as the first character.

The following are examples of quoted string constants:

| Constant | Value |
| :--- | :--- |
| '1,2,' | 1,2, |
| 'DON'T' | DON'T |
| '24 12 20' | $2412 \mathbf{2 0}$ |

The following are examples of unquoted strings:

| Constant | Meaning |
| :--- | :--- |
| CHICAGO | CHICAGO |
| FILE1 | FILE1 |
| *LIBL | Library list |
| LIBX/PGMA | Program PGMA in library LIBX |
| $\mathbf{1 . 2}$ | 1.2 |

More information and examples can be found in "Character string expressions" on page 79.

## Date values

A date value is a character string that represents a date. Its format is specified by the system value QDATFMT. The length of the date value varies with the format used and whether a separator character is used. For example, if no separator character is used, the length of a date in a Julian format is five characters, and the length of a date in a non-Julian format is six characters. If a separator character is used, the length will be greater. More information on system value QDATFMT is in the Work Management book.

The system value QDATSEP specifies the optional separator character that can be used when the date is entered. If a separator character is used, the date must be enclosed in apostrophes. For additional
information on system value QDATSEP, see the Work Management
book.

A date value can be specified for the parameters of type *DATE. A year value equal to or greater than 40 indicates a year from 1940 through 1999. A year value less than 40 indicates a year from 2000 through 2039. For additional information on parameter value *DATE, see the PARM statement description.

## Hexadecimal values

A hexadecimal value is a constant made up of a combination of the hexadecimal digits $A$ through $F$ and 0 through 9. All character strings except names, dates, and times can be specified in hexadecimal form. To specify a hexadecimal value, the digits must be specified in multiples of two, be enclosed in apostrophes, and be preceded by an X. Examples are: X'F6' and X'A3FE'.

Note: Care should be used when entering hexadecimal values in the range of 00 through $3 F$, or the value FF. If these characters are shown or printed, they may be treated as device control characters producing unpredictable results.

## Decimal values

A decimal value is a numeric string of one or more digits, optionally preceded by a plus (+) or minus (-) sign. A decimal value can contain a maximum of 15 digits, of which no more than nine can follow the decimal point (which can be either a comma or a period). Therefore, a decimal value can have no more than 17 character positions including the plus or minus sign and decimal point (if any). The following are examples of decimal values.


## Logical values

A logical value is a single character (1 or 0 ) enclosed in apostrophes. It is often used as a switch to represent a condition such as on or off, yes or no, and true or false. When used in expressions, it can be optionally preceded by *NOT or $\neg$. The following are examples of logical values:

| Constant | Value | Meaning |
| :--- | :--- | :--- |
| '0' | 0 | Off, no, or false |
| '1' | 1 | On, yes, or true |

## Floating-point constants

A floating-point constant is a representation of a number that consists of:

- A significand sign: The significand sign may be + or -. The significand sign is optional; it is assumed to be + if no sign is specified.
- A significand: The significand must contain a decimal point. The maximum number of digits that can be specified for the significand is 253 ; however, only the first 17 significant digits are used.
- An exponent character: The exponent character must be $E$.
- An exponent sign: The exponent sign must be + or -. The significand sign is optional; it is assumed to be + if no sign is specified.
- An exponent: The exponent must be an integer; numbers 0 through 9 are valid. The maximum number of digits that can be specified is three.

All floating-point constants are stored as double-precision values. No blanks are allowed between any of the parts of a floating-point constant, and the parts must be in the order listed above.

Three commands have parameters for which floating-point constants can be specified:

- Call Program (CALL) command: You can use the PARM parameter to pass a floating-point constant to a called program. Any program you call must receive a floating-point constant as a double precision value.
- Change Program Variable (CHGPGMVAR) command: You can use the VALUE parameter to change a floating-point variable in a program.
- Copy File (CPYF) command: You can use floating-point construction in the FROMKEY, TOKEY, and INCREL parameters to select which records are copied from a database file.

For more information about floating-point constants see the DDS Reference information in the Database and Filesystems topic from the left navigation bar.

Variables: A variable contains a data value that can be changed when a program is run. The variable is used in a command to pass the value that it contains at the time the command is run. The change in value can result if one of the following conditions occur: the value is received from a data area, a display device file field, or a message; the value is passed as a parameter; a Change Variable (CHGVAR) command is run in the program; or another program that is called changes the value before returning it.

The variable name identifies a value to be used; the name points to where the actual data value is. Because CL variables are valid only in CL programs, they are often called CL program variables or, simply, CL variables. CL variable names must begin with an ampersand (\&).

CL variables can be used to specify values for almost all parameters of CL commands. When a CL variable is specified as a parameter value and the command containing it is run, the current value of the variable is used as the parameter value. That is, the variable value is passed as if the user had specified the value as a constant.

Because it is generally true that CL variables can be used for most parameters of commands in CL programs, the command descriptions usually do not mention CL variables. For parameters that are restricted to constants only (such as in the DCL command), to CL variables only (such as all of the parameters of the Retrieve Job Attributes (RTVJOBA) command), or to specific types of variables (such as on the RTVJOBA or Retrieve Message (RTVMSG) command), the individual parameter descriptions specify those limitations. Otherwise, if the command is allowed in a CL program, CL variables can be used in place of a value, even with parameters that accept only predefined values. For example, a SAVE parameter having only predefined values of *YES and *NO can have a CL variable specified instead; its value can then be changed to *YES or *NO, depending on its value when the command is run.

A CL variable must contain only one value; it may not contain a list of values separated by blanks.
The value of any CL program variable can be defined as one of the following types:

- Character: A character string that can contain a maximum of 9999 characters. The character string can be coded in quoted or unquoted form, but only the characters in the string itself are stored in the variable.
- Decimal: A packed decimal value that can contain a maximum of 15 digits, of which no more than nine can be decimal positions.
- Logical: A logical value of ' 1 ' or ' 0 ' that represents on/off, true/false, or yes/no.


## If value is:

Name
Date or time
Character string
Numeric
Logical

## CL variable can be declared as:

Character
Character
Character
Decimal or character
Logical or character

Expressions: An expression is a group of constants or variables, separated by operators, that produces a single value. The operators specify how the values are combined to produce the single value or result. The operators can be arithmetic, character string, relational, or logical. The constants or variables can be character, decimal, or logical. For example, the expression ( $\& A+1$ ) specifies that the result of adding 1 to the value in the variable $\& A$ is used in place of the expression.

Character string expressions can be used in certain command parameters defined with EXPR(*YES) in CL programs. An expression can contain the built-in functions \%BINARY (or \%BIN), \%SUBSTRING (or $\%$ SST), and \%SWITCH, which are covered in detail in "Expressions in CL_commands" on page 78 The types of expressions and examples of each are described there.

List of values: A list of values is one or more values that can be specified for a parameter. Not all parameters can accept a list of values. A list parameter can be defined to accept a specific set of multiple values that can be of one or more types. Values in the list must be separated by one or more blanks. Each list of values is enclosed by parentheses, indicating that the list is treated as a single parameter. Parentheses are used even when a parameter is specified in positional form. To determine whether a list can be specified for a parameter, and what kind of list it can be, refer to the parameter description under the appropriate command description.

A list parameter can be defined to accept a list of multiple like values (a simple list) or a list of multiple unlike values (a mixed list). Each value in either kind of list is called a list element. List elements can be constants, variables, or other lists; expressions are not allowed.

- A simple list parameter accepts one or more values of the type allowed by a parameter. For example, (RSMITH BJONES TBROWN) is a simple list of three user names.
- A mixed list parameter accepts a fixed set of separately defined values that are in a specific order. Each value can be defined with specific characteristics such as type and range. For example, LEN(5 2 ) is a mixed list in which the first element (5) gives the length of a field and the second element (2) gives the number of decimal positions in that field.
- For many parameters defined to accept lists, predefined single values can be specified in place of a list of values. One of these single values can be the default value, which can be either specified or assumed if no list is specified for a simple or mixed list. To determine what defaults are accepted for a given list parameter, refer to the description of the parameter in the description of the command for which the parameter is defined and used.
Note: *N cannot be specified in a simple list, but it can be specified in a mixed list. Also, individual parameters passed on the CALL command cannot be lists.
- The maximum level of nesting of lists inside lists is three, including the first. These are indicated by three nested levels of parentheses.

The following are examples of lists:


The last two examples contain two lists nested inside a list: the first list contains values of A and B , and the second list contains values of 1 and 2 . The space between the two nested lists is not required. Blanks are the separators between the values inside each nested list, and the sets of parentheses group the nested values into larger lists.

Command syntax: Commands have the following general syntax. The brackets indicate that the item within them is optional; however, the parameter set may or may not be optional, depending upon the requirements of the command.
[//] [?] [label-name:][1ibrary-name/]command-name [parameter-set]

Note: The // is valid only for a few batch job control commands, such as the DATA command. The // identifies those types of commands sent to the spooling reader that reads the batch job input stream.

Command delimiters: Command delimiters are special characters or spaces that identify the beginning or end of a group of characters in a command. Delimiters are used to separate a character string into the individual parts that form a command: command label, command name, parameter keywords, and parameter values. Parameter values can be constants, variable names, lists, or expressions. The following diagram shows various delimiters for a command:


The following delimiters are used in the OS/400 control language:

- The colon (:) ends the command label, and it can be used to separate the command label from the command name.
- Blank spaces separate the command name from its parameters and separate parameters from each other. They also separate values in a list. Multiple blanks are treated as a single blank except in a quoted character string or comment enclosed in apostrophes. A blank cannot separate a keyword and the left parenthesis for the value.
- Parentheses ( ) are used to separate parameter values from their keywords, to group lists of values, and to group lists within lists.
- Slashes (/) connect the parts of a qualified name or the parts of a path name.
- For a qualified object name, the two parts are the library qualifier and the object name (LIBX/OBJA). Qualified object names are described in Simple and qualified object names.
- For a path name, the parts are the directory or directories searched and the object name ('/Dir1/Dir2/Dir3/ObjA').
- Either a period or a comma can be used as a decimal point in a decimal value (3.14 or 3,14 ). Only one decimal point is allowed in a value.
- Apostrophes specify the beginning and ending of a quoted character string, which is a combination of any of the 256 extended binary-coded decimal interchange code (EBCDIC) characters that can be used as a constant. For example, 'YOU CAN USE \$99@123.45 ()*></ and lowercase letters' is a valid quoted string that is a constant.
Because an apostrophe inside a quoted string is paired with the opening apostrophe (delimiter) and is interpreted as the ending delimiter, an apostrophe inside a quoted string must be specified as two apostrophes. A pair of adjacent apostrophes used this way is counted as a single character.
- A special character is used to separate a date into three parts: month, day, and year (two parts for Julian dates: year and day). The special characters that may be used as date separators are the slash $(/)$, the hyphen (-), the period (.), and the comma (,). The special character used to code as separators in a command date must be the same as the special character specified as the date separator for the
job. The Work Management
book contains more information on specifying job and system values.
- The characters /* and */ can indicate the beginning and ending of a comment, or can be used in a character string. To begin a comment, the characters /* must begin in the first position of the command, be preceded by a blank, or be followed by either a blank or an asterisk. If the characters /* or */ occur in a later position of a command, they will usually be enclosed in apostrophes and can represent, for example, all objects in the current directory for a path name. For more information on path names, see the Integrated File Systems topic.
- A question mark (?) preceding the command name indicates that the command is prompted. If the command is specified with a label, the question mark may either precede the label, or it may follow the label and precede the command name.
Within a CL program, when a question mark precedes a command name, a prompt display is presented. You can enter parameter values not specified on the command in the program.
Prompting characters may be put into a command in two forms. A single question mark (?) may be coded before the command name (either before or after the command label in a CL program) to cause the entire command to be prompted. Selective prompt characters (?? or ?*) may be coded before any parameter keyword to cause that parameter to be prompted when the command is run.
If a question mark is entered before the command name on the command entry display, the effect is the same as pressing the F4 (Prompt) key after the command is entered.
Within a CL program, when a question mark precedes the command name, a prompt display is presented. This display is of the same format as that presented when pressing the F4 key from the command entry display. Parameters of the command for which the program has coded values are shown for informational purposes, but the user cannot change the values supplied by the program. Parameters for which no value was coded are shown as input fields so you can enter values to be used in processing the command.

Selective prompting allows you to identify specific command parameters to be prompted. To call selective prompting, the characters ??, ?*, or ?- are coded immediately preceding the keyword name of the parameter(s) to be prompted. More information on prompting is available in the CL_Programming
book.
Selective prompting is not allowed with command string (*CMDSTR) parameters.
Note: Parameters of the command that are preceded by the characters ?* are shown, but you cannot change the values that are supplied by the program. Parameters preceded by the characters ?? are shown as input fields containing the values coded in the program or command defaults so you can enter or change the values used in processing the command. Parameters preceded by the characters ?- are omitted from the display. All selectively prompted parameters must be coded in keyword or keyword-with-value form. Several parameters may be selectively prompted within one command. When selective prompting is called, only keywords that are immediately preceded by the selective prompt characters are prompted. All other parameters are processed using the values as coded on the command or, if not coded, using command defaults.

Either form of prompting, but not both, is allowed on a single command in a CL program. If the character ? precedes the command name and selective prompt characters (except ?-) precede any keyword, an error message is returned and the program is not created.

For additonal information, see "Summary of generalcommand_coding_rules" on page 70.
Command continuation: Commands can be entered in free format. This means that a command does not have to begin in a specific location on a coding sheet or on the display. A command can be contained entirely in one record, or it can be continued on several lines or in several records. Whether continued or not, the total command length cannot exceed 20,000 characters. Either of two special characters, the plus sign (+) or the minus sign (-), is entered as the last nonblank character on the line to indicate that a command is continued. Blanks immediately preceding a + or - sign are always included; blanks immediately following a + or - in the same record are ignored. Blanks in the next record that precede the first nonblank character in the record are ignored when + is specified but are included when - is specified.

The + is generally useful between parameters or values. At least one blank must precede the sign when it is used between separate parameters or values. The difference between the plus and minus sign usage is particularly important when continuation occurs inside a quoted character string. The following example shows the difference:

```
CRTLIB LIB(XYZ) TEXT('This is CONT+
    INUED')
CRTLIB LIB(XYZ) TEXT('This is CONT-
    INUED')
For + : CRTLIB LIB(XYZ) TEXT('This is CONTINUED')
For - : CRTLIB LIB(XYZ) TEXT('This is CONT INUED')
```


## Notes:

- The minus sign causes the leading blanks on the next line to be entered.
- Use continuation characters + and - in CL programs only. An error occurs if + or - is used on a command entry display.
- The characters + and - are used for multiple-command examples, but not for single-command examples.

Entering comments in commands: Comments can be inserted either inside or outside a command's character string wherever a blank is permitted. However, because a continuation character must be the last nonblank character of a line (or record), comments may not follow a continuation character on the same line.

For readability, it is recommended that each comment be specified on a separate line preceding or following the command it describes, as shown here:

```
MOVOBJ OBJA TOLIB(LIBY)
    /* Object OBJA is moved to library LIBY. */
DLTLIB LIBX
    /* Library LIBX is deleted. */
```

Comments can include any of the 256 EBCDIC characters. However, the character combination */ should not appear within a comment because these characters end the comment. To begin a comment, the characters $/ *$ must be placed in the first position of the command, be preceded by a blank, or be followed by either a blank or an asterisk.

Summary of general command coding rules: This section contains a summary of general information needed to properly code CL commands.

## Delimiters

- Blanks are the basic separators between the parts of a command:
- Between command label and command name (not required, because the colon [:] is the delimiter).
- Between command name and first parameter, and between parameters.
- Between values in a list of values (not required between ending and beginning parentheses that enclose nested lists inside a list).
- Between the slashes and the name or label of some job control commands, like // DATA (not required).
- Blanks cannot separate a parameter's keyword from the left parenthesis preceding its values. When a keyword is used, parentheses must be used to enclose the values; blanks can occur between the parentheses and the values. For example, KWD( A ) is valid.
- Multiple blanks are treated as a single blank, unless they occur in a quoted string or a comment.
- A colon must immediately follow a command label. Only one label can be used on any command (LABEL1: DCLF).
- Apostrophes must be used to specify the beginning and end of a quoted character string. If a character string contains special characters, such as blanks, apostrophes are required. If an apostrophe must be used in the quoted string, two apostrophes must be entered consecutively to indicate that it is an apostrophe and not the end of the quoted string.
- Parentheses must be used:
- On parameters that are specified (coded) in keyword form
- To group multiple values in a single list, in a positional parameter, or around expressions
- To indicate a list (of none, one, or several elements) nested inside another list
- Sets of parentheses inside parentheses can be entered as long as they are paired, up to the maximum of five nested levels in logical expressions or three nested levels in lists of values.
- Comments can appear wherever blanks are permitted, except after a continuation character on the same line or record.
- A plus or minus sign at the end of a line indicates that the command is continued on the following line. Blanks following a + or - sign in the same record are ignored; blanks in the next record that precede the first nonblank character are ignored when + is specified and included when - is specified. One blank must precede the + sign when it is used between separate parameters or values.


## Parameters

- All required parameters must be coded.
- If an optional parameter is not coded, the system uses its default value if the parameter has one. In the syntax diagram of each command, default values are indicated by showing the default value above the line the keyword name is on. If no default value is indicated, the default varies (depending on other parameter values) and is described in the text, or the action taken does not require that parameter.
- Words or abbreviations specified in capital letters in the command and parameter descriptions must be coded as shown. This is true of all command names, the keywords of parameters (if used), and many parameter values. Lowercase letters not coded in quoted strings or in comments are translated to uppercase letters. Lowercase letters specified for values on parameters defined as CASE(*MIXED) are not translated to uppercase letters.
- If there are key parameters, the values for the key parameters must be entered on the prompt before the remaining parameters will be shown. Parameters preceding the key parameter footnote on the syntax diagram are key parameters.
- Parameters cannot be coded in positional form past the positional parameter footnote found in the syntax diagrams (if applicable). The order of positional coding is the order in which the parameters are presented in the syntax diagram and in the command description.


## Parameter Values

- The first character in all names must be an alphabetic character (A through Z, \$, \#, @, or a double quotation mark (")). Names must not exceed 10 characters (CL variable names and built-in function names can have 11 characters maximum, including the preceding \& or \% characters). In some commands, the names of objects can be specified in qualified form (library-name/object-name) or in path name form (directory-name/object name).
- Predefined values that begin with an asterisk can be used only for the purposes intended, unless they are included in comments or quoted strings. These include predefined parameter values (*ALL, for example), symbolic operators (*EQ, for example), and the null value (*N).
- In a CL program, a variable can be specified for all parameters, except where that is explicitly restricted. The user-specified value of the variable is passed as if it had been specified on the command.
- In a CL program, a character string expression can be specified for any parameter defined with EXPR(*YES). The resulting value of the expression is passed as if the value had been specified on the command.
- Null (omitted) values are specified with the characters *N, which mean that no value was specified and the default value, if one exists, should be used. * N is needed only when another value following the omitted value is being specified as a positional parameter or an element in a list.
- Either a comma or a period can be used to indicate a decimal point in a numeric value. The decimal point is the only special character allowed between digits in the numeric string; there is no delimiter for indicating thousands.
- When repetition is indicated for a parameter:
- A predefined value is not coded more than once in a series of values.
- As many user-defined values (like names or numeric limits) can be entered as there are different values or names, up to the maximum number of repetitions allowed. For example, if a syntax footnote states "A maximum of 20 repetitions," you can specify a maximum of 20 values.

Note: When you are using parameters that have the same name in different commands, the meaning of (and the values for) that parameter in each command may be somewhat different. Refer to the correct command description for the explanation of the parameter you are using. For some parameters, you can also refer to "Commonly used parameters: Expanded descriptions" on page 144 for both general information about a parameter and an expanded description of its values coded in commands.

## CL programs

A Control Langauge (CL) program is a progam that is created from source statements consisting entirely of control language commands.

See the following for concepts relating to CL programs:

- "CL_ character sets and values" on page 72
- "Naming_within_commands" on_page 74
- "Folder and_document names" on page 76
- "Expressions in CL commands" on page 78

CL character sets and values: This section explains the usage of the EBCDIC character sets, special characters, and IBM-defined fixed values called predefined values.

See the following:

- "Character sets"
- "Special_character use"
- "Predefined values" on page_74

Character sets: The control language uses the extended binary-coded decimal interchange code (EBCDIC) character set. For convenience in describing the relationship between characters used in the control language and those in the EBCDIC character set, the following control language categories contain the EBCDIC characters shown:

## Category

Alphabetic ${ }^{1}$
Numeric
Alphanumeric ${ }^{1,2}$
Special Characters

## Characters Included

26 letters (A through Z), \$, \#, and @
10 digits (0-9)
A through Z, 0 through $9, \$$, \#, @, period (.), and underscore (__)
All other EBCDIC characters (for those having special uses in CL, see "Special character use")

## Note:


#### Abstract

1 Lowercase letters (a through z) are accepted, but they are translated into the corresponding uppercase letters by the system except when they are included within a quoted character string or a comment, or they are specified for a value on a parameter that has the character (*CHAR) or the path name (*PNAME) attribute for its TYPE parameter and the mixed case (*MIXED) attribute for its CASE parameter in the command definition.

2 The underscore (__) is an alphanumeric connector that can be used in iSeries 400 CL to connect words or alphanumeric characters to form a name (for example, PAYLIB__01). This use of the underscore might not be valid in other high-level languages.


The first three categories contain the characters that are allowed in quoted and unquoted character strings, in comments, and in CL names, such as in names of commands, labels, keywords, variables, and OS/400 objects. Special characters in the last category can only be used in quoted character strings and comments; they cannot be used in unquoted strings. However, some have special syntactical uses when coded in the proper place in CL commands. These uses are given in the "Special character use" chart.

Special character use: The following special EBCDIC characters are used by the CL in various ways. They are most frequently used as delimiters (which are covered in Delimiters under Command syntax ) and as symbolic operators in expressions.

For more information about symbolic operators, see:

- "Symbolic operators" on page 73
- the discussion about the types of expressions in the Operators in expressions" on page 82

Special characters can only be used in these special ways or inside quoted character strings or comments. The special characters, as shown in the following table, have assigned meanings when coded in control language commands:

## Delimiters

| Name | Symbol | Meanings <br> Apostrophe |
| :--- | :--- | :--- |
|  | Single apostrophe delimiters indicate the beginning and end of a quoted <br> character string (a constant). |  |


| Name <br> Begin and end <br> comment <br> Blank | Symbol <br> $/^{*}$ | Meanings <br> Indicates the beginning and end of a comment. |
| :--- | :--- | :--- |
| Colon <br> Comma | $b^{1}$ | Basic delimiter for separating parts of a command (label, command name, <br> and its parameters), and for separating values inside lists. <br> Ending delimiter for command labels. Separates parts of time values. |
| In many countries, used as decimal point in numeric values. Separates |  |  |
| parts of date values. |  |  |

## Notes:

1 Because this character does not resolve in the online version of this book, $b$ is used to represent a blank
space only when the character cannot be clearly explained in another manner.
2 Valid only when the job date separator value specifies the same character.
$3 \quad$ Valid only when the job time separator value specifies the same character.

## Symbolic operators

The following characters are used as symbolic operators in CL commands.

| Name | Symbol | Meanings |
| :---: | :---: | :---: |
| And | \& | Symbolic logical operator for AND. |
| Asterisk | * | Multiplication operator. Indicates a generic name when it is the last character in the name. Indicates OS/400 reserved values (predefined parameter values and expression operators) when it is the first character in a string. |
| Concatenation | $1>, \mid<$, and $\\|^{3}$ | Character string operator (indicates both values are to be joined). See "Expressions" on page 66 for more information on the differences between these concatenation operators. |
| Equal | = | Symbolic equal relational operator. |
| Greater than | > | Symbolic greater than relational operator. |
| Less than | < | Symbolic less than relational operator. |
| Minus (hyphen) | - | Subtraction operator, command continuation operator, and negative signed value indicator. Separates parts of date values. ${ }^{1}$ |
| Not | $\sim^{2}$ | Symbolic NOT relational operator. |
| Or | $1^{3}$ | Symbolic logical operator for OR. |
| Plus | + | Addition operator, command continuation character, and positive signed value indicator. |
| Slash | 1 | Division operator. Separates parts of date values. ${ }^{1}$ Used as the separator between parts of a qualified name. |

## Note:

1 Valid only when the job date separator value specifies the same character.
2 In some character sets, including the multinational character set, the character ^ replaces the $\neg$ character. Either ${ }^{\wedge}$ or *NOT can be used as the logical NOT operator in those character sets.
3 In some character sets, including the multinational character set, the character! replaces the I character. Either ! or *OR can be used as the logical OR operator, and either II or *CAT can be used as the concatenation operator in those character sets.

Note: The symbolic operators can also be used in combinations as listed in the chart under Operators in expressions in Expressions.

## Symbolic operators: Other uses

Symbolic operators can also be used in the following ways:

| Name | Symbol |
| :--- | :--- |
| Ampersand | $\&$ |
| Percent | $\%$ |
| Question mark | $?$ |

Meanings
Identifies a CL variable name when it is the first character in the string.
Identifies a built-in system function when it is the first character in the string.
Specifies a prompt request when it precedes a command name or keyword name.

Predefined values: Predefined values are IBM-defined fixed values that have predefined uses in the CL and are considered to be reserved in the OS/400 system. Predefined values have an asterisk (*) as the first character in the value followed by a word or abbreviation, such as *ALL or *PGM. The purpose of the * in predefined values is to prevent possible conflicts with user-specified values, such as object names. Each predefined value has a specific use in one or more command parameters, and each is described in detail in the command description.

Some predefined values are used as operators in expressions, such as *EQ and *AND. The predefined value * N is used to specify a null value and can be used to represent any optional parameter. A null value (*N) indicates a parameter position for which no value is being specified; it allows other parameters that follow it to be entered in positional form. To specify the characters * N as a character value (not as a null), the string must be enclosed in apostrophes ( ${ }^{*} \mathrm{~N}$ ) to be passed. Also, when the value ${ }^{*} \mathrm{~N}$ appears in a CL program variable at the time it is run, it is always treated as a null value.

Naming within commands: The type of name you specify in the OS/400 control language determines the characters you can use to specify a name. For certain types of names, there are restrictions on the use of certain characters to represent the name. Those types of names are *NAME, *SNAME, and *CNAME.

The *PNAME and *GENERIC list element or parameter types are only discussed briefly in this section.
Note: For a description of how to specify these names when you use command definitions to create commands, see the PARM (parameter) and ELEM (element) statements in "Command definition statements" on page 87 .

The characters allowed for the *NAME, *SNAME, and *CNAME names and the rules you use to specify them are shown in the table and descriptions that follow.

Table 10. Allowable Characters for *NAME, *SNAME, and *CNAME

| Type of Name | First Character | Other Characters | Min. Length | Max. Length |
| :--- | :--- | :--- | :--- | :--- |
| *NAME |  | A-Z, 0-9, \$, | 1 | 256 |
|  | A-Z, | \#, d, _, |  |  |


| Type of Name | First Character | Other Characters | Min. Length | Max. Length |
| :---: | :---: | :---: | :---: | :---: |
| *SNAME ${ }^{1}$ | $\begin{aligned} & \text { A-Z, } \\ & \$, \#, \\ & @ \end{aligned}$ | $\begin{aligned} & A-Z, 0-9, \\ & \$, \#, ~ ©, \end{aligned}$ | 1 | 256 |
| *CNAME ${ }^{1}$ | $\begin{aligned} & \text { A-Z, } \\ & \$, \#, \\ & \text { a } \end{aligned}$ | $\begin{aligned} & A-Z, 0-9, \\ & \$, \#, \mathrm{C} \end{aligned}$ |  |  |
| Quoted name ${ }^{2}$ | "3 | Any except blank, *, <br> ?, ', ", X'00'-X'3F', and X'FF' | 3 | 256 |

## Notes:

1 The system converts lowercase letters to uppercase letters.
2 Double quotes can only be used for basic names (*NAME).
$3 \quad$ Both the first and last characters must be a double quote (").
*NAME (Basic Name): Every basic name can begin with the characters A-Z, \$, \#, or @ and can be followed by up to nine characters. The remaining characters can include the same characters as the first but can also include numbers $0-9$, underscores (_), and periods (.). Lowercase letters are changed to uppercase letters by the system. Basic names used in IBM-supplied commands can be no longer than 10 characters. However, in your own commands, you can define parameters of type *NAME (specified on the TYPE parameter of the PARM or ELEM statements) with up to 256 characters.

Examples of basic names are shown below:
A987@.442\# ONE_NAME LIBRARY_0690 \$LIBX
Names can be entered in quoted or unquoted form. If you use the quoted form, the following rules and considerations also apply:
*NAME (Basic Name in Quoted Form): Every quoted name must begin and end with a quotation mark ("). The middle characters of a quoted name can contain any character except , *, ?, ', ", hex 00 through 3F, or hex FF, and is delimited by a slash. Quoted names allow you to use graphic characters in the name. The quoted form of basic names used in IBM-supplied commands can be no longer than 8 characters (not including the double quotes). In your own commands, you can define parameters of type *NAME in quoted form with up to 254 characters (not including the double quotes).

Note: Only basic names can be used in quoted form.
Examples of quoted names are shown below:
"A" "AA\%abc" "ABC\%\%abc"
When you use quoted names, you should be aware of certain restrictions:

- Code points in a name might not be addressable from all keyboards.
- Characters in a quoted name might not be valid in a high-level language.
- The System/38 environment supports only simple (*SNAME) names. If other characters are used, the objects cannot be accessed as System/38 environment objects.
- Names that are longer than eight characters cannot be accessed by the System/36 environment unless control language overrides are used.
- A Structured Query Language (SQL) name that contains a period must be specified in an SQL statement in quotation marks.

If a name enclosed in quotation marks is a valid unquoted basic name, the quotation marks are removed. Thus, "ABC" is equivalent to ABC. Because the quotation marks are removed, they are not included in the length of the name. "ABCDEFGHIJ" is, therefore, a valid name on IBM* commands even though it is longer than 10 characters.
*SNAME (Simple Name): Simple names are the same as unquoted basic names but with one exception: periods (.) cannot be used. Simple names are used for CL variables, labels, and keywords to simplify the syntax of the control language.

Some examples of simple names are as follows:
NEWCMD LIB_2
*CNAME (Communications Name): Communications names are the same as unquoted basic names with the following exceptions:

1. Periods (.) and underscores (_) cannot be used.
2. For IBM commands, *CNAME is limited to 8 characters.

An example of a communications name is shown below:
APPN3@®
Note: Because restricted character sets are sometimes used by other IBM systems, use caution when choosing names that use the special characters \#, \$, and @. These special characters might not be on the remote system's keyboard. The names that may be exchanged with the remote systems include the following:

- Network IDS
- Location names
- Mode names
- Class-of-service names
- Control point names

Folder and document names: Folder names should describe the contents of a folder. The names must be unique and should be easy to type, as well as descriptive to a user. To find a particular folder on the system and change a document stored in it, you must either supply the folder name or select it from a list of names.

Document names should describe the contents of the document. You should give careful consideration to the names you use to help you find the document later. The names must be unique in the folder and should be easy to type, as well as descriptive.

The name you use for a folder or a document must follow these rules:

- The name must be unique within a folder.
- A document or folder name can be 1 to 12 characters long, including an optional extension. If no extension is included, a document or folder name can have a maximum of eight characters. If an extension is included, the extension must start with a period and can have up to three additional characters. An extension in the document name allows you to identify the document by using specific information that can help you do a selective listing of documents on your system.


SKJ986.NT A.NOT

AB.TXT

- A document or folder name can include any single-byte EBCDIC character except for the following special characters that the system uses for other purposes:


## Character

Asterisk (*)
Slash (/)

Question Mark (?)

## Special uses

Multiplication operator, indicates generic names, and indicates OS/400 reserved values
Division operator, delimiter within system values, and separates parts of qualified object names
Initiates requests for system help

- When a folder is stored in another folder, both folder names are used, separated by a slash (/). That combination of names is called a folder path. For example, if a folder named FOLDR2 is stored in FOLDR1, the path for FOLDR2 is FOLDR1/FOLDR2. FOLDR1 is the first-level folder. FOLDR2 is the next-level folder. The name of a single folder can be 1 to 12 characters long, including an optional extension. A folder path can contain a maximum of 63 characters.
Folder names should not begin with $Q$ because the system-supplied folder names begin with $Q$. The following are examples of permitted folder names and folder paths:
@LETTERS
FOLDER.PAY
PAYROLL/FOLDER.PAY
\#TAX1/FOLD8.TAX/\$1988/PAYR0LL/FOLDER.PAY


## Notes:

1. In CL commands, folder path names must be enclosed in apostrophes to prevent the system from processing them as qualified (library/object) names. If an apostrophe is to be part of the name, it must be specified as two consecutive apostrophes.
2. A number of CL commands act on either documents or folders, and some act on both. The abbreviation DLO (document library object) is used when referring to either a document or folder.
3. In CL commands, folder and document names must be enclosed in apostrophes if they contain characters that are CL delimiters.
4. The system does not recognize graphic characters; it recognizes only code points and uses the following assumptions:

- All folder and document names are encoded using single-byte EBCDIC code pages. Since code points hex 41 through FE represent graphic characters in those code pages, they are the only code points that can be used in folder and document names.
- Code points hex 5C, 61, and 6F represent the asterisk (*), slash (/), and question mark (?) respectively, and cannot be used in folder and document names.
- The code points for lowercase letters in English (hex 81 through 89, 91 through 99, and A2 through A9) are converted to the code points for uppercase letters (C1 through C9, D1 through D9, and E2 through E9, respectively).

More information on code pages that are supported on the iSeries 400 is in Chapter 5 of the Local
Device Configuration book and in the description of the CRTDEVDSP (Create Device Description (Display)) command.

In addition to the folder and document names previously described, folders and documents are internally classified in the system by their system object names. These are 10-character names derived from date/time stamps, and, while they are generally not known to the user, they may be specified on some CL commands by specifying *SYSOBJNAM for the folder or document name and by specifying the system object name in a separate parameter.

For more information, see "Naming within commands" on page 74.
Expressions in CL commands: A character string expression can be used for any parameter, element, or qualifier defined with EXPR(*YES) in the command definition object. Any expression can be used as a single parameter in the Change Variable (CHGVAR) and If (IF) commands. An expression in its simple form is a single constant, a variable, or a built-in function. An expression usually contains two operands and an operator that indicates how the expression is to be evaluated. Two or more expressions can be combined to make a complex expression.

The following types of expressions are supported in CL programs:

- "Arithmetic expressions" on page_78(\&VAR + 15)
- "Character string_expressions" on page_79(SIX || TEEN)
- "Relational_expressions" on page 81 (\&VAR > 15)
- "Logical expressions" on page 81(\&VAR \& \&TEST)

A complex expression contains multiple operands, operators that indicate what operation is performed on the operands, and parentheses to group them. Only one operator is allowed between operands, except for the + and - signs when they immediately precede a decimal value (as a signed value), and the *NOT operator when it is used in a logical expression.

No complex expression can have more than five nested levels of parentheses, including the outermost (required) level.

Arithmetic and character string expressions can be used together in a complex expression if they are used with relational and logical operators; for example: $(A=B \&(1+2)=3)$. A pair of arithmetic expressions or a pair of character string expressions can be compared within a relational expression. Also, relational expressions can be used within a logical expression

## Arithmetic expressions

The operands in an arithmetic expression must be decimal constants or decimal CL variables. An arithmetic operator (only in symbolic form) must be between the operands. The results of all arithmetic expressions are decimal values, which may be stored in a CL variable.

Note: The division operator (/) must be preceded by a blank if the operand that precedes it is a variable name. (For example, \&A /2, not \&A/2.) All other arithmetic operators may optionally be preceded or followed by a blank.

Arithmetic operands can be signed or unsigned; that is, each operand (whether it is a numeric constant or a decimal CL variable) can be immediately preceded by a plus (+) or minus (-) sign, but a sign is not required. When used as a sign, no blanks can occur between the + or - and its value. For example, a decimal constant of 23.7 can be expressed as +23.7 or -23.7 (signed) or as 23.7 (unsigned).

The following are examples of arithmetic expressions:

```
(&A + 1)
(&A+&B -15)
(&A - &F)
(&A+&B-15)
(&A + (-&B))
```

If the last nonblank character on a line is a + or -, it is treated as a continuation character and not as an arithmetic operator.

## Character string expressions

The operands in a character string expression must be quoted or unquoted character strings, character variables, or the substring (\%SUBSTRING or \%SST) built-in function. The value associated with each variable or built-in function must be a character string. The result of concatenation is a character string.

There are three operators that can be used in character string expressions. These operators concatenate (or join) two character strings, but each has a slightly different function. They are:

- *CAT (concatenation, symbol II)
*CAT Operator
The *CAT operator concatenates two character strings. For example:
ABC *CAT DEF becomes ABCDEF
Blanks are included in the concatenation. For example:
'ABC ' *CAT 'DEF 'becomes 'ABC DEF,
- *BCAT (concatenation with blank insertion, symbol I>)
*BCAT Operator
The *BCAT operator truncates all trailing blanks in the first character string; one blank is inserted, then the two character strings are concatenated. Leading blanks on the second operand are not truncated. For example:
ABC *BCAT DEF becomes ABC DEF
'ABC' $*$ BCAT DEF becomes 'ABC DEF'
- *TCAT (concatenation with trailing blank truncation, symbol I<)
*TCAT Operator
The *TCAT operator truncates all trailing blanks in the first character string, then the two character strings are concatenated. All leading blanks on the second operand are not truncated. For example:
ABC *TCAT DEF becomes ABCDEF
'ABC' *TCAT DEF becomes 'ABCDEF'
ABC *TCAT, DEF' becomes 'ABC DEF'
'ABC '*TCAT, DEF' becomes 'ABC DEF'
All blanks that surround the concatenation operator are ignored, but at least one blank must be on each side of the reserved value operator (*CAT, *BCAT, or *TCAT). If multiple blanks are wanted in the expression, a quoted character string (a character string enclosed within apostrophes) must be used.

See the following examples for more information about character string expressions.

- "Example: Character string expressions"
- "Example: Using character strings and variables" on page 80


## Example: Character string expressions

The following are examples of string expressions. Assume the following variables:

| Variable | Value |
| :--- | :--- |
| $\& A A$ | 'GOOD |
| \&BB | 'REPLACEMENT, |


| Variable | Value |
| :--- | :--- |
| $\& C C$ | 'ALSO GOOD' |
| \&DD | 'METHOD' |

Expression
(\&AA || \&BB)
(\&AAll\&BB)
(\&AA *CAT \&BB)
(\&CC l> \&DD)
(\&CC *BCAT \&DD)
(A *CAT MOUSE)
('A ' *CAT MOUSE)
(FAST *CAT MOUSE)
('FAST ' *BCAT MOUSE)
('FAST ' *TCAT MOUSE)
('AB' *CAT 'CD')
('AB' *BCAT 'CD')
('AB' *TCAT 'CD')
(\%SST(\&AA 15 ) *CAT (\%SST(\&BB 3 5))
(\%SST(\&CC 19 ) *BCAT (\%SST(\&BB 3 5))
(\&AA *CAT ' ${ }^{\prime}$ TIME')
(\&CC *BCAT TIME)

Result
GOOD REPLACEMENT
GOOD REPLACEMENT
GOOD REPLACEMENT

ALSO GOOD METHOD
ALSO GOOD METHOD

AMOUSE
A MOUSE

FASTMOUSE
FAST MOUSE
FASTMOUSE

ABCD
$A B C D$
ABCD

GOOD PLACE
ALSO GOOD PLACE

GOOD TIME
ALSO GOOD TIME

Example: Using character strings and variables
The following example shows how several character variables and character strings can be concatenated to produce a message for a work station operator. The example assumes that the variables \&DAYS and \&CUSNUM were declared as character variables, not decimal variables.

```
DCL VAR(&MSG)TYPE(*CHAR) LEN(100)
    *
    *
CHGVAR &MSG ('Customer' *BCAT &CUSNAMD +
            *BCAT'Account Number' *BCAT +
            &CUSNUM *BCAT 'is overdue by' +
            *BCAT &DAYS *BCAT 'days.')
```

After the appropriate variables have been substituted, the resulting message might be:
Customer ABC COMPANY Account Number 12345
is overdue by 4 days.

If the variables \&DAYS and \&CUSNUM had been declared as decimal variables, two other CHGVAR commands would have to change the decimal variables to character variables before the concatenation could be performed. If, for example, two character variables named \&DAYSALPH and \&CUSNUMALPH were also declared in the program, the CHGVAR commands would be:
CHGVAR \&DAYSALPH \&DAYS
CHGVAR \&CUSNUMALPH \&CUSNUM

Then instead of \&DAYS and \&CUSNUM, the new variables \&DAYSALPH and \&CUSNUMALPH would be specified in the CHGVAR command used to concatenate all the variables and character strings for \&MSG.

For another example using character string expressions:

- "Fxample- Character string_expressions" on page_79


## Relational expressions

The operands in a relational expression can be arithmetic or character string expressions; they can also be logical constants and logical variables. Only two operands can be used with each relational operator. The data type (arithmetic, character string, or logical) must be the same for the pair of operands. The result of a relational expression is a logical value ' 0 ' or ' 1 '.

Refer to the table under "Operators in expressions" on page 82 for the meanings of the relational operators, which can be specified by symbols (=, >, <, >=, <=, ᄀ =, ᄀ>, ᄀ<) or their reserved values (*EQ, *GT, *LT, *GE, *LE, *NE, *NG, *NL).

If an operation involves character fields of unequal length, the shorter field is extended by blanks added to the right.

Arithmetic fields are compared algebraically; character fields are compared according to the EBCDIC collating sequence.

When logical fields are compared, a logical one ('1') is greater than logical zero ('0'). Symbolically, this is ('1' > '0').

The following are examples of relational expressions:

```
(&X *GT 25)
(&X > 25)
(&X>25)
(&NAME *EQ GSD)
(&NAME *EQ &GSD)
(&NAME *EQ 'GSD')
(&BLANK *EQ ' ')
```


## Logical expressions

The operands in a logical expression consist of relational expressions, logical variables, or constants, separated by logical operators. Two or more of these types of operands can be used in combinations, making up two or more expressions within expressions, up to the maximum of five nested levels of parentheses. The result of a logical expression is a ' 0 ' or ' 1 ' that can be used as part of another expression or saved in logical variables.

The logical operators used to specify the relationship between the operands are *AND and *OR (as reserved values), and \& and I (as symbols). The AND operator indicates that both operands (on either side of the operator) have to be a certain value to produce a particular result. The OR operator indicates that one or the other of its operands can determine the result.

The logical operator *NOT (or $\neg$ ) is used to negate logical variables or logical constants. All *NOT operators are evaluated before the *AND or *OR operators are evaluated. All operands that follow *NOT operators are evaluated before the logical relationship between the operands is evaluated.

The following are examples of logical expressions:

```
((&C *LT 1) *AND (&TIME *GT 1430))
(&C *LT 1 *AND &TIME *GT 1430)
((&C < 1) & (&TIME *GT 1430))
```

$((\& C<1) \&(\& T$ IME $>1430))$
( \& A *OR *NOT \&B)
(\&TOWN *EQ CHICAGO *AND \&ZIP *EQ 60605)
Two examples of logical expressions used in the IF command are:
IF \& A CALL PROG1
IF (\&A *OR \&B) CALL PROG1

## Operators in expressions

Operators are used in expressions to indicate an action to be performed on the operands in the expression or the relationship between the operands. There are four kinds of operators, one for each of the four types of expressions:

- Arithmetic operators (+, -, *, /)
- Character operator (||, |>, |<)
- Logical operators (\&, |, )
- Relational operators (=, >, <, >=, <=, =, >, <)

Each operator must be between the operands of the expression in which it is used; for example, ( $\& A+4$ ). Operators can be specified as a predefined value (for example, *EQ) or as a symbol (for example, =).

- All predefined value operators must have a blank on each side of the operator:
(\&VAR *EQ 7)
- Except for the division operator ( $/$ ), symbolic operators need no blanks on either side. For example, either $(\& V A R=7)$ or ( $\& V A R=7$ ) is valid.
Where the division operator follows a variable name, the division operator must be preceded by a blank. For example, ( $\& V A R / 5$ ) or ( $\& V A R / 5$ ) is valid; ( $\& V A R / 5$ ) is not valid.

The following character combinations are the predefined values and symbols that represent the four kinds of operators; they should not be used in unquoted strings for any other purpose.

Table 11. Predefined values and symbols representing the four kinds of operators

| Predefined Value | Predefined Symbol | Meaning | Type |
| :---: | :---: | :---: | :---: |
|  | + | Addition | Arithmetic operator |
|  | - | Subtraction | Arithmetic operator |
|  | * | Multiplication | Arithmetic operator |
|  | 1 | Division | Arithmetic operator |
| *CAT | $11{ }^{1}$ | Concatenation | Character string operator |
| *BCAT | $1>1$ | Blank insertion with concatenation | Character string operator |
| *TCAT | $1{ }^{1}$ | Blank truncation with concatenation | Character string operator |
| *AND | \& | AND | Logical operator |
| *OR | $\\|^{1}$ | OR | Logical operator |
| *NOT | $\neg^{2}$ | NOT | Logical operator |
| *EQ | = | Equal | Relational operator |
| *GT | > | Greater than | Relational operator |
| *LT | $<$ | Less than | Relational operator |
| *GE | >= | Greater than or equal | Relational operator |
| *LE | <= | Less than or equal | Relational operator |
| *NE | $\neg=2$ | Not equal | Relational operator |
| *NG | $7>_{2}$ | Not greater than | Relational operator |
| *NL | $\rightarrow<_{2}$ | Not less than | Relational operator |

Predefined Value Predefined Symbol Meaning Type
Notes:
Notes:

1 In some national character sets and in the multinational character set, the character I (hexadecimal 4F) is replaced by the character! (exclamation point). Either! or *OR can be used as the OR operator and either II or *CAT, !> or *BCAT, and !< or *TCAT can be used for concatenation in those character sets.
2
In some national character sets and in the multinational character set, the character $\neg$ (hexadecimal 5F) is replaced by the character *. Either * or *NOT can be used as the NOT operator in those character sets.

## Priority of operators when evaluating expressions

When multiple operators occur in an expression, the expression is evaluated in a specific order depending upon the operators in the expression. Parentheses can be used to change the order of expression evaluation. The following table shows the priority of all the operators used in expressions, including signed decimal values.

```
Priority Operators
1 signed (+ and -) decimal values, *NOT, ᄀ
2 *,/
+, - (when used between two operands)
*CAT, II, *BCAT, l>, *TCAT, l<
*GT, *LT, *EQ, *GE, *LE, *NE, *NG, *NL, >, <, =, >=, <=, ᄀ =, ᄀ >, ᄀ <
*AND, &
*OR, I
```

A priority of 1 is the highest priority (signed values are evaluated first); a priority of 7 is the lowest priority (OR relationships are evaluated last). When operators with different priority levels appear in an expression, operations are performed according to priorities.

When operators of the same priority appear in an expression, operations are performed from left to right within the expression. Parentheses can always be used to control the order in which operations are performed. The value of a parenthetical expression is determined from the innermost level to the outermost level, following the priorities stated above within matching sets of parentheses.

## Built-in functions for CL

CL provides the following built-in functions:

- "\%BINARY"
- "\%SUBSTRING" on page 85
- "\%SWITCH" n page 86
\%BINARY

The binary (\%BINARY) built-in function operates on a character string that is contained in a CL character variable.
\%BINARY or \%BIN can be used in expressions and as either operand (receiver) of the Change Variable (CHGVAR) command. See the CHGVAR command description for more information.

Note: The binary built-in function can also be used on command parameters that are defined as numeric (*DEC, *INT2 and *INT4) and EXPR(*YES) has been specified.

Sample \%BINARY syntax diagram

The syntax of the binary built-in function is:

```
>>-\&BINARY (-character-variable-name-+------------------------------------
    '-starting-position-+-2-+-'
    '-4-'
```

>---------------------------------------------------------------------

The binary built-in function treats the contents of the specified CL character variable, starting at the position specified for a length of 2 or 4 characters, as a signed binary integer.

When the binary built-in function is used with the VAR parameter on the CHGVAR command, the decimal number or arithmetic expression in the VALUE parameter is converted to a 2-byte or 4-byte signed binary integer. A decimal fraction is not included.

If the starting position and length are not specified, then a starting position of 1 and the length of the character variable specified is used. The length of the character variable must be declared as 2 or 4.

The following are examples of how the \%BINARY built-in function can be used.

## Example 1: Converting binary to decimal

```
DCL VAR(&N) TYPE(*DEC) LEN(3 0)
DCL VAR(&B2) TYPE(*CHAR) LEN(2) VALUE(X'0012')
CHGVAR &N %BINARY(&B2)
```

The content of character variable \&B2 is treated as a 2-byte signed binary number and is converted to its decimal equivalent of 18 . It is then assigned to the decimal variable $\& N$.

## Example 2: Converting decimal to binary

CHGVAR \%BIN(\&B2) \&N
The number contained in the decimal variable $\& N$ is converted to a 2 -byte signed binary number and is placed in the first and second bytes of the character variable \&B2.

## Example 3: Used within an arithmetic expression

CHGVAR \&N VALUE (\%BIN (\&B2) + 4)
The contents of character variable \&B2 is treated as a 2-byte signed binary integer and is converted to its decimal equivalent of 18 . The decimal number 4 is then added and the sum, 22 , is assigned to the decimal variable $\& N$.

## Example 4: Converting decimal to binary with truncation

CHGVAR \%BINARY (\&B2) VALUE (122.567)
The number 122.567 is truncated to the whole number 122 and is then converted to a 2 -byte signed binary integer and assigned to the character variable \&B2. Character variable \&B2 will then contain the hexadecimal equivalent of X'007A'.

## Example 5: Converting a negative number

DCL VAR(\&B4) TYPE (*CHAR) LEN(4)
CHGVAR \%BIN(\&B4) VALUE(-45)
The value -45 is converted to a 4-byte signed binary integer assigned to the character variable \&B4. Character variable \&B4 then contains the hexadecimal equivalent of X'FFFFFFFD3'.

## Example 6: Used on the IF command

IF COND (\%BIN(\&B4) *EQ 0) THEN(GOTO ENDIT)

The content of character variable \&B4 is treated as a 4-byte signed binary integer and is compared to the decimal number 0 . If they are equal, the command following the label ENDIT is run. If they are not equal, the command following the IF command is run.

## Example 7: Varying length character string to CPP

```
PGM PARM(&P ... )
    DCL VAR(&P) TYPE(*CHAR) LEN(202)
    DCL VAR(&L) TYPE(*DEC) LEN(5 0)
    DCL VAR(&C) TYPE(*CHAR) LEN(200)
        *
        *
        CHGVAR &L %BINARY(&P 1 2)
        CHGVAR &C %SST(&P 3 &L)
    *
    *
    *
ENDPGM
```

This program is the command processing program CPP for a command with a first parameter defined with the attributes $\operatorname{TYPE}\left({ }^{*} C H A R\right), \operatorname{LEN}(200)$ and VARY(*YES). The first two bytes of character variable \&P contain the length of the parameter as *INT2, a 2-byte signed binary integer. The character string specified on the command starts in position 3 of the variable \&P. The maximum length of the character string is 200 characters.

The first CHGVAR command retrieves the length from the first two character positions of variable \&P and treats the 2 bytes as a signed binary integer. The bytes are converted to the decimal equivalent of the signed binary integer, and are assigned to the decimal variable \&L.

The second CHGVAR command retrieves the contents of the parameter by making variable \&P a substring and assigning it to variable \&C.

## \%SUBSTRING

The substring built-in function operates on a character string that is contained in a CL character variable or in a local data area. \%SUBSTRING or \%SST can be used in expressions and as either operand (receiver) of the Change Variable (CHGVAR) command. For more information, see the description of the CHGVAR command. This built-in function can be coded as either \%SUBSTRING or \%SST.

## Sample \%SUBSTRING syntax diagram

The syntax of the substring built-in function is:

```
>>-\&SST (-+-*LDA-------------------+--starting-position--length---)->
    '-character-variable-name-'
```

This built-in function produces a substring from the contents of the specified CL character variable or local data area. The substring begins at the specified starting position in the value and continues for the length specified. For example:
\%SST(\&TEST 5 3)
In this example, a portion of the variable \&TEST is referenced. That position (or substring) is 3 characters long and begins with the fifth character position. If \&TEST contains ABCDEFGHIJ, the resulting substring will be EFG.

CL variables can also be used to specify the starting position and the length values in the function. For example:
CHGVAR \&X \%SST(*LDA \&B \&C)
The value of the character variable named $\& X$ is to be replaced by the value in the job's local data area, starting at the position obtained from variable \&B and continuing for the length specified by the value in \&C.
RTVJOBA SWS(\&JOBSWS)
CHGVAR VAR(\&CURSW4) VALUE (\%SST(\&JOBSWS 4 1))
In this example, the Retrieve Job Attributes (RTVJOBA) command is used to retrieve the current value of the job's eight job switches. The CHGVAR command is then used to extract the current value of the fourth job switch only and store it in the variable \&CURSW4. If the value of the eight job switches retrieved in \&JOBSWS is 10010000 , the second 1 would be stored in \&CURSW4.

## \%SWITCH

The built-in function \%SWITCH tests one or more of the eight job switches in the current job and returns a logical value of 1 or 0 . If every job switch tested by \%SWITCH has the value indicated, the result is a 1 (true); if any switch tested does not have the value indicated, the result is a 0 (false).

The 8-character mask is used to indicate which job switches are tested, and what value each switch is tested for. Each position in the mask corresponds with one of the eight job switches in a job. Position 1 corresponds with job switch 1, position 2 with switch 2, and so on. Each position in the mask can be specified as one of three values: 0,1 , or X .
$0 \quad$ The corresponding job switch is tested for a 0 (off).
1 The corresponding job switch is tested for a 1 (on).
$\mathbf{X} \quad$ The corresponding job switch is not tested.
The value in the switch does not affect the result of \%SWITCH.

## Sample \%SWITCH syntax diagram

The syntax of the switch built-in function is:
>>-\&SWITCH(--)--------------------------------------------------><
If \%SWITCH( $0 \times 111 \times \times 0$ ) is specified, job switches 1 and 8 are tested for 0 s, switches 3,4 , and 5 are tested for 1 s , and switches 2,6 , and 7 are not tested. If each job switch contains the value ( 1 or 0 only) shown in the mask, the result of \%SWITCH is true (1).

Function \%SWITCH can be used in the Change Variable (CHGVAR) and If (IF) commands. On the CHGVAR command, it can be used in place of a logical variable in the VALUE parameter. On the IF command, it can be used in the COND parameter as the logical expression to be tested.

The following two examples show how the same mask can be used to control a branch in a program (the IF command), or to set the value of a variable (the CHGVAR command).
IF COND (\%SWITCH (0X111XX0)) THEN(GOTO C)
CHGVAR VAR(\&A) VALUE(\%SWITCH(0X111XX0))
If job switches $1,3,4,5$, and 8 respectively contain $0,1,1,1$, and 0 respectively when $\%$ SWITCH( $0 \times 111$ XX0) is specified in the IF command, the result is true and the program branches to the command having label C. If one or more of the switches tested do not have the values indicated in the mask, the result is false
and the branch does not occur. If the same mask is used in the CHGVAR command and the result is true, the variable \&A is set to a ' 1 '; if the result is false, \&A is set to a ' 0 '. Note that \&A must be declared as a logical variable.

## Monitoring messages

Monitorable messages are those *ESCAPE, *STATUS, and *NOTIFY messages that can be issued by each CL command that can be used in a program. You can use this information to determine which messages you want to monitor for in your program.

Using the Monitor Message (MONMSG) CL command, you can monitor for one or more messages and then specify (on the MONMSG command) what action you want taken when any of those messages are issued by the commands(s) being monitored.

You can view the monitorable messages listed at the bottom of each command description by selecting a command from the Alphabetical listing of commands.

If you have a V4R2 or later system, you can refer to the online help for an individual command to obtain its monitorable message information. To view the online command help on an iSeries 400 computer, type the command name on a command line and press F1 (Help). The error message information follows the brief description of the purpose for the command.

Refer to Chapter 8 of the CL-Programming book for information concerning messages that are sent to the QSYSMSG queue.

Command definition statements: The OS/400 control program lets users define a command that calls a program to perform some function. Users can define commands by using a command definition statement. The defined command can include the following:

- Keyword notation parameters for passing data to programs
- Default values for omitted parameters
- Parameter validity checking so the program performing the function will have correct input
- Prompt text for prompting interactive users

For additional information about command definition statements, see the following:

- "Creating user-defined commands"
- "CMD (command) statement" on page 88
- "DEP (dependent) statement" on page 89
- "ELEM (element) statement" on page 91
- "PARM (Parameter) statement" on page 105
- "PMTCTL (Prompt Control) statement" on page 123
- "QUAL (Qualifier) statement" on page 125


## Creating user-defined commands

Users can define a command by entering command definition statements into a source file and running a Create Command (CRTCMD) command using the source file as input. One and only one Command (CMD) statement must be somewhere in the source file. A Parameter (PARM) statement must be provided for each parameter that appears on the command being created. If any special keyword relationships need checking, the Dependent (DEP) statement is used to define the relationships. The DEP statement can only refer to parameters that have been previously defined. These statements can appear in any order. See the

CL Programming
book for a complete description of how to use these statements to define a command.

Only one command can be defined in each source member in the source file. The CRTCMD command is run to create the command definition object from the command definition statements in one source file member. Other users can then be authorized to use the new command by the Grant Object Authority (GRTOBJAUT) command or the Edit Object Authority (EDTOBJAUT) command.

## Command definition statement descriptions

The command definition statement of each command contains one or more of the following command statements:

- "CMD (command) statement"
- "DEP (dependent) statement" on page 89
- "FIFM (element) statement" on page 91
- "PARM (Parameter) statement" on page 105
- "PMTCTL (Prompt Control) statement" on page 123
- "OUAL_(Qualifier)_statement" on_page_125


## CMD (command) statement

The Command (CMD) statement specifies the prompt text for the command being created. The prompt text is displayed at a work station when a user requests prompting while entering the command that is being defined. The CMD statement can be anywhere in the source file referred to by the Create Command (CRTCMD) command; one and only one CMD statement must be used in the source file, even if no prompt text is specified for the created command. The following syntax diagram shows the syntax for the CMD definition statement.

```
    .-*NONE--------------
>>-CMD--PROMPT--(--+-message-identifier-+---)----------------------
    '-'prompt-text'------'
```


## PROMPT Parameter

Specifies the prompt text, if any, that is included in the heading (title) of the prompt display for the command being defined. The prompt text further describes the name of the command. For example, in the CRTLIB prompt heading, "Create Library (CRTLIB)", the words Create Library would be specified as the prompt text in this PROMPT parameter.

Note: Prompt text for each of the parameters in this command can be specified in the PROMPT parameters of the PARM, ELEM, and QUAL command definition statements. They specify the prompt text for the parameters, just as the PROMPT parameter in the CMD statement specifies the prompt text for the command (in the heading).
*NONE: No prompt text is included in the displayed heading of the prompt when the command is being prompted.
message-identifier: Specify the message identifier that specifies the message, containing no more than 30 characters, for the prompt text that is shown when the command is being prompted. If a message having the specified identifier cannot be found in the message file specified in the PMTFILE parameter of the Create Command (CRTCMD) command, the message identifier itself is used as the prompt text.
'prompt-text': Specify the prompt text that is displayed during the command prompting. It must be a character string of no more than 30 characters, enclosed in apostrophes.

Note: Variables cannot be coded for this parameter.

## Example: CMD statement

CMD PROMPT (UCD0001)
This statement describes a command that is prompted with additional text in the display heading; the prompt text comes from the message identified by UCD0001.

The Dependent (DEP) statement defines a required relationship between parameters and parameter values that must be checked. This relationship can refer to either the specific value of a parameter or parameters or to the required presence of parameters.

If a parameter has a default value and the parameter is not specified, the checking differs depending on whether the DEP statement is performing a specification check or a relational check. If a specification check is made on an unspecified parameter (checking for the presence of a value for that parameter), the system assumes that no value was specified, and the default value is not used. If a relational check is made on an unspecified parameter, the default value is used as the parameter value. The following syntax diagram shows the syntax for the DEP definition statement.



$$
3-x_{1}
$$



## Notes:

1. Must not be defined as TYPE(*NULL).
2. Must not be defined as TYPE(*NULL) or PASSVAL(*NULL).
3. A maximum of 25 repetitions.

## CTL Parameter

Specifies the controlling conditions that must be true before the parameter dependencies defined in the PARM statement must be true. The first keyword specified identifies the controlling parameter. The controlling condition can be specified either by a keyword name only or by a keyword name and a test relationship that determines whether the controlling condition requires the presence of the parameters it is dependent upon. The relationship between the controlling parameter and a specified value can be tested to determine whether the condition specified is met. If it is, the parameters that the controlling parameter is dependent upon must meet the requirements specified in the PARM and NBRTRUE statements.
*ALWAYS: The parameter dependency is always checked, regardless of the form of the command.
keyword-name: Specify the keyword name of the parameter for which a value must be specified to control dependency. The keyword name is the name of the parameter that is
specified by the KWD parameter on the PARM statement defining it. If the keyword is specified, the parameter dependency is checked. The keyword must not be defined as TYPE(*NULL).
\&keyword-name relational-operator value: Specify the keyword name of the controlling parameter followed by a relational operator (such as *LE or *EQ) and a value to be tested. If the tested condition is met, the parameters that the controlling parameter is dependent upon must meet the requirements specified in the PARM statement. The value must be no longer than 32 characters. The keyword must not be defined as TYPE(*NULL).
If the value being tested against has been specified as a special value or single value (SPCVAL or SNGVAL parameters of the PARM statement), the to-value must be used rather than the from-value.

The keyword name must be preceded by an ampersand (\&) to indicate that the value of the keyword is tested if the relational operator and value are specified; the ampersand must not be used if the relational operator and value are not specified.

If the controlling parameter is a qualified name, the first qualifier will be used for the compare value. If the controlling parameter is a list, then the first element of the list will be used for the compare value. If the first element is a list, then the first element of that list is used, and so on.
(\&keyword-name relational-operator \&keyword-name): Specify the keyword name of the controlling parameter followed by a relational operator (such as *EQ) and the keyword name of another parameter whose value is compared with the value of the controlling parameter. The keywords must not be defined as TYPE(*NULL) or with PASSVAL(*NULL) specified.

## PARM Parameter

Specifies the parameter dependencies that must be tested if the controlling conditions defined by the CTL parameter are true. The dependencies can be one or all of the following:

- The names of one or more parameters that will be tested to determine if they are present.
- One or more test relationships of keyword values to the values of other keywords or constants. A maximum of 25 parameters can be specified for the PARM parameter. Keywords specified in this parameter must not be defined as TYPE(*NULL).
keyword-name: Specify the keyword name of each parameter that must have a value specified for it.
\&keyword-name relational-operator value: Specify the keyword name of each parameter followed by a relational operator and a value to be tested. An ampersand must precede the keyword name to indicate that the value of the keyword is tested. The value specification must be no longer than 32 characters.

If the value being used for testing comparison has been specified as a special value or single value (SPCVAL or SNGVAL parameters of the PARM statement), the to-value must be used rather than the from-value.

If the controlling parameter is a qualified name, the first qualifier will be used for the compare value. If the controlling parameter is a list, then the first element of the list will be used for the compare value. If the first element is a list, then the first element of that list is used, and so on.
\&keyword-name relational-operator \&keyword-name: Specify the keyword name of one parameter followed by a relational operator and the keyword name of another parameter whose value is compared with the value of the first parameter. A keyword defined with PASSVAL(*NULL) cannot be specified.

## NBRTRUE Parameter

Specifies the number of parameter dependencies defined in the associated PARM statement that must be true to satisfy the control condition.
*ALL: All the parameter dependencies specified in the PARM statement must be true to satisfy the control condition.
relational-operator number-true: Specify a relational operator and a number that specifies the number of parameter dependencies that must be true to satisfy the specified relation. For example, if (*EQ 2) is specified for NBRTRUE, then two, and only two, of the parameter dependencies must be true for the PARM statement.
Note: Variables cannot be coded for this parameter.

## MSGID Parameter

Specifies the message identifier of an error message in a message file that is sent to the user if all the specified parameter dependencies have not been satisfied.
*NONE: No special message is sent. Instead, a message generated by the command analyzer is sent to the user.
message-identifier: Specify the message identifier of the error message sent to the user if all the dependencies for this statement are not met. Messages whose identifiers begin with the 3-character prefixes CPF or CPD are retrieved from the IBM-supplied message file QCPFMSG. All other messages specified here are retrieved from the message file identified by the MSGF parameter on the CRTCMD command which is used to create the command being defined with these dependencies.
Note: Variables cannot be coded for this parameter.
Example: DEP statement
DEP CTL(\&TYPE *EQ LIST) PARM(ELEMLIST)
If TYPE(LIST) is specified, the ELEMLIST parameter must be specified.
DEP CTL(FILE) PARM(VOL LABEL) NBRTRUE(*EQ 2)
If the FILE parameter is specified, both the VOL and LABEL parameters must be specified.
DEP CTL(GLOOP) PARM(J1 D J2) NBRTRUE (*EQ 1)
If the GLOOP parameter is specified, a value must be specified for one (and only one) of the $\mathrm{J} 1, \mathrm{D}$, and J2 parameters.

```
DEP CTL(&LIB *EQ MYLIB)
PARM((&PASSWORD *EQ XYZ5)
    (&USRPRF *EQ BOBJ))
NBRTRUE(*GE 1) MSGID(MSG001)
```

If the LIB parameter equals MYLIB, then the PASSWORD parameter must equal XYZ5, or the USRPRF parameter must equal BOBJ. Otherwise, message MSG001 will be sent to the user.

## ELEM (element) statement

Element (ELEM) statements are used to define the elements of a mixed list (list elements) parameter on a command. A list parameter is a parameter that accepts multiple values that are passed together as consecutive values pointed to by a single keyword. The values are preceded by a 2 -byte binary value that indicates the number of elements defined for the parameter. CL programs do not support binary values in variables, but you can use the \%BINARY built-in function to examine the length.

A list element is the value that represents one value among a group of values organized in a specific order in a list. If all of the list elements are not of the same type, one ELEM statement must be used for each element that appears in the list being defined. If all the elements are of the same type (a simple list), individual ELEM statements are not required. For a simple list, specify the number of elements in the list on the MAX parameter of the PARM statement.

The order in which the ELEM statements are entered into the source file determines the position of the elements in the list. The first ELEM statement (for the first list element) must have a statement label that matches TYPE (statement-label) on the PARM or ELEM statements for the same list. The remaining ELEM statements in the list must be unlabeled. Lists of elements having different values can be nested to the depth of three levels including the highest level. A maximum of 300 elements can be included in one list.

Note: The ELEM statement contains certain parameters and predefined values that can be used only when an IBM-supplied command processing program (CPP) is called by the command being defined. Because there are limitations in some high-level languages, these values may not be useful in the definition statements of user-defined commands. If the entire parameter is for IBM-supplied commands only, these parameters and values are identified by placing the phrase, "(For IBM-supplied commands)" immediately following the parameter keyword or the predefined value to which it applies.

The following syntax diagram shows the syntax for the ELEM definition statement.

'-DFT(----value--------'

>-----+------------------------------------------------------------------1>
'-SNGVAL(--+-single-value------------------------------------|




## Notes:

1. A maximum of 300 repetitions.
2. *YES is valid only for the following parameter types: *CHAR, *NAME, *SNAME, *CNAME, *PNAME, *GENERIC, *LGL, *VARNAME, *CMD, *CMDSTR, and *X.
3. This value can be specified only for *CHAR and *PNAME parameter types.

## TYPE Parameter

Specifies the type of list element being defined. The element can be an integer, a decimal or logical value, or a quoted or unquoted character string that can be a name, label, date, or time. Enter one of the following values to specify the type of element.
Note: For more information on names (below), see "Object naming rules" on page 141.
*NAME: The list element is a character string that represents a basic name. The maximum length of the name is 256 characters; the first character must be A-Z, \$, @, or \#. The remaining characters can be the same as the first character but can also include the numbers 0 through 9 , underscores (_), and periods (.). The name can also be a string of characters starting and ending with double quotation marks ("). If a special value is used (as in *LIBL or *NONE), it must be specified in the SPCVAL parameter.
*SNAME: The list element is a character string that represents a simple name. The maximum length of the name is 256 characters; the first character must be A-Z, \$, @, or \#. The remaining characters can be the same as the first but may also include the numbers 0 through 9 and underscores (_). Periods (.) are not allowed. If a special value is used (such as *LIBL or *NONE), it must be specified in the SPCVAL parameter.
*CNAME: The list element is a character string that represents a communications name. The maximum length of the name is 256 characters; the first character must be A-Z, \$, @, or \#. The remaining characters can be the same as the first character but may also include the numbers 0 through 9 . Periods (.) and underscores (_) are not allowed. If a special value is used (such as *LIBL or *NONE), it must be specified in the SPCVAL parameter.
*PNAME: The list element is a character string that represents a path name. The path name can be enclosed in apostrophes. If the path name contains any special characters (not including an asterisk (*)), it must be enclosed in apostrophes. The maximum length of the path name character string is 5000 characters.
Path names are used in the integrated file system. See the information in the Untegrated Fild System section for more information on using the list element *PNAME.
*GENERIC: The list element is a character string that represents a generic name. A generic name contains a maximum of 255 characters followed by an asterisk (*) or 256 characters without an asterisk and must conform to the rules for "Generic object names" on page 140. The name identifies a group of objects whose names all begin with the characters preceding the *. If an * is not included, the system assumes that the generic name is a complete object name.
*DATE: The list element is a character string that represents a date. When entering the command, the year may be specified in either 2 digits or 4 digits. If a 2 -digit year is specified, the date is assumed to be in the range of January 1, 1940 through December 31, 2039. If a 4-digit year is specified, the date may be in the range of August 24, 1928 through May 9, 2071. When the date is passed to the CPP, it is always passed in the format Cyymmdd, where $C=$ century, yy = year, $m m=$ month, and $d d=$ day. The century digit is set to 0 for years $19 x x$, and it is set to 1 (one) for years 20xx. When a date value is specified in this ELEM statement,
it must be specified without quotation marks in one of the following formats: mmddyy, mmddyyyy, or Cyymmdd. If the user enters a date when the command is run, it must be entered in the job date format. The job date separator specifies the optional separator character that must be used when the date is entered. If the separator character is used, the date must be enclosed in apostrophes.
*TIME: The list element is a character string that represents a time. It is in the format hhmmss, where $\mathrm{hh}=$ hours, $\mathrm{mm}=$ minutes, and $\mathrm{ss}=$ seconds. It is passed to the CPP in a 6-byte character string as hhmmss. Values specified in this statement must be in the format hhmmss. The job time separator specifies the optional separator character that can be used when the time is entered. If the separator character is used, the time must be enclosed in apostrophes.
*CHAR: The list element is a character string that optionally can be enclosed in apostrophes. If the character string contains any special characters (not including an asterisk (*)), it must be enclosed in apostrophes. The maximum length of the character string is 5000 characters.
*DEC: The list element is a packed decimal number.
*LGL: The list element is a logical value, either a one (' 1 ') or a zero (' 0 ').
*HEX: The list element value is in hexadecimal form. The specified characters must be 0 through $F$. They are converted to hexadecimal (EBCDIC) characters (2 hex digits per byte), right justified, and padded with zeros. If the value is enclosed in apostrophes, an even number of digits is required. If the value is not enclosed in apostrophes, the number of digits may be odd or even.
*ZEROELEM: The list element is always considered to be a list of zero elements for which no value can be specified in the command. It is used to prevent a value from being entered as an element in a list even though the CPP expects one. An element for which *ZEROELEM is specified is not prompted, although the other elements in the parameter are prompted and are passed to the CPP as a list.
*INT2: The list element is an integer that is passed as a 2-byte signed binary number. CL programs do not support using binary values in variables.
*INT4: The list element is an integer that is passed as a 4-byte signed binary number. CL programs do not support using binary values in variables.
*UINT2: The list element is an integer that is passed as a 2-byte unsigned binary number. CL programs do not support using binary values in variables.
*UINT4: The list element is an integer that is passed as a 4-byte unsigned binary number. CL programs do not support using binary values in variables.
*VARNAME: (For IBM-supplied commands) The list element is a variable name that is passed as a character string. The name can contain a maximum of 11 characters, including the initial ampersand (\&).
statement-label: Specify a qualified name or a mixed list of values. The statement label specified here by the TYPE parameter is the statement label that identifies the first of a series of QUAL or ELEM statements that further describe the qualified name or the mixed list being defined. The label must be the same as the label specified by TYPE(statement-label) on the PARM statement for this list.

## LEN Parameter

Specifies the length of the list element value that is passed to the CPP. If TYPE was specified as *INT2, *INT4, *UINT2, *UINT4, *DATE, *TIME, *ZEROELEM, or statement-label, LEN is not allowed. If TYPE(*DEC) was specified, the decimal length is specified in the form ( n 1 n 2 ), where n 1 specifies the total number of digits in the value (including the decimal portion), and n 2 specifies the number of allowable decimal digits to the right of the decimal point. The value for n 2 is optional, and zero is assumed if n 2 is not entered. If TYPE is other than *DEC, the decimal portion ( n 2 ) must be omitted and only the number of characters must be specified.

## Table 12. Lengths of Data Types That Can Be Coded

| Data Type | Default Length | Maximum Length ${ }^{1}$ |
| :--- | :--- | :--- |
| *DEC | $(155)$ | $(249)$ |
| *LGL | 1 | 1 |
| *CHAR | 32 | 5000 |
| *NAME | 10 | 256 |
| *SNAME | 10 | 256 |
| *CNAME | 10 | 256 |
| *PNAME | 32 | 5000 |
| *GENERIC | 10 | 256 |
| *HEX | 1 | 256 |
| *VARNAME | 11 | 11 |

## Note:

1 The maximum length shown here is the maximum length allowed by the Command Definition. The high-level language used as the CPP for the command may have different maximum lengths for these data types (for example, *DEC values in CL programs have a maximum length of (159)).

Whereas the maximum shown here is the maximum for the values used in the command when it is run, the maximum length of character constants specified in the command definition is limited to 32 characters. This restriction applies to the following parameters: CONSTANT, DFT, VALUES, REL, RANGE, SPCVAL, and SNGVAL.

For data types whose length cannot be coded, the following are the maximum lengths and the lengths passed.

## Table 13. Lengths of Data Types That Cannot Be Coded

| Data Type | Maximum Length | Length Passed |
| :--- | :--- | :--- |
| *DATE $^{1}$ | 8 | 7 |
| *TIME $^{2}$ | 8 | 6 |
| *ZEROELEM $^{\text {*INT2 }}$ |  |  |
| *INT4 $^{4}$ | 0 | 0 |
| *UINT2 $^{5}$ | 6 | 2 |
| *UINT4 $^{6}$ | 11 | 4 |
| statement-label $^{5}$ | 6 | 2 |

## Notes:

1 If a date is specified, the value is passed as 7 characters.
2 If a time is specified, the value is passed as 6 characters.
3 The value must meet the following condition: $-2^{15} \leq$ value $\leq 2^{15}-1$. The value is passed as a 2 -byte signed binary number.
4 The value must meet the following condition: $-2^{31}<$ value $\leq 2^{31}-1$. The value is passed as a 4 -byte signed binary number.
$5 \quad$ The value must meet the following condition: $0 \leq$ value $\leq 2^{16}-1$. The value is passed as a 2 -byte unsigned binary number.
$6 \quad$ The value must meet the following condition: $0 \leq$ value $\leq 2^{32}-1$. The value is passed as a 4 -byte unsigned binary number.
7 The length of the data accepted and passed is defined by the ELEM or QUAL statement that the label identifies.

## CONSTANT Parameter

Specifies that a value is passed to the CPP as a constant for the list element when the
command being defined is processed. The value does not appear externally on the command. If specified, the value must satisfy the requirements specified by the TYPE, LEN, VALUES, REL, RANGE, SPCVAL, and FULL parameters. As noted in the LEN parameter chart, if a character constant is specified in this parameter, it can be no longer than 32 characters. CONSTANT is not valid with TYPE(*ZEROELEM), EXPR(*YES), or MAX(>1), or if DFT was coded for ELEM.

If a constant is specified for the element being defined, no prompt text can be specified for the PROMPT parameter of this ELEM statement. However, the other elements of the list parameter (of which this list element is a part) are still prompted, and their values (along with this constant value) are still passed to the CPP as a list.
Variables cannot be coded for this parameter.

## RSTD Parameter

Specifies whether the value entered for the list element (specified in the ELEM statement) is restricted to only one of the values given in the VALUES, SPCVAL, or SNGVAL parameters, or whether the value can be any value that satisfies the requirements specified by the TYPE, LEN, REL, RANGE, SPCVAL, SNGVAL, and FULL parameters.
*NO: The value entered for the list element defined by this ELEM statement can be anything that matches the requirements specified by the TYPE, LEN, REL, RANGE, SPCVAL, SNGVAL, and FULL parameters in this ELEM statement.
*YES: The value entered for the list element in this ELEM statement is restricted to one of the values in the VALUES parameter, or to one of the from-values in the SPCVAL or SNGVAL parameter. *YES cannot be specified if TYPE(statement-label) or TYPE(*ZEROELEM) is specified.

## DFT Parameter

Specifies the default value that is assigned to the list element. That is, the default value is used as the value of the list element if the user omits the parameter that represents this list element, or specifies * N for the element, while coding or entering the command. The default value must satisfy one of the following:

- It must match the element requirements specified by the TYPE, LEN, REL, RANGE, and FULL parameters.
- It must be one of the from-values in the SPCVAL or SNGVAL parameters.
- If the default is a character constant, it can have no more than 32 characters (as noted in the LEN parameter chart).
- If RSTD(*YES) is specified, it must be in the list of values in the VALUES parameter or in the list of from-values of the SPCVAL or SNGVAL parameters.
- If this ELEM statement itself defines a list, the default value must be specified in the SNGVAL parameter.

The DFT parameter is valid only if MIN is 0 , which means the element defined by this ELEM statement for this list is optional. The DFT parameter is not valid if the CONSTANT parameter is specified. A default cannot be specified if TYPE(*ZEROELEM) is specified; in that case, an assumed default is passed.

If DFT is not specified, the default assumed is as follows, depending on the specified element type:

```
Assumed Default
O
'0'
zeros
blanks
```

```
Element Types
*DEC *INT2 *INT4 *UINT2 *UINT4 *ZEROELEM
*LGL
*DATE *TIME *HEX
*CHAR *NAME *SNAME *CNAME *PNAME *GENERIC *VARNAME
```

An assumed default value is not displayed by the command prompt; a blank input field is shown instead. If a default is specified in the DFT parameter, it is displayed by the prompt exactly as specified.
value: Specify the default value that meets the specified requirements or that is one of the values specified in the SPCVAL, SNGVAL, or VALUES parameters.

Variables cannot be coded for this value.

## VALUES Parameter

Specifies a list of up to 300 constants (fixed values) from which one constant can be specified as the value of the list element. The VALUES parameter is valid only if all of the following are true: RSTD(*YES) is specified, both RANGE and REL are not specified, and each constant matches the attributes specified by the TYPE, LEN, and FULL parameters in this ELEM statement. As noted in the LEN parameter chart, character constants specified in this parameter can be no longer than 32 characters. Enter the constants (not more than 300) that can be specified as the value of the list element. The VALUES parameter is not valid for TYPE(statement-label) or for TYPE(*ZEROELEM).
If this ELEM statement is defining the first element in a list, the value specified for this parameter cannot be the same as the value specified in the SNGVAL parameter on either the PARM or ELEM statement that points to this ELEM statement.

## REL Parameter

Specifies the relationship between the list element value and a constant value.
To specify the relationship, enter one of the following relational operators followed by a constant.

| *LT | less than |
| :--- | :--- |
| *LE | less than or equal to |
| *EQ | equal to |
| *GE | greater than or equal to |
| *GT | greater than |
| *NL | not less than |
| *NE | not equal to |
| *NG | not greater than |

The REL parameter is not valid if TYPE is specified as *LGL, *VARNAME, *ZEROELEM, or statement label; or if either RANGE or VALUES is specified.

If a character type is specified by TYPE(*CHAR), the EBCDIC value of the character string is used as an unsigned integer in the comparison. As noted in the LEN parameter chart, a character constant specified in this parameter can be no longer than 32 characters.

## RANGE Parameter

Specifies the range (the limits) for the value of the list element. The list element value must be greater than or equal to the lower limit value specified, and it must be less than or equal to the upper limit value specified. The value tested is the value sent to the CPP, not the user-specified value. For example, 15 would be valid if RANGE was specified as (0 16).

For nonnumerical data types, such as *CHAR, the range of values and the data specified will be left-justified and padded on the right with blanks. A numeric range should not be used to define an interval for nonnumerical data unless leading zeros are specified or the data is only 1 character in length.

The RANGE parameter is not valid if either REL or VALUES is specified, or if TYPE is specified as *LGL, *VARNAME, *ZEROELEM, or statement label. As noted in the LEN parameter chart, character constants specified in this parameter can be no longer than 32 characters.

## SPCVAL Parameter

Specifies a list of up to 300 entries that define special values that can be entered for the element defined by this ELEM statement. Each entry specifies a character string (a from-value) that can be entered even though it may not meet all validity checking requirements. If the entered character string matches the from-value of one of the entries, and the to-value is specified, the string is replaced with the to-value and is then passed to the CPP without further checking. If the to-value is omitted, the from-value is passed to the CPP. The SPCVAL parameter is not valid for TYPE(statement-label) or for TYPE(*ZEROELEM).

If a to-value of *CURLIB is specified, the name of the current job library is passed to the CPP instead of the value *CURLIB. If the from-value is *CURLIB and no to-value is specified, or if the to-value is *CURLIB and it is enclosed in apostrophes, the value *CURLIB is passed to the CPP.
The from-value is a character string, but the to-value can be anything that is passable. However, for TYPE(*DATE), the to-value must be specified unquoted in mmddyy, mmddyyyy, or Cyymmdd format. If a CL variable is used for the from-value, its type must be *CHAR. If this ELEM statement is defining the first element in a list, the value specified for the from-value cannot be the same as the value specified in the SNGVAL parameter on either the PARM or ELEM statement that points to this ELEM statement.

The to-value must be no longer than LEN specifies. If TYPE is *DEC, *INT2, *INT4, *UINT2, or *UINT4, the type of the to-value must be the same. If TYPE is a character type (such as *CHAR, *LGL, or *DATE), the to-value must be a character string. As noted in the LEN parameter chart, character constants specified in this parameter can be no longer than 32 characters. If a to-value is not specified, the from-value must be passable.
Variables cannot be coded for this element.

## SNGVAL Parameter

Specifies a list of up to 300 single values that can be specified for an element being defined as a statement label, or that is to have two or more list elements (defined by the MAX parameter) in its nested list. Any one of the single values can be used instead of a nested list of values or a qualified name that the element is defined to accept. Each entry specifies a character string (a from-value) that can be entered. If an entered character string matches the from-value of one of the entries and the to-value is specified, the data is replaced with the to-value and is then passed to the CPP without further checking. If the to-value is omitted, the from-value is passed to the CPP.

If this ELEM statement defines the first element in a list, the value specified for the from-value cannot be the same as the value specified in the SNGVAL parameter on either the PARM or ELEM statement that points to this ELEM statement.

The to-value (or the from-value, if the to-value is omitted) must be passable, as specified in the SPCVAL parameter. As noted in the LEN parameter chart, character constants specified in this parameter can be no longer than 32 characters. SNGVAL can be specified only if MAX is greater than one or TYPE is specified as a statement
label; it is not valid for TYPE(*ZEROELEM). Each single value can only substitute for a list of values or a qualified name; it cannot be a list element or qualifier. It is passed as the first element of the list.

If a to-value of *CURLIB is specified, the name of the current job library is passed to the CPP instead of the value *CURLIB. If the from-value is *CURLIB and no to-value is specified, or if the to-value is *CURLIB and it is enclosed in apostrophes, the value *CURLIB is passed to the CPP.
Variables cannot be coded for this element.

## MIN Parameter

Specifies the minimum number of values that must be entered for the list element being defined.

For an element that does not allow multiple like values, only zero (0) for optional and one (1) for required can be specified as the minimum number of values.

For an element that allows multiple like values because a value greater than one (1) is specified in the MAX parameter, zero (0) indicates that no values must be entered; therefore, it is an optional element. A value equal to or greater than one (1) indicates the minimum number of values that must be entered for the element. Therefore, it is a required element. The value specified for MIN cannot exceed the value specified for the MAX parameter.
The number specified tells how many list elements are required in another list. If MIN is not specified, zero (0) is assumed, meaning that the element is optional.

0: The list element is optional; it does not have to be entered.
minimum-number: Specify the minimum number of elements that must be specified in the nested list. If 1 is the assigned value, it specifies that at least one value is required for the element. If a number greater than one (1) is specified, the element contains a list that must have at least as many elements as the number specified.

## MAX Parameter

Specifies, if this ELEM statement is defining a simple list element, the maximum number of elements that this list element can have in its nested list. If a value greater than 1 is specified, the element is capable of accepting multiple like values (that is, a simple nested list). All values entered for this element (at the time the command is run) must satisfy the validity checking requirements specified by the values specified in the other parameters on this ELEM statement.

Note: The values for a nested list are passed consecutively, preceded by a 2-byte binary value that indicates the number of values entered in the list element by the user. CL programs do not support the handling of binary values in variables, but you can use the \%BINARY built-in function to examine the length.

1: The list element accepts only one value; there is no nested list.
maximum-number: Specify the maximum number of elements that the list element can accept. The specified maximum must be greater than or equal to the value specified in MIN , and less than or equal to 300 . If the maximum is greater than one (1) and TYPE is not a statement label that identifies a QUAL statement or another ELEM statement, the parameter-which is also an element -is a simple list of like values (that is, each element in the list has the same requirements, such as type and length). If TYPE(statement-label) is specified and it points to the label of a QUAL statement or another ELEM statement, MAX should only be specified greater than 1 if a list of lists or a list of qualified names is to be accepted. A maximum greater than one (1) is not valid if the CONSTANT parameter is also specified.

## ALWUNPRT Parameter

Specifies whether this ELEM statement should accept the hexadecimal characters
$X^{\prime} F F^{\prime}$ or those in the range of $X^{\prime} 00^{\prime}$ to $X^{\prime} 3 F^{\prime}$. This parameter is valid only for TYPE(*CHAR) or TYPE(*X).
*YES: Allows any characters to be sent to the display or printer.
*NO: Does not allow unprintable characters to be passed to the command processing program.

## ALWVAR Parameter

Specifies whether to allow variable names for the element. If TYPE was specified as *VARNAME, *ZEROELEM, *NULL, or statement-label, ALWVAR(*NO) is not allowed.
*YES: Allows the use of variable names for the element.
*NO: Does not allow the use of variable names for the element.

## PGM Parameter

Specifies whether the list element is a program name. PGM(*YES) is valid only for a statement-label, *CHAR, *NAME, *SNAME, *CNAME, and *GENERIC types. The specification of the PGM(*YES) parameter has no effect on the element being defined by the ELEM statement; it only indicates to the compiler that the value for this element is a program name. This information is stored so it can be included in the output of the Display Program References (DSPPGMREF) command.
*NO: The element defined in this ELEM statement is not a program name.
*YES: The element is a program name.

## DTAARA Parameter

Specifies whether the list element is a data area name. DTAARA(*YES) is valid only for statement-label, *CHAR, *NAME, *SNAME, *CNAME, and *GENERIC types. The specification of the DTAARA(*YES) parameter has no effect on the element being defined by the ELEM statement; it only indicates to the CL compiler that the value for this element is a data area. This information is stored so it can be included in the output of the Display Program References (DSPPGMREF) command.
*NO: The element defined in this ELEM statement is not a data area name.
*YES: The element is a data area name.

## FILE Parameter

Specifies whether the list element is a file name and the expected use of the file. The element can be specified as the name of a file that has a specific use so that, at CL compile time, the names can be used to get file reference information about where the files are used. FILE is valid only if the value for TYPE is statement-label, *CHAR, *NAME, *SNAME, *CNAME, or *GENERIC. The specification in the FILE parameter has no effect on the list element being defined by the ELEM statement; it only indicates to the CL compiler that the value for this element is a file name and what type of file it is. This information is stored so it can be included in the output of the DSPPGMREF (Display Program References) command. One of the following types of files can be specified:
*NO: The list element defined in this ELEM statement is not a file name.
*IN: The list element is an input file name.
*OUT: The list element is an output file name.
*UPD: The list element is an update file name.
*INOUT: The list element value is the name of a file to be used for both input and output.
*UNSPFD: The list element value is the name of a file, but its use cannot be specified.

## FULL Parameter

Specifies whether the number of characters in the list element must be exactly the same as the number specified in the LEN parameter (if specified) or its default length (if LEN is not specified).
*NO: The number of characters in the list element can be less than that specified by the LEN parameter.
*YES: The number of characters in the list element must equal the number specified by the LEN parameter or the default length for that type. The exact length is valid only for element types *LGL, *CHAR, *NAME, *SNAME, *CNAME, *GENERIC, *VARNAME, and *HEX.

## EXPR Parameter

Specifies whether the list element can accept an expression containing a characters that are combined or linked together (concatenation). Valid character concatenation operators are as follows:

| Concatenation | ${ }^{*}$ CAT or, II |
| :--- | :--- |
| Blank insertion with concatenation | ${ }^{* B C A T}$ or, I> |
| Blank truncation with concatenation | ${ }^{*}$ TCAT or, I< |

*NO: The element value cannot be a concatenation expression.
*YES: The element value can be a concatenation expression. *YES is not valid if a value is specified for the CONSTANT parameter.

## VARY Parameter

Specifies whether the list element value passed to the CPP is preceded by a length value that indicates the number of characters entered for the element's value. This parameter may be specified as a single value (*NO) or as a list of two values (elements).
*NO: The element value is not preceded by a length value.

## Element 1: Return Length Value

*YES: The element value passed to the CPP is preceded by a field that indicates the number of characters actually specified for the parameter. *YES is valid only for the following parameter types: *CHAR, *NAME, *SNAME, *CNAME, *PNAME, *GENERIC, *LGL, *VARNAME, *CMD, *CMDSTR, and *X.

Note: The length value is the actual number of characters entered for the command parameter with trailing blanks removed. The length value passed may be different than the defined parameter length or the declared variable length. The length of the field containing the character string data is determined by the defined length for the parameter or the declared LEN for CL Program variables. The length value defines how many characters in the character string data field were actually entered for the command parameter.

## Element 2: Value Length

*INT2: The length of the element value is an integer passed as a 2-byte signed binary number.
*INT4: The length of the element value is an integer passed as a 4-byte signed binary number.

## PASSATR Parameter

(For IBM-supplied commands) Specifies whether an attribute byte is to be passed to the CPP with the list element data. PASSATR is not valid for TYPE(statement-label) or for TYPE(*ZEROELEM).
${ }^{*}$ NO: No attribute byte is passed with the list element.
*YES: An attribute byte is passed with the list element; the attribute byte indicates whether the data value came from the default, the data type of the value, and (if TYPE(*CHAR) was specified) whether the character string was enclosed in apostrophes.

## CASE Parameter

Specifies whether the value that is passed to the CPP is changed from lowercase to uppercase, or is preserved in the case specified on the command parameter.
*MONO: The element value is changed from lowercase to uppercase. Single quoted parameters with apostrophes preserve the case whether or not this value is specified.
*MIXED: The element value is preserved in the case specified on the command parameter. This value can be specified only for *CHAR and *PNAME parameter types.

## DSPINPUT Parameter

Specifies whether the keyword value is shown (displayed) in the job log or on a prompt display. DSPINPUT(*PROMPT) and DSPINPUT(*NO) are valid only for the following element types: *CHAR, *NAME, *SNAME, *CNAME, *GENERIC, *DEC, *LGL, *INT2, *INT4, *UINT2, *UINT4, *DATE, *TIME, and *HEX.

Note: The DSPINPUT parameter will have no effect on the job log entries for a database reader job, for imbedded commands (for example, a command submitted on the SBMJOB command), or for commands executed using the QCMDEXC or QCAEXEC APIs.
*YES: The element value is shown both on the prompt screen and in the job log.
*PROMPT: The element value is shown on the prompt screen but not in the job log.
*NO: The element value is not shown in either the job log or a prompt screen. When a previously entered command is retrieved, the nondisplayed field entries must be retyped and their previous values are not retrievable. When a job log entry is created, the nondisplayed field is replaced by empty parentheses ().

## CHOICE Parameter

Specifies the text that is displayed to the right of the prompt line of each parameter on the prompt screen. Up to 30 characters of text can be displayed.
*VALUES: Each possible value is displayed in the possible values field, separated by a comma and a space. If values are specified for the Default, Single value, or Special value parameters, the first value displayed is the default value; the next value is a single value, and the values following that are special values. If there are too many values to fit in 30 characters, the last value is followed by three periods.
Examples of possible values text follow:

- If *NO is specified on the RSTD parameter and *DEC is specified on the TYPE parameter and the RANGE parameter is not specified, the word "Number" is displayed in the possible values field. The resulting line will appear in the form: Number, *XXX, *YYY, *ZZZ...
- If *NO is specified on the RSTD parameter and *DEC is specified on the TYPE parameter and the RANGE parameter is specified, the range of possible values is displayed in the possible values field. The resulting line will appear in the form: a-b, *XXX, *YYY, *ZZZ (where a and b are numerals defining the range).
- If *YES is specified on the RSTD parameter, the possible values displayed are determined by the VALUES parameter, the SNGVAL parameter, and the SPCVAL parameter. The resulting line will appear in the form: *XXX, *YYY, *ZZZ...
*NONE: No values are displayed.
*PGM: A program that is called determines the values that are displayed. The program that is called is identified in CHOICEPGM parameter.
message-identifier: Specify the message ID of the message used to retrieve the message containing the text for the possible values field. The message file specified on the PMTFILE parameter of the Create Command (CRTCMD) command is used to find the message.
'choices-text': Specify no more than 30 characters, enclosed in apostrophes.


## CHOICEPGM Parameter

Specifies the name of the program that is called during the prompting to fill in the possible choices text and the permissible values during prompting. This parameter must be specified only if CHOICE(*PGM) is specified.
*NONE: No program is identified to fill in the possible choices text and permissible values.

The possible library values are:
*LIBL: The library list is used to locate the program name.
*CURLIB: The current library for the job is used to locate the program name. 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 program name is located.
program-name: Specify the name of the program to be called during prompting to fill in the possible choices text or to supply a permissible value.

If any exception occurs when the program is called, no possible-choices text will be left blank, and the list of permissible values will be obtained from the command.

## INLPMTLEN Parameter

Specifies the length of the input field initially displayed for the element when the command is prompted. The user can extend the field to a maximum length of 512 bytes by entering an ampersand ( $\&$ ) in the first position of the field, followed by a blank. INLPMTLEN is valid only if TYPE is specified as *CHAR, *NAME, *SNAME, *CNAME, *PNAME, *GENERIC, or *HEX. If FULL(*YES), RSTD(*YES), or CONSTANT are specified, INLPMTLEN(*CALC) must be specified or defaulted.
*CALC: The prompter will determine the length of the prompt field based on the type and length of the parameter.
initial-prompt-length: Specify the initial length in bytes of the prompt field. Valid values are $1-12,17,25,32,50,80,132,256$, and 512.

## PROMPT Parameter

Specifies the prompt text, if any, that is used for the list element being defined in this ELEM statement. The prompt text describes the element to the user, who may enter a response to the information displayed. Prompt text cannot be specified if TYPE(*ZEROELEM) is specified or if a constant value is specified in the CONSTANT parameter.
*NONE: No prompt text is displayed for the list element defined by this ELEM statement. The input field still asks for this list element, but no text is displayed with it.
message-identifier: Specify the message identifier that identifies the prompt text message of up to 30 characters displayed when the program is asking for the list element. If a message having the specified identifier cannot be found in the message file contained in the PMTFILE parameter of the Create Command (CRTCMD) command, the message identifier itself is used as the prompt text.
'prompt-text': Specify the prompt text displayed when the program is asking for the list element. The text must be a character string of no more than 30 characters, enclosed in apostrophes.

## Example: ELEM statement

Example 1: Defining a JOBDESC Parameter
>>-+-------------------------------+-----------------------------------
'-JOBDESC(-job-name--number---)-'
Command definition statements:

```
    PARM KWD(JOBDESC) TYPE(L1)
L1: ELEM TYPE(*NAME) MIN(1)
    ELEM TYPE(*DEC) LEN(2) MIN(1) REL(*LE 60)
```

The parameter named JOBDESC can be omitted, but, if present, it must be a list of two elements. The first element is a name, and the second is a 2-digit number that is less than or equal to 60 .

## Example 2: Defining a RANGE Parameter

```
    .-*SAME--------------------.
>>-RANGE(-+-lower-value--upper-value--+--)----------------------><
```

Command definition statements:

```
    PARM KWD(RANGE) TYPE(L1) DFT(*SAME) +
        SNGVAL((*SAME 101))
L1: ELEM TYPE(*DEC) MIN(1) REL(*LE 100)
    ELEM TYPE(*DEC) MIN(1) REL(*LE 100)
```

The parameter named RANGE can be omitted, but, if present, it must be a list of two numbers, neither of which can be greater than 100. Validity checking is performed to determine that the lower-limit value is less than the upper-limit value. To allow the CPP to determine whether the value passed is a user-specified value or the default, *SAME is mapped to 101.

## PARM (Parameter) statement

The Parameter (PARM) statement defines a parameter of a command being created. A parameter is the means by which a value is passed to the command processing program (CPP). One PARM statement must be used for each parameter that appears in the command being defined. The order in which the PARM statements are entered into the source file determines the order in which the parameters must be specified when the command is entered in positional form and the order in which they are passed to the
validity checker and to the CPP. A maximum of 75 parameters can be defined for one command. Note, however, that commands having a large number of parameters take longer to run, regardless of how many parameters are actually coded.

Note: The PARM statement contains certain parameters and predefined values that can be used only when IBM-supplied CPPs are called by the command being defined. Limitations in some high-level languages reduce the usefulness of these values in the definition statements of user-defined commands. These parameters and values are identified by the phrase "(For IBM-supplied commands)" that immediately follows the parameter keyword (if the entire parameter is for IBM-supplied commands only) or the predefined value to which it applies.

The following syntax diagram shows the syntax for the PARM definition statement.
>>-PARM---KWD--(--keyword-name--)----------------------------------->
>----TYPE--(--+-*DEC------------+---)--------------------------------->
+-*LGL------------+
+-*CHAR-----------+
+-*NAME-----------+
+-*SNAME----------
+-*CNAME----------+
+-*PNAME----------+
+-*GENERIC--------+
+-*CMDSTR---------+
+-*DATE-----------+
+-*TIME-----------+
+-*HEX------------+
+-*ZEROELEM-------+
+-*X--------------+
+-*INT2-----------
+-*INT4-----------+
+-*UINT2----------+
+-*UINT4----------+
+-*VARNAME--------+
+-*CMD------------+
+-*NULL-----------+
'-statement-label-'
>-----+---------------------------------------------------------------
'-LEN--(--+-length1-----------------------------'
+-length1--length2------------
'-length1--length2--length3--'
>-----+-------------------------+---+--------------------------------

>-----+---------------------------+----------------------------------


>-----+---------------------------------------------------------------
'-SPCVAL(--+-special-value------------------------------------- '




## Notes:

1. A maximum of 300 repetitions.
2. *YES is valid only for the following parameter types: *CHAR, *NAME, *SNAME, *CNAME, *PNAME, *GENERIC, *LGL, *VARNAME, *CMD, *CMDSTR, and *X. *YES must be specified if PASSATR(*YES) and RTNVAL(*YES) are specified.
3. This value can be specified only on *CHAR and *PNAME parameter types.

## KWD Parameter

Specifies the keyword name of the parameter being created. The keyword identifies the parameter in the command, and it is used when the parameter is entered in keyword form. Enter the keyword name using no more than 10 alphanumeric characters, the first character being alphabetic.

## TYPE Parameter

Specifies the type of value being defined. The value can be an integer, a decimal or logical value, or a quoted or unquoted character string that can be a name, label, date, or time. Enter one of the following values to specify the type of parameter.
Note: For more information on names (below), see *Path names (*PNAMF)" on page 143.
*NAME: The parameter value is a character string that represents a basic name. The maximum length of the name is 256 characters; the first character must A-Z, \$, @, or \#. The remaining characters can be the same as the first character but can also include the numbers 0 through 9 ,
underscores (_), and periods (.). The name can also be a string of characters starting and ending with double quotation marks ("). If a special value is used (as in *LIBL or *NONE), it must be specified in the SPCVAL parameter.
*SNAME: The parameter value element is a character string that represents a simple name. The maximum length of the name is 256 characters; the first character must be $A-Z, \$$, @, or \#. The remaining characters can be the same as the first but may also include the numbers 0 through 9 and underscores (_). Periods (.) are not allowed. If a special value is used (such as *LIBL or *NONE), it must be specified in the SPCVAL parameter.
*CNAME: The parameter value is a character string that represents a communications name. The maximum length of the name is 256 characters; the first character must be A-Z, \$, @, or \#. The remaining characters can be the same as the first character but may also include the numbers 0 through 9. Periods (.) and underscores (_) are not allowed. If a special value is used (such as *LIBL or *NONE), it must be specified in the SPCVAL parameter.
*PNAME: The parameter value is a character string that represents a path name. The path name can be enclosed in apostrophes. If the path name contains any special characters (not including an asterisk (*)), it must be enclosed in apostrophes. The maximum length of the path name character string is 5000 characters.

Path names are used in the integrated file system. For more information on using the parameter value *PNAME, see the Integrated File System topic.
*GENERIC: The parameter value is a character string that represents a generic name. A generic name contains a maximum of 255 characters followed by an asterisk (*) or 256 characters without an asterisk and must conform to the rules for generic names. The name identifies a group of objects whose names all begin with the characters preceding the *. If an * is not included, the system assumes that the generic name is a complete object name.
*CMDSTR: The parameter value is a command string that is checked for validity by the command analyzer. It is passed to the CPP as a character string.

The command analyzer rebuilds the command string when it checks it for validity. When the command is rebuilt, keywords are added to parameters that were specified positionally, parameters can be reordered, and parameters that contain characters that cannot be printed ( $X^{\prime} F F^{\prime}$ and X'00 - X'3F') are converted to hexadecimal notation. As a result, the rebuilt command string may be substantially longer than the original command string. If the length of the rebuilt command is longer than the allowed length specified with the LEN keyword, the command will fail.

Note: Selective prompting is not allowed with the *CMDSTR parameter.
*DATE: The parameter value is a character string that represents a date. When entering the command, the year may be specified with either 2 digits or 4 digits. If a 2-digit year is specified, the date is assumed to be in the range of January 1, 1940 through December 31, 2039. If a 4-digit year is specified, the date may be in the range of August 24, 1928 through May 9, 2071. When it is passed to the CPP, it is always passed in the format Cyymmdd, where $C=$ century, yy = year, $\mathrm{mm}=$ month, and dd = day. The century digit is set to 0 for years 19 xx , and it is set to 1 (one) for years 20xx. When a date value is specified in this PARM statement, it must be specified in one of the following formats: mmddyy, mmddyyyy, or Cyymmdd. When a user enters a date in the command at run time, it must be entered in the job date format. The job date separator specifies the optional separator character that can be used when the date is entered. If the separator character is used, the date must be enclosed in apostrophes.
*TIME: The parameter value is a character string that represents a time. It is entered in the format hhmmss. It is passed to the CPP in a 6-byte character string as hhmmss. The job time separator specifies the optional separator character that can be used when the time is entered. If the separator character is used, the time must be enclosed in apostrophes.
*CHAR: The parameter value is a character string that (optionally) can be enclosed in apostrophes. If the character string contains any special characters (not including an asterisk (*)), it must be enclosed in apostrophes. The maximum length of the character string is 5000 characters.
*DEC: The parameter value is a packed decimal number.
*LGL: The parameter value is a logical value, either a one (' 1 ') or a zero (' 0 ').
*HEX: The parameter value is in hexadecimal form. The specified characters must be 0 through $F$. They are converted to hexadecimal (EBCDIC) characters (2 hex digits per byte), right-justified, and padded on the left with zeros. If the value is enclosed in apostrophes, an even number of digits is required. If the value is not enclosed in apostrophes, an even number of digits is not required.
*ZEROELEM: The parameter is always considered as a list of zero elements, for which no value can be specified in the command. It is used to prevent a value from being entered for a parameter that is a list even though the CPP expects one. For example, if two commands use the same CPP, one command could pass a list for a parameter and the other command may not have any values to pass. The second command would be coded with TYPE(*ZEROELEM).
*X: (For IBM-supplied commands) The parameter value is a character string, variable name, or numeric value. The value is passed as a numeric value if it contains only digits, a "+" or "-" sign, and/or a decimal point; otherwise, it is passed as a character string.
*INT2: The parameter value is an integer that is passed as a 2-byte signed binary number. CL programs do not support binary values in variables.
*INT4: The parameter value is an integer that is passed as a 2-byte unsigned binary number. CL programs do not support binary values in variables.
*UINT2: The parameter value is an integer that is passed as a 2-byte signed binary number. CL programs do not support binary values in variables.
*UINT4: The parameter value is an integer that is passed as a 4-byte unsigned binary number. CL programs do not support binary values in variables.
*VARNAME: (For IBM-supplied commands) The parameter value is a CL variable name that is passed as a character string. The name can contain a maximum of 11 characters, including the ampersand (\&).
*CMD: (For IBM-supplied commands) The parameter value is a command. For example, the IF command has a parameter called THEN whose value must be another command. The command is checked for validity by the command analyzer.
*NULL: The parameter value is to be a null pointer, which can be used as a constant place holder. A DEP statement or the REL and RANGE keywords of other PARM statements may not reference the value of a parameter defined with TYPE(*NULL).
statement-label: Specify a qualified name or a mixed list of values. The statement label specified here by the TYPE parameter is the statement label that identifies the first of a series of QUAL or ELEM statements that further describe the qualified name or the mixed list being defined by this PARM statement.

## LEN Parameter

Specifies the length of the parameter value that is passed to the CPP. LEN is not allowed if TYPE was specified as *INT2, *INT4, *DATE, *TIME, *CMD, *ZEROELEM, *NULL, or statement-label. With other TYPE specifications, this parameter has the following applications:

- If TYPE(*DEC) was specified, the decimal length is specified in the form (length1 length2), where length1 specifies the total number of digits in the value (including the decimal portion), and length2 specifies the number of allowable decimal digits to the right of the decimal point. (The value for length2 is optional. Zero is assumed if it is not entered.)
- If TYPE(*CHAR), TYPE(*NAME), TYPE(*SNAME), TYPE(*CNAME), TYPE(*CMDSTR), or TYPE(*VARNAME) was specified, only length1 is specified. It identifies the number of characters passed.
- If TYPE(*HEX) was specified, only length1 is specified. This length specifies the number of characters passed after the hexadecimal digits have been converted to character digits. Because 2 hexadecimal digits are converted to 1 decimal digit, the number of hexadecimal digits converted is twice the value of this length.
- If TYPE $\left({ }^{*} X\right)$ was specified, the LEN parameter is used as follows:
- For character data, length1 specifies the minimum length to be passed. If a longer value is entered, the entire value is passed.
- For decimal data, length2 and length3 specify the length and decimal positions for a constant value. If a variable is entered, it is passed according to the variable attributes.
- For a logical value, length1 specifies the length of the value, which is always 1.

The default length that is assumed by the system and the maximum length for each type of parameter value are shown in the following table:

| Data Type | Default Length | Maximum Length ${ }^{1}$ |
| :--- | :--- | :--- |
| *DEC | $(155)$ | $(249)$ |
| *LGL | 1 | 1 |
| *CHAR | 32 | 5000 |
| *NAME | 10 | 256 |
| *SNAME | 10 | 256 |
| *CNAME | 10 | 256 |
| *PNAME | 32 | 5000 |
| *GENERIC | 10 | 256 |
| *HEX | 1 | 256 |
| *X | $(1155)$ | $(256249)$ |
| *VARNAME | 11 | 11 |
| *CMDSTR | 256 | 20,000 |
| Note: |  |  |

## Note:

1 The maximum length shown here is the maximum length allowed by the Command Definition. The high-level language used as the CPP for the command may have different maximum lengths for these data types (for example, *DEC values in CL programs have a maximum length of (15 9)).
Whereas the maximum shown here is the maximum for the values used in the command when it is run, the maximum length of character constants specified in the command definition is limited to 32 characters. This restriction applies to the following parameters: CONSTANT, DFT, VALUES, REL, RANGE, SPCVAL, and SNGVAL.

For data types for which length cannot be coded, the following are the maximum lengths and the lengths passed.

| Data Type | Maximum Length | Length Passed |
| :---: | :---: | :---: |
| *DATE ${ }^{1}$ | 8 | 7 |
| *TIME ${ }^{2}$ | 8 | 6 |
| *ZEROELEM | 0 | 0 |
| * $\mathrm{NT2}{ }^{3}$ | 6 | 2 |
| *INT4 ${ }^{4}$ | 11 | 4 |
| *UINT2 ${ }^{5}$ | 6 | 2 |
| *UINT4 ${ }^{6}$ | 11 | 4 |
| *CMD | Any | Length needed |
| statement-label ${ }^{5}$ | - | - |

 identifies.

## RTNVAL Parameter

Specifies whether a value is returned by the CPP through the parameter being defined in this PARM statement.
*NO: No value can be returned in the parameter being defined. The parameter is an input parameter only.
*YES: A value is to be returned by the CPP in the parameter. A CL variable name must be specified for the parameter to receive the value (when the command is called). If a variable name is not specified when the command is invoked, a null pointer is passed to the CPP.

- *YES is valid only if the TYPE parameter was specified as *DEC, *CHAR, *LGL, or *X. Also, *YES is valid only on commands that are limited to CL programs.
- *YES is not valid with MAX(>1), CONSTANT, DFT, RSTD, VALUES, REL, RANGE, SPCVAL, SNGVAL, FILE, FULL, EXPR, or ALWVAR(*NO).
- RTNVAL(*YES) can be specified if *BPGM, *IPGM, *BREXX, or *IREXX is specified in the CRTCMD command that uses the source file containing this PARM statement.
- VARY(*YES) must be specified if PASSATR(*YES) and RTNVAL(*YES) have been specified.


## CONSTANT Parameter

Specifies that a value is passed to the CPP as a constant when the command being defined is processed. The parameter does not appear externally on the command. The value specified in this parameter (if any) must satisfy the requirements specified by the TYPE, LEN, VALUES, REL, RANGE, SPCVAL, and FULL parameters. As noted in the LEN parameter chart, if a character constant is specified in this parameter, it can be no longer than 32 characters.

If a constant is specified for the parameter being defined, no prompt text can be specified for the PROMPT parameter in the PARM statement, because the parameter will not be prompted.
The CONSTANT parameter is not valid with TYPE(*CMD), TYPE(*NULL), TYPE(*ZEROELEM), MAX(>1), DFT, RTNVAL(*YES), or EXPR(*YES).

Variables cannot be coded for this parameter.

## RSTD Parameter

Specifies whether the value entered for the parameter (specified in the PARM statement) is restricted to only one of the values given in the VALUES, SPCVAL, or SNGVAL
parameters, or whether the value can be any value that satisfies the requirements specified by the TYPE, LEN, REL, RANGE, SPCVAL, SNGVAL, and FULL parameters.
*NO: The value entered for the parameter specified by KWD in this PARM statement can be anything that matches the requirement specified by parameters TYPE, LEN, REL, RANGE, SPCVAL, SNGVAL and FULL in this PARM statement.
*YES: The value entered for the parameter specified by KWD in this PARM statement is restricted to one of the values in the VALUES parameter, or to one of the from-values in the SPCVAL or SNGVAL parameters. *YES cannot be specified if TYPE(statement-label), TYPE(*CMD), TYPE(*NULL), TYPE(*ZEROELEM), TYPE(*X), or RTNVAL(*YES) is specified.

## DFT Parameter

Specifies the default value that is assigned to the parameter if a value is not specified by the user. That is, the default value is used as the value of the parameter if the user omits the parameter while entering the command or if * N is entered as the parameter value. The default value must satisfy one of the following:

- It must match the requirements specified by the TYPE, LEN, REL, RANGE, and FULL parameters.
- It must be one of the from-values in the SPCVAL or SNGVAL parameters.
- If the default is a character constant, it can have no more than 32 characters (as noted in the LEN parameter chart).
- If RSTD(*YES) is specified, it must be in the list of values in the VALUES parameter or in the list of from-values of the SPCVAL or SNGVAL parameters.
- It must be a from-value in the SNGVAL parameter if the parameter being defined is a list of unlike values or it is a qualified name. This is true when a statement label is specified for TYPE; the label is used to identify a QUAL or ELEM statement.

The DFT parameter is not valid if CONSTANT is specified. The DFT parameter is valid only if MIN is 0 , which means the parameter named in the KWD parameter is optional. A default cannot be specified if RTNVAL(*YES) is specified; instead, a null pointer is passed for the default. A default cannot be specified if TYPE(*CMD), TYPE(*ZEROELEM), or TYPE(*NULL) is specified. If TYPE(*VARNAME) is specified, a default special value can be specified; a default variable name cannot be specified.

If DFT is not specified and $\operatorname{MIN}(0)$ and RTNVAL(*NO) are specified, then the default assumed is as follows, depending on the specified type:
Assumed Default
Parameter Types

An assumed default value is not displayed by the command prompt; a blank input field is shown instead. If a default is specified in the DFT parameter, it is displayed by the prompt exactly as specified.
value: Specify the default value that meets the specified requirements or that is one of the values specified in the VALUES, SPCVAL, or SNGVAL parameters.

Variables cannot be coded for this value.

## VALUES Parameter

Specifies a list of up to 300 constants (fixed values) from which one constant can be entered as the value of the parameter named in the KWD parameter. The VALUES parameter is valid only if all of the following are true: RSTD(*YES) is specified, both the RANGE and REL parameters are not specified, and each constant matches the attributes specified by the TYPE, LEN, and FULL parameters. As noted in the LEN parameter chart, character constants specified in this parameter can be no longer than 32 characters. Enter the constants (not more than 300) that can be specified as the value of the parameter. The VALUES parameter is not valid if TYPE(*CMD), TYPE(*CMDSTR), TYPE(*X), TYPE(*NULL), TYPE(statement-label), TYPE(*VARNAME), or TYPE(*ZEROELEM), or if RTNVAL(*YES) is specified.

## REL Parameter

Specifies the relationship between the parameter value of this parameter and the value of a constant or another parameter. If a keyword is specified, it must be preceded by an ampersand (\&) to indicate that it is the value of the keyword that is to be tested. The value associated with the referenced keyword, not the user-specified value, is the value passed to the CPP. If the relationship is with another parameter whose value is a list of values or a qualified name, only the first value is used in the comparison.

To specify the relationship, enter one of the following relational operators followed by either a constant or the keyword name (KWD) of the other parameter (which must be preceded by an \&).

```
*LT less than
*LE less than or equal to
*EQ equal to
*GE greater than or equal to
*GT greater than
*NL not less than
*NE not equal to
*NG not greater than
```

The REL parameter is not valid if RTNVAL(*YES) is specified, if either RANGE or VALUES is specified, or if TYPE is specified as *LGL, *VARNAME, *CMD, *CMDSTR, *X, *ZEROELEM, *NULL, or a statement label.

If a character type is specified by TYPE(*CHAR), the EBCDIC value of the character string is used as an unsigned integer in the comparison. As noted in the LEN parameter chart, if a character constant is specified in this parameter, it can be no longer than 32 characters.

Variables can be coded for this element.

## RANGE Parameter

Specifies the range (the limits) for the value of the parameter. The parameter value must be greater than or equal to the lower limit value specified, and it must be less than or equal to the upper limit value specified. For example, 15 would be valid if RANGE was specified as (0 16).

For nonnumeric data types, such as *CHAR, the range of values and the data specified are left-justified and padded on the right with blanks. A numeric range should not be used to define an interval for nonnumeric data unless leading zeros are specified or the data is only 1 character long.

Variables can be coded for this element.
The upper and lower limits of the range can be specified either by a keyword representing the value or by the value itself. If a keyword is specified, it must be preceded by an ampersand (\&) to indicate that the value of the keyword is to be tested. The value of its parameter at the time of the check is used to determine the range. The value that is tested is the value passed to the CPP, not the user-specified value. If the keyword identifies a list of values or a qualified name, only the first value is used as the range limit. A keyword may not reference a parameter that is defined with PASSVAL(*NULL), and RANGE is not valid with PASSVAL(*NULL).

The RANGE parameter is not valid if RTNVAL(*YES) is specified, if either REL or VALUES is specified, or if TYPE is specified as *LGL, *VARNAME, *CMD, *CMDSTR, *X, *ZEROELEM, *NULL, or statement label. As noted in the LEN parameter chart, character constants specified in this parameter can be no longer than 32 characters.
Variables can be coded for this element.

## SPCVAL Parameter

Specifies a list of up to 300 entries that define special values that can be entered on the parameter named in the KWD parameter. Each entry specifies a character string (a from-value) that can be entered even though it may not meet all validity checking requirements. If the entered character string matches the from-value of one of the entries, and the to-value is specified, the string is replaced with the to-value and is then passed to the CPP without further checking. If the to-value is omitted, the from-value is passed to the CPP. SPCVAL is not valid if TYPE is specified as *CMD, *CMDSTR, *X, *NULL, statement-label, or *ZEROELEM, or if RTNVAL(*YES) is specified.

The from-value is a character string, but the to-value can be anything that is passable. However, for TYPE(*DATE), the to-value must be specified unquoted in mmddyy, mmddyyyy, or Cyymmdd format. If a CL variable is used for the from-value, its type must be *CHAR. The to-value must be no longer than LEN specifies and, if TYPE is *DEC, *INT2, or *INT4, the type of the to-value must be the same; if TYPE is a character type (such as *CHAR, *LGL, or *DATE), the to-value must be a character string. As noted in the LEN parameter chart, character constants specified in this parameter can be no longer than 32 characters. If a to-value is not specified, the from-value must be passable.

If a to-value of *CURLIB is specified, the name of the current job library is passed to the CPP instead of the value *CURLIB. If the from-value is *CURLIB and no to-value is specified, or if the to-value is *CURLIB and it is enclosed in apostrophes, the value *CURLIB is passed to the CPP.
Variables cannot be coded for this element.

## SNGVAL Parameter

Specifies a list of up to 300 single values that can be specified for a parameter being defined as a mixed list or as a qualified name (when a statement label is specified for TYPE), or specifies that it is to accept two or more values as defined by the MAX parameter. Any one of the single values can be used instead of a list of values or a qualified name that the parameter is defined to accept. Each entry specifies a character string (a from-value) that can be entered. If an entered character string matches the from-value of one of the entries and the to-value is specified, the data is replaced with the to-value and is passed to the CPP without further checking. If the to-value is omitted, the from-value is passed to the CPP.

The to-value (or the from-value, if the to-value is omitted) must be passable, as specified in the SPCVAL parameter. As noted in the LEN parameter chart, character constants specified in this parameter can be no longer than 32 characters. SNGVAL can be specified only if the MAX parameter is greater than 1 or TYPE is specified as a statement label of a QUAL or ELEM statement. Each single value can only substitute for a list of values or a qualified name; it cannot be a list element or qualifier. It is passed as the first and only element of the list.
SNGVAL is not valid if RTNVAL(*YES) is specified or if TYPE is specified as *CMD, *CMDSTR, *NULL, *ZEROELEM, or *X.
If a to-value of *CURLIB is specified, the name of the current job library, instead of the value *CURLIB, is passed to the CPP. If the from-value is *CURLIB and no to-value is specified, or if the to-value is *CURLIB and it is enclosed in apostrophes, the value *CURLIB is passed to the CPP.

Variables cannot be coded for this element.

## MIN Parameter

Specifies the minimum number of values that must be entered for the parameter being defined.

For a parameter that does not allow multiple like values, only zero (0) for optional and 1 for required can be specified as the minimum number of values.
Note: Required parameter statements must precede optional statements. If required parameter statements are not specified first, the system assumes that the specified parameter is optional, and the minimum number of values for required parameters is ignored.

For a parameter that allows multiple like values (because a value greater than 1 is specified for the MAX parameter), zero (0) indicates that no values need be entered; therefore, it is an optional parameter. A value equal to or greater than one (1) indicates the minimum number of values that must be entered for the parameter; therefore, it is a required parameter. The value exceeds the value specified for the MAX parameter and cannot exceed 1 for TYPE(*NULL).
$\mathbf{0}$ : The parameter is optional; it does not have to be entered.
minimum-number: Specify the minimum number of elements that must be specified for this parameter (named by the KWD parameter). If 1 is the assigned value, it specifies that at least one value is required for the parameter. If a number greater than 1 is specified, the parameter is a list that must have at least as many elements as the number specified.

## MAX Parameter

Specifies, if this PARM statement is defining a simple list parameter, the maximum number of list elements that this list parameter can contain. If a value greater than 1 is specified, the parameter is capable of accepting multiple like values (that is, a simple list). This support is primarily intended for IBM-supplied commands. All values entered for this parameter (at the time the command is run) must satisfy the validity checking requirements specified by the other parameter values on this PARM statement.
Note: The values for a list parameter are passed consecutively, preceded by a 2-byte binary value that indicates the number of values entered in the parameter by the user. CL programs do not support the handling of binary values in variables.

1: The parameter accepts only one value; the parameter is not a list parameter.
maximum-number: Specify the maximum number of elements that the list parameter can accept. The specified maximum must be greater than or equal to the value specified in MIN, and less than or equal to 300. If the maximum is greater than 1 and TYPE is not a statement label that identifies a QUAL or ELEM statement, the parameter is a simple list of
like elements (that is, each element in the list has the same requirements, such as type and length). If TYPE(statement-label) is specified and it points to the label of an ELEM or QUAL statement, MAX should only be specified greater than 1 if a list of lists or a list of qualified names is accepted. A maximum greater than 1 is not valid if TYPE is specified as *CMD, *CMDSTR, or *NULL, or if RTNVAL(*YES) or CONSTANT is specified.

## ALWUNPRT Parameter

Specifies whether this PARM statement accepts the hexadecimal characters X'FF' or those in the range of X'00' to X'3F'. This parameter is valid only for TYPE(*CHAR) or TYPE(*X).
*YES: Any characters can be passed to the CPP and sent to the display or printer.
*NO: Unprintable characters cannot be passed to the CPP.

## ALWVAR Parameter

Specifies whether to allow variable names for the parameter. If TYPE was specified as *VARNAME, *ZEROELEM, *NULL, or statement-label, ALWVAR(*NO) is not allowed.
*YES: Variable names can be used for the parameter.
*NO: Variable names cannot be used for the parameter.

## PGM Parameter

Specifies whether this parameter element is a program name. PGM(*YES) is valid only for statement-label, *CHAR, *NAME, *SNAME, *CNAME, and *GENERIC types. The specification of the PGM(*YES) parameter does not have any effect on the parameter element being defined by the PARM statement; it only indicates to the compiler that the value for this parameter is a program name. This information is stored so it can be included in the output of the Display Program References (DSPPGMREF) command.
*NO: The parameter defined in this PARM statement is not a program name.
*YES: The parameter defined in this PARM statement is a program name.

## DTAARA Parameter

Specifies whether the parameter is a data area name. DTAARA(*YES) is valid only for statement-label, *CHAR, *NAME, *SNAME, *CNAME, and *GENERIC types. The specification of the DTAARA(*YES) parameter does not have any effect on the parameter being defined by the PARM statement; it only indicates to the compiler that the value for this parameter is a data area. This information is stored so it can be included in the output of the Display Program References (DSPPGMREF) command.
*NO: The parameter defined in this PARM statement is not a data area name.
*YES: The parameter defined in this PARM statement is a data area name.

## FILE Parameter

Specifies whether the parameter is a file name and the expected use of the file. The parameter can be specified as the name of a file that has a specific use so that, at compile time, the names can be used to get file reference information about where the files are used. The specification in the FILE parameter does not have any effect on the operation of the parameter being defined; it only indicates to the compiler that the value for this parameter is a file name and what type of file it is. This information is stored so it can be included in the output of the Display Program References (DSPPGMREF) command. The FILE parameter is valid only if *CHAR, *NAME, *SNAME, *CNAME, *GENERIC, or statement-label is specified for the TYPE parameter. The FILE parameter is not valid with RTNVAL(*YES). One of the following types of files can be specified:
*NO: The parameter (named by KWD) is not a file name.
*IN: The parameter value is an input file name.
*OUT: The parameter value is an output file name.
*UPD: The parameter value is an update file name.
*INOUT: The parameter value is the name of a file that is used for both input and output.
*UNSPFD: The parameter value is the name of a file, but its use cannot be specified.
The use of the file must match the type of file specified. For example, if ${ }^{*} \mathrm{~N}$ is specified, the file can be used only for input; if *UPD is specified, it can be used only to update existing records.

## FULL Parameter

Specifies whether the number of characters in the parameter must be exactly the same as the number specified in the LEN parameter (if specified) or its default length (if LEN is not specified).
*NO: The number of characters in the parameter can be less than that specified by the LEN parameter.
*YES: The number of characters in the parameter must equal the number specified by LEN or the default length for that type. The exact length is valid only for the following parameter types: *LGL, *CHAR, *NAME, *SNAME, *CNAME, *GENERIC, *VARNAME, and *HEX. FULL(*YES) is valid with RTNVAL(*YES).

## EXPR Parameter

Specifies whether the parameter named in the KWD parameter can accept an expression containing a character concatenation or a built-in function (\%SUBSTRING or \%BIN). Valid character concatenation operators are as follows:

| Concatenation | *CAT or, II |
| :--- | :--- |
| Blank insertion with concatenation | *BCAT or, I> |
| Blank truncation with concatenation | *TCAT or, I< |

Restrictions: Expressions are not allowed on parameters where the TYPE parameter specifies *CMDSTR, *CMD, *ZEROELEM, *NULL, or statement-label.
*NO: The parameter value cannot be a concatenation expression or a built-in function.
*YES: The parameter value can be a concatenation expression or a built-in function.

## VARY Parameter

Specifies whether the value that is passed to the CPP is preceded by a length value that indicates the number of characters entered for the command parameter.

The length value is the actual number of characters entered for the command parameters with trailing blanks removed. The length value passed may be different than the defined parameter length or the declared variable length. The length of the field containing the character string data is determined by the defined length for the parameter or the declared LEN for CL program variables. The length value defines how many characters in the character string data field were actually entered for the command parameter. This parameter may be specified as a single value ( ${ }^{*} \mathrm{NO}$ ) or as a list of two values (elements).
*NO: The parameter value is not preceded by a length value.

## Element 1: Return Length Value:

*YES: The parameter value passed to the CPP is preceded by a field that indicates the number of characters actually specified for the parameter.

Note: *YES is valid only for the following parameter types: *CHAR, *NAME, *SNAME, *CNAME, *PNAME, *GENERIC, *LGL, *VARNAME, *CMD, *CMDSTR, and *X. *YES must be specified if PASSATR(*YES) and RTNVAL(*YES) are specified.

## Element 2: Value Length:

*INT2: The length of the parameter value is an integer passed as a 2-byte signed binary number.
*INT4: The length of the parameter value is an integer passed as a 4-byte signed binary number.

## PASSATR Parameter

(For IBM-supplied commands) Specifies whether an attribute byte is to be passed to the CPP with the parameter data.
*NO: No attribute byte is passed with the parameter.
*YES: An attribute byte is passed with the parameter; the attribute byte indicates whether the data value came from the default, the data type of the value, and, if TYPE(*CHAR) was specified, whether the character string was enclosed in apostrophes.

## PASSVAL Parameter

Specifies whether a value is to be passed to the command processing program for this parameter. *NULL is not valid if the parameter is a constant parameter (a parameter in which a value has been specified for the CONSTANT parameter on the PARM statement, a parameter for which TYPE(*ZEROELEM) or TYPE(*NULL) has been specified, or is a list/qualified name defined by all constant ELEM or QUAL statements). *NULL also is not valid if RTNVAL(*YES) has been specified or if the value specified for the MIN parameter is greater than zero. A DEP statement or the REL and RANGE keywords of other PARM statements may not reference the value of a parameter defined with PASSVAL(*NULL).
*DFT: The default value is always passed to the CPP.
*NULL: A null pointer is passed to the CPP if the parameter is not specified.

## CASE Parameter

Specifies whether the value that is passed to the CPP is changed from lowercase to uppercase, or is preserved in the case specified on the command parameter.
*MONO: The parameter value is changed from lowercase to uppercase. Parameters with apostrophes preserve the case whether or not this value is specified.
*MIXED: The parameter value is preserved in the case specified on the command parameter. This value can be specified only on *CHAR and *PNAME parameter types.

## LISTDSPL Parameter

Specifies whether the displacement to a list within a list is 2-bytes or 4-bytes long. These displacements are generated when a parameter being passed to a CPP has a list within a list. This parameter is ignored if the value being built for the CPP does not contain a list within a list.
*INT2: The displacement value is an integer passed as a 2-byte signed binary number.
*INT4: The displacement value is an integer passed as a 4-byte signed binary number.

## DSPINPUT Parameter

Specifies whether the keyword value is shown in the job log or on a prompt display. DSPINPUT(*PROMPT) and DSPINPUT(*NO) are valid for the following parameter types: *CHAR, *NAME, *SNAME, *CNAME, *GENERIC, *DEC, *LGL, *INT2, *INT4, *DATE, *TIME, *HEX, and *CMDSTR.

Note: The DSPINPUT parameter has no effect on the job log entries for a database reader job, for imbedded commands (for example, a command submitted on the SBMJOB command), or for commands executed using the QCMDEXC or QCAEXEC APIs.
*YES: The parameter value is displayed on the prompt display and in the job log.
*PROMPT: The parameter value is displayed on the prompt display but not in the job log.
*NO: The parameter value is shown in neither the job log or a prompt display. When a previously entered command is retrieved, the nondisplay field entries must be retyped (their previous values are not retrievable). When a job log entry is created, the nondisplay field is replaced by empty parentheses ().

## CHOICE Parameter

Specifies the text that is displayed to the right of the prompt line of each parameter on the prompt screen. Up to 30 characters of text can be displayed.
*VALUES: Each possible value is displayed in the possible values field, separated by a comma and a space. If values are specified for the Default, Single value, or Special value parameters, the first value displayed is the default value; the next value is a single value, and the values following that are special values. If there are too many values to fit in 30 characters, the last value is followed by three periods.

Examples of possible values text follow:

- If *NO is specified on the RSTD parameter and *DEC is specified on the TYPE parameter and the RANGE parameter is not specified, the word "RANGE" is displayed in the possible values field. The resulting line will appear in the form: RANGE, *XXX, *YYY, *ZZZ...
- If *NO is specified on the RSTD parameter and *DEC is specified on the TYPE parameter and the RANGE parameter is specified, the range of possible values is displayed in the possible values field. The resulting line will appear in the form: a-b, *XXX, *YYY, *ZZZ (where $a$ and $b$ are numerals defining the range).
- If *YES is specified on the RSTD parameter, the possible values displayed are determined by the VALUES parameter, the SNGVAL parameter, and the SPCVAL parameter. The resulting line will appear in the form: *XXX, *YYY, *ZZZ...
*NONE: No values are displayed.
*PGM: A program that is called determines the values that are displayed. The program that is called is identified in CHOICEPGM parameter.
message-identifier: Specify the message ID of the message used to retrieve the message containing the text for the possible values field. The message file specified on the PMTFILE parameter of the Create Command (CRTCMD) command is used to find the message.
'choices-text': Specify no more than 30 characters, enclosed in apostrophes.


## CHOICEPGM Parameter

Specifies the qualified name of the program that is called during the prompting to fill in the possible choices text and the permissible values during prompting. This parameter must be specified if CHOICE(*PGM) is specified, and it may not be specified otherwise.
*NONE: No program is identified to fill in the possible choices text and permissible values. The possible library values are:
*LIBL: The library list is used to locate the program name.
*CURLIB: The current library for the job is used to locate the program name. 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 program name is located.
program-name: Specify the name of the program called during prompting to fill in the possible choices text or a permissible value.

If an exception occurs when the program is called, no possible choices text will be left blank, and the list of permissible values will be taken from the command.

## PMTCTL Parameter

Specifies how prompting is controlled for this parameter. Prompting may be conditioned by another parameter, specified by a PMTCTL statement referred to by label in this parameter, or called for by pressing the F10 key.
*NONE: Specifies that this parameter is always prompted, unless it is omitted due to selective prompting.
*PMTRQS: Specifies that this parameter is not prompted unless:

- The user requests additional parameters.
- A value was entered for the parameter before the prompt was called.
statement-label: Specifies the label of the PMTCTL statement that is used to determine whether this parameter is prompted. The parameter is not prompted unless:
- The conditions specified on the referred to PMTCTL statement have been met.
- A value was entered for the parameter before the prompt was called.


## PMTCTLPGM Parameter

Specifies the qualified name of the program called to convert the value specified for the parameter into a value used on a PMTCTL statement. This parameter is valid only on parameters that are referred to in the CTL parameter of a PMTCTL statement.
*NONE: There is no program to convert the parameter value for prompt control statements. If the parameter is specified in a PMTCTL statement, the actual value is compared in the PMTCTL statement.

The possible library values are:
*LIBL: The library list is used to locate the program name.
*CURLIB: The current library for the job is used to locate the program name. 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 program name is located.
program-name: Specifies the qualified name of the program called to convert the parameter value.

## KEYPARM Parameter

Specifies whether the parameter is a key parameter. Key parameters can be used only if a prompt override program is specified on the PMTOVRPGM parameter of the CRTCMD or CHGCMD commands. The prompt override program overrides the command processing program (CPP) by showing only the key parameters on the initial prompt display. Values must be input for these parameters before the remaining parameters are shown. The remaining parameters are shown on the prompt display with the actual values, instead of *SAME or *PRV.
*NO: The parameter is not a key parameter.
*YES: The parameter is a key parameter. The following rules are followed if *YES is specified:

1. Key parameters must be placed before non-key parameters in the command definition statement.
2. Key parameters appear on the prompt display in the same order as they appear in the command definition statement.
3. Key parameters are valid only if a prompt override program is specified on the PMTOVRPGM parameter of the CRTCMD or CHGCMD commands; if a prompt override program is not specified, the key parameters are treated as non-key parameters, and a warning message is issued.
4. Key parameters must not be the only parameters in the command definition statement; if they are, a warning message is sent.

## INLPMTLEN Parameter

Specifies the length of the input field initially displayed for the parameter when the command is prompted. The user can extend the field to a maximum length of 512 bytes by entering an ampersand (\&) in the first position of the field, followed by a blank. INLPMTLEN is valid only if TYPE is specified as *CHAR, *NAME, *SNAME, *CNAME, *PNAME, *GENERIC, *CMDSTR, *HEX, *X, or *CMD. If FULL(*YES), RTNVAL(*YES), RSTD(*YES), or CONSTANT are specified, INLPMTLEN(*CALC) must be specified or defaulted.
*CALC: The prompter will determine the length of the prompt field based on the type and length of the parameter.
*PWD: If the current value of system value QPWDLVL is ' 0 ' or ' 1 ', the prompt field will be 10 bytes long. Otherwise, the length of the prompt field will be determined by the length of the parameter. INLPMTLEN(*PWD) is valid only if type is specified as *CHAR, *NAME, *SNAME, *PNAME, or *CNAME.
initial-prompt-length: Specify the initial length in bytes of the prompt field. Valid values are $1-12,17,25,32,50,80,132,256$, and 512.

## PROMPT Parameter

Specifies the prompt text, if any, that is used for the parameter named by the KWD parameter. The prompt text further describes the keyword and input field to the user, who may enter a response to the information displayed. For example, the prompt text for the TYPE parameter on the Create Library (CRTLIB) command is:

Library type
When the prompt for the command is displayed, the prompt for the TYPE parameter is:
Library type . . . . . . . . . . *PROD
The underscored field is the prompt input field where the user enters the value for the TYPE parameter. When the prompt is displayed, the prompt input field contains the default value (*PROD in this example). Prompt text cannot be specified if TYPE(*ZEROELEM) or TYPE(*NULL) is specified or if a constant value is specified in the CONSTANT parameter.
*NONE: No prompt text is displayed for the parameter defined by this PARM statement. This parameter is still asked for by its keyword name, but no text is displayed with it.
message-identifier relative-prompt-number: Specify the message identifier that specifies the message that contains the prompt text of up to 30 characters that is displayed when the parameter is prompted. If a message having the specified identifier cannot be found in the message file specified in the PMTFILE parameter of the Create Command (CRTCMD) command, the message identifier itself is used as the prompt text.

Optionally, a relative prompt number can be specified with the message identifier. The relative prompt number specifies the order in which parameter keywords are to be asked
for. This order affects only the order of prompting, not the order in which the parameters are passed to the CPP. Parameters having prompt numbers are asked for before parameters having no prompt numbers. Parameters having no prompt numbers and that do not have PMTCTL(*PMTRQS) coded are asked for before parameters having no prompt numbers and that have PMTCTL(*PMTRQS) coded.
'prompt-text' relative-prompt-number: Specify the prompt text that is displayed when the parameter is prompted. The text must be a character string of no more than 30 characters, enclosed in apostrophes. An optional relative prompt number can be specified with the prompt text, the same as for the message identifier option.

## Examples: PARM statement

PARM KWD (X) TYPE (*DEC) LEN(2) MIN(1) REL(*GT 5)
The value for the parameter named X , a 2-digit decimal number, must be entered. The value must be greater than 5 .

```
PARM KWD(CLASS) TYPE(*CHAR) LEN(1)
    DFT(A) VALUES(A B C) RSTD(*YES)
```

The value of the parameter named CLASS must be $\mathrm{A}, \mathrm{B}$, or C , if entered. If it is not present, A is assumed.

```
PARM KWD(MAXREC) TYPE(*DEC) LEN(3)
    MIN(1) RANGE(&MINREC 999)
```

The value of the MAXREC parameter must be entered as a decimal number of 3 digits or less, with no digits to the right of the decimal point. The value must be greater than or equal to the value entered for parameter MINREC and also must be less than or equal to 999 .
PARM KWD(FILES) TYPE(*NAME) MIN(2) MAX(5)
The FILES parameter is a homogeneous list that contains 2 to 5 names.

```
PARM KWD(INVFNAME) TYPE(*NAME) DFT(*ALL)
    SNGVAL((*ALL XXX)) VALUES(DEPT1 DEPT2 DEPT3)
    FILE(*UPD) MIN(0) MAX(3) RSTD(*YES)
    PROMPT(USR0002 1)
```

The value of the parameter named INVFNAME can be a list of up to three file names of which DEPT1, DEPT2, DEPT3, and *ALL are the valid choices. If *ALL is entered, no other values can be entered for the parameter. If this parameter is omitted, file name XXX is passed to the command processing program. If this parameter is entered through the prompt, the prompt text, as stored in the message file, is displayed and *ALL is listed as the default.

## PMTCTL (Prompt Control) statement

The Prompt Control (PMTCTL) statement specifies a condition that is tested to determine if prompting is done for the parameters whose PARM statement refers to the PMTCTL statement.

The PMTCTL statement (or the first PMTCTL statement if there is more than one) must have a statement label that matches the label referred to in the PMTCTL parameter of one or more PARM statements in the command definition source. The following syntax diagram shows the syntax for the PMTCTL definition statement.

|  | V | (1) |
| :---: | :---: | :---: |
| >>-PMTCTL--CTL--(--keyword-name--)--COND--(------+-*SPCFD- | -+-*SPCFD |  |
|  | +-*UNSPCFD- |  |
|  | '-(relational-operator-value--)-' |  |



## Note:

1. A maximum of 50 repetitions

## CTL Parameter

Specifies the name of the parameter that controls the prompting. The value of the parameter specified here is compared to the value specified in the COND parameter. If the PMTCTLPGM parameter is coded for the parameter specified here, the value returned by the program specified in the PMTCTLPGM parameter is compared to the values specified in the COND parameter. If the parameter specified here is a list or qualified name, only the first list element or qualifier is compared.

## COND Parameter

Specifies the condition against which the parameter specified in the CTL parameter is tested. Up to 50 conditions can be specified.
*SPCFD: The condition is true, including the default value, if it is specified for the control parameter.
*UNSPCFD: The condition is true only if the control parameter is not specified. It is not true if the default value is specified.
relational-operator value: Specify the relational operator and value used to compare the value of the control parameter to the value specified in the COND parameter. Relational operators are *GT, *EQ, *NL, *LT, *NE, *LE, and *NG.

## NBRTRUE Parameter

Specifies the number of conditions (indicated in the COND parameter) that must be true if the parameter is prompted.
*ALL: All the conditions must be true.
relational-operator number: Specify the relational operator and number used to compare the number of conditions that are true to the number specified in the NBRTRUE parameter. Relational operators are *GT, *EQ, *NL, *LT, *NE, *LE, and *NG.

## LGLREL Parameter

Specifies, when multiple PMTCTL statements are in a group, the logical relationship of the statement to the previous statements in the group. This parameter is not allowed on the first PMTCTL statement in a group.
*AND: This statement is in an AND relationship of the statement to the previous statements in the group.
*OR: This statement is in an OR relationship with the previous PMTCTL statement or statements. Statements in an OR relationship are evaluated after AND relationships are evaluated.

## Example: PMTCTL statement

A: PMTCTL CTL(TYPE) COND ((*EQ *) (*EQ *LIST))
NBRTRUE (*EQ 1)
If TYPE (*) or TYPE(*LIST) is specified, the parameters which reference this PMTCTL statement are selected for prompting.

B: PMTCTL CTL(P1) COND ((*EQ *ALL))
PMTCTL CTL(P1) COND ((*EQ *SOME)) LGLREL (*OR)
PMTCTL CTL(P2) COND ((*EQ *ALL)) LGLREL (*AND)
PMTCTL CTL(P1) COND ((*EQ *NONE)) LGLREL (*OR)
PMTCTL CTL(P2) COND ((*NE *ALL)) LGLREL(*AND)
The parameters which refers to this group of PMTCTL statements are selected for prompting if any of the following conditions exist:

- *ALL is specified for P1.
- *SOME is specified for P1 and *ALL is specified for P2.
- *NONE is specified for P1 and *ALL is not specified for P2.


## QUAL (Qualifier) statement

The Qualifier (QUAL) statement describes one part of a qualified name. If a name is the allowed value of a parameter or list element defined in a PARM or ELEM statement, it can be changed to a qualified name by using a QUAL statement for each qualifier used to qualify the name.

The order in which the QUAL statements are entered into the source file determines the positional order in which the qualifiers must be specified and passed to the validity checker and the command processing program (CPP).

The QUAL statement (or only the first QUAL statement if there is more than one) must have a statement label that matches the statement label value that must be specified in a PARM or ELEM statement for which the qualifier is being defined. The qualifiers for the parameter or list element are then entered on the command in the form value3/value2/value1 where values 1 through 3 are qualifiers described by a QUAL statement.

Note: In the System/38 environment, the values are passed in sequential order with periods as delimiters. An example of this form is value1.value2.value3.

The values are passed with each value padded to its defined length and with the delimiters (slashes or periods) removed.

Note: The QUAL statement contains certain parameters and predefined values that can be used only when IBM-supplied CPPs are called by the command being defined. Limitations in some high-level languages reduce the usefulness of these values in the definition statements of user-defined commands. These parameters and values are identified by the phrase "(For IBM-supplied commands)" that immediately follows the parameter keyword (if the entire parameter is for IBM-supplied commands only) or the predefined value to which it applies.

The following syntax diagram shows the syntax for the QUAL definition statement.



## Note:

- A maximum of 300 repetitions.


## TYPE Parameter

Specifies the type of qualifier used to qualify a parameter name or list element name. The qualifier can be a name or generic name, a quoted or unquoted character string, or an integer. Enter one of the following options to specify the type of qualifier. The first qualifier for any qualified name must have a type of name (*NAME) or generic name (*GENERIC).
*NAME: The qualifier is a character string that represents a name. The maximum length of the name is 256 characters. The first character must be alphabetic (including the special characters \$, \#, or @), and the remaining characters must be alphanumeric, a period, or an underscore. The name must be a string of characters starting and ending with double quotation marks ("). If a special value is used (as in *LIBL or *NONE), it must be specified in the SPCVAL parameter.
*SNAME: The qualifier is a character string that represents a name. The maximum length of the name is 256 characters. The first character must be alphabetic (including the special characters \$, @, or \#), and the remaining characters must be A through Z, 0 through 9 , or \$, \#, or @. Periods (.) are not allowed. If a special value is used (as in *LIBL or *NONE), it should be specified in the SPCVAL parameter.
*CNAME: The qualifier is a character string that represents a name. The maximum length of the name is 256 characters. The first character must be alphabetic (including the special characters \$, \#, or @), and the remaining characters must be A through Z, 0 through 9 , \$, \#, or @. Periods (.) and underscores (__) are not allowed. If a special value is used (as in *LIBL or *NONE), it must be specified in the SPCVAL parameter.
*GENERIC: The qualifier is a character string that represents a generic name. A generic name contains a maximum of 255 characters followed by an asterisk (*) or 256 characters without an asterisk. The name identifies a group of objects whose names all begin with the characters preceding the *. If an asterisk (*) is not included, the system assumes that the generic name is a complete object name.
*CHAR: The qualifier is a character string that can (optionally) be enclosed in apostrophes. If the character string contains any special characters (not including an asterisk (*)), it must be enclosed in apostrophes. The maximum length of the character string is 5000 characters.
*INT2: The qualifier is an integer that is passed as a 2-byte signed binary number. CL programs do not support binary values in variables.
*INT4: The qualifier is an integer that is passed as a 4-byte signed binary number. CL programs do not support binary values in variables.

## LEN Parameter

Specifies the length of the qualifier, if its data type is *NAME, *GENERIC, or *CHAR. The default length that is assumed by the system and the maximum length for each type of qualifier are shown in the following table:

| Data Type | Default Length | Maximum Length ${ }^{1}$ |
| :--- | :--- | :--- |
| *NAME | 10 | $256^{2}$ |
| *SNAME | 10 | $256^{2}$ |
| *CNAME | 10 | $256^{2}$ |
| *GENERIC | 10 | $256^{2}$ |
| *CHAR $^{*}$ INT2 | 32 | $5000^{2}$ |
| *INT4 $^{4}$ | 6 |  |

## Data Type <br> Default Length <br> Note:

1 The maximum length shown here is the maximum length allowed by Command Definition. The high-level language used as the CPP for the command may have a different maximum lengths for these data types (for example, *DEC values in CL programs have a maximum length of (159)).
2 Whereas the maximum shown here is the maximum for values used in the command when it is run, the maximum length of character constants specified in the command definition is limited to 32 characters. This restriction applies to the following parameters: CONSTANT, DFT, VALUES, REL, RANGE, and SPCVAL.
$3 \quad$ For ${ }^{*}$ INT2, length cannot be specified; its assumed length is 6 . The value must meet the following condition: $-2^{15} \leq$ value $\leq 2^{15}-1$. The value is passed as a 2 -byte signed binary number.
4 For *INT4, length cannot be specified; its assumed length is 11 . The value must meet the following condition: $-2^{31} \leq$ value $\leq 2^{31}-1$. The value is passed as a 4 -byte signed binary number.

## CONSTANT Parameter

Specifies that a value is passed to the CPP as a constant for the qualifier when the command being defined is processed; the qualifier does not appear externally on the command. If specified, the value must satisfy the requirements specified by the TYPE, LEN, VALUES, REL, RANGE, and SPCVAL parameters. (As noted in the LEN parameter chart, if a character constant is specified in this parameter, it can be no longer than 32 characters.)

If a constant is specified in this QUAL statement, and other QUAL statements immediately follow it, they must also be defined as constants, unless a label precedes one of them. A label indicates the beginning of a new group of QUAL statements, which can be defined differently.
Also, if a constant is specified for the qualifier being defined, no prompt text can be specified for the PROMPT parameter of this QUAL statement. However, any other qualifiers or groups of qualifiers are still prompted, and their values are still passed to the CPP as a qualified name.

The CONSTANT parameter is not valid if the DFT parameter is specified or if *YES is specified on the EXPR parameter.

Variables cannot be coded for this parameter.

## RSTD Parameter

Specifies whether the value entered for the qualifier is restricted to only one of the values given in the VALUES or SPCVAL parameters, or whether any value can be used that satisfies the requirements specified by the TYPE, LEN, REL, RANGE, and SPCVAL parameters.
*NO: The value entered for the qualifier defined by this QUAL statement can be anything that satisfies the requirements specified by the TYPE, LEN, REL, RANGE, and SPCVAL parameters in this QUAL statement.
*YES: The value entered for the qualifier defined by this QUAL statement is restricted to one of the values in the VALUES parameter, or to one of the from-values in the SPCVAL parameters.

## DFT Parameter

Specifies the default value assigned to the qualifier if a value is not specified by the user. The default value must satisfy one of the following:

- It must match the qualifier requirements specified by the TYPE, LEN, REL, and RANGE parameters.
- It must be one of the from-values in the SPCVAL parameter.
- If RSTD(*YES) is specified, it must be in the list of values in the VALUES parameter or in the list of from-values in the SPCVAL parameter.
- If the default is a character constant, it can have no more than 32 characters as noted in the LEN parameter chart.

The DFT parameter is valid only if the MIN parameter is 0 , which means the qualifier defined by this QUAL statement for this list is optional. A default is not meaningful on this QUAL statement if it is the first one (defining the first part) for a qualified name and if a default is specified on the PARM or ELEM statement that this QUAL statement further defines.

If DFT is not specified, it has a default of its own: a blank ( ) if TYPE was specified as *CHAR, *NAME, *SNAME, *CNAME, or *GENERIC; or a zero (0) if TYPE was specified as *INT2 or *INT4. An assumed default value is not displayed by the command prompt; a blank input field is shown instead. If a default is specified in the DFT parameter, it is displayed by the prompt exactly as specified.

The DFT parameter is not valid if the CONSTANT parameter is specified.
value: Specify the default value that meets the specified requirements or that is one of the values specified in the SPCVAL or VALUES parameters.

Variables cannot be coded for this value.

## VALUES Parameter

Specifies a list of up to 300 constants (fixed values) from which one constant can be entered as the value of the qualifier. The VALUES parameter is valid only if all of the following are true: RSTD(*YES) is specified, both RANGE and REL are not specified, and the constant matches the attributes specified by the TYPE and LEN parameters in this QUAL statement. As noted in the LEN parameter chart, character constants specified in this parameter can be no longer than 32 characters. Enter the constants (not more than 300) that can be specified as the value of the qualifier.

## REL Parameter

Specifies the relationship between the qualifier value and the value of another parameter or constant. To specify the relationship, enter one of the following relational operators followed by a constant or the value of another parameter.
*LT less than
*LE less than or equal to
*EQ equal to
*GE greater than or equal to
*GT greater than
*NL not less than
*NE not equal to
*NG not greater than
The REL parameter is not valid if either RANGE or VALUES is specified. If a character type is specified by TYPE(*CHAR), the EBCDIC value of the character string is used as an unsigned integer in the comparison. As noted in the LEN parameter chart, if a character constant is specified in this parameter, it can be no longer than 32 characters.

## RANGE Parameter

Specifies the range (limits) for the value of the qualifier. The qualifier value must be
greater than or equal to the lower limit value specified, and it must be less than or equal to the upper limit value specified. For example, 15 would be valid if the RANGE parameter was specified as (016). For nonnumeric data types, such as *CHAR, the range of values and the data specified is left-justified and padded on the right with blanks. A numerical range should not be used to define an interval for nonnumeric data unless leading zeros are specified or the data is only 1 character in length. The RANGE parameter is not valid if either the REL or VALUES parameter is specified. As noted in the LEN parameter chart, character constants specified in this parameter can be no longer than 32 characters.

## SPCVAL Parameter

Specifies a list of up to 300 entries that define special values that can be entered on the parameter named in the KWD parameter on the PARM statement. Each entry specifies a character string (a from-value) that can be entered even though it may not meet all validity checking requirements. If the entered character string matches the from-value of one of the entries, and the to-value is specified, the string is replaced with the to-value and is then passed to the CPP without further checking. If the to-value is omitted, the from-value is passed to the CPP. The from-value is a character string, but the to-value can be anything that is passable. If a CL variable is used for the from-value, its type must be *CHAR.

However, the first qualifier can only have special to-values with the from-values that are a name, a generic name, or an asterisk, followed by a name, such as *ALL.
Each to-value must be passable to the CPP. The to-value must be no longer than the LEN parameter specifies and, if TYPE is *INT2 or *INT4, the type of the to-value must be the same; if TYPE is a character type (such as *CHAR or *NAME), the to-value must be a character string. As noted in the LEN parameter chart, character constants specified in this parameter can be no longer than 32 characters. If a to-value is not specified, the from-value must be passable.

If a to-value of *CURLIB is specified, the name of the current job library is passed to the CPP instead of the value *CURLIB. If the from-value is *CURLIB and no to-value is specified, or if the to-value is *CURLIB and it is enclosed in apostrophes, the value *CURLIB is passed to the CPP.
Variables cannot be coded for this value.

## ALWUNPRT Parameter

Specifies whether this QUAL statement should accept the hexadecimal characters X'FF' or those in the range of $X^{\prime} 00$ ' to $X^{\prime} 3 F^{\prime}$. This parameter is valid only for TYPE(*CHAR) or TYPE(*X).
*YES: Any characters can be sent to the display or printer.
*NO: Unprintable characters cannot be passed to the command processing program.

## ALWVAR Parameter

Specifies whether to allow variable names for the qualifier. If TYPE was specified as *VARNAME, *ZERO, *NULL, or statement-label, ALWVAR(*NO) is not allowed.
*YES: Variable names can be used for the qualifier.
*NO: Variable names cannot be used for the qualifier.

## MIN Parameter

Specifies whether the qualifier being defined in this QUAL statement is required or optional. If MIN is not specified, 0 is assumed, which means the qualifier is optional. If a required qualified name is needed, $\mathrm{MIN}(1)$ must be coded on both the first QUAL statement and on the PARM or ELEM statement that references it.
$\underline{\mathbf{0}}$ : The qualifier is optional on the name being qualified.

1: The qualifier is required on the name being qualified; it must be entered.

## FULL Parameter

Specifies whether the number of characters in the qualifier value must be exactly the same as the number specified in the LEN parameter (if specified) or its default length (if LEN is not specified).
*NO: The number of characters in the qualifier value can be less than that specified by the LEN parameter.
*YES: The number of characters in the qualifier value must equal the number specified by the LEN parameter or the default length for that type. The exact length is valid only for the *CHAR, *NAME, and *GENERIC qualifier types.

## EXPR Parameter

Specifies whether the qualifier can accept an expression containing a character concatenation. Valid character concatenation operators are as follows:

| Concatenation | *CAT or, II |
| :--- | :--- |
| Blank insertion with concatenation | *BCAT or, I> |
| Blank truncation with concatenation | *TCAT or, I< |

*NO: The qualifier value cannot be a concatenation expression.
*YES: The qualifier value can be a concatenation expression.

## VARY Parameter

Specifies whether the qualifier value passed to the CPP is preceded by a length value that indicates the number of characters entered for the qualifier's value.
*NO: The qualifier value is not preceded by a length value.
*YES: The qualifier value passed to the CPP is preceded by a 2-byte binary length field that indicates the number of characters actually specified for the qualifier. The data is passed in a field of the length specified by LEN or by the default length. *YES is valid only for the following qualifier types: *CHAR, *NAME, *SNAME, *CNAME, or *GENERIC. If a CL variable is specified for this qualifier, the 2-byte binary length field contains the length of the variable value with trailing blanks removed, not the declared length of the CL variable.

## PASSATR Parameter

(For IBM-supplied commands) Specifies whether an attribute byte is to be passed to the CPP with the qualifier.
*NO: No attribute byte is passed with the qualifier.
*YES: An attribute byte is passed with the qualifier; the attribute byte indicates whether the data value came from the default, the data type of the value, and, if TYPE(*CHAR) was specified, whether the character string was enclosed in apostrophes.

## DSPINPUT Parameter

Specifies whether the keyword value is shown in the job log or on a prompt screen.
Note: The DSPINPUT parameter will have no effect on the job log entries for a database reader job, for imbedded commands (for example, a command submitted on the SBMJOB command), or for commands executed using the QCMDEXC or QCAEXEC APIs.
*YES: The parameter value is shown on the prompt display and in the job log.
*PROMPT: The parameter value is shown on the prompt display but not in the job log.
*NO: The parameter value is not shown either in the job log or on a prompt display. When a previously entered command is retrieved, the nondisplay field entries must be retyped (their previous values are not retrievable). When a job log entry is created, the nondisplay field is replaced by empty parentheses ().

## CHOICE Parameter

Specifies the text that is displayed to the right of the prompt line of each parameter on the prompt screen. Up to 30 characters of text can be displayed.
*VALUES: Each possible value is displayed in the possible values field, separated by a comma and a space. If values are specified for the Default, Single value, or Special value parameters, the first value displayed is the default value; the next value is a single value, and the values following that are special values. If there are too many values to fit in 30 characters, the last value is followed by three periods.

Examples of possible values text follow:

- If *NO is specified on the RSTD parameter and *DEC is specified on the TYPE parameter and the RANGE parameter is not specified, the word "RANGE" is displayed in the possible values field. The resulting line will appear in the form: RANGE, *XXX, *YYY, *ZZZ...
- If *NO is specified on the RSTD parameter and *DEC is specified on the TYPE parameter and the RANGE parameter is specified, the range of possible values is displayed in the possible values field. The resulting line will appear in the form: a-b, *XXX, *YYY, *ZZZ (where $a$ and $b$ are numerals defining the range).
- If *YES is specified on the RSTD parameter, the possible values displayed are determined by the VALUES parameter, the SNGVAL parameter, and the SPCVAL parameter. The resulting line will appear in the form: *XXX, *YYY, *ZZZ...
*NONE: No values are displayed.
*PGM: A program that is called determines the values that are displayed. The program that is called is identified in CHOICEPGM parameter.
message-identifier: Specify the message ID of the message used to retrieve the message containing the text for the possible values field. The message file specified on the PMTFILE parameter of the Create Command (CRTCMD) command is used to find the message.
'choices-text': Specify no more than 30 characters, enclosed in apostrophes.


## CHOICEPGM Parameter

Specifies the qualified name of the program that is called during the prompting to fill in the possible choices text and the permissible values during prompting. This parameter must be specified if CHOICE(*PGM) is specified, and may not be specified otherwise.
*NONE: No program is identified to fill in the possible choices text and permissible values.

The possible library values are:
*LIBL: The library list is used to locate the program name.
*CURLIB: The current library for the job is used to locate the program name. 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 program name is located.
program-name: Specify the name of the program to be called during prompting to fill in the possible choices text or a permissible value.

If an exception occurs when the program is called, no possible choices text is left blank, and the list of permissible values is taken from the command.

## INLPMTLEN Parameter

Specifies the length of the input field initially displayed for the qualifier when the command is prompted. The user can extend the field to a maximum length of 512 bytes by entering an ampersand ( $\&$ ) in the first position of the field, followed by a blank. INLPMTLEN is valid only if TYPE is specified as *NAME, *SNAME, *CNAME, *GENERIC, or *CHAR. If FULL(*YES), RSTD(*YES), or CONSTANT are specified, INLPMTLEN(*CALC) must be specified or defaulted.
*CALC: The prompter will determine the length of the prompt field based on the type and length of the parameter.
*PWD: If the current value of system value QPWDLVL is ' 0 ' or ' 1 ', the prompt field will be 10 bytes long. Otherwise, the length of the prompt field will be determined by the length of the parameter. INLPMTLEN(*PWD) is valid only if type is specified as *CHAR, *NAME, *SNAME, *PNAME, or *CNAME.
initial-prompt-length: Specify the initial length in bytes of the prompt field. Valid values are $1-12,17,25,32,50,80,132,256$, and 512.

## PROMPT Parameter

Specifies the prompt text, if any, that is used for the qualifier (defined in this QUAL statement). The PROMPT parameter is not allowed for the first qualifier or for a qualifier for which the CONSTANT parameter is specified. The prompt text for the first qualifier comes from the PARM or ELEM statement PROMPT parameter that points to the qualifier. The prompt text describes the qualifier input field to the user, who may enter a response to the information displayed.
*NONE: No prompt text is shown for the qualifier defined by this QUAL statement. This qualifier is still prompted by an input field, but no text is shown with it.
message-identifier: Specify the message identifier that specifies the message containing the prompt text of up to 30 characters that is shown. When the program is prompting for the qualifier. If a message having the specified identifier cannot be found in the message file specified in the PMTFILE parameter of the Create Command (CRTCMD) command, the message identifier itself is used as the prompt text.
'prompt-text': Specify the prompt text that is shown when the program is prompting the qualifier. The text must be a character string of no more than 30 characters, enclosed in apostrophes.

Example: QUAL statement
Example 1: Defining a SPLFILE Parameter

```
>>-SPLFILE(-+-file-name--+------------------------------------------------------
            '-+--------------------------+---job-name-- '
            '-+-------------+--user-name/-'
                        '-job-number/-'
```

Command definition statements:

```
    PARM KWD(SPLFILE) TYPE(L1) DFT(*) SNGVAL(*)
L1: ELEM TYPE(*NAME) MIN(1) /*For file name */
    ELEM TYPE(Q1) /*For job name */
Q1: QUAL TYPE(*NAME) MIN(1) /*For job name */
QUAL TYPE(*NAME) /*For user name */
QUAL TYPE(*CHAR) LEN(6) /*For job number */
```

The SPLFILE parameter is optional and, if not specified, defaults to an asterisk (*). Otherwise, the value consists of a two-element list. The first element is a file name and it is required. The second element is a qualified job name. The first qualifier is required; the last two qualifiers are optional.

Example 2: Defining a DTAMBRS Parameter


## Note:

1. A maximum of 32 repetitions

Command definition statements:

```
        PARM KWD(DTAMBRS) TYPE(L1) DFT(*ALL) MAX(32) +
            SNGVAL(*ALL)
L1: ELEM TYPE(Q1) MIN(1)
    ELEM TYPE(*NAME) MIN(0) MAX(32) SPCVAL(*NONE) +
                DFT(*NONE)
Q1: QUAL TYPE(*NAME) MIN(1)
    QUAL TYPE(*NAME) DFT(*CURLIB) SPCVAL(*CURLIB)
```

The parameter named DTAMBRS is optional and, if not specified, defaults to *ALL. Otherwise, the value consists of a list, each element of which is itself a list. Each sublist consists of a qualified file name optionally followed by one or more member names. If no member name is specified, *NONE is taken as the default. If no library qualifier is specified for the physical file, ${ }^{*}$ CURRENT is taken as the default. This means that the library is the one currently indicated by the qualified physical file name saved in the description of the logical file to which this DTAMBRS parameter applies. Each sublist can contain one file name and up to 32 member names. Up to 32 such sublists can appear as the value of DTAMBRS.

## Parameter values used for testing and debugging

This section contains expanded descriptions of the program variable, basing pointer, subscript, and qualified-name parameter values. These values can be specified on the Add Breakpoint (ADDBKP), Add Trace (ADDTRC), Change High-Level Language Pointer (CHGHLLPTR), Change Program Variable (CHGPGMVAR), and Display Program Variable (DSPPGMVAR) commands.

For expanded descriptions, see the following:

- "Program-variable description" on page 134
- "Basing-pointer description" on page 135
- "Subscript description" on page 135
- "Oualified-name description" on page -136


## Program-variable description

Program Variable
>>-qual ified-name---subscript------, subscript---------------------------------><

## Note:

1. A maximum of 14 repetitions

The program variable must be enclosed in apostrophes if it contains special characters. Up to 132 characters can be specified for a program variable name. This includes any subscripts, embedded blanks, parentheses, and commas. It does not include the enclosing apostrophes when special characters are used. Some examples are:

```
COUNTA
'VAR1(2,3)'
'A.VAR1(I,3,A.J,1)'
'VAR1 OF A(I,3,J OF A)'
'&LIBNAME'
```


## Basing-pointer description

Basing Pointer


## Note:

1. A maximum of 14 repetitions

The basing pointer must be enclosed in apostrophes if it contains special characters. Up to 132 characters can be specified for a basing pointer name. This includes any subscripts, embedded blanks, parentheses, and commas. It does not include the enclosing apostrophes when special characters are used. Some examples are:

PTRVAR1
'ABC.PGMPTR $(5, B . I) '$
If more than one basing pointer is specified for a variable, the list of basing pointers must be enclosed in parentheses. When multiple basing pointers are specified, they must be listed in order, from the first basing pointer to the last, when used to locate the variable. In the example below, the PTR_1 basing pointer is the first basing pointer used to locate the variable; it either must have a declared basing pointer, or it must not be a based variable. The address contained in the PTR_1 pointer is used to locate the A.PTR_2 pointer (which must be declared as a based pointer variable). The contents of the A.PTR_2 pointer are used to locate the PTR_3 pointer array (which must also be declared based), and the contents of the specified element in the last pointer array are used to locate the variable. An example is:
('PTR_1' 'A.PTR_2' 'PTR_3(1,B.J)')

## Subscript description

Subscript
.-integer-number--.

'-*----------------'

An integer number contains from 1 through 15 digits with an optional leading sign (either plus or minus). A decimal point is not allowed in an integer-number subscript. If a decimal point is specified, the subscript value is not interpreted as the correct numeric value by the system, and an error message is returned.

An asterisk (*) can be used to request a single-dimensional cross-section display of an array program variable. An asterisk can only be specified for a subscript on the primary variable (not on a basing pointer) for the PGMVAR keyword on the Add Break Point (ADDBKP), Add Trace (ADDTRC), and Display Program Variable (DSPPGMVAR) commands. In addition, if the variable has multiple dimensions, only one of the subscript values can be an asterisk. An example of a request to display an array cross-section is:

DSPPGMVAR PGMVAR('X1(*,5,4)')

This display shows the values of all elements of the array that have the second subscript equal to five, and the third subscript equal to four.

## Qualified-name description

Qualified-Name


## Note:

1. A maximum of 19 repetitions

Some high-level languages may allow you to declare more than one variable with the same fully qualified name (although you generally are not able to refer to these variables in the high-level language program after they are declared). If you attempt to refer to such a variable using an OS/400 test facility command, the system selects one of the variables and uses it for the operation. No error is reported when a duplicate fully qualified name is selected.

## Rules for qualified name description

- An ODV number is a slash (/) followed by 1 to 4 hexadecimal digits ( 0 through 9, and A through F).
- The variable-name must be the name of a variable in the program. This name must be specified the same way in the high-level language. Some high-level languages introduce qualifier variable names in addition to the ones you specified in the source for your program. See the appropriate high-level language manual for more information about variable names.
- Blanks must separate the variable-names from the special words OF and IN.
- When a period is used to form a qualified name, no blanks can appear between it and the variable-names.
- The ordering of the variable names must follow these rules:
- For qualified names that contain no embedded period, the variable names are assumed to be specified from the lowest to the highest levels in the structure.
- For qualified names that contain one or more embedded periods, the variable names are assumed to be specified from the highest to the lowest levels in the structure.
- When an ODV number is not used for the qualified name, enough qualifier variable names must be specified so that a single unique variable can be identified in the program. Whether the qualified name is a simple name (only one variable name specified) or a name with multiple qualifier variable names, the variable in the program is uniquely identified if either of the following conditions is true (these conditions may require you to specify more qualifier variable names for $\mathrm{OS} / 400$ test facility commands than you need to specify in the high-level language program to uniquely select a program variable):
- A variable is uniquely identified if there is one and only one variable in the program with a set of qualifier variables matching the qualified variable name specified.
- A variable is uniquely identified in the program if it has exactly the same set of qualifier variables as the qualifier variable names specified. When the complete set of qualifiers is specified, the variable name is said to be fully qualified. A variable that is a fully qualified match for the qualified-name is selected even if there are other variables with names that match the qualified name but have additional qualifier variables which were not specified.


## OS/400 objects

Operating System/400* (OS/400*) objects provide the means through which all data processing information is stored and processed by the iSeries 400 . An OS/400 object is a named unit that exists (occupies space) in storage and on which operations are performed on it by the operating system.

CL commands perform operations on the Operating System/400* (OS/400*) objects. Several types of OS/400 objects are created and used in the control language.

OS/400 objects have the following in common:

- Objects have a set of descriptive attributes that are defined when the object is created.
- Objects have to be used by the system to perform a specific function must be specified in the CL command that performs that function.
- Objects have a set of attributes that describe it and give the specific values assigned for those attributes.
- Generally, objects are independent of all other objects. However, some objects must be created before other objects can be created; for example, a logical file cannot be created if the physical file it must be based on does not exist.
- Objects must be created before other operations that use the object are performed. Descriptions of the create commands (those commands that begin with the letters CRT) give more information about the object types that they create.
- Every OS/400 object that is used by the control language has a name. The object name specified in a CL command identifies which object is used by the operating system to perform the function of the command.
- Objects have either a simple, qualified, or generic name.

For additional information about OS/400 objects, see the following:

- "Library objects"
- "Object types"
- "Simple and qualified object names" on page 139
- "Generic object names" on page 140
- "Object naming rules" on page 141
- Predefined Values and Default Library Locations for OS/400 Object Types table (on page 137)


## Library objects

Many objects are grouped in special objects called libraries. "Object types" provides information about various object types and their default libraries.

Some objects, which use the integrated file system, are located in directories and can be found by using path names or object name patterns instead of searching libraries. You can also use these directories to locate objects. For more information about integrated file system commands, see the lntegrated File Systems topic.

## Object types

The following table lists the predefined values for all the OS/400 object types. When an object is created and a library qualifier can be specified but is not, the object is stored in the user's current job library, as shown in the last column. The user profile for each user specifies the user's current library. The current library will be QGPL if it is not specified otherwise. The other objects, identified by N/A in the last column, cannot be stored in user-provided libraries.

Table 4. Predefined Values and Default Library Locations for OS/400 Object Types

| Value | Object Type | Default User Library |
| :--- | :--- | :--- |
| *ALRTBL | Alert table | *CURLIB |


| Value | Object Type | Default User Library |
| :---: | :---: | :---: |
| *AUTL | Authorization list | N/A |
| *BLKSF | Block special file | N/A |
| *BNDDIR | Binding directory | *CURLIB |
| *CFGL | Configuration list | N/A |
| *CHRSF | Character special file | N/A |
| *CHTFMT | Chart format | *CURLIB |
| *CLD | C/400 locale description | *CURLIB |
| *CLS | Class | *CURLIB |
| *CMD | Command | *CURLIB |
| *CNNL | Connection list | QSYS |
| *COSD | Class-of-service description | QSYS |
| *CRG | Cluster resource group | N/A |
| *CRQD | Change request description | *CURLIB |
| *CSI | Communications Side Information | *CURLIB |
| *CTLD | Controller description | QSYS |
| *DDIR | Distributed file directory | N/A |
| *DEVD | Device description | QSYS |
| *DIR | Directory | N/A |
| *DOC | Document | QDOC |
| *DSTMF | Distributed stream file | N/A |
| *DTAARA | Data area | *CURLIB |
| *DTADCT | Data dictionary | N/A |
| *DTAQ | Data queue | *CURLIB |
| *EDTD | Edit description | QSYS |
| *EXITRG | Exit registration | N/A |
| *FCT | Forms control table | *CURLIB |
| *FIFO | First-in-out special file | N/A |
| *FILE | File | *CURLIB |
| *FLR | Folder | QDOC |
| *FNTRSC | Font resources | *CURLIB |
| *FNTTBL | Font mapping table | *CURLIB |
| *FORMDF | Form definition | *CURLIB |
| *FTR | Filter | *CURLIB |
| *GSS | Graphics symbol set | *CURLIB |
| *IGCDCT | Double-byte character set (DBCS) conversion dictionary | *CURLIB |
| *IGCSRT | Double-byte character set (DBCS) sort table | *CURLIB |
| *IGCTBL | Double-byte character set (DBCS) font table | N/A |
| *IMGCLG | Image catalog | N/A |
| *IPXD | Internetwork packet exchange description | QSYS |
| *JOBD | Job description | *CURLIB |
| *JOBQ | Job queue | *CURLIB |
| *JOBSCD | Job schedule | *CURLIB |
| *JRN | Journal | *CURLIB |
| *JRNRCV | Journal receiver | *CURLIB |
| *LIB | Library | QSYS |
| *LIND | Line description | QSYS |
| *MENU | Menu description | *CURLIB |
| *MGTCOL | Management collection | QPFRDATA |
| *MODD | Mode description | QSYS |
| *MODULE | Compiler unit | *CURLIB |
| *MSGF | Message file | *CURLIB |
| *MSGQ | Message queue | *CURLIB |
| *M36 | AS/400 Advanced 36 machine | *CURLIB |
| *M36CFG | AS/400 Advanced 36 machine configuration | *CURLIB |


| Value |
| :--- |
| *NODGRP |
| *NODL |
| *NTBD |
| *NWID |
| *NWSD |
| *OUTQ |
| *OVL |
| *PAGDFN |
| *PAGSEG |
| *PDG |
| *PGM |
| *PNLGRP |
| *PRDAVL |
| *PRDDFN |
| *PRDLOD |
| *PSFCFG |
| *QMFORM |
| *QMQRY |
| *QRYDFN |
| *RCT |
| *SBSD |
| *SCHIDX |
| *SOCKET |
| *SPADCT |
| *SRVPGM |
| *SQLPKG |
| *SQLUDT |
| *SSND |
| *STMF |
| *S36 |
| *SVRSTG |
| *SYMLNK |
| *TBL |
| *USRIDX |
| *USRPRF |
| *USRQ |
| *USRSPC |
| *VLDL |
| *WSCST |
| *ST |

Object Type
Node group
Node list
NetBIOS description
Network interface description
Network server description
Output queue
Overlay
Page definition
Page segment
Print Descriptor Group
Program
Panel group definition
Product availability
Product definition
Product load
Print Services Facility
configuration
Query management form
Query management query
Query definition
Reference code translate table
Subsystem description
Search index
Local socket
Spelling aid dictionary
Service program
Structured Query Language package
User-defined SQL type
Session description
Bytestream file
System/36 machine description
Server storage space
Symbolic link
Table
User index
User profile
User queue
User space
Validation list
Work station customizing object
Sa

Default User Library
*CURLIB
*CURLIB
QSYS
QSYS
QSYS
*CURLIB
*CURLIB
*CURLIB
*CURLIB
*CURLIB
*CURLIB
*CURLIB
QSYS
QSYS
QSYS
*CURLIB
*CURLIB
*CURLIB
QGPL
QGPL
*CURLIB
QGPL
N/A
QGPL
*CURLIB
*CURLIB
N/A
QGPL
N/A
QGPL
N/A
N/A
*CURLIB
*CURLIB
QSYS
*CURLIB
*CURLIB
*CURLIB
*CURLIB

## Simple and qualified object names

The name of a specific object that is located in a library can be specified as a simple name or as a qualified name. A simple object name is the name of the object only. A qualified object name is the name of the library where the object is stored followed by the name of the object. In a qualified object name, the library name is connected to the object name by a slash (/).

Either the simple name or the qualified name of an object can be specified if the object exists in one of the libraries named in the job's library list; the library qualifier is optional in this case. A qualified name must be specified if the named object is not in a library named in the library list.

Note: Although a job name also has a qualified form, it is not a qualified object name because a job is not an OS/400 object. A job name is qualified by a user name and a job number, not by a library name. For more information about the JOB parameter, refer to JOB parameter.

Example: The following table shows how simple and qualified object names are formed.

Name Type
Simple object name
Qualified object name

Name Syntax
object-name
library-name/object-name

## Example

OBJA
LIB1/OBJB

## Generic object names

A generic object name may refer to more than one object. That is, a generic name contains one or more characters that are the first group of characters in the names of several objects; the system then searches for all the objects that have those characters at the beginning of their names and are in the libraries named in the library list. A generic name is identified by an asterisk (*) as the last character in the name.

A quoted generic name consists of a generic name enclosed in quotation marks. Unlike quoted names, if there are no special characters between the quotation marks, the quotation marks are not removed. The generic name "ABC*" would cause the system to search for objects whose name begins with "ABC.

A generic name can also be qualified by a library name. If the generic name is qualified, the system will search only the specified library for objects whose names begin with that generic name.

Note: A generic name also can be qualified by one or more directories if it is a path name. In a path name, letters can be specified before and after the asterisk (*). For more information on path names, see the Integrated File System topic.

When you specify a generic name, the system performs the required function on all objects whose names begin with the specified series of characters. You must have the authority required to perform that function on every object the generic name identifies. If you do not have the required authority for an object, the function is not performed and a diagnostic message is issued for each instance that the attempted generic function failed. A completion message is issued for each object the generic function operates on successfully. You must view the online low-level messages to see the completion messages. Once the entire generic function is completed, a completion message is issued that states that all objects were operated on successfully. If one or more objects could not be successfully operated on an escape message is issued. If an override is in effect for a specific device file, the single object name specified on the override, rather than the generic name, is used to perform the operation.

You may not be able to use a generic name for delete, move, or rename commands if the library containing the objects is already locked. A search for generic object names requires a more restrictive lock on the library containing the objects than a search for full object names. The more restrictive lock is necessary to prevent another user from creating an object with the same name as the generic search string in the library while the delete, move, or rename command is running. You can circumvent this problem by using the full name of the objects instead of a generic name. Or you can end the job or subsystem that has a lock on the library.

Note: Use the WRKOBJLCK (Work with Object Locks) command to determine which jobs or subsystems have a lock on the library.

For some commands, a library qualifier can be specified with the generic name to limit the scope of the operation. For example, a Change Print File (CHGPRTF) command with FILE(LIB1/PRT*) performs the desired operation on printer files beginning with PRT in library LIB1only; printer files in other libraries are not affected.

The limitations associated with the various library qualifiers are as follows:

- library-name: The operation is performed on generic object names only in the specified library.
- *LIBL: The operation is performed on generic object names in the library list associated with the job that requested the generic operation.
- *CURLIB: The operation is performed on generic object names in the current library.
- *ALL: The operation is performed on generic object names in all libraries on the system for which you are authorized.
- *USRLIBL: The operation is performed on generic object names in the user part of the library list for the job.
- *ALLUSR: The operation is performed on all nonsystem libraries (libraries that do not start with the letter Q), except for the following:
\#CGULIB \#DFULIB \#RPGLIB \#SEULIB

The operation is also performed on the following Qxxx libraries:

| QDSNX | QRCL | QUSRIJS | QUSRSYS |
| :--- | :--- | :--- | :--- |
| QGPL | QS36F | QUSRINFSKR | QUSRVxRxMx |
| QGPL38 | QUSER38 | QUSRNOTES |  |
| QMPGDATA | QUSRADSM | QUSRPOSGS |  |
| QMQMDATA | QUSRBRM | QUSRPOSSA |  |
| QMQMPROC | QUSRDIRCL | QUSRPYMSVR |  |
| QPFRDATA | QUSRDIRDB | QUSRRDARS |  |

Note: A different library name, of the form QUSRVxRxMx, can be created by the user for each release that IBM supports. VxRxMx is the version, release, and modification level of the library.

## Example: Generic object name:

## Name Type

Simple generic name Qualified generic name Quoted generic name

## Name Syntax <br> generic-name* <br> library-name/generic-name* <br> "generic-name*"

Example<br>OBJ*<br>LIB1/OBJ*<br>"ABC*"

## Object naming rules

The following rules, in addition to the standard rules for all names, are used to name all OS/400 objects used in control language commands. The syntax diagram for each CL command shows whether a simple object name, a qualified name, or a generic name can be specified.

- Naming a Single Object. In the name of a single object, each part (the simple name and the library qualifier name) can have a maximum of 10 characters. For more information on specifying objects, see Generic object names.
- Naming a User-Created Object. To distinguish a user-created object from an IBM-supplied object, you should not begin user-created object names with $Q$ because the names of all IBM-supplied objects (except commands) begin with Q. Although you can use as many as 10 characters in CL object names, you may need to use fewer characters to be consistent with the naming rules of the particular high-level language that you are also using. Also, the high-level language might not allow underscores in the naming rules. For example, RPG limits file names to eight characters and does not allow underscores.
- Naming a Generic Object. In a generic name, a maximum of nine alphanumeric characters can be used, not including the asterisk (*) that must immediately follow the last character. For more information on using generic names, see "Generic object names" on page-140.
INV and INV* are valid values where a generic name is accepted. When the name INV is specified, only the object INV is referenced. When the quoted generic name INV* is specified, objects that begin with INV are referred to, such as INV, INVOICE, INVENTORY, and INVENPGM1. When the quoted generic name "INV*" is specified, objects that begin with "INV are referred to, such as "INV\%1" and "INV>.
- Object Library Qualifier Limitations: No library qualifier can be specified with the object name if the object being created is a library, user profile, line description, controller description, device description, mode description, class-of-service description, or configuration list. A library name can never be qualified because a library cannot be placed in a library. The other object types (*USRPRF, *LIND, *CTLD, *DEVD, *MODD, *COSD, and *CFGL) appear to be types that exist only in the QSYS library. When only
the name of an object of these object types is accepted, a library qualifier cannot be specified with the object name. On the Display Object Description (DSPOBJD) command, where any object name is accepted, QSYS can be specified.
- Library List Qualifiers: The predefined value *LIBL (and others, such as *CURLIB and *ALLUSR) can be used in place of a library name in most commands. *LIBL indicates that the libraries named in the job's library list are used to find the object named in the second part of the qualified name.
- Duplicate Object Names: Duplicate names are not allowed for objects of the same type in the same library.
Two objects with the same name cannot be stored in the same library unless their object types are different. Two objects named OBJA can be stored in the library LIBx only if, for example, one of the objects is a program and the other is a file. The following combinations of names and object types could all exist on the system at the same time.


If more than one library contains an object with the same name (and both libraries are in the same library list) and a library qualifier is not specified with the object name, the first object found by that name is used. Therefore, when you have multiple objects with the same name, you should specify the library name with the object name or ensure that the appropriate library occurs first in the library list. For example, if you are testing and debugging and choose not to qualify the names, ensure that your test library precedes your production library in the library list.

## Default libraries

In a qualified object name, the library name is always optional. If a library name is not specified, the default given in the command's description is used (usually either *CURLIB or *LIBL). If the named object is being created, the current library is the default; when the object is created, it is placed either in the current library or in the QGPL (the general purpose library ) if no current library is defined. For objects that already exist, *LIBL is the default for most commands, and the job's library list is used to find the named object. The system searches all of the libraries currently in the library list until it finds the object name specified.

For additional information about object naming, see the following:

- "Path names (*PNAMF)" on page 143
- "Generic names (*GFNFBIC)" on page 144
- "Additional rules for unique names" on page 144

Related information:

- "Naming within commands" on page 74
- "Folder and document names" on page 76

Path names (*PNAME): A path name is a character string that can be used to locate objects in the integrated file system. The string can consist of one or more elements, each separated by a slash (/) or back slash ( $(1)$. Each element is typically a directory or equivalent, except for the last element, which can be a directory, another object such as a file, or a generic presentation of an object or objects to be located.

The / and $\backslash$ characters and nulls cannot be used in the individual components of the path name because the / and $\backslash$ characters are used as separators. The name may or may not be changed to uppercase, depending on whether the file system containing the object is case-sensitive and whether the object is being created or searched for. If the parameter is defined as CASE(*MONO) (the default), any values that are not enclosed in single quotes will be changed to uppercase by the command analyzer.

A / or $\backslash$ character at the beginning of a path name means that the path begins at the top most directory, the "root" (/) directory. If the path name does not begin with a / or \character, the path is assumed to begin at the current directory of the user entering the command.

The path name must be represented in the CCSID currently in effect for the job. If the CCSID of the job is 65535 , the path name must be represented in the default CCSID of the job. Hard-coded path names in programs are encoded in CCSID 37. Therefore, the path name should be converted to the job CCSID before being passed to the command. The maximum length of the path name character string on the CL commands is 5000 characters.

When operating on objects in the QSYS.LIB file system, the component names must be of the form name.object-type; for example:
'/QSYS.LIB/PAY.LIB/TAX.FILE'
Path names must be enclosed in apostrophe (') marks when entered on a command line if they contain special characters. These marks are optional when path names are entered on displays. If the path name includes any quoted strings or special characters; however, the enclosing " marks must be included. The following are rules for using special characters:

- A tilde ( $\sim$ ) character followed by a slash or backslash at the beginning of a path name means that the path begins at the home directory of the user entering the command.
- A tilde $(\sim)$ character followed by a user name and then a slash or backslash at the beginning of a path name means that the path begins at the home directory of the user identified by the user name.
- In some commands, an asterisk (*) or a question mark (?) can be used in the last component of a path name to search for patterns of names. The * tells the system to search for names that have any number of characters in the position of the * character. The ? tells the system to search for names that have a single character in the position of the ? character.
- To avoid confusion with iSeries 400 special values, path names cannot start with a single asterisk (*) character. To perform a pattern match at the beginning of a path name, use two asterisks (**).
Note: This only applies to relative path names where there are no other characters before the asterisk.
- The path name must be enclosed in apostrophes (') or quotation marks (") if any of the following characters are used in a component name:
- Asterisk (*)
- Question mark (?)
- Apostrophe (')
- Quotation mark (")
- Tilde ( $\sim$ ), if used as the first character in the first component name of the path name (if used in any other position, the tilde is interpreted as just another character)

This practice is not recommended because the meaning of the character in a command string could be confused and it is more likely that the command string will be entered incorrectly.

- Do not use a colon (:) in path names. It has a special meaning within the system.
- The processing support for commands and associated user displays does not recognize code points below hexadecimal 40 as characters that can be used in command strings or on displays. If these code points are used, they must be entered as a hexadecimal representation, such as the following:
crtdir dir(X'02')
Therefore, use of code points below hexadecimal 40 in path names is not recommended. This restriction applies only to commands and associated displays, not to APIs.

I For further information on device names, see the Specifying_the_device_name article in the Systems I management, Backup and recovery topic.

For further information on path names, see the Integrated File System topic in the Information Center.
Generic names (*GENERIC): A generic name is one that contains at least one initial character that is common to a group of objects, followed by an asterisk. (The asterisk identifies the series of common characters as a generic name; otherwise, the system interprets the series of characters as the name of a specific object).

For more information on *GENERIC names, see the Generic object names section in this topic.
Additional rules for unique names: Additional rules involving special characters (as an extra character) that apply to the following types of names are:

- A command label must be immediately followed by a colon (:). Blanks can follow the colon, but none can precede it. A command label name cannot be a quoted name.
- A CL variable name must be preceded by an ampersand (\&) to indicate that it is a CL variable used in a CL program.
- A built-in function name must be preceded by a percent sign (\%) to indicate that it is an IBM-supplied built-in function that can be used in an expression. A built-in function name cannot be a quoted name.

These special characters are not part of the name; each is an additional character attached to a name (making a maximum of 11 characters) indicating to the system what the name identifies.

The names of OS/400 objects, CL program variables, system values, and built-in functions can be specified in the parameters of individual commands as indicated in the syntax diagram for each command. Instead of specifying a constant value, a CL variable name can be used on most parameters in CL programs to specify a value that may change during the running of programs. It is the contents of the variable that identify the objects and variables that are used when the command is run.

## Commonly used parameters: Expanded descriptions

This section contains the expanded descriptions of some of the parameters commonly used in the CL commands. The parameters included here meet one or both of these criteria:

- There is extensive information about how they are used.
- They are used in many of the CL commands (such as the AUT parameter), and the parameter description in the individual command description gives only the essential information.

The expanded descriptions of the applicable command parameters have been placed here for several reasons:

- to reduce the amount of material needed in the individual commands. Normally programmers familiar with a parameter's main function do not need the details.
- to provide the supplemental information that is useful to programmers in some instances.

The format for this information is designed for easy reference and includes a general description of each parameter that explains its function, states the rules for its use, and provides other helpful information. The values that can be specified for each parameter are also listed. Each value is followed by an explanation of what it means and (possibly) in which commands it is used. Not all of the values appear in every command. Refer to the individual command descriptions for the specific use of the value in that command parameter.

Double-byte character text in CL commands

| AUT parameter | OBJ parameter |
| :--- | :--- |
| CLS parameter | OBJTYPE parameter |
| COUNTRY parameter | OUTPUT parameter |
| EXCHTYPE parameter | PRTTXT parameter |
| FILETYPE parameter | REPLACE parameter |
| FRCRATIO parameter | Scheduling priority parameters (JOBPTY, OUTPTY, PTYLMT) |
| IGCFEAT parameter | SEV parameter |
| JOB parameter | SPLNBR parameter |
| LABEL parameter | TEXT parameter |
| MAXACT parameter | VOL parameter |
|  | WAITFILE parameter |

## Double-byte character text in CL commands

You can use double-byte character data anywhere in a CL command that descriptive text can be used.

Enter double-byte character text as follows:

1. Begin the double-byte character text with an apostrophe (').
2. Enter a shift-out character.
3. Enter the double-byte character text.
4. Enter a shift-in character.
5. End the double-byte character text with an apostrophe (').

For example, to enter the double-byte character literal $A B C$, enter the following, where $0_{E}$ represents the shift-out character and $0_{F}$ represents the shift-in character:

$$
\text { ' } \mathrm{O}_{E} \mathrm{ABCO}_{F} \text { ' }
$$

Limit the length of a double-byte character text description of an object to 14 double-byte characters, plus the shift control characters, to make sure that the description is properly displayed and printed.

## AUT parameter

You use the authority (AUT) parameter in create, grant, and revoke commands. It specifies the authority granted to all users of an object. It also specifies an authorization list that is used to secure the object. Four object types allow the AUT parameter to contain an authorization list: LIB, PGM, DTADCT, and FILE. Public authority is an OS/400 object attribute that controls the base set of rights to that object for all users having access to the system. These rights can be extended or reduced for specific users. If you specify an authorization list, the public authority in the authorization list is the public authority for the object. The owner of an object has all authority to the object at its creation.

If the object is created as a private object or with the limited authority given to all users, the owner can grant more or less authority to specific users by specifically naming them and stating their authority in the Grant Object Authority (GRTOBJAUT) command. The owner also can withdraw specific authority from specific users, or from all users (publicly authorized and/or specifically authorized) by using the Revoke Object Authority (RVKOBJAUT) command or the Edit Object Authority (EDTOBJAUT) command.

The iSeries Security Reference book has a complete description of security provisions and applicable rights of use by object type.

## Values allowed

*LIBCRTAUT: The public authority for the object is taken from the value on the CRTAUT parameter of the target library (the library that is to contain the object). The public authority is determined when the object is created. If the CRTAUT value for the library changes after the object is created, the new value does not affect any existing objects.
*USE: You can perform basic operations on the object, such as running a program or reading a file. The user cannot change the object. *USE authority provides object operational authority, read authority, and execute authority.
*CHANGE: You can perform all operations on the object except those limited to the owner or controlled by object existence authority and object management authority. You can change and perform basic functions on the object. Change authority provides object operational authority and all data authority.
*ALL:You can perform all operations except those limited to the owner or controlled by authorization list management authority. Your can control the object's existence, specify the security for the object, change the object, and perform basic functions on the object. You also can change ownership of the object.
*EXCLUDE: You cannot access the object.
*EXECUTE: You can run a program or procedure or search a library or directory.
authorization-list-name: Specify the name of the authorization list whose authority is used.

## CLS parameter

The class (CLS) parameter identifies the attributes that define the run time environment of a job. The following attributes are defined in each class:

- Run priority: A number that specifies the priority level assigned to all jobs running that use the class. The priority level is used to determine which job, of all the jobs competing for system resources, is run next. The value can be 1 through 99 , where 1 is the highest priority (all jobs having a 1 priority are run first).
- Time slice: The maximum amount of processor time that the system allows the job to run when it is allowed to begin. The time slice indicates the amount of time needed for the job to accomplish a meaningful amount of work (the time used by the system for reading auxiliary storage is not charged against the time slice). When the time slice ends, the job waits while other queued jobs of the same or higher priority are allowed to run (up to the time specified in their time slices); then the job is given another time slice.
- Purge value: Indicates whether the job step is eligible to be moved from main storage to auxiliary storage while the job is waiting for some resource before it can continue, or when its time slice is used up and equal or higher priority jobs are waiting.
- Default wait time: The default amount of time that the system waits for the completion of an instruction that performs a wait. This wait time applies to times when an instruction is waiting for a system action, not to the time an instruction is waiting for a response from a user. Normally, this would be the amount of time you are willing to wait for the system before ending the request. If the wait time is exceeded, an error message is passed to the job. This default wait time applies only when a wait time is not specified in the CL command that causes the wait.
The wait time used for allocating file resources is specified in the file description and can be overridden by an override command. It specifies that the wait time specified in the class object is used. If file resources are not available when the file is opened, the system waits for them until the wait time ends.

Note: The class attributes apply to each routing step of a job. Most jobs have only one routing step, but if the job is rerouted (because of something like the Remote Job or Transfer Job command) the class attributes will be reset.

- Maximum CPU time: The maximum amount of processor time (the sum of the time slices if they differ, or time slice period multiplied by number of time slices if they are equal) allowed for a job's routing step to complete processing. If the job's routing step is not completed in this amount of time, it is ended, and a message is written to the job log.
- Maximum temporary storage: The maximum amount of temporary storage that can be used by a job's routing step. This temporary storage is used for the programs that run in the job, for the system objects used to support the job, and for temporary objects created by the job.

The system is shipped with a set of classes that define the attributes for several job processing environments. Other classes can be created by the Create Class (CRTCLS) command; any class can be displayed or deleted by the respective Display Class (DSPCLS) and Delete Class (DLTCLS) commands.

## Values allowed

qualified-class-name: Specify the name of the class, optionally qualified by the name of the library in which the class is stored. If the class name is not qualified and the CLS parameter is in the CRTCLS command, the class object is stored in *CURLIB; otherwise, the library list (*LIBL) is used to find the class name.

The following classes (by name) are supplied with the system:

## QGPL/QBATCH

For use by batch jobs

## QSYS/QCTL

For use by the controlling subsystem

## QGPL/QINTER

For use by interactive jobs

## QGPL/QPGMR

For use by the programming subsystem

## QGPL/QSPL

For use by the spooling subsystem printer writer

## QGPL/QSPL2

For general spooling use in the base system pool

## COUNTRY parameter

The Country parameter specifies the country or region code part of the X. 400 O/R name. An ISO 3166 Alpha-2 code or an ITU-T country or region code can be specified. (The ITU-T country or region code is the data country or region or geographical area code published in the "International Numbering Plan for Public Data Networks," Recommendation X. 121 (09/92), by the ITU-T (formerly CCITT). Table 4 is a list of the possible country or region codes that can be specified.

## Values allowed

*NONE: No country or region code is specified.
country-code: Specify an ISO 3166 Alpha-2 code or a CCITT (also known as ITU-2) country or region code from the following table.

Table 6. ISO X. 400 Country or Region Codes

ISO 3166 Alpha-2 Code AF

ITU-T ${ }^{1}$ Country or Region Code 412

| Country or Region | ISO 3166 Alpha-2 Code | ITU-T ${ }^{\mathbf{1}}$ Country or Region Code |
| :---: | :---: | :---: |
| Albania | AL | 276 |
| Algeria | DZ | 603 |
| American Samoa | AS | 544 |
| Andorra | AD |  |
| Angola | AO | 631 |
| Anguilla | AI |  |
| Antarctica | AQ |  |
| Antigua and Barbuda | AG | 344 |
| Argentina | AR | 722 |
| Armenia | AM | 283 |
| Aruba | AW | 362 |
| Australia | AU | 505 |
| Austria | AT | 232 |
| Azerbaijan | AZ | 400 |
| Bahamas | BS | 364 |
| Bahrain | BH | 426 |
| Bangladesh | BD | 470 |
| Barbados | BB | 342 |
| Belarus | BY | 257 |
| Belgium | BE | 206 |
| Belize | BZ | 702 |
| Benin | BJ | 616 |
| Bermuda | BM | 350 |
| Bhutan | BT |  |
| Bolivia | BO | 736 |
| Bosnia and Herzegovina | BA |  |
| Botswana | BW | 652 |
| Bouvet Island | BV |  |
| Brazil | BR | 724 |
| British Indian Ocean Terr. | 10 |  |
| Brunei Darussalam | BN | 528 |
| Bulgaria | BG | 284 |
| Burkina Faso | BF | 613 |
| Burundi | BI | 642 |
| Cambodia | KH | 456 |
| Cameroon | CM | 624 |
| Canada | CA | 302, 303 |
| Cape Verde | CV | 625 |
| Cayman Islands | KY | 346 |
| Central African Republic | CF | 623 |
| Chad | TD | 622 |
| Chile | CL | 730 |
| China | CN | 460 |
| Christmas Island | CX |  |
| Cocos (Keeling) Islands | CC |  |
| Colombia | CO | 732 |
| Comoros | KM | 654 |
| Congo | CG | 629 |
| Cook Islands | CK | 548 |
| Costa Rica | CR | 712 |
| Cote d'Ivoire | Cl | 612 |
| Croatia | HR |  |
| Cuba | CU | 368 |
| Cyprus | CY | 280 |


| Country or Region | ISO 3166 Alpha-2 Code | ITU-T ${ }^{\mathbf{1}}$ Country or Region Code |
| :---: | :---: | :---: |
| Czech Republic | CZ | 230 |
| Denmark | DK | 238 |
| Djibouti | DJ | 638 |
| Dominica | DM | 366 |
| Dominican Republic | DO | 370 |
| East Timor | TP |  |
| Ecuador | EC | 740 |
| Egypt | EG | 602 |
| El Salvador | SV | 706 |
| Equatorial Guinea | GQ | 627 |
| Eritrea | ER |  |
| Estonia | EE | 248 |
| Ethiopia | ET | 636 |
| Falkland Islands (Malvinas) | FK |  |
| Faroe Islands | FO | 288 |
| Fiji | FJ | 542 |
| Finland | FI | 244 |
| France | FR | 208, 209 |
| France, Metropolitan | FX |  |
| French Antilles |  | 340 |
| French Guiana | GF | 742 |
| French Polynesia | PF | 547 |
| French Southern Terr. | TF |  |
| Gabon | GA | 628 |
| Gambia | GM | 607 |
| Georgia | GE | 282 |
| Germany | DE | 262-265 |
| Ghana | GH | 620 |
| Gibralter | GI | 266 |
| Greece | GR | 202 |
| Greenland | GL | 290 |
| Grenada | GD | 352 |
| Guadeloupe | GP |  |
| Guam | GU | 535 |
| Guatemala | GT | 704 |
| Guinea | GN | 611 |
| Guinea-Bissau | GW | 632 |
| Guyana | GY | 738 |
| Haiti | HT | 372 |
| Heard and Mc Donald Islands | HM |  |
| Honduras | HN | 708 |
| China (Hong Kong S.A.R.) | HK | 453, 454 |
| Hungary | HU | 216 |
| Iceland | IS | 274 |
| India | IN | 404 |
| Indonesia | ID | 510 |
| Iran | IR | 432 |
| Iraq | IQ | 418 |
| Ireland | IE | 272 |
| Israel | IL | 425 |
| Italy | IT | 222 |
| Jamaica | JM | 338 |
| Japan | JP | 440-443 |
| Jordan | JO | 416 |


| Country or Region | ISO 3166 Alpha-2 Code | ITU-T ${ }^{\mathbf{1}}$ Country or Region Code |
| :---: | :---: | :---: |
| Kazakhstan | KZ | 401 |
| Kenya | KE | 639 |
| Kiribati | KI | 545 |
| Korea, Democratic People's | KP | 467 |
| Republic |  |  |
| Korea, Republic of | KR | 450, 480, 481 |
| Kuwait | KW | 419 |
| Kyrgyzstan | KG | 437 |
| Lao People's Democratic Rep. | LA | 457 |
| Latvia | LV | 247 |
| Lebanon | LB | 415 |
| Lesotho | LS | 651 |
| Liberia | LR | 618 |
| Libyan Arab Jamahiriya | LY | 606 |
| Liechtenstein | LI |  |
| Lithuania | LT | 246 |
| Luxembourg | LU | 270 |
| China (Macau S.A.R.) | MO | 455 |
| Macedonia ${ }^{2}$ | MK ${ }^{2}$ |  |
| Madagascar | MG | 646 |
| Malawi | MW | 650 |
| Malaysia | MY | 502 |
| Maldives | MV | 472 |
| Mali | ML | 610 |
| Malta | MT | 278 |
| Marshall Islands | MH |  |
| Martinique | MQ |  |
| Mauritania | MR | 609 |
| Mauritius | MU | 617 |
| Mayotte | YT |  |
| Mexico | MX | 334 |
| Micronesia | FM | 550 |
| Moldova, Republic of | MD | 259 |
| Monaco | MC | 212 |
| Mongolia | MN | 428 |
| Montenegro ${ }^{2}$ | ME ${ }^{2}$ |  |
| Montserrat | MS | 354 |
| Morocco | MA | 604 |
| Mozambique | MZ | 643 |
| Myanmar | MM | 414 |
| Namibia | NA | 649 |
| Nauru | NR | 536 |
| Nepal | NP | 429 |
| Netherlands | NL | 204, 205 |
| Netherlands Antilles | AN | 362 |
| New Caledonia | NC | 546 |
| New Zealand | NZ | 530 |
| Nicaragua | NI | 710 |
| Niger | NE | 614 |
| Nigeria | NG | 621 |
| Niue | NU |  |
| Norfolk Island | NF |  |
| Northern Mariana Islands | MP | 534 |
| Norway | NO | 242 |


| Country or Region | ISO 3166 Alpha-2 Code | ITU-T ${ }^{1}$ Country or Region Code |
| :---: | :---: | :---: |
| Oman | OM | 422 |
| Pakistan | PK | 410 |
| Palau | PW |  |
| Panama | PA | 714 |
| Papua New Guinea | PG | 537 |
| Paraguay | PY | 744 |
| Peru | PE | 716 |
| Philippines | PH | 515 |
| Pitcairn | PN |  |
| Poland | PL | 260 |
| Portugal | PT | 268 |
| Puerto Rico | PR | 330 |
| Qatar | QA | 427 |
| Reunion | RE | 647 |
| Romania | RO | 226 |
| Russian Federation | RU | 250, 251 |
| Rwanda | RW | 635 |
| St. Helena | SH |  |
| St. Kitts and Nevis | KN | 356 |
| St. Lucia | LC | 358 |
| St. Pierre and Miquelon | PM | 308 |
| St. Vincent and the Grenadines | VC | 360 |
| Samoa, Western | WS | 549 |
| San Marino | SM | 292 |
| Sao Tome and Principe | ST | 626 |
| Saudi Arabia | SA | 420 |
| Senegal | SN | 608 |
| Serbia ${ }^{2}$ | SP ${ }^{2}$ |  |
| Seychelles | SC | 633 |
| Sierra Leone | SL | 619 |
| Singapore | SG | 525 |
| Slovakia | SK |  |
| Slovenia | SI |  |
| Solomon Islands | SB | 540 |
| Somalia | SO | 637 |
| South Africa | ZA | 655 |
| South Georgia and the S.S.I | GS |  |
| Spain | ES | 214 |
| Sri Lanka | LK | 413 |
| Sudan | SD | 634 |
| Suriname | SR | 746 |
| Svalbard and Jan Mayen Is. | SJ |  |
| Swaziland | SZ | 653 |
| Sweden | SE | 240 |
| Switzerland | CH | 228 |
| Syrian Arab Republic | SY | 417 |
| Taiwan | TW | 466 |
| Tajikistan | TJ | 436 |
| Tanzania, United Republic of | TZ | 640 |
| Thailand | TH | 520 |
| Togo | TG | 615 |
| Tokelau | TK |  |
| Tonga | TO | 539 |
| Trinidad and Tobago | TT | 374 |


| Country or Region | ISO 3166 Alpha-2 Code | ITU-T ${ }^{\mathbf{1}}$ Country or Region Code |
| :--- | :--- | :--- |
| Tunisia | TN | 605 |
| Turkey | TR | 286 |
| Turkmenistan | TM | 438 |
| Turks and Caicos Islands | TC | 376 |
| Tuvalu | TV | 641 |
| Uganda | UG | 255 |
| Ukraine | UA | $424,430,431$ |
| United Arab Emirates | AE | $234,235,236,237$ |
| United Kingdom | GB | $310-316$ |
| United States | US |  |
| United States Minor Outlying Is. | UM | 748 |
| Uruguay | UY | 434 |
| Uzbekistan | UZ | 541 |
| Vanuatu | VU | 225 |
| Vatican City State (Holy See) | VA | 734 |
| Venezuela | VE | 452 |
| Viet Nam | VN | 348 |
| Virgin Is. (Brit.) | VG | 332 |
| Virgin Is. (U.S.) | VI | 543 |
| Wallis and Futuna Is. | WF | 421,423 |
| Western Sahara | EH | 220 |
| Yemen | YE | 630 |
| Yugoslavia, territories of the former | YU | 645 |
| Zaire | ZR | 648 |
| Zambia | ZM |  |
| Zimbabwe | ZW |  |

## Note:

1 This International Telecommunication Union (ITU) committee was formerly known as CCITT.
2 At the time of publication, the ISO 3166 Alpha-2 Code for this country or region could not be confirmed. Before using this code, be sure to confirm with the latest ISO 3166 standard.

## EXCHTYPE parameter

You use the Exchange Type (EXCHTYPE) parameter to specify which one of the three diskette exchange types (basic, H , or I) the system will use when writing diskette files. The exchange type will be stored in the volume label area on the diskette. There is one label for each data file on the diskette.

You can specify the exchange type to be used in one of the diskette device file commands (Create Diskette File (CRTDKTF), Change Diskette File (CHGDKTF), or Override Diskette File (OVRDKTF)). It can also be passed as a parameter when the device file is opened by the high-level language program (if supported).

The system will not use the exchange type specified in the diskette device file or high-level language program when processing a diskette input file. Instead, the system will use the exchange type from the file label on the diskette.

It is possible for one diskette to contain both basic and I exchange format files or H and I format files. One diskette cannot contain both basic and H format files.

## Values allowed

You can specify one of the following values for the EXCHTYPE parameter, depending on the diskette type ( 1,2 , or 2D) and the diskette sector size (128, 256, 512, or 1024 bytes):
*STD: The system determines the exchange type based on the diskette type and sector size. A basic exchange type is used if the diskette type is 1 or 2 , and the diskette sector size is 128 bytes. An H exchange type is used if the diskette type is 2 D and the diskette sector size is 256 bytes. The *STD value is not valid for any other combination of type and sector size.
*BASIC: The basic exchange type is used. The diskette type must be 1 or 2 , and the diskette sector size must be 128 bytes.
*H: The H exchange type is used. The diskette type must be 2D, and the diskette sector size must be 256 bytes.
*I: The I exchange type is used. The diskette type and sector size may be any of the following:

## Diskette type

> Sector size (bytes)

1 128, 256, or 512
2 128, 256, or 512
2D 256,512, or 1024

## FILETYPE parameter

The FILETYPE parameter specifies whether the database file description describes data records or source records. Further, it specifies whether each member of a database file being created is to contain data records or source records (statements). For example, the file could contain RPG source statements for an RPG program or data description source (DDS) statements for another device or database file.

Note: If you are creating a source type physical database file and are not providing field-level descriptions of the file (through data description specifications (DDS)), you can use either the Create Physical File (CRTPF) command or the Create Source Physical File (CRTSRCPF) command. However, the CRTSRCPF command is usually more convenient and efficient, because it is designed to be used to create source physical files. If DDS is provided when you are creating a source type database file, you should use the CRTPF command or the Create Logical File (CRTLF) command, which both have the SRCFILE and SRCMBR parameters for specifying source input.

Records in a source file must have at least three fields: the first two are the source sequence number field and the date field; the third field contains the source statement. These three fields are automatically provided by the OS/400 when a source file is created for which no DDS is provided; additional source fields can be defined in DDS. The length of the sequence number field must be six zoned digits with two decimal places. The length of the date field must be six zoned digits with no decimal places.

The source sequence number and date fields are added to the source record when:

- Records are read into the system.
- Records are created by the Source Entry Utility (which is part of the licensed Application Development* Tools program).

The fields are added when an inline data file (specified as the standard source file format) is read from the diskette device. The spooling reader places a sequence number in the source sequence number field and sets up a zeroed date field.

If those fields already exist in records read from the diskette device, they are not changed. If the records in a database file are in source format and are being read as an inline data file in data format, the source sequence number and date fields are removed.

For more information about data and source files, see Database Programming topic in the Information Center.

## Values allowed

*DATA: The file created contains or describes data records.
*SRC: The file created contains or describes source records. If the file is keyed, the 6-digit source sequence number field must be used as the key field.

## FRCRATIO parameter

The force write ratio (FRCRATIO) parameter specifies the maximum number of records that can be inserted, updated, or deleted before they are forced into auxiliary (permanent) storage. The force write ratio ensures that all inserted, updated, or deleted records are written into auxiliary storage at least as often as this parameter specifies. In the event of system failure, the only records likely to be lost would be those that were inserted, updated, or deleted since the last force write operation.

The force write ratio is applied to all records inserted, updated, or deleted in the file through the open data path (ODP) to which the force write ratio applies. If two programs are sharing the file, SHARE(*YES), the force write ratio is not applied separately to the set of records inserted, updated, or deleted by each program. It is applied to any combination of records (from both programs) that equals the specified force write ratio parameter value. For example, if a force write ratio of 5 was specified for the file, any combination of five records from the two programs (such as four from one program and one from the other) forces the records to be written to auxiliary storage. If two or more programs are using the file through separate ODPs, the insertions, updates, and deletions from each program are accumulated individually for each ODP.

Each database file can have a force write ratio assigned to it. Logical files, which can access data from more than one physical file, can specify a more restrictive force write ratio (a smaller number of records) than that specified for the based-on physical files. However, a logical file cannot specify a less restrictive force write ratio. If a logical file specifies a less restrictive force write ratio than that specified for any of the physical files, the most restrictive force write ratio from the physical files is used for the logical file. For example, if the force write ratios of three physical files are 2,6 , and 8 , the force write ratio of a logical file based on these physical files cannot be greater than 2. If no force write ratio is specified for the logical file, 2 is assumed. Thus, each time a program inserts, updates, or deletes two records in the logical file (regardless of which physical files are affected), those records are forced into auxiliary storage.

The FRCRATIO number overrides the SEQONLY number specified. For example, if you specify:
OVRDBF ... SEQONLY(*YES 20) FRCRATIO(5)
The value of 20 is overridden and a buffer of five records is used. When FRCRATIO(1) is used, a buffer still exists, but it contains only a single record.

Access paths associated with the inserted, updated, and deleted records are written to auxiliary storage only when all the records covered by the access path have been written to auxiliary storage. If only one ODP exists for the file, the access path is forced to auxiliary storage whenever a forced write occurs. If two or more ODPs to the file exist, the access path is written to auxiliary storage whenever all the inserted, updated, and deleted records for all the ODPs have been forced.

## Notes:

- These rules apply only when a force write ratio of 2 or higher is specified. When a force write ratio of 1 is specified, the access path is not written to auxiliary storage until all the ODPs have been closed.
- If the file is being recorded in a journal. FRCRATIO(*NONE) should be specified. More information is in
the Backup_and_Recovery book.


## Values allowed

*NONE: There is no specified ratio; the system determines when the records are written to auxiliary storage.
number-of-records-before-force: Specify the number of updated, inserted, or deleted records that are processed before they are explicitly forced to auxiliary storage.

## IGCFEAT parameter

The IGCFEAT parameter specifies which double-byte character set (DBCS) table is used, according to device and language. The following table indicates the corresponding IGCFEAT parameter and DBCS font table for the double-byte character set device being configured.

Table 7. DBCS Features Configurable on the IGCFEAT Parameter

| Language/Device | Type of Physical DBCS Work Station | Configure as Type-Model | Configure with DBCS Feature |
| :---: | :---: | :---: | :---: |
| Japanese Display | 5295-001 Display | 5555-B01 | ((2424J4 55FE)) |
| Stations | 5295-002 Display | 5555-B01 | ((2424J4 68FE)) |
|  | InfoWindow 3477-J Display | $\begin{aligned} & \text { 5555-B01, } \\ & \text { C01 } \end{aligned}$ | ((2424J4 68FE)) |
|  | PS/55 with 5250PC | 5555-B01 | ((2424J4 68FE)) |
|  | PS/55* with graphics 5250PC | 5555-G01 | ((2424J4 68FE)) |
|  | PS/55* with graphics 5250PC | 5555-G02 | ((2424J4 68FE)) |
|  | PS/55 with 5250PC/2 | 5555-E01 | ((2424J0 (1))) |
|  | 3270-type Display | 3279-0 | ((2424J0 (1))) |
|  | PS/55 with Client Access/400 by OS/400 | 5555-B01 | ((2424J0 (1))) |
| Japanese 24x24 | Attached to 5295-001 Display | 5553-B01 | ((2424J1 55FE)) |
| Printers | Attached to 5295-002 Display | 5553-B01 | ((2424J1 68FE)) |
|  | Attached to PS/55 | 5553-B01 | ((2424J1 68FE)) |
|  | 5227-001 Printer | 5553-B01 | ((2424J2 55FE)) |
|  | 5327-001 Printer | 5553-B01 | ((2424J2 68FE)) |
| Japanese 32x32 | 5337-001 Printer | 5553-B01 | ((3232J0 (1))) |
| Printers | 5383-200 Printer | 5583-200 | ((3232J0 (1))) |
| Korean Display | 5250-Type Display | 5555-B01 | ((2424K0 (1))) |
| Stations | 3270-Type Display | 3279-0 | ((2424K0 (1))) |
| Korean 24x24 | Attached to 5295 Display | 5553-B01 | ((2424K0 (1))) |
| Printers | Attached to PS/55 | 5553-B01 | ((2424K0 (1))) |
|  | 5227-002 Printer | 5553-B01 | ((2424K2 52FE)) |
| Traditional Chinese | 5250-Type Display | 5555-B01 | ((2424C0)) |
| Display Stations | 3270-Type Display | 3279-0 | ((2424C0)) |
| Traditional Chinese | Attached to 5295 Display | 5553-B01 | ((2424C0)) |
| 24x24 Printers | Attached to PS/55 | 5553-B01 | ((2424C0)) |
|  | 5227-003 Printer | 5553-B01 | ((2424C2 5CFE)) |
| Simplified Chinese | 5250-Type Display | 5555-B01 | ((2424S0)) |
| Display Stations | 3270-Type Display | 3279-0 | ((2424S0)) |
| Simplified Chinese | Attached to PS/55 | 5553-B01 | ((2424S0)) |
| 24x24 Printers | 5227-005 Printer | 5553-B01 | ((2424S2 6FFE)) |

## JOB parameter

The JOB parameter specifies the name of the job to which the command is applied. The job name identifies all types of jobs on the system. Each job is identified by a qualified job name, which has the following format:
job-number/user-name/job-name
Note: Although the syntax is similar, job names are qualified differently than OS/400 object names.
The following list describes the pieces of the qualified job name:

- Job number: The job number is a unique 6-digit number that is assigned to each job by the system. The job number provides a unique qualifier if the job name is not otherwise unique. The job number can be determined by means of the Display Job (DSPJOB) command. If specified, the job number must have exactly six digits.
- User name: The user name identifies the user profile under which the job is to run. The user name is the same as the name of the user profile and contains a maximum of 10 alphanumeric characters. The name can come from one of several sources, again, depending on the type of job:
- Batch job: The user name is specified on the SBMJOB command, or it is specified in the job description referenced by the BCHJOB or SBMJOB commands.
- Interactive job: The user name is specified at sign-on, or the user name is provided from the default in the job description referred to by the work station's job entry.
- Autostart job: The user name is specified in the job description referred to by the job entry for the autostart job.
- Job name: The job name can contain a maximum of 10 alphanumeric characters, of which the first character must be alphabetic. The name can come from one of three sources, depending on the type of job:
- Batch job: The job name is specified on the Batch Job (BCHJOB) or Submit Job (SBMJOB) commands or, if not specified there, the unqualified name of the job description is used.
- Interactive job: The job name is the same as the name of the device (work station) from which the sign-on was performed.
- Autostart job: The job name is provided in the autostart job entry in the subsystem description under which the job runs. The job name was specified in the Add Autostart Job Entry (ADDAJE) command.

Commands only require that the simple name be used to identify the job. However, additional qualification must be used if the simple job name is not unique.

## Duplicate job names

If a duplicate job name is specified in a command in an interactive job, the system displays all of the duplicates of the specified job name to the user in qualified form. The job names are displayed in qualified form along with the user name and job number so that you can further identify the job that is to be specified in a command. You can then enter he correct qualified job name.

If a duplicate job name is used in a command in a batch job, the command is not processed. Instead, an error message is written to the job log.

## Values allowed

The JOB parameter can have one or more of the following values, depending upon the command:
*: The job is the one in which the command is entered; that is, the command with JOB(*) specified on it.
*JOBD: The simple job name is the unqualified name of the job description.
*NONE: No job name is specified as in the Display Log (DSPLOG) command.
job-name: A simple job name is specified.
qualified-job-name: You must specify a qualified job name. If no job qualifier (user name and job number) is given, all of the jobs currently in the system are searched for the job name. If duplicates of the specified name are found, a qualified job name must be specified.

## LABEL parameter

The LABEL parameter specifies the data file identifier of the data file (on diskette or tape) used in input and/or output operations. The data file can be in either the exchange format or the save/restore format.

Note: The device file commands are used for diskettes and tapes that are in the exchange format only, not for those in the save/restore format; user-defined device files are not used in save/restore operations.

Each data file that is on a diskette or tape has its data file identifier stored in its own file label.
On diskette, all of the data file labels are in one place, in the volume label area of that diskette. In addition to the data file identifier, each label contains other information about the file, such as where the file is stored on the diskette (track and sector) and whether the file continues on another diskette (in the case of a multivolume data file).

On tape, the data file label (or header label) of each data file is stored on the tape just before the data in the file. That is, each file on the tape has its own header label and its own data records together as a unit, and one file follows another. In addition to the data file identifier, each label also contains other information about the file, such as the file sequence number, record and block attributes, and whether it is a multivolume data file.

Generally, the data file identifier is an alphanumeric character string that contains no more than 8 characters. However, the maximum length actually depends on several things: what data format is used for the files, whether the files are on diskette or on tape, and CL commands in which the identifiers are specified. The unused portion of the file identifier field should be left blank.

The first character of the data file identifier must be alphabetic (A through Z, \$, \#, or @) and the rest of the characters should be alphanumeric (A through Z, 0 through 9, \$, \#, _, ., and @). You can use special characters if the identifier is enclosed in apostrophes. However, if the diskette or tape is used on a system other than an iSeries 400, the requirements for specifying identifiers on that system must be considered.

## Diskette and tape data file identifiers

For diskettes in the exchange format, the data file identifier cannot exceed 8 characters (the same limit as for RPG file names). This limitation applies to the following commands: Create Diskette File (CRTDKTF), Change Diskette File (CHGDKTF), Change Spooled File Attributes (CHGSPLFA), Override Diskette File (OVRDKTF), Delete Diskette Label (DLTDKTLBL), Display Diskette (DSPDKT), and Start Diskette Reader (STRDKTRDR).

For tapes, the identifier can have as many as 17 characters. However, if a tape is used on a system other than an iSeries 400 , a maximum of 8 characters, or a qualified identifier of no more than 17 characters, should be used. If more than 8 characters are used, the identifier should be qualified and enclosed in apostrophes so that no more than 8 characters occur in either part, and the parts are separated by a period; for example, LABEL('TAXES.JAN1980'). This limitation applies to the following commands: Create Tape File (CRTTAPF), Change Tape File (CHGTAPF), Override Tape File (OVRTAPF), and Display Tape (DSPTAP).

Duplicate data file identifiers are not allowed in the same volume, on either diskette or tape. However, the identifier can be the same as the name of the database file written to diskette or tape if the file name contains no more than 8 characters. The diskette and tape data files contain only data, not file descriptions like those of database files. On diskette, the identifiers ERRORSET and SYSAREA cannot be used; they are reserved for special use.

The data file identifier is put on the volume when the data file is put on the volume. For input/output operations, the identifier can be specified in one of the diskette or tape device file commands, or it can be passed as a parameter when the device file is opened by the high-level language program that uses the file.

## Save/Restore format

For diskettes in the save/restore format, the data file identifier can have a maximum of 17 characters. If a library name is used to generate the label, the file identifier can have a maximum of 15 characters. The identifier consists of a library name of up to 10 characters followed by a period, a Q, and a 3-digit sequence number; for example, LABEL('PAYLIB.Q014'). The 15-character limit applies to identifiers of save/restore data files displayed by the DSPDKT command.

For tapes in the save/restore format, the identifier can have a maximum of 17 characters. If a library name is used to generate the label, the identifier cannot exceed 10 characters. You may specify a label other than a library name.

## Values allowed

One of the following values can be specified for the LABEL parameter, depending upon the command.
*ALL: Labels for all the data file identifiers in the specified diskette or tape volumes are shown on the display.
*NONE: The data file identifier is not specified. It must be supplied before the device file (and/or database file) is opened to be used in the diskette or tape operation.
*SAME: The data file identifier already present in the diskette or tape device file does not change.
data-file-identifier: Specify the identifier of the data file (on diskette or tape) used or displayed with the device file description.
*LIB: The file label is created by the system and the name of the library specified on the LIB parameter is used as the qualifier for the file name.
*SAVLIB: The file label is created by the system, and the name of the library specified on the SAVLIB parameter is used as the qualifier for the file name.

## MAXACT parameter

The maximum activity level (MAXACT) parameter specifies the maximum number of jobs that can be concurrently started and that remain active through a job queue entry, communications entry, routing entry, or work station entry. A job is considered active from the time it starts running until it is completed. This includes time when:

- The job is actually being processed.
- The job is waiting for a response from a work station user.
- The job is started and available for processing but is not actually using the processor. For example, it might have used up its time slice and is waiting for another time slice.
- The job is started but is not available for processing. For example, it could be waiting for a message to arrive on its message queue.


## Values allowed

*NOMAX: There is no maximum number of jobs that can be active at the same time.
maximum-active-jobs: Specify a value that indicates the maximum number of jobs that can be concurrently active through this entry.

See the Work Management
book for a description of activity level controls.

## OBJ parameter

The object (OBJ) parameter specifies the names of one or more objects affected by the command in which this parameter is used. All of the objects must be in the library specified in the LIB parameter, the SAVLIB parameter, or the library qualifier in the OBJ parameter, depending upon which command is used.

On some commands, the generic name of a group of objects can be specified. To form a generic name, add an asterisk (*) after the last character in the common group of characters; for example, ABC*. If an * is not included with the name, the system assumes that the name is a complete object name.

## Values allowed

Depending on the command, the following types of values can be specified on the OBJ parameter:

- *ALL
- Simple object name
- Qualified object name
- Generic object name
- Qualified generic object name


## OBJTYPE parameter

The object type (OBJTYPE) parameter specifies the types of OS/400 objects that can be operated on by the command in which they are specified. The object types that can be specified in the OBJTYPE parameter vary from command to command.

The primary purpose of Table 8 (Table 8. Object Types Used by Commands Containing the OBJTYPE Parameter" on page 160) is to provide you with a list of the object types that can be operated on by commands containing the OBJTYPE parameter. The Xs indicate that the object type (in the same row as the X ) can be specified as a value for the OBJTYPE parameter of the command (in the same column as the $X$ ).

The table also provides you with an index to the object-related commands that operate on most objects. The object-related commands allow you to perform general functions on most objects without knowing the special commands related to the specific object type. For example, you could use the CRTDUPOBJ command to create a copy of a file or library instead of the specific commands CPYF (Copy File) or CPYLIB (Copy Library). The table can help you determine whether you can use the general object-related commands to perform a function on a specific object.

The following commands also contain the OBJTYPE parameter but are not included in the table because they operate on only a few object types.

- CHKDLO operates on *DOC and *FLR.
- CPROBJ and DCPOBJ operate on *FILE, *MENU, *MODULE, *PGM, *PNLGRP, and *SRVPGM.
- CRTSQLPKG operates on *PGM and *SRVPGM.
- DSPPGMADP operates on *PGM, *SQLPKG, and *SRVPGM.
- DSPPGMREF operates on *PGM and *SQLPKG.
- RSTCFG operates on *CFGL, *CNNL, *COSD, *CTLD, *DEVD, *LIND, *MODD, and *NWID.
- SAVLICPGM operates on *LNG and *PGM.
- SETOBJACC operates on *FILE and *PGM.

The DSPLNK and WRKLNK commands operate on all object types.
The ALCOBJ and DLCOBJ commands also require that an object type value is specified. However, for these commands, the object type value is specified as one of four values (in a list of values) on the required parameter OBJ. The following object types can be specified for the OBJ parameter on the ALCOBJ and DLCOBJ commands: *AUTL, *BNDDIR, *CLD, *CRQD, *CSI, *DEVD, *DTAARA, *DTADCT,
*DTAQ, *FCT, *FILE, *FNTRSC, *FORMDF, *IPXD, *LIB, *MENU, *MODULE, *MSGQ, *NODL, *NTBD, *NWSD, *OVL, *PAGDFN, *PAGSEG, *PDG, *PGM, *PNLGRP, *PSFCFG, *QMFORM, *QMQRY, *QRYDFN, *SBSD, *SCHIDX, *SQLPKG, *SRVPGM, *SSND, *S36, *USRIDX, *USRQ, *USRSPC, and *WSCST.

Note: RTVOBJD and DSPOBJD support the same object types. To see which object types are supported by RTVOBJD, refer to the column labeled DSPOBJD in the following table.

Table 8. Object Types Used by Commands Containing the OBJTYPE Parameter:

| Value | Basic Object-Related Commands |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | Other Object-Related Commands |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Object |  |  |  |  | Object Authority |  |  |  |  | General |  |  |  |  |  |  |  |  |  |  |
|  | $\begin{aligned} & \mathrm{C} \\ & \mathrm{H} \\ & \mathrm{~K} \\ & \mathrm{O} \\ & \mathrm{~B} \\ & \mathrm{~J} \end{aligned}$ | $\begin{aligned} & \mathrm{D} \\ & \mathrm{M} \\ & \mathrm{P} \\ & \mathrm{O} \\ & \mathrm{~B} \\ & \mathrm{~J} \end{aligned}$ | $\begin{aligned} & \text { M } \\ & \text { O } \\ & \text { V } \\ & \text { O } \\ & \text { B } \\ & \text { J } \end{aligned}$ | $\begin{aligned} & \text { R } \\ & \mathrm{N} \\ & \mathrm{M} \\ & \mathrm{O} \\ & \mathrm{~B} \\ & \mathrm{~J} \end{aligned}$ | $\begin{aligned} & \text { W } \\ & \text { R } \\ & \text { K } \\ & \text { O } \\ & \text { B } \\ & \text { J } \end{aligned}$ | $\begin{aligned} & \mathrm{C} \\ & \mathrm{H} \\ & \mathrm{G} \\ & \mathrm{O} \\ & \mathrm{~B} \\ & \mathrm{~J} \\ & \mathrm{~A} \\ & \mathrm{U} \\ & \mathrm{D} \end{aligned}$ | $\begin{aligned} & \mathrm{D} \\ & \mathrm{~S} \\ & \mathrm{P} \\ & \mathrm{O} \\ & \mathrm{~B} \\ & \mathrm{~J} \\ & \mathrm{~A} \\ & \mathrm{U} \\ & \mathrm{~T} \end{aligned}$ | $\begin{aligned} & \hline \text { E } \\ & \text { D } \\ & \text { T } \\ & \text { O } \\ & \text { B } \\ & \mathrm{J} \\ & \text { A } \\ & \mathrm{U} \\ & \mathrm{~T} \end{aligned}$ | $\begin{aligned} & \mathrm{G} \\ & \mathrm{R} \\ & \mathrm{~T} \\ & \mathbf{O} \\ & \mathrm{~B} \\ & \mathrm{~J} \\ & \mathrm{~A} \\ & \mathrm{U} \\ & \mathrm{~T} \end{aligned}$ | R V K O B J A U T | $\begin{aligned} & \text { C } \\ & \text { H } \\ & \text { G } \\ & \text { O } \\ & \text { B } \\ & \text { J } \\ & \text { D } \end{aligned}$ | $\begin{gathered} D \\ \text { S } \\ \text { P } \\ \text { O } \\ \text { B } \\ \text { J } \end{gathered}$ |  | $\begin{aligned} & \mathrm{C} \\ & \mathrm{R} \\ & \mathrm{~T} \\ & \mathrm{D} \\ & \mathrm{U} \\ & \mathrm{P} \\ & \mathrm{O} \\ & \mathrm{~B} \\ & \mathrm{~J} \end{aligned}$ | W R K O B J L C K | $\begin{aligned} & \mathrm{C} \\ & \mathrm{H} \\ & \mathrm{G} \\ & \mathrm{O} \\ & \mathrm{~B} \\ & \mathrm{~J} \\ & \mathrm{P} \\ & \mathrm{G} \\ & \mathrm{P} \end{aligned}$ | $\begin{array}{\|c\|} \hline D \\ M \\ P \\ S \\ Y \\ S \\ \text { O } \\ \text { B } \\ \hline \end{array}$ | $\begin{gathered} \hline P \\ \hline R \\ T \\ D \\ S \\ \text { K } \\ \text { I } \\ \text { N } \\ \hline \end{gathered}$ | $\begin{aligned} & \mathrm{R} \\ & \mathrm{~S} \\ & \mathrm{~T} \\ & \mathrm{O} \\ & \mathrm{~B} \\ & \mathrm{~J} \end{aligned}$ | $\begin{aligned} & \mathrm{S} \\ & \mathrm{~A} \\ & \mathrm{~V} \\ & \mathrm{C} \\ & \mathrm{H} \\ & \mathrm{G} \\ & \mathrm{O} \\ & \mathrm{~B} \\ & \mathrm{~J} \end{aligned}$ | $\begin{aligned} & \text { S } \\ & \text { A } \\ & \text { V } \\ & \text { O } \\ & \text { B } \\ & \text { J } \end{aligned}$ |
| *ALRTBL | X | X | X | X | X | X | X | X | X | X | X | X | x | x | x | x | x | x | X | X | X |
| *AUTL | x | x |  | x | x | x | x | x |  |  | x | x | x | x | X | x | X | x |  |  |  |
| *BLKSF |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | X |  | X |  |  |
| *BNDDIR | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x |
| *CFGL | X | X |  |  | X | X | X | X | X | X | X | X | X |  | X | X | X | X |  |  |  |
| *CHRSF |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| *CHTFMT | X | X | x | X | X | X | x | x | x | X | x | X | x | X | X | x | x | x | x | x | X |
| *CLD | X | x | x | X | X | X | X | X | x | X | x | x | X | X | x | x | x | x | X | x | x |
| *CLS | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X |
| *CMD | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X |
| *CNNL | X | X |  |  | X | X | x | x | X | X | X | X | X |  |  | X | X | x |  |  |  |
| ${ }^{*} \mathrm{COSD}$ | X | X |  | X | X | X | X | X | x | X | X | X | X |  | X | X | X | X |  |  |  |
| *CSI | X | X | x |  | X | X | x | x | x | X |  |  | X | X | X | x | X | x | X | x | X |
| *CRG |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| *CRQD | X | x | X | x | X | X | x | x | x | X | X | X | X | X | x | X | X | x | X | X | X |
| *CTLD | X | X |  | X | X | X | X | X | X | X | X | X | X |  | X | X | X | X |  |  |  |
| *DEVD | X | X |  | X | X | X | X | X | X | X | X | X | X |  | X | X | X | X |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| *DDIR | X | x |  |  | X | X | x |  |  |  |  | x |  |  | x |  | x | x |  |  |  |
| *DIR |  | X |  |  |  |  |  |  |  |  |  |  |  |  |  |  | X | X |  |  |  |
| *DOC | X |  | X | x | x |  | x | X | X | X | X | X | X | X | X | X |  |  | X | X | X |
| *DSTMF | X | x |  |  | X | X | x | x | X | X | X | X | X |  | X | X | x | x |  |  |  |
| *DTAARA | X | X | x | x | x | X | X | x | X | X | X | X | X |  | X | X | x | x | X | X | X |


|  |  |  |  |  |  | ic | bje | R | ated | Co | ma |  |  |  |  |  |  | O | jec | Rel |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | bjec |  |  |  | bje | A | hor |  |  |  | Gen | ra |  |  |  |  |  |  |  |
|  |  |  |  |  |  | C | D | E | G | R |  |  | C | C | W | C | D | P |  | S |  |
|  |  |  |  |  |  | H | S | D | R | V |  |  | H | R | R | H | M | R |  | A |  |
|  |  |  |  |  |  | G | P | T | T | K | C | D | G | T | K | G | P | T |  | V |  |
|  | C | D | M | R | W | 0 | 0 | 0 | 0 | 0 | H | S | 0 | D | 0 | 0 | S | D | R | C | S |
|  | H | M | 0 | N | R | B | B | B | B | B | G | P | B | U | B | B | Y | S | S | H | A |
|  | K | P | V | M | K | J | J | J | J | J | 0 | 0 | J | P | J | J | S | K | T | G | V |
|  | 0 | 0 | 0 | 0 | 0 | A | A | A | A | A | B | B | 0 | 0 | L | P | 0 | I | 0 | 0 | 0 |
|  | B | B | B | B | B | U | U | U | U | U | J | J | W | B | C | G | B | N | B | B | B |
| Value | J | J | J | J | J | D | T | T | T | T | D | D | N | J | K | P | J | F | J | J | J |
| *DTADCT |  | x |  |  |  | X |  |  |  |  |  |  |  |  |  |  | X | X |  |  |  |
| *DTAQ |  |  |  |  |  | X |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |


| Value | Basic Object-Related Commands |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | Other Object-Related Commands |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Object |  |  |  |  | Object Authority |  |  |  |  | General |  |  |  |  |  |  |  |  |  |  |
|  | $\begin{aligned} & \mathrm{C} \\ & \mathrm{H} \\ & \mathrm{~K} \\ & \mathrm{O} \\ & \mathrm{~B} \\ & \mathrm{~J} \end{aligned}$ | $\begin{aligned} & \mathrm{D} \\ & \mathrm{M} \\ & \mathrm{P} \\ & \mathrm{O} \\ & \mathrm{~B} \\ & \mathrm{~J} \end{aligned}$ | $M$ $O$ $V$ $O$ $B$ $J$ | $\begin{aligned} & \mathrm{R} \\ & \mathrm{~N} \\ & \mathrm{M} \\ & \mathrm{O} \\ & \mathrm{~B} \\ & \mathrm{~J} \end{aligned}$ | $\begin{aligned} & \text { W } \\ & \text { R } \\ & \text { K } \\ & \text { O } \\ & \text { B } \\ & \text { J } \end{aligned}$ | $\begin{aligned} & \hline \text { C } \\ & \text { H } \\ & \text { G } \\ & \text { O } \\ & \text { B } \\ & \text { J } \\ & \text { A } \\ & \text { U } \\ & \text { D } \end{aligned}$ | $\begin{aligned} & \hline \mathrm{D} \\ & \mathrm{~S} \\ & \mathrm{P} \\ & \mathrm{O} \\ & \mathrm{~B} \\ & \mathrm{~J} \\ & \mathrm{~A} \\ & \mathrm{U} \\ & \mathrm{~T} \end{aligned}$ | $\begin{aligned} & \hline \mathrm{E} \\ & \mathrm{D} \\ & \mathrm{~T} \\ & \mathrm{O} \\ & \mathrm{~B} \\ & \mathrm{~J} \\ & \mathrm{~A} \\ & \mathrm{U} \\ & \mathrm{~T} \end{aligned}$ | $\begin{aligned} & \mathrm{G} \\ & \mathrm{R} \\ & \mathrm{~T} \\ & \mathrm{O} \\ & \mathrm{~B} \\ & \mathrm{~J} \\ & \mathrm{~A} \\ & \mathrm{U} \\ & \mathrm{~T} \end{aligned}$ | R V K O B J A U T | $\begin{aligned} & \text { C } \\ & \text { H } \\ & \text { G } \\ & \text { O } \\ & \text { B } \\ & \text { J } \\ & \text { D } \end{aligned}$ | D S P O B J D | C H G O B J O W N |  |  |  | $\begin{aligned} & \mathrm{D} \\ & \mathrm{M} \\ & \mathrm{P} \\ & \mathrm{~S} \\ & \mathrm{Y} \\ & \mathrm{~S} \\ & \mathrm{O} \\ & \mathrm{~B} \\ & \mathrm{~J} \end{aligned}$ | $\begin{array}{\|c\|} \hline P \\ \text { R } \\ \text { T } \\ \text { D } \\ \text { S } \\ \text { K } \\ \text { I } \\ \text { N } \\ \hline \end{array}$ | $\begin{aligned} & \mathrm{R} \\ & \mathrm{~S} \\ & \mathrm{~T} \\ & \mathrm{O} \\ & \mathrm{~B} \\ & \mathrm{~J} \end{aligned}$ | $\begin{aligned} & \text { S } \\ & \text { A } \\ & \text { V } \\ & \text { C } \\ & \text { H } \\ & \text { G } \\ & \text { O } \\ & \text { B } \end{aligned}$ | $\begin{aligned} & \text { S } \\ & \text { A } \\ & \text { V } \\ & \text { O } \\ & \text { B } \\ & \text { J } \end{aligned}$ |
| *EDTD | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x |
| *EXITRG | x | x | x |  |  | x | x | x |  |  |  | x | x |  |  |  | x | x | x | x | x |
| *FCT | x | x |  | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x |
| *FIFO |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| *FILE | x | x |  | x | x | x | x | x | x | x | x | x | x |  | x | x | x | x | x | x | x |
| *FLR | X | X |  |  | X |  | x |  |  |  |  | X |  |  | X |  | X | x |  |  |  |
| *FNTRSC | X | X | X | X | X | X | x | X | X | X | X | X | X | X | X | X | X | x | X | x | X |
| *FNTTBL | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x |  | x | x | x | x |
| *FORMDF | X | X | x | X | X | X | X | X | X | X | X | X | X | X | X | X | X | x | X | X | X |
| *FTR | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X |
| *GSS | x | X | x | x | X | X | X | X | X | x | X | x | X | X | X | X | X | X | X | X | x |
| *IGCDCT | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X |  | X | X | X |
| *IGCSRT | x | X | X | X | X | X | X | X | X | X | X | X | X | X | x | x | x | x | x | X | X |
| *IGCTBL | X | X |  |  | X | X | X | X | X | X | X | X |  |  | X | X | X | X | X | X | X |
| *IMGCLG | X | X |  | X | X | X | X | X | X |  | X | X | X |  | X | X | X | X | X | X | X |
| *IPXD | X | X |  | X | X | X | x | X | X | X | X | X | X |  | X | X | X | X |  |  |  |
| *JOBD | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X |  | X | X | X | X | X |
| *JOBQ | X | X | X | X | X | X | x | X | X | X | X | X | X | X |  |  | X |  | X | X | X |
| *JOBSCD | X | X |  |  | X | X | x | X | x | X | X | X |  |  |  |  | X |  | X | x | X |


|  | Basic Object-Related Commands |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | Other Object-Related Commands |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Object |  |  |  |  | Object Authority |  |  |  |  | General |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  | C | D | E | G | R |  |  | C | C | W | C | D | P |  | S |  |
|  |  |  |  |  |  | H | S | D | R | V |  |  | H | R | R | H | M | R |  | A |  |
|  |  |  |  |  |  | G | P | T | T | K | C | D | G | T | K | G | P | T |  | V |  |
|  | C | D | M | R | w | 0 | 0 | 0 | 0 | 0 | H | S | 0 | D | 0 | 0 | S | D | R | C | S |
|  | H | M | 0 | N | R | B | B | B | B | B | G | P | B | U | B | B | Y | S | S | H | A |
|  | K | P | V | M | K | J | $J$ | J | J | J | 0 | 0 | J | P | J | J | S | K | T | G | V |
|  | 0 | 0 | 0 | 0 | 0 | A | A | A | A | A | B | B | 0 | 0 | L | P | 0 | I | 0 | 0 | 0 |
|  | B | B | B | B | B | U | U | U | U | U | J | J | W | B | C | G | B | N | B | B | B |
| Value | J | J | J | J | J | D | T | T | T | T | D | D | N | J | K | P | J | F | J | J | J |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| *JRN | X | X | x | X | X | X | X | X | X | x | X | X | X |  | X | X | X | X | X | X | X |
| *JRNRCV | x | x | X | X | X | X | x | X | X | X | X | X | X |  | X | X | X | X | X | X | X |
| *LIB | x | x |  |  | x | x | x | x | x | x | X | x | X |  | X | x | X | x |  |  |  |
| *LIND | x | x |  |  | x | X | x | x | X | x | X | X | X |  | X | x | X | X |  |  |  |
| *MEDDFN | X | X | X | X | X | X | x | X | X | X | X | X | X | X | X | X | X |  | X | X | X |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| *MENU | x | X | x | X | x | X | x | X | X | X | X | X | X | x | X | X | X | x | X | X | X |
| *MGTCOL | X | X | X | X | X | X | x | X | X | X | X | X | X | X | X | X | X | X | X | X | X |
| *MODD | X | x |  |  | X | X | X | X | X | X | X | X | x |  | X | X | x | X |  |  |  |
| *MODULE | X | X | x | X | x | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X |
| *MSGF | x | x | x | x | x | x | x | x | x | X | x | x | X | X | X | x | X | x | X | X | x |


| Value | Basic Object-Related Commands |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | Other Object-Related Commands |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Object |  |  |  |  | Object Authority |  |  |  |  | General |  |  |  |  |  |  |  |  |  |  |
|  | $\begin{aligned} & \mathrm{C} \\ & \mathrm{H} \\ & \mathrm{~K} \\ & \mathrm{O} \\ & \mathrm{~B} \\ & \hline \end{aligned}$ | $\begin{aligned} & \mathrm{D} \\ & \mathrm{M} \\ & \mathrm{P} \\ & \mathrm{O} \\ & \mathrm{~B} \\ & \mathrm{~J} \end{aligned}$ | $\begin{aligned} & \mathrm{M} \\ & \mathrm{O} \\ & \mathrm{~V} \\ & \mathrm{O} \\ & \mathrm{~B} \\ & \mathrm{~J} \end{aligned}$ | $\begin{aligned} & \mathrm{R} \\ & \mathrm{~N} \\ & \mathrm{M} \\ & \mathrm{O} \\ & \mathrm{~B} \\ & \mathrm{~J} \end{aligned}$ | $\begin{aligned} & \text { W } \\ & \text { R } \\ & \text { K } \\ & \text { O } \\ & \text { B } \\ & \text { } \end{aligned}$ | $\begin{aligned} & \mathrm{C} \\ & \mathrm{H} \\ & \mathrm{G} \\ & \mathrm{O} \\ & \mathrm{~B} \\ & \mathrm{~J} \\ & \mathrm{~A} \\ & \mathrm{U} \\ & \mathrm{D} \end{aligned}$ | $\begin{aligned} & \hline \text { D } \\ & \text { S } \\ & \text { P } \\ & \text { O } \\ & \text { B } \\ & \mathrm{J} \\ & \text { A } \\ & \mathrm{U} \\ & \text { T } \end{aligned}$ | E D T O B J A U T | $\begin{aligned} & \text { G } \\ & \text { R } \\ & \text { T } \\ & \mathbf{O} \\ & \text { B } \\ & \mathbf{J} \\ & \mathbf{A} \\ & \mathbf{U} \\ & \mathbf{T} \end{aligned}$ | $\begin{aligned} & \hline \mathrm{R} \\ & \mathrm{~V} \\ & \mathrm{~K} \\ & \mathrm{O} \\ & \mathrm{~B} \\ & \mathrm{~J} \\ & \mathrm{~A} \\ & \mathrm{U} \\ & \mathrm{~T} \end{aligned}$ | C H G O B J D | D S P O B J D | C <br> H <br> G <br> O <br> B <br>  <br> J <br> O <br> W <br>  <br>  | C <br> $R$ <br> $T$ <br> $D$ <br> $D$ <br> $U$ <br> $P$ <br> $O$ <br> $B$ <br> $J$ | $\begin{array}{\|c\|} \hline \text { W } \\ \text { R } \\ \text { K } \\ \text { O } \\ \text { B } \\ \text { J } \\ \text { L } \\ \text { C } \\ \text { K } \end{array}$ |  |  | $\begin{gathered} P \\ R \\ \text { T } \\ \text { D } \\ S \\ \text { K } \\ \text { I } \\ \text { N } \\ \text { F } \end{gathered}$ | $\begin{aligned} & \text { R } \\ & \mathrm{S} \\ & \mathrm{~T} \\ & \mathrm{O} \\ & \mathrm{~B} \\ & \mathrm{~J} \end{aligned}$ | S A V C H G O B J | $\begin{aligned} & \mathrm{S} \\ & \mathrm{~A} \\ & \mathrm{~V} \\ & \mathrm{O} \\ & \mathrm{~B} \\ & \mathrm{~J} \end{aligned}$ |
| *MSGQ | x | X | x | X | x | X | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x |
| *NODGRP | X | X | X | x | X | X | x | X | x | X | x | X | X | X | x | x | X | x | X | x | x |
| *NODL | X | X | X | x | X | X | x | x | X | X | x | X | x |  | x | X | X | x | X | x | X |
| *NTBD | X | X |  | x | X | X | x | x | X | X | X | X | X |  | X | X | X | x |  |  |  |
| *NWID | X | X |  | X | x | X | x | x | x | X | x | X | X |  | x | x | x | X |  |  |  |
| *NWSD | X | X |  |  | X | X | x | X | X | X | X | X | X |  | X | X | X | X |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| *OUTQ | x | x | X | x | X | x | x | x | x | X | x | x | x | x | x | x | X | x | X | X | X |
| *OVL | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X |
| *PAGDFN | X | X | X | x | x | X | x | X | X | X | x | X | X | x | X | x | X | x | X | X | X |
| *PAGSEG | X | X | X | X | X | X | x | x | X | X | X | X | X | X | X | X | X | X | X | X | X |


| Value | Basic Object-Related Commands |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | Other Object-Related Commands |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Object |  |  |  |  | Object Authority |  |  |  |  | General |  |  |  |  |  |  |  |  |  |  |
|  | $\begin{aligned} & \mathrm{C} \\ & \mathrm{H} \\ & \mathrm{~K} \\ & \mathrm{O} \\ & \mathrm{~B} \\ & \mathrm{~J} \end{aligned}$ | $\begin{gathered} \mathrm{D} \\ \mathrm{M} \\ \mathrm{P} \\ \mathrm{O} \\ \mathrm{~B} \\ \mathrm{~J} \end{gathered}$ | $\begin{gathered} \mathrm{M} \\ \mathrm{O} \\ \mathrm{~V} \\ \mathrm{O} \\ \mathrm{~B} \\ \mathrm{~J} \end{gathered}$ | $\begin{aligned} & \mathrm{R} \\ & \mathrm{~N} \\ & \mathrm{M} \\ & \mathrm{O} \\ & \mathrm{~B} \\ & \mathrm{~J} \end{aligned}$ | $\begin{gathered} W \\ R \\ K \\ O \\ B \\ \text { J } \end{gathered}$ | C H G O B J A U D | D S P O B J A U T | E D T O B J A U T | G R T O B J A U T | $\begin{aligned} & \text { R } \\ & \text { V } \\ & \text { K } \\ & \text { O } \\ & \text { B } \\ & \mathrm{J} \\ & \text { A } \\ & \mathrm{U} \\ & \mathrm{~T} \end{aligned}$ | C H G O B J D | $\begin{aligned} & \mathrm{D} \\ & \mathrm{~S} \\ & \mathrm{P} \\ & \mathrm{O} \\ & \mathrm{~B} \\ & \mathrm{~J} \\ & \mathrm{D} \end{aligned}$ | C <br> H <br> G <br> 0 <br> B <br> J <br> 0 <br> W <br> N | C R T D U P O B J | $\begin{aligned} & \mathrm{W} \\ & \mathrm{R} \\ & \mathrm{~K} \\ & \mathrm{O} \\ & \mathrm{~B} \\ & \mathrm{~J} \\ & \mathrm{~L} \\ & \mathrm{C} \\ & \mathrm{~K} \end{aligned}$ | C <br> H <br> G <br> 0 <br> B <br> J <br> P <br> G <br> P | D <br> M <br> P <br> S <br> Y <br> S <br> 0 <br> B <br> J | $\begin{gathered} \hline \mathrm{P} \\ \mathrm{R} \\ \mathrm{~T} \\ \mathrm{D} \\ \mathrm{~S} \\ \mathrm{~K} \\ \mathrm{I} \\ \mathrm{~N} \\ \mathrm{~F} \end{gathered}$ | $\begin{aligned} & \mathrm{R} \\ & \mathrm{~S} \\ & \mathrm{~T} \\ & \mathrm{O} \\ & \mathrm{~B} \\ & \mathrm{~J} \end{aligned}$ | $\begin{aligned} & \mathrm{S} \\ & \mathrm{~A} \\ & \mathrm{~V} \\ & \mathrm{C} \\ & \mathrm{H} \\ & \mathrm{G} \\ & \mathrm{O} \\ & \mathrm{~B} \\ & \mathrm{~J} \end{aligned}$ | $\begin{aligned} & \mathrm{S} \\ & \mathrm{~A} \\ & \mathrm{~V} \\ & \mathrm{O} \\ & \mathrm{~B} \\ & \mathrm{~J} \end{aligned}$ |
| *PDG | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X |
| *PGM | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X |
| *PNLGRP | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X |
| *PRDAVL |  | X |  | X |  | X |  |  |  |  | X | X | X | X | X | X | X |  | X |  | X |
| *PRDDFN | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X |  |
| *PRDLOD |  | X | X | X | X | X |  |  |  |  | X | X | X | X | X | X | X | X | X |  |  |
| *PSFCFG | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X |
| *QMFORM | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X |
| *QMQRY | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X |
| *QRYDFN | X | X | X | X | X | X | X | X | X | X | X | X | X | X |  | X | X | X | X | X | X |
| *RCT | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X |
| *SBSD | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X |
| *SCHIDX | X | X | X | X | X | X | X | X | X | X | X |  | X |  |  | X | X | X | X | X | X |
| *SOCKET |  |  |  |  |  |  |  |  |  |  |  |  |  |  | X |  |  | X |  |  |  |
| *SPADCT | X | X | X | X | X | X | X | X | X | X | X | X | X |  |  | X | X | X | X | X | X |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |


|  | Basic Object-Related Commands |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | Other Object-Related Commands |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Object |  |  |  |  | Object Authority |  |  |  |  | General |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  | C | D | E | G | R |  |  | C | C | W | C | D | P |  | S |  |
|  |  |  |  |  |  | H | S | D | R | V |  |  | H | R | R | H | M | R |  | A |  |
|  |  |  |  |  |  | G | P | T | T | K | C | D | G | T | K | G | P | T |  | V |  |
|  | C | D | M | R | W | 0 | 0 | 0 | 0 | 0 | H | S | 0 | D | 0 | 0 | S | D | R | C | S |
|  | H | M | 0 | N | R | B | B | B | B | B | G | P | B | U | B | B | Y | S | S | H | A |
|  | K | P | v | M | K | J | J | J | J | J | 0 | 0 | J | P | J | J | S | K | T | G | V |
|  | 0 | 0 | 0 | 0 | 0 | A | A | A | A | A | B | B | 0 | 0 | L | P | 0 | I | 0 | 0 | 0 |
|  | B | B | B | B | B | U | U | U | U | U | J | J | W | B | C | G | B | N | B | B | B |
| Value | J | J | J | J | J | D | T | T | T | T | D | D | N | J | K | P | J | F | J | J | J |
| *SQLPKG | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X |
| *SQLUDT |  | X |  | X |  |  |  |  |  |  |  |  |  | X |  |  |  |  |  |  |  |
| *SRVPGM | x |  | X |  | X | X | X | x | X | x | X | x | X |  | X | X | X | x | X | x | X |
| *SSND | X | X |  |  | x | X | X | X | X | X | X | X | X |  | X | X | X | X | X | X | X |
| *STMF |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | X |  |  |  |


|  | Basic Object-Related Commands |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | Other Object-Related Commands |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Object |  |  |  |  | Object Authority |  |  |  |  | General |  |  |  |  |  |  |  |  |  |  |
| Value | C H K O B J | $\begin{aligned} & \mathrm{D} \\ & \mathrm{M} \\ & \mathrm{P} \\ & \mathrm{O} \\ & \mathrm{~B} \\ & \mathrm{~J} \end{aligned}$ | $\begin{gathered} \mathrm{M} \\ \mathrm{O} \\ \mathrm{~V} \\ \mathrm{O} \\ \mathrm{~B} \\ \mathrm{~J} \end{gathered}$ | $\begin{aligned} & \mathrm{R} \\ & \mathrm{~N} \\ & \mathrm{M} \\ & \mathrm{O} \\ & \mathrm{~B} \\ & \mathrm{~J} \end{aligned}$ | $\begin{gathered} \text { W } \\ \text { R } \\ \text { K } \\ \text { O } \\ \text { B } \\ \text { J } \end{gathered}$ | $\begin{aligned} & \mathrm{C} \\ & \mathrm{H} \\ & \mathrm{G} \\ & \mathrm{O} \\ & \mathrm{~B} \\ & \mathrm{~J} \\ & \mathrm{~A} \\ & \mathrm{U} \\ & \mathrm{D} \end{aligned}$ | $\begin{aligned} & \hline \mathrm{D} \\ & \mathrm{~S} \\ & \mathrm{P} \\ & \mathrm{O} \\ & \mathrm{~B} \\ & \mathrm{~J} \\ & \mathrm{~A} \\ & \mathrm{U} \\ & \mathrm{~T} \end{aligned}$ | $\begin{aligned} & \hline \text { E } \\ & \text { D } \\ & \text { T } \\ & \text { O } \\ & \text { B } \\ & \mathrm{J} \\ & \text { A } \\ & \mathrm{U} \\ & \mathrm{~T} \end{aligned}$ | $\begin{aligned} & \mathrm{G} \\ & \mathrm{R} \\ & \mathrm{~T} \\ & \mathbf{O} \\ & \mathrm{~B} \\ & \mathrm{~J} \\ & \mathrm{~A} \\ & \mathrm{U} \\ & \mathrm{~T} \end{aligned}$ | R V K O B J A U T | C H G O B J D | $\begin{aligned} & \text { D } \\ & \text { S } \\ & \text { P } \\ & \text { O } \\ & \text { B } \\ & \text { J } \\ & \text { D } \end{aligned}$ | $\begin{gathered} \hline \mathrm{C} \\ \mathrm{H} \\ \mathrm{G} \\ \mathrm{O} \\ \mathrm{~B} \\ \mathrm{~J} \\ \mathrm{O} \\ \mathrm{~W} \\ \mathrm{~N} \end{gathered}$ | $\begin{array}{\|l\|} \hline \mathrm{C} \\ \mathrm{R} \\ \mathrm{~T} \\ \mathrm{D} \\ \mathrm{U} \\ \mathrm{P} \\ \mathrm{O} \\ \mathrm{~B} \\ \mathrm{~J} \end{array}$ | $\begin{array}{\|c\|} \hline \text { W } \\ \text { R } \\ \text { K } \\ \text { O } \\ \text { B } \\ \text { J } \\ \text { L } \\ \text { C } \\ \text { K } \end{array}$ | $\begin{aligned} & \mathrm{C} \\ & \mathrm{H} \\ & \mathrm{G} \\ & \mathrm{O} \\ & \mathrm{~B} \\ & \mathrm{~J} \\ & \mathrm{P} \\ & \mathrm{G} \\ & \mathrm{P} \end{aligned}$ | $\begin{aligned} & \hline \mathrm{D} \\ & \mathrm{M} \\ & \mathrm{P} \\ & \mathrm{~S} \\ & \mathrm{Y} \\ & \mathrm{~S} \\ & \mathrm{O} \\ & \mathrm{~B} \\ & \mathrm{~J} \end{aligned}$ | $\begin{aligned} & \hline P \\ & R \\ & \mathrm{~T} \\ & \mathrm{D} \\ & \mathrm{~S} \\ & \mathrm{~K} \\ & \mathrm{I} \\ & \mathrm{~N} \\ & \mathrm{~F} \end{aligned}$ | $\begin{aligned} & \text { R } \\ & \mathrm{S} \\ & \mathrm{~T} \\ & \mathrm{O} \\ & \mathrm{~B} \\ & \mathrm{~J} \end{aligned}$ | $\begin{aligned} & \hline \mathrm{S} \\ & \mathrm{~A} \\ & \mathrm{~V} \\ & \mathrm{C} \\ & \mathrm{H} \\ & \mathrm{G} \\ & \mathrm{O} \\ & \mathrm{~B} \\ & \mathrm{~J} \end{aligned}$ | $\begin{aligned} & \text { S } \\ & \text { A } \\ & \text { V } \\ & \text { O } \\ & \text { B } \\ & \text { J } \end{aligned}$ |
| *SVRSTG |  | X |  |  | X | X | x | X | x | x | x | x |  |  |  | x | X | X | X | x | X |
| *SYMLNK |  |  |  | X |  |  |  |  |  |  |  |  |  | x |  |  |  | X |  |  |  |
| *S36 | x | X | x |  | X | X | x | x | x | X | x | X | X |  | X | X | X | X | X | x | X |
| *TBL | x | x |  |  | x | x | x | x | x | x | x | x | x |  | x | x | x | x | x | x | x |
| *USRIDX | x | X | X | x | X | X | x | x | X | X | X | X | x | x | X | X | X | X | X | X | x |
| *USRPRF | X | x | x | X | X | x | X | X | x | X | x | X | x |  | x | x | x | X |  |  |  |
| *USRQ | X | X | X | X | X | X | X | X | X | X | X | X | X |  | X | X | X | X | X | X | X |
| *USRSPC | X | X | X | X | X | X | x | x | X | X | X | X | X | x | X | X | X | X | X | X | X |
| *VLDL | X | x | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | x | X |
| *WSCST | X | X | X | X | X | X | X | X | X | X | X | X | X | X |  | X | X | X | X | X | X |

## Values allowed

*ALL: All the object types that are allowed in the command, specified by name, and are in the specified library are operated on by the command in which they are specified. *ALL refers only to the object types that apply to that command; refer to the individual command descriptions of the OBJTYPE parameter to see which of the OS/400 object types can be specified.
object-type: Specify the predefined values for the types of objects that are to be operated on by the command.

## OUTPUT parameter

You use the OUTPUT parameter to specify whether the output from the display command will be shown on the display, printed, or written to an output file. Basically, the same information is provided in either form; only the format is changed as necessary to present the information in the best format for the device. For example, because there are more lines on a printed page than on a display, column headings are not repeated as often in printed output.

If the output is to be shown on the display, it will be sent to the work station that issued the display command. It will be shown in the format specified in the display device file used by that display command. A different device file is used for the output of each display command, and the file is different for displayed, printed, or written file output. In most cases, the name of the command is part of the file names of either type of device file.

If the output will be printed, it is spooled and an entry is placed on the job's output queue. The output can be printed depending on which device is specified in the Start Printer Writer (STRPRTWTR) command.

Note: Although the IBM-supplied printer files are shipped with SPOOL(*YES) specified, they can be changed to SPOOL(*NO) by the Override with Printer File (OVRPRTF) and Change Printer File (CHGPRTF) commands.

If the OUTPUT parameter is not specified in the display command, the default value * is assumed. The output resulting from this value depends on the type of job that entered the command. The following table shows how the output is produced for interactive and batch jobs.

| Output | Interactive Job | Batch Job |
| :--- | :--- | :--- |
| Displayed | Printed |  |

## Values allowed

*: Output requested by an interactive job is shown on the display. Output requested by a batch job is printed with the job's spooled output.
*PRINT: The output is printed with the job's spooled output.
*OUTFILE: The only output is to be written to a specified database file.

## PRTTXT parameter

The print text (PRTTXT) parameter specifies the text that appears at the bottom of listings and on separator pages. Print text is copied from the job attribute when the job enters the system. Print files that originate on another system do not use the print text on the target system. Print text exists as a job attribute (PRTTXT) for defining the print text of a specific job, and as a system value (QPRTTXT) for the default of jobs with *SYSVAL specified. QPRTTXT is the system-wide default for all jobs.

The print text can be up to 30 characters in length. The text should be centered in the form's width and printed in the overflow area. You should center the desired text within the 30 character field.

If the print text is not blank, the system prints 30 characters of text on the bottom of each page. This text normally follows the overflow line and is preceded by a blank line (if the form's length permits). If the user prints past the overflow line, the print text follows the last line of the user text, again preceded by a blank line when possible. If the overflow line is the last line of the form, the print text also prints on the last line of the form, which may result in the typing over of user text.

The print text for job and file separators is put on the first line of the separator page. A job separator contains print text of the job that created the separator at the time the file was printed. A file separator contains the same print text as the spooled file it precedes.

The print text can be specified for all job types. System and subsystem monitor jobs use the system value. Reader and writer jobs use the system value unless print text is changed in the QSPLxxxx job description associated with the reader or writer.

The print text is determined from several places by using the following hierarchical order. If print text is not specified in one place, the next place in the order is used.

The hierarchical order, beginning with the highest priority, is as follows:

- Override print file value
- Print file value
- Job attribute changed by the Change Job (CHGJOB) command
- Job attribute set by the Submit Job (SBMJOB) or Batch Job (BCHJOB) command
- Job description
- System value


## Values allowed

For the system value QPRTTXT, any character string can be specified, with the exception of *SYSVAL. If *BLANK is specified, there will be no print text. For PRTTXT, some of the following values can be selected, depending on the command:
*SAME: The print text does not change.
*CURRENT: The print text is taken from the submitting job.
*JOBD: The print text is taken from the job description under which the job is run.
*SYSVAL: The print text is taken from the system value QPRTTXT.
*BLANK: There is no text or blanks printed.
'print-text': Specify 30 characters of text. If there are blanks in the text, then apostrophes must be used around the entry. The text should be centered within the field for the text to be centered on the page.

## REPLACE parameter

The replace (REPLACE) parameter is used on create commands. It specifies that the existing object, if one exists, is replaced by the object of the same name, library, and object type that is being created. The user of the new object is granted the same authority as for the object being replaced. If the object being replaced is secured by an authorization list, then the new object is secured by the same authorization list. The public authority of the new object is the same as the public authority of the replaced object. The AUT parameter from the create command is ignored. All private authorities from the replaced object are copied to the new object. The owner of the new object is not copied from the replaced object. The owner of the new object is the creator of the new object or the creator's group profile. Some objects such as panel groups, display files, and menus cannot be replaced if they are in use by the current job or another job.

If the object being created is a program or service program, then the user profile (USRPRF parameter) value from the replaced program is used. The user profile (USRPRF parameter) value from the Create Program or Create Service Program command is ignored. If the value of the user profile (USRPRF parameter) of the program or service program being replaced is *OWNER, then only the current owner of the program or service program being replaced can create the new program or service program that replaces the existing program or service program. If the owner of the existing object and the object being created do not match, the object is not created and message CPF2146 is sent.

If the object being created is a program or service program, then the use adopted authority (USEADPAUT) value from the replaced program or service program is used as long as the user creating the object can create programs/service programs with the USEADPAUT(*YES) attribute. The QUSEADPAUT system value determines whether or not users can create programs or service programs to use adopted authority. For example, if the existing object being replaced has USEADPAUT(*YES) and you do not have authority to create a program or service program that uses adopted authority, the program or service program created will have USEADPAUT(*NO). In this case, the USEADPAUT value was not copied. If you have authority to create programs or service programs that use adopted authority, the created program or service program will have the same USEADPAUT value as the program or service program being replaced. An informational message is sent which indicates whether the USEADPAUT value was copied to the object being replaced.

If the object being created is a file, and the default, or *YES, is specified on the REPLACE parameter, an existing device file other than save file and a DDM file with the same qualified name will be replaced by the new file. For example, an existing display file can be replaced by a new printer file, or tape file, etc.

Object management (*OBJMGT), object existence (*OBJEXIST), and read (*READ) authorities are required for the existing object to allow replacement of the existing object with a new object.

I The existing object is renamed and moved to library QRPLOBJ or library QRPLxxxxx if the object resides I on an Independent ASP (where ' $x x x x x$ ' is the number of the primary ASP of the ASP group) when the creation of the new object is successful. The replaced object is renamed with a $Q$ appended to a time stamp and moved to library QRPLOBJ or library QRPLxxxxx if the object resides on an Independent ASP.

Restriction: Programs can be replaced while they are being run; however, if the replaced program refers to the program message queue after the renaming of the replaced program to the Qtimestamp name, the program fails and an error message is sent stating that the program message queue is not found.

A database file, physical or logical, and a save file cannot be replaced by any file.
Library QRPLOBJ is cleared when an initial program load (IPL) of the system is done. Library QRPLxxxxx is cleared when the primary ASP of the ASP group is varied on.

## Values allowed

*YES: The system replaces the existing object with the new object being created that has the same name, library, and object type.
*NO: The system does not replace the existing object that has the same name, library, and object type with the object being created.

## Scheduling priority parameters (JOBPTY, OUTPTY, PTYLMT)

The scheduling priority parameters specify the priority values used by the system to determine the order in which the jobs and spooled files are selected for processing. Each job is given a scheduling priority that is used for both job selection and spooled file output. The job scheduling priority is specified by the JOBPTY parameter in commands like the Batch Job (BCHJOB), Submit Job (SBMJOB), Create Job Description (CRTJOBD), and Change Job Description (CHGJOBD) commands. The priority for producing the spooled output from a job is specified by the OUTPTY parameter in the same commands.

In addition, because every job is processed under a specific user profile, the priority for jobs can be limited by the PTYLMT parameter specified on the Create User Profile (CRTUSRPRF) and Change User Profile (CHGUSRPRF) commands. This parameter value controls the maximum job scheduling priority and output priority that any job running under a user profile can have; that is, the priority specified in the JOBPTY and OUTPTY parameters of any job command cannot exceed the priority specified in the PTYLMT parameter for that user profile. The scheduling priority is used to determine the order in which jobs are selected for processing and is not related to the process priority specified in the class object.

The three scheduling priority parameters specify the following:

- The PTYLMT parameter specifies the highest scheduling priority for any job that you submit. In the commands that affect the user profile, the PTYLMT parameter specifies the highest priority that can be specified in another JOBPTY parameter on commands relating to each specific job. You can specify a lower priority for a job on the command used to submit the job. If you specify a higher priority for JOBPTY in the BCHJOB or SBMJOB command than is specified for PTYLMT in the associated user profile, an error message is shown on the display and the maximum priority specified in PTYLMT is assumed. If a higher job priority is specified in the CHGJOB or CHGJOBD command, an error message is shown and the attributes are not changed.
- The JOBPTY parameter specifies the priority value to be used for a specific job being submitted. In the commands relating to a specific job being submitted, the JOBPTY parameter specifies the actual scheduling priority for the job.
- The OUTPTY parameter specifies the priority for producing the output from all spooled output files from the job. The priority value specified in the OUTPTY parameter determines the order in which spooled files are handled for output. The same value is applied to all the spooled files produced by the job.

The scheduling priority can have a value ranging from 0 through 9 , where 1 is the highest priority and 9 is the lowest priority. Any job with a priority of 0 is scheduled for processing before all other jobs that are waiting and that have priorities of 1 through 9.

The priority parameters can be specified on the following commands.

| JOBPTY | OUTPTY | PTYLMT |
| :--- | :--- | :--- |
|  |  |  |
| ADDJOBJS | ADDJOBJS |  |
| BCHJOB | BCHJOB | CHGUSRPRF |
| CHGJOB | CHGDKTF | CRTUSRPRF |
| CHGJOBD | CHGJOBD |  |
| CHGJOBJS | CHGJOBJS |  |
| CRTJOBD | CHGJOB | RTVUSRPRF |
| SBMJOB | CHGJOBD |  |
| SBMJOBJS | CHGJOBJS |  |
|  | CHGPJ |  |
|  | CHGPRTF |  |
|  | CHGSPLFA |  |
|  | CRTDKTF |  |
|  | CRTJOBD |  |
|  | CRTPRTF |  |
|  | OVRDKTF |  |
|  | OVRPRTF |  |
|  | SBMJOB |  |
|  | SBMJOBJS |  |

## Values allowed

Depending upon the command, one or more of the following values apply to the parameter.
5: If a value is not specified in the CRTUSRPRF command, five is the default value that is assumed for the priority limit for the user profile. That would be the highest priority that the user could specify for any job he submits for processing. If not specified in the CRTJOBD command, five is the default value for both the job scheduling priority and the output priority.
*SAME: The priority assigned, or the highest priority that can be assigned, does not change.
*JOBD: The scheduling priority for the job is obtained from the job description under which the job runs.
scheduling-priority: Specify a priority value ranging from 0 through 9 , where 0 is the highest priority and 9 is the lowest priority. Priority 0 is allowed only on CHGJOB.

## SEV parameter

The severity (SEV) parameter specifies the severity code that:

- Describes the level of severity associated with an error message.
- Indicates the minimum severity level that causes a message to be returned to a user or program.
- Causes a batch job to end.
- Causes processing of a command to end if a syntax error of sufficient severity occurs.

Note: The LOG parameter on some commands also uses these severity codes for logging purposes (to control which job activity messages and error messages are logged in the job log).

The severity code is a 2-digit number that can range from 00 through 99. The higher the value, the more severe or important the condition. The severity code of a message that is sent to a user indicates the
severity of the condition described by the message. More than one message can have the same severity code. If a severity code is not specified for a predefined message, it is assumed to be 00 (information only).

Your can specify a severity code for any message when it is defined by the Add Message Description (ADDMSGD) command. To change the severity code of a message, use the Change Message Description (CHGMSGD) command.

IBM-defined severity codes are used in all of the IBM-supplied messages that are shipped with the system.

00 - Information: A message of this severity is for information purposes only; no error was detected and no reply is needed. The message could indicate that a function is in progress or that it has reached a successful completion.

10 - Warning: A message of this severity indicates a potential error condition. The program may have taken a default, such as supplying missing input. The results of the operation are assumed to be what was intended.

20 - Error: An error has been detected, but it is one for which automatic recovery procedures probably were applied, and processing has continued. A default may have been taken to replace input that was in error. The results of the operation may not be valid. The function may be only partially complete; for example, some items in a list may be processed correctly while others may fail.

30 - Severe Error: The error detected is too severe for automatic recovery, and no defaults are possible. If the error was in source data, the entire input record was skipped. If the error occurred during program processing, it leads to an abnormal end of the program (severity 40). The results of the operation are not valid.

40-Abnormal End of Program or Function: The operation has ended, possibly because it was unable to handle invalid data, or possibly because the user ended it.

50 - Abnormal End of Job: The job was ended or was not started. A routing step may have ended abnormally or failed to start, a job-level function may not have been performed as required, or the job may have been ended.

60 - System Status: A message of this severity is issued only to the system operator. It gives either the status of or a warning about a device, a subsystem, or the whole system.

70 - Device Integrity: A message of this severity is issued only to the system operator. It indicates that a device is malfunctioning or in some way is no longer operational. You may be able to restore system operation, or the assistance of a service representative may be required.

80 - System Alert: A message of this severity is issued only to the system operator. It warns of a condition that, although not severe enough to stop the system now, could become more severe unless preventive measures are taken.

90 - System Integrity: A message of this severity is issued only to the system operator. It describes a condition that renders either a subsystem or the whole system inoperative.

99 - Action: A message of this severity indicates that some manual action is required, such as specifying a reply, changing printer forms, or replacing diskettes.

## SPLNBR parameter

The spooled file number (SPLNBR) parameter is used when more than one spooled file is created by a job and the files all have the same name. The files are numbered, starting with 1, in the order that they are opened by the job. The job log is always the last file for a job.

A file number is generated for each file when it is opened within a job (when output records are produced) and it is used by the system as long as the job and/or the files are on the system. If the files are not uniquely named because they were opened more than once, this file number is used to specify which file (or group of records, if the complete file has not yet been produced) is acted upon by a CL command.

## TEXT parameter

The TEXT parameter specifies the user-defined description that briefly describes the object being created or changed. The description can include up to 50 characters; if it is a quoted string (that is, enclosed in apostrophes), any of the 256 EBCDIC characters can be used. The apostrophes are not required if the string does not contain any blanks or other special characters. Any of the 50 character positions not filled by the specified description are padded with blanks.

The description is used to describe any of the OS/400 objects when the named object is shown on the display by the Display Object Description (DSPOBJD) command. Only objects for which object operational authority has been obtained can be displayed by a user. See the OBJTYPE parameter description for a list of the OS/400 object types.

For commands that use a database source file to create some type of object, you can (by default) use the text from the source file member as the text for the newly-created object. For example, if you use the Create Control Language Program (CRTCLPGM) command to create a CL program, but you do not specify a description in the TEXT parameter, the text specified for the source file member (SRCMBR parameter) of the source file (SRCFILE parameter) is assumed as the descriptive text for the CL program.

## Values allowed

Depending upon the command, one or more of the following values apply to the TEXT parameter.
*SRCMBRTXT: For commands that create objects based on database source files only, the text is taken from the source member. If a device or an inline file is used for source input or if source is not used, the text is left blank.
*BLANK: The user description of the object being created or changed is left blank.
*SAME: The user-defined description does not change.
'description': Specify the description of the object being created or changed. Up to 50 characters enclosed in apostrophes (required for blanks and other special characters) can be specified to describe the object. If an apostrophe is one of the 50 characters, two apostrophes (") must be used instead of one to represent the apostrophe character.

## VOL parameter

The volume (VOL) parameter specifies the volume identifiers of the volumes used in a diskette, tape, or optical operation. A diskette volume consists of a single diskette. A tape volume consists of a reel of tape. An optical volume consists of a single side of an optical cartridge or a single CD-ROM. Optical cartridges are dual sided and each side is a separate volume.

The volume identifier is the identifier stored on each diskette, tape, or optical disk (in the volume label area) that it identifies. The diskettes (volumes) must be on the diskette drive in the same order as the identifiers are specified in the VOL parameter. An inquiry message is sent to the system operator if a volume identifier is missing or out of order.

Tape volumes must be on the tape units in the same order as their identifiers are specified in the VOL parameter and as the device names are specified in the DEV parameter of the tape device file commands. However, if the tapes are read backward (a function supported in COBOL), the volumes must be in reverse order to that specified in the VOL parameter. Nevertheless, the device names are still specified in forward order in the DEV parameter.

In general, the rule for specifying diskette and tape volume identifiers is that as many as 6 characters, containing any combination of letters and digits, can be used. Special characters can be used if the identifier is enclosed in apostrophes. However, if the diskette or tape is used on a system other than an iSeries 400, the requirements for specifying identifiers on that system must be considered.

Optical volume identifiers can be up to 32 characters long and can contain any combination of digits and upper case letters. Each optical volume identifier must be unique. No two optical volumes with the same identifier can be present on the system at the same time. A complete list of the rules for optical volume
identifiers can be found in the Optical Support book.
For diskettes in the data exchange format and for labeled tapes, the following rules apply:

- Characters: A maximum of 6 characters, or fewer, can be specified for each volume identifier. Alphabetic and numeric characters can be used in any order.
- Uniqueness: More than one volume can have the same identifier. You may have a file using the same identifier for several volumes; in this case, the system keeps track of the order internally with a sequence number written on the volumes. However, volume identifiers should be unique whenever possible.
- Order: When multiple volumes (with different identifiers) are used in a single operation, they must be in the same order as the volume identifiers specified in the VOL parameter.


## Multivolume files

For a multivolume file on diskettes (that is, a data file on several diskettes, all having the same name), a message is sent to the system operator for each diskette volume after the first, until all volumes have been processed. If (for S/R only) more than 100 diskettes are used for the same file, duplicate diskette sequence numbers occur for each additional diskette used after the first hundred ( 01 through 99, and 00). For each 100 diskettes written for the file, a message is sent to the system operator indicating the total number written. When the diskettes are read, the operator must determine the order in which the diskette volumes are inserted.

If multiple volumes (tapes or diskettes) are used in an operation and all have the same volume identifier, that identifier must be specified in the VOL parameter once for each volume used. For example, if three tapes named QGPL are used in a save operation, VOL(QGPL QGPL QGPL) must be specified.

When a multivolume file on tape is processed and multiple tape units are used, the tape volumes must be placed in the tape devices in the same order as they are specified in the VOL parameter. For example, if five volumes and three tape units are used, they are mounted as follows: VOL1 on unit 1, VOL2 on unit 2, VOL3 on unit 3, VOL4 on unit 1, and VOL5 on unit 2.

## Values allowed

*MOUNTED: The volume currently placed in the device is used.
*NONE: No volume identifier is specified.
*SAME: Previously specified volume identification does not change.
*SAVVOL: The system, using the save/restore history information, determines which tape or diskette volumes contain the most recently saved version. If the device specified in the DEV parameter of the restore command does not match the device of the most recently saved version of the object, an error message is returned to the user, and the function is ended. If the wrong volume is mounted in the unit specified by the command, a message is returned to the system operator that identifies the first volume that must be placed in the device before the restore operation can begin.
volume-identifier: Specify the identifiers of one or more volumes in the order in which they are put on the device and used. Each tape or diskette volume identifier contains a maximum of 6 alphanumeric characters. Each optical volume identifier contains a maximum of 32 characters. A blank is used as a separator character when listing multiple identifiers.

## WAITFILE parameter

You use the WAITFILE parameter to specify the following:

- For the maximum number of seconds that a program waits for file resources to be allocated when the file is opened
- For session resources when the evoke function is issued for an APPC device
- For the device to be allocated when an acquire operation is performed to read the file

If the program must wait, it will be placed in a wait state until the resources are available or until the wait time expires. If two or more file resources are needed and are not available because they are being used by different system users, the acquisition of each resource might require a wait. This maximum is applied to each wait.

The length of the wait can be specified in this parameter, or the default wait time of the class that applies to the object can be used. If the file resources cannot be allocated in the specified number of seconds, an error message is returned to the program.

The file resources that must be allocated depend on the type of file being opened. File resources consist of the following.

- For device files that are not spooled (SPOOL(*NO)), the file resources include the file description and device description. Because the device description must be allocated, the device itself must also be available.
- For device files that are spooled (SPOOL(*YES)), the file resources include the file description, the specified output queue, and storage in the system for the spooled data. Because the data is spooled, the device description (and thus the device itself) need not be available.
- For database files, the file resources consist of the file and member data. The file's associated member paths are not accessed, and therefore, the system does not wait for them. A file open exception error can occur before the WAITFILE time has expired when an access path is not available (for example, when the access path is being rebuilt).
The Allocate Object (ALCOBJ) command can be used to allocate specific file resources before the file is opened.

The session resources that were allocated for an APPC device conversation can be lost between the time the application issues a detach function or receives a detach indication and the time another evoke function is issued. If the session resource is lost, this parameter is used to determine the length of time that the system waits for another session resource.

## Values allowed

*IMMED: The program does not wait; when the file is opened, an immediate allocation of the file resources is required.
*CLS: The default wait time specified in the class description is used as the wait time for the file resources to be allocated.
number-of-seconds: Specify the maximum number of seconds that the program waits for the file resources to be allocated. Valid values range from 1 through 32767 seconds.

## Database and device files used by CL commands

Many of the IBM-supplied CL commands use database and device files during processing. This section provides a cross-reference between the commands and the IBM-supplied files used by the commands. All of the commands and files for all iSeries 400 licensed programs that meet the following criteria are included:

- The types of files included are:
- Database files: physical (PF) and logical (LF), including files with data and files used as model files (no data)
- Device files: diskette (DKTF), tape (TAPF), and printer (PRTF)
- The files are included only if a user might have a reason to use them, such as declaring them in a program so they can be overridden with another file. Two examples:
- You want to change some attributes for a printer device file, such as the font to be used or the printed lines per inch (the FONT or LPI parameter).
- You want to override the IBM-supplied file with your own output file (when valid).

The types of files not included in this section are:

- iSeries 400-provided display (DSPF) device files, because they should not be changed or overridden.
- Most of the iSeries 400 -provided database files used by directory commands, document library object commands, and optical index database files because they cannot be overridden.

As mentioned, IBM-supplied physical (PF) or logical (LF) files that are used as model files for certain commands are included in the following table. (Examples are the model files listed under the DSPFD, DSPJRN, and STRPFRMON commands.) In most cases, these model files do not contain data; instead, they contain the definitions (or record formats) of the files to be created for storing the actual output data resulting from use of these commands. For the record formats of these files, you can display the file's description online or you can refer to the publication or soft-copy manual that documents that command.

Additionally, some files considered to be IBM-supplied files do not actually exist on the system until some function is used that requires the file and so creates it at that time.

The following notes describe how the table of commands and files are sorted and explain the meanings of the superscripts used in the table.

Notes for Table:

1. The first column of the table lists the CL commands that use the iSeries 400-provided files shown in the third column. The table entries are in alphabetic order by command name first. If there is more than one library for a command, they are further ordered by the file library name and then by file name within each library.
2. A superscript $1\left({ }^{1}\right)$ following the description of a file indicates that the file is used only when the output from the command is directed to that form of output-by an output-related parameter on the command.

- The superscript ${ }^{1}$ is used at the end of printer file (PRTF) descriptions to show that use of the printer file is dependent on the job environment and the print-related value specified (or assumed) on the command. For commands with an OUTPUT parameter (primarily DSPxxx and WRKxxx commands), the output is printed either when OUTPUT(*) is specified in a batch job, or when OUTPUT(*PRINT) is specified in a batch or interactive job. For other commands, the output is printed if an *PRINT, *LIST, and/or *SRC value is specified on a different parameter.
- The superscript ${ }^{1}$ is used at the end of database file (PF or LF) descriptions to show that use of the database file is dependent on the print-related value specified (or assumed) on the command. For commands with an OUTPUT parameter (primarily DSPxxx and SAVxxx commands), the output is directed to the database file when OUTPUT(*OUTFILE) is specified. The same is true for other commands that specify a value similar to *OUTFILE on one of its parameters.

3. A superscript $2\left(^{2}\right)$ following a file's description indicates that the file is a model file and not an output file. As a model file, it defines the record format of the file created to contain the actual output.
4. Those files showing "user-lib" as the file library do not exist on the system until the user creates them. When the command is used, the file is created in the user's specified library with the file name shown.

## Table 2. Files Used by CL Commands

| Command Name ADDDOCCVN | File |  |  |
| :---: | :---: | :---: | :---: |
|  | Library | File Name | File Type |
|  | QUSRSYS | QAO1CRL | LF |
|  | QUSRSYS | QAO1CVNP | PF |
|  | QUSRSYS | QAO1DCVN | PRTF |
| ADDDSTQ | QUSRSYS | QASNADSQ | PF |
| ADDDSTRTE | QUSRSYS | QASNADSQ | PF |
|  | QUSRSYS | QASNADSR | PF |
| ADDDSTSYSN | QUSRSYS | QASNADSA | PF |
| ADDNETJOBE | QUSRSYS | QANFNJE | PF |
| ADDSOCE | QUSRSYS | QAALSOC | PF |
| ADDTAPCTG | QUSRSYS | QATAMID | PF |
|  | QUSRSYS | QLTAMID | LF |
|  | QUSRSYS | QATACGY | PF |
|  | QUSRSYS | QLTACGY | LF |
| ADDTCPHTE | QUSRSYS | QATOCHOST | PF |
| ADDTCPIFC | QUSRSYS | QATOCIFC | PF |
| ADDTCPPORT | QUSRSYS | QATOCPORT | PF |
| ADDTCPRSI | QUSRSYS | QATOCRSI | PF |
| ADDTCPRTE | QUSRSYS | QATOCRTE | PF |
| ADDTXTIDXE | QUSRSYS | QABBADMTB | PF |
| ANSQST | QSYS | QPQAPRT | PRTF |
| ANZACCGRP | QPFR | QAPTDDS | PF |
|  | QPFR | QAPTPAGD | PF |

## File Usage

Document conversion logical file for input or output.
Document conversion physical file for input or output.
Document conversion printer file.
SNADS distribution queues table.
SNADS distribution queues table.
SNADS routing table.
SNADS secondary node ID table.
Network job entry database file.
Sphere of control file.
Cartridge ID db file.
Cartridge ID logical file.
Category db file.
Category logical file.
TCP/IP host file.
TCP/IP configuration file.
TCP/IP configuration file.
TCP/IP configuration file.
TCP/IP configuration file.
OfficeVision text search services administration table.
Q \& A printer file.
Performance data DDS source file.
Performance database input file of files and programs in a process access group (PAG).

| Command Name | File |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
|  | Library | File Name | File Type | File Usage |
|  | QPFR | QPPTPAG | PRTF | Printer file of PAG data containing environment, job, file, and program summary data. |
| ANZDBF | QPFR | QAPTAZDR | PF | Performance data collection file: analyze application database files data. |
|  | QPFR | QAPTDDS | PF | Performance data DDS source file. |
|  | QPFR | QPPTANZD | PRTF | Performance printer file showing physical-to-logical and logical-to-physical database file relationships. |
| ANZDBFKEY | QPFR | QAPTAZDR | PF | Performance input file of analyze application database files data showing logical file key structures. |
|  | QPFR | QAPTDDS | PF | Performance data DDS source file. |
|  | QPFR | QPPTANKM | PRTF | Performance printer file containing logical file key structure data. |
|  | QPFR | QPPTANZK | PRTF | Performance printer file containing access path and record selection data. |
| ANZPFRDTA | QSYS | QAPMxxxx | PF | QAPMxxxx performance data collection files, where $\mathrm{xxxx}=\mathrm{ASYN}$, BSC, CIOP, CONF, DIOP, DISK, ECL, ETH, HDLC, IDLC, JOBS, LAPD, LIOP, MIOP, POOL, SYS, and X25. ${ }^{2}$ |
|  | QPFR | QPAVPRT | PRTF | Performance printer file containing the advisor report. ${ }^{1}$ |
| ANZPGM | QPFR | QAPTAZPD | PF | Performance data collection file: analyze application programs data. |
|  | QPFR | QPPTANZP | PRTF | Performance printer file showing program-to-file and file-to-program relationships. |
| ASKQST | QSYS | QPQAPRT | PRTF | Q \& A printer file. |
| CFGDSTSRV | QUSRSYS | QASNADSA | PF | SNADS secondary node ID table. |
|  | QUSRSYS | QASNADSQ | PF | SNADS destination queues table. |
|  | QUSRSYS | QASNADSR | PF | SNADS destination systems routing table. |
| CFGTCP | QUSRSYS | QATOCIFC | PF | TCP/IP interface file. |
|  | QUSRSYS | QATOCRTE | PF | TCP/IP route file. |
|  | QUSRSYS | QATOCTCPIP | PF | TCP/IP attributes file. |
|  | QUSRSYS | QATOCPORT | PF | TCP/IP port restrictions file. |
|  | QUSRSYS | QATOCRSI | PF | TCP/IP RSI file. |
|  | QUSRSYS | QATOCHOST | PF | TCP/IP hostname file. |
|  | QUSRSYS | QATOCPS | PF | TCP/IP services file. |
| CFGTCPSMTP | QUSRSYS | QATMSMTP | PF | TCP/IP SMTP file. |
|  | QUSRSYS | QATMSMTPA | PF | TCP/IP SMTP file. |
| CHGDOCCVN | QUSRSYS | QAO1CRL | LF | Document conversion logical file for input or output. |
| CHGDTA | QIDU | QDTALOG | PRTF | Audit control log printer file. |
|  | QIDU | QDTAPRT | PRTF | Record and accumulator total printer file. |
|  | QSYS | QPDZDTALOG | PRTF | DFU run-time audit log. |
|  | QSYS | QPDZDTAPRT | PRTF | DFU run-time printer data file. |
| CHGDSTQ | QUSRSYS | QASNADSQ | PF | SNADS distribution queues table. |


| Command Name | File |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
|  | Library | File Name | File Type | File Usage |
| CHGDSTRTE | QUSRSYS | QASNADSQ | PF | SNADS distribution queues table. |
|  | QUSRSYS | QASNADSR | PF | SNADS routing table. |
| CHGFTPA | QUSRSYS | QATMFTP | PF | TCP/IP FTP configuration file. |
| CHGHTTPA | QUSRSYS | QATMHTTP | PF | TCP/IP HTTP file. |
| CHGLPDA | QUSRSYS | QATMLPD | PF | TCP/IP LPD configuration file. |
| CHGPOPA | QUSRSYS | QATMPOPA | PF | POP server configuration file. |
| CHGPRB | QUSRSYS | QASXNOTE | PF | Problem log user notes file. |
|  | QUSRSYS | QASXPROB | PF | Problem log problem file. |
| CHGQSTDB | QSYS | QPQAPRT | PRTF | Q \& A printer file. |
| CHGSMTPA | QUSRSYS | QATMSMTP | PF | TCP/IP SMTP configuration file. |
| CHGTAPCTG | QUSRSYS | QATAMID | PF | Cartridge ID database file. |
|  | QUSRSYS | QATAMID | LF | Cartridge ID logical database file. |
| CHGTCPA | QUSRSYS | QATOCTCPIP | PF | TCP/IP attributes file. |
| CHGTCPHTE | QUSRSYS | QATOCHOST | PF | TCP/IP host file. |
| CHGTCPIFC | QUSRSYS | QATOCIFC | PF | TCP/IP interface file. |
| CHGTCPRTE | QUSRSYS | QATOCRTE | PF | TCP/IP routes file. |
| CHGTELNA | QUSRSYS | QATMTELN | PF | TCP/IP TELNET configuration file. |
| CHKTAP | QSYS | QSYSTAPE | TAPF | Printer file for tape output. |
| CLRDKT | QSYS | QSYSDKT | DKTF | Diskette device file used for output. |
| CMPJRNIMG | QSYS | QPCMPIMG | PRTF | Compare journal images printer file. |
| CPYF | QSYS | QSYSPRT | PRTF | Copy file printer file. ${ }^{1}$ |
| CPYFRMDKT | QSYS | QSYSPRT | PRTF | Copy file printer file. ${ }^{1}$ |
| CPYFRMQRYF | QSYS | QSYSPRT | PRTF | Copy file printer file. ${ }^{1}$ |
| CPYFRMTAP | QSYS | QSYSPRT | PRTF | Copy file printer file. ${ }^{1}$ |
| CPYIGCTBL | QSYS | QSYSDKT | DKTF | Diskette device file used for input and output. |
|  | QSYS | QSYSTAP | TAPF | Tape device file used for input and output. |
| CPYPFRDTA | QSYS | QAPMxxxx | PF | QAPMxxxx performance data collection files, where $\mathrm{xxxx}=\mathrm{ASYN}$, BSC, BUS, CIOP, CONF, DIOP, DISK, DMPT, ECL, ETH, HDLC, IOBS, JOBS, LIOP, MIOP, POOL, RESP, RWS, SBSD, SYS, TSK, and X25. ${ }^{2}$ |
| CPYPTF | QSYS | QSYSDKT | DKTF | Diskette device file used for input and output. |
|  | QSYS | QSYSTAP | TAPF | Tape device file used for input and output. |
| CPYSRCF | QSYS | QSYSPRT | PRTF | Copy file printer file. ${ }^{1}$ |
| CRTAPAR | QSYS | QSYSDKT | DKTF | Diskette device file used for output. |
|  | QSYS | QSYSTAP | TAPF | Tape device file used for output. |
| CRTBNDC | QGPL | QCSRC | PF | C/400 source default input file. |
| CRTBNDCBL | QGPL | QCBLLESRC | PF | ILE COBOL/400 source default input file. |
|  | QSYS | QSYSPRT | PF | ILE COBOL/400 source listing printer file. |
| CRTBNDCL | QGPL | QCLSRC | PF | CL source default input file. |
|  | QSYS | QSYSPRT | PRTF | CL source listing printer file. ${ }^{1}$ |
| CRTBNDRPG | QGPL | QRPGLESRC | PF | ILE RPG/400 source default input file |
|  | QSYS | QSYSPRT | PRTF | ILE RPG/400 source listing printer file. |
| CRTCBLMOD | QGPL | QCBLLESRC | PF | ILE COBOL/400 source default input file. |


| Command Name |  |  |  |
| :---: | :---: | :---: | :---: |
|  | Library | File Name | File Type |
|  | QSYS | QSYSPRT | PF |
| CRTCBLPGM | QGPL | QLBLSRC | PF |
|  | QSYS | QSYSPRT | PRTF |
| CRTCLD | QGPL | QCLDSRC | PF |
|  | QSYS | QSYSPRT | PRTF |
| CRTCLMOD | QGPL | QCLSRC | PF |
|  | QSYS | QSYSPRT | PRTF |
| CRTCLPGM | QGPL | QCLSRC | PF |
|  | QSYS | QSYSPRT | PRTF |
| CRTCMD | QGPL | QCMDSRC | PF |
|  | QSYS | QSYSPRT | PRTF |
| CRTCMOD | QGPL | QCSRC | PF |
|  | QSYS | QSYSPRT | PRTF |
| CRTDSPF | QGPL | QDDSSRC | PF |
|  | QSYS | QPDDSSRC | PRTF |
| CRTICFF | QGPL | QDDSSRC | PF |
|  | QSYS | QPDDSSRC | PRTF |
| CRTLASREP | QGPL | QAOIASCI | PF |
|  | QGPL | QAOIASCM | PF |
|  | QGPL | QAOIASCT | PF |
|  | QOSI | QAOIXLAT | PF |
| CRTLF | QGPL | QDDSSRC | PF |
|  | QSYS | QPDDSSRC | PRTF |
| CRTMNU | QGPL | QMNUSRC | PF |
|  | QSYS | QSYSPRT | PRTF |
| CRTMSGFMNU | QGPL | QDDSSRC | PF |
|  | QGPL | QS36DDSSRC | PF |
|  | QSSP | QPUTMENU | PRTF |
|  | QSYS | QSYSPRT | PRTF |
| CRTPF | QGPL | QDDSSRC | PF |
|  | QSYS | QPDDSSRC | PRTF |
| CRTPGM | QSYS | QSYSPRT | PRTF |
| CRTPNLGRP | QGPL | QPNLSRC | PF |
|  | QSYS | QSYSPRT | PRTF |
| CRTPRTF | QGPL | QDDSSRC | PF |
|  | QSYS | QPDDSSRC | PRTF |
| CRTQSTDB | QSYS | QAQA00xxxx | LF |
|  | QSYS | QAQA00xxxx | PF |
| CRTQSTLOD | QSYS | QPQAPRT | PRTF |
| CRTRJEBSCF | QRJE | QRJESRC | PF |
| CRTRJECFG | QRJE | QRJESRC | PF |
| CRTRJECMNF | QRJE | QRJESRC | PF |


| Command Name CRTRPGMOD | File |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
|  | Library | File Name | File Type | File Usage |
|  | QGPL | QRPGLESRC | PF | ILE RPG/400 source default input file. |
|  | QSYS | QSYSPRT | PRTF | ILE RPG/400 source listing printer file. ${ }^{1}$ |
| CRTRPGPGM | QGPL | QRPGSRC | PF | RPG source default input file. |
|  | QSYS | QSYSPRT | PRTF | RPG source listing printer file. ${ }^{1}$ |
| CRTRPTPGM | QGPL | QRPGSRC | PF | RPG source default input file. |
|  | QSYS | QSYSPRT | PRTF | RPG source listing printer file. ${ }^{1}$ |
| CRTSQLC | QGPL | QCSRC | PF | SQL C source file. |
|  | QSYS | QSYSPRT | PRTF | SQL C printer file. ${ }^{1}$ |
| CRTSQLCI | QGPL | QCSRC | PF | SQL C source file. |
|  | QSYS | QSYSPRT | PRTF | SQL C printer file. ${ }^{1}$ |
| CRTSQLCBL | QGPL | QLBLSRC | PF | SQL COBOL source file. |
|  | QSYS | QSYSPRT | PRTF | SQL COBOL printer file. ${ }^{1}$ |
| CRTSQLCBLI | QGPL | QCBLLESRC | PF | SQL COBOL source file. |
|  | QSYS | QSYSPRT | PRTF | SQL COBOL printer file. ${ }^{1}$ |
| CRTSQLFTN | QGPL | QFTNSRC | PF | SQL FORTRAN source file. |
|  | QSYS | QSYSPRT | PRTF | SQL FORTRAN printer file. ${ }^{1}$ |
| CRTSQLPLI | QGPL | QPLISRC | PF | SQL PLI source file. |
|  | QSYS | QSYSPRT | PRTF | SQL PLI printer file. ${ }^{1}$ |
| CRTSQLRPG | QGPL | QRPGSRC | PF | SQL RPG source file. |
|  | QSYS | QSYSPRT | PRTF | SQL RPG printer file. ${ }^{1}$ |
| CRTSQLRPGI | QGPL | QRPGLESRC | PF | SQL RPG source file. |
|  | QSYS | QSYSPRT | PRTF | SQL RPG printer file. ${ }^{1}$ |
| CRTSRVPGM | QSYS | QSYSPRT | PRTF | Service program source listing printer file. ${ }^{1}$ |
| CRTS36CBL | \#LIBRARY | QS36SRC | PF | S/36-compatible COBOL source default input file. |
|  | QSYS | QSYSPRT | PRTF | S/36-compatible COBOL source listing printer file. ${ }^{1}$ |
| CRTS36DSPF | QGPL | QDDSSRC | PF | DDS source created for display file by \$SFGR. |
|  | QGPL | QS36DDSSRC | PF | DDS source created for display file by $\$$ SFGR. |
|  | QSSP | QPUTSFGR | PRTF | \$SFGR source listing printer file. |
| CRTS36MNU | QGPL | QDDSSRC | PF | DDS source created for menu by \$BMENU. |
|  | QGPL | QS36DDSSRC | PF | DDS source created for menu by \$BMENU. |
|  | QSSP | QPUTMENU | PRTF | \$BMENU source listing printer file. |
| CRTS36RPG | \#LIBRARY | QS36SRC | PF | System/36 RPG II source default input file. |
|  | QSYS | QSYSPRT | PRTF | System/36 RPG II source listing printer file. ${ }^{1}$ |
| CRTS36RPGR | \#LIBRARY | QS36SRC | PF | System/36 RPG II source default input file. |
| CRTS36RPT | \#LIBRARY | QS36SRC | PF | System/36 RPG II Auto Report source default input file. |
|  | QSYS | QSYSPRT | PRTF | System/36 RPG II Auto Report source listing printer file. ${ }^{1}$ |
| CRTTAPCGY | QUSRSYS | QATACGY | PF | Library device database file. |
|  | QUSRSYS | QLTACGY | LF | Library device logical database file. |
| CRTTBL | QGPL | QTBLSRC | PF | Table source default input file. |


| Command Name <br> CVTPFRDTA | File |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
|  | Library | File Name | File Type | File Usage |
| CVTPFRDTA | QPFR | QACPxxxx | PF | QACPxxxx performance data collection files, where $\mathrm{xxxx}=\mathrm{CNFG}$, GPHF, PROF, and RESP. |
|  | QPFR | QAITMON | PF | Performance data collection file: job and Licensed Internal Code task data. |
|  | QSYS | QAPMyyyy | PF | QAPMyyyy performance data collection files, where yyyy = CIOP, CONF, DIOP, DISK, JOBS, LIOP, POOL, RESP, RWS, and SYS. ${ }^{2}$ |
|  | QSYS | QAPMzzzz | PF | QAPMzzzz performance data collection files, where zzzz = ASYN, BSC, BUS, DMPT, ECL, ETH, HDLC, MIOP, and X25. ${ }^{2}$ |
|  | QPFR | QAPTAPGP | PF | Performance data collection file for functional area data. |
| CVTRPGSRC | user-lib | QRPGSRC | PF | RPG/400 source file (from file). |
|  | user-lib | QRPGLESRC | PF | ILE RPG/400 source file (to file). |
|  | QSYS | QSYSPRT | PRTF | ILE RPG/400 listing printer file. |
|  | user-lib | QRNCVTLG | PF | ILE RPG/400 conversion log file. |
| DLTALR | QUSRSYS | QAALERT | PF | Alert database file. |
| DLTBESTMDL | user-lib | QACYMDLS | PF | BEST/1 file of capacity planning models. |
| DLTPFRDTA | QPFR | QAPGSUMD | PF | Performance data collection file for graphics data. |
|  | QSYS | QAPMxxxx | PF | QAPMxxxx performance data collection files, where $x x x x=$ ASYN, BSC, BUS, CIOP, CONF, DIOP, DISK, DMPT, ECL, ETH, HDLC, IOBS, JOBS, LIOP, MIOP, POOL, RESP, RWS, SBSD, SYS, TSK, and X25. ${ }^{2}$ |
|  | QPFR | QAPTLCKD | PF | Performance data collection file: lock and seizure conflict data. |
|  | QPFR | QTRxxxx | PF | QTRxxxx performance data collection files, where xxxxx = IDX, JOBT, JSUM, SLWT, and TSUM. |

DLTPRB Command:

All 8 of the QASXxxxx files for the DLTPRB command are the same subset of files that are shown in the QUSRSYS library for the DSPPRB command. For the descriptions of these files, see the DSPPRB command.

| DLTPRB | QUSRSYS | QASXxxxx | PF | See the DSPPRB command. |
| :--- | :--- | :--- | :--- | :--- |
| DLTQST | QSYS | QPQAPRT | PRTF | Q \& A printer file. |
| DLTQSTDB | QSYS | QPQAPRT | PRTF | Q \& A printer file. |
| DLTTAPCGY | QUSRSYS | QATACGY | PF | Library device database file. |
|  | QUSRSYS | QLTACGY | LF | Library device logical database file. |
| DMPCLPGM | QSYS | QPPGMDMP | PRTF | CL program dump printer file. |
| DMPJOB | QSYS | QPSRVDMP | PRTF | Service dump printer file. |
| DMPOBJ | QSYS | QPSRVDMP | PRTF | Service dump printer file. |
| DMPSYSOBJ | QSYS | QPSRVDMP | PRTF | Service dump printer file. |
| DMPTAP | QSYS | QPTAPDMP | PRTF | Tape dump printer file. |
| DMPTRC | QSYS | QAPMDMPT | PF | Performance trace file. |
|  | QSYS | QSYSPRT | PRTF | SDA source printer file. |
| DSPACC | QSYS | QSYSPRT | PRTF | Display access codes printer file. ${ }^{1}$ |


| Command Name | File |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
|  | Library | File Name | File Type | File Usage |
| DSPACCAUT | QSYS | QSYSPRT | PRTF | Display access code authority printer file. ${ }^{1}$ |
| DSPACCGRP | QPFR | QAPTDDS | PF | Performance data DDS source file. |
|  | QPFR | QAPTPAGD | PF | Performance data collection file: data about files and programs in a process access group (PAG). |
|  | QPFR | QPPTPAG | PRTF | Display process access group printer file. ${ }^{1}$ |
|  | QPFR | QPPTPAGD | PRTF | Performance printer file containing files and programs in a process access group (PAG). |
| DSPACTPJ | QSYS | QSYSPRT | PRTF | Display active prestart jobs printer file. ${ }^{1}$ |
| DSPAPPNINF | QUSRSYS | QALSxxx | PF | Set of 4 QALSxxx model database files that contain the record formats used for storing APPN information, where $x x x$ = DIR, END, INM, and TDB. ${ }^{2}$ |
|  | QSYS | QSYSPRT | PRTF | Display APPN information printer file. ${ }^{1}$ |
| DSPAUTHLR | QSYS | QADSHLR | PF | Model database file that contains the record format for the authority holder object entries. ${ }^{2}$ |
|  | QSYS | QPSYDSHL | PRTF | Display authority holders printer file. ${ }^{1}$ |
| DSPAUTL | QSYS | QAOBJAUT | PF | Model database file that contains the record format for the authorization list entries. ${ }^{2}$ |
|  | QSYS | QPOBJAUT | PRTF | Authorization list entries printer file. ${ }^{1}$ |
| DSPAUTLDLO | QSYS | QSYSPRT | PRTF | Authorization list printer file. ${ }^{1}$ |
| DSPAUTLOBJ | QSYS | QADALO | PF | Model database file that contains the record format for the authorization list object entries. ${ }^{2}$ |
|  | QSYS | QPSYDALO | PRTF | Display authorization list objects printer file. ${ }^{1}$ |
| DSPAUTUSR | QSYS | QPAUTUSR | PRTF | Authorized users printer file. ${ }^{1}$ |
| DSPBCKSTS | QSYS | QSYSPRT | PRTF | Display backup status printer file. ${ }^{1}$ |
| DSPBCKUP | QSYS | QSYSPRT | PRTF | Display backup options printer file. ${ }^{1}$ |
| DSPBCKUPL | QSYS | QSYSPRT | PRTF | Display backup list printer file. ${ }^{1}$ |
| DSPBKP | QSYS | QPDBGDSP | PRTF | Breakpoint (debug mode) printer file. ${ }^{1}$ |
| DSPBNDDIR | QSYS | QABNDBND | PF | Model database file that contains the record format for the binding directory entries. ${ }^{2}$ |
|  | QSYS | QSYSPRT | PRTF | Displays the contents of the binding directory printer file. ${ }^{1}$ |
| DSPCFGL | QSYS | QPDCCFGL | PRTF | Configuration list printer file. ${ }^{1}$ |
| DSPCHT | QSYS | QPGDDM | PRTF | BGU-defined chart output printer file. ${ }^{1}$ |
| DSPCLS | QSYS | QPDSPCLS | PRTF | Class printer file. ${ }^{1}$ |
| DSPCMD | QSYS | QPCMD | PRTF | Command values printer file. ${ }^{1}$ |
| DSPCNNL | QSYS | QPDCCNNL | PRTF | Connection list printer file. ${ }^{1}$ |
| DSPCNNSTS | QSYS | QSYSPRT | PRTF | Connection status printer file. ${ }^{1}$ |
| DSPCOSD | QSYS | QPDCCOS | PRTF | Class-of-service description printer file. ${ }^{1}$ |
| DSPCSI | QSYS | QSYSPRT | PRTF | Communications side information printer file. ${ }^{1}$ |
| DSPCTLD | QSYS | QPDCCTL | PRTF | Controller description printer file. ${ }^{1}$ |


| Command Name | File |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
|  | Library | File Name | File Type | File Usage |
| DSPDBG | QSYS | QPDBGDSP | PRTF | Debug display (debug mode) printer file. ${ }^{1}$ |
| DSPDBR | QSYS | QADSPDBR | PF | Model database file that defines the record format of the file created to store information about database file relationships. ${ }^{2}$ |
|  | QSYS | QPDSPDBR | PRTF | Printer file that contains information about database file relationships. ${ }^{1}$ |
| DSPDDMF | QSYS | QPDSPDDM | PRTF | Distributed data management (DDM) file listing printer file. ${ }^{1}$ |
| DSPDEVD | QSYS | QPDCDEV | PRTF | Device description printer file. ${ }^{1}$ |
|  | QSYS | QAOSDIRO | PF | Display directory output file: OUTFILFMT(*TYPE1) |
|  | QSYS | QAOSDIRB | PF | Display directory output file: <br> OUTFILFMT(*TYPE2) <br> DETAIL(*BASIC) |
|  | QSYS | QAOSDIRF | PF | Display directory output file: OUTFILFMT(*TYPE2) DETAIL(*FULL) |
|  | QSYS | QAOSDIRX | PF | Display directory output file: <br> OUTFILFMT(*TYPE3) <br> DETAIL(*FULL) |
|  | QSYS | QPDSPDDL | PRTF | Printer file for full details of displayed directory entries. ${ }^{1}$ |
|  | QSYS | QPDSPDSM | PRTF | Printer file for basic details of displayed directory entries. ${ }^{1}$ |
| DSPDKT | QSYS | QPDSPDKT | PRTF | Printer file for diskettes in basic data exchange format. ${ }^{1}$ |
|  | QSYS | QPSRODSP | PRTF | Printer file for diskettes in save/restore format. ${ }^{1}$ |
|  | QSYS | QSYSDKT | DKTF | Diskette device file for input. |
| DSPDLOAUT | QSYS | QSYSPRT | PRTF | Display document library object authority printer file. ${ }^{1}$ |
| DSPDLONAM | QSYS | QSYSPRT | PRTF | Display document library object printer file. ${ }^{1}$ |
| DSPDSTL | QSYS | QAOSDSTO | PF | Distribution list output file. |
|  | QSYS | QPDSPLDL | PRTF | Distribution list details printer file. ${ }^{1}$ |
|  | QSYS | QPDSPLSM | PRTF | Distribution list summary printer file. ${ }^{1}$ |
| DSPDSTCLGE | QSVMSS | QACQFVOF | PF | Output file model for MSS/400 Display Distribution Catalog Entries command. ${ }^{2}$ |
| DSPDSTLOG | QSYS | QPDSTDLG | PRTF | Display distribution log printer file. ${ }^{1}$ |
| DSPDSTSRV | QSYS | QPDSTSRV | PRTF | Distribution services printer file. ${ }^{1}$ |
|  | QUSRSYS | QASNADSA | PF | SNADS secondary node ID table. |
|  | QUSRSYS | QASNADSQ | PF | SNADS destination queues table. |
|  | QUSRSYS | QASNADSR | PF | Routing table database file. |
| DSPDTA | QIDU | QDTAPRT | PRTF | DFU audit control printer file. |
|  | QSYS | QPDZDTALOG | PRTF | DFU run-time audit log. |
|  | QSYS | QPDZDTAPRT | PRTF | DFU run-time printer data file. |
| DSPDTAARA | QSYS | QPDSPDTA | PRTF | Data area printer file. ${ }^{1}$ |
| DSPDTADCT | QSYS | QPDSPFFD | PRTF | Data dictionary printer file. ${ }^{1}$ |
| DSPEDTD | QSYS | QPDCEDSP | PRTF | Edit description printer file. ${ }^{1}$ |


|  | File |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| Command Name | Library | File Name | File Type | File Usage |
| DSPFD <br> Command: | For the (model store a descript cause th here and | mmand, all of the not actual ou of information TYPE and FIL be used.) The part of each | owing entri es) that defi ut a type (or parameters. , the comm ption contin | a file type of PF are physical files cord formats of created files used to f files. (See theDSPFD command for parameters identify all the values that each model file's description begins $r$ the File Usage column: |
|  | Model database file that defines the record format of the file created to store... |  |  |  |
| DSPFD | QSYS | QAFDACCP | PF | ...access path file information. ${ }^{2}$ |
|  | QSYS | QAFDBASI | PF | ...basic file information common to all files. ${ }^{2}$ |
|  | QSYS | QAFDBSC | PF | ...BSC file and mixed file device attribute information. ${ }^{2}$ |
|  | QSYS | QAFDCMN | PF | ...communications file and mixed file device attribute information. ${ }^{2}$ |
|  | QSYS | QAFDCSEQ | PF | ... collating sequence information. ${ }^{2}$ |
|  | QSYS | QAFDCST | PF | ... constraint relationship information. ${ }^{2}$ |
|  | QSYS | QAFDDDM | PF | ...distributed data management (DDM) file attribute information. ${ }^{2}$ |
|  | QSYS | QAFDDKT | PF | ...diskette file attribute information. ${ }^{2}$ |
|  | QSYS | QAFDDSP | PF | ...display file and mixed file display device attribute information. ${ }^{2}$ |
|  | QSYS | QAFDICF | PF | ...ICF file attribute information. ${ }^{2}$ |
|  | QSYS | QAFDJOIN | PF | ...join logical file information. ${ }^{2}$ |
|  | QSYS | QAFDLGL | PF | ...logical file attribute information. ${ }^{2}$ |
|  | QSYS | QAFDMBR | PF | ...database member information. ${ }^{2}$ |
|  | QSYS | QAFDMBRL | PF | ...database member list information. ${ }^{2}$ |
|  | QSYS | QAFDNGP | PF | ... node group information. ${ }^{2}$ |
|  | QSYS | QAFDPHY | PF | ...physical file attribute information. ${ }^{2}$ |
|  | QSYS | QAFDPRT | PF | ...printer file attribute information. ${ }^{2}$ |
|  | QSYS | QAFDRFMT | PF | ...record format information. ${ }^{2}$ |
|  | QSYS | QAFDSAV | PF | ...save file information. ${ }^{2}$ |
|  | QSYS | QAFDSELO | PF | ...select/omit information. ${ }^{2}$ |
|  | QSYS | QAFDSPOL | PF | ...device file spooled information. ${ }^{2}$ |
|  | QSYS | QAFDTAP | PF | ...tape file attribute information. ${ }^{2}$ |
|  | QSYS | QAFDTRG | PF | ... trigger information. ${ }^{2}$ |
|  | QSYS | QPDSPFD | PRTF | File description printer file. ${ }^{1}$ |
| DSPFFD | QSYS | QADSPFFD | PF | Model database file that defines the record format of the file created to store file field descriptions. ${ }^{2}$ |
|  | QSYS | QPDSPFFD | PRTF | File field description printer file. ${ }^{1}$ |
| DSPFLR | QSYS | QADSPDOC | PF | Document list output database file. |
|  | QSYS | QADSPFLR | PF | Folder list output database file. |
|  | QSYS | QPDSPFLR | PRTF | Display folder printer file. ${ }^{1}$ |
| DSPFNTRSCA | QSYS | QPDSPFNT | PRTF | Font resource attributes printer file. ${ }^{1}$ |
| DSPGDF | QSYS | QPGDDM | PRTF | BGU-defined graphics data printer file. ${ }^{1}$ |
| DSPGNDDIR | QSYS | QABNDBND | PF | System-supplied output file. ${ }^{1}$ |


|  | File |  |
| :--- | :--- | :--- |
| Command Name | Library File Name File Type $\quad$ Usage |  |
| DSPHDWRSC | For the DSPHDWRSC command, all of the following entries having a file type of PF are physical |  |
| Command: | files (model files that are not actual output files) that define the record formats of created files <br> used to store a specific type of hardware resource information. Therefore, the common part of |  |
|  | each model file's description begins here and the unique part of each description continues under <br> the File Usage column: |  |

Model database file that defines the record format of the file created to store information about...

| DSPHDWRSC | QSYS | QARZDCMN | PF | ...communications resources. ${ }^{2}$ |
| :---: | :---: | :---: | :---: | :---: |
|  | QSYS | QARZDLWS | PF | ...local work station resources. ${ }^{2}$ |
|  | QSYS | QARZDPRC | PF | ...processor resources. ${ }^{2}$ |
|  | QSYS | QARZDTRA | PF | ...token-ring local area network (TRLAN) adapter resources. ${ }^{2}$ |
|  | QSYS | QARZDSTG | PF | ...storage device resources. ${ }^{2}$ |
|  | QSYS | QSYSPRT | PRTF | Hardware resources printer file. ${ }^{1}$ |
| DSPHFS | QSYS | QSYSPRT | PRTF | Display hierarchical file systems printer file. ${ }^{1}$ |
| DSPHSTGPH | QPFR | QPPGGPH | PRTF | Display historical graph printer file. ${ }^{1}$ |
| DSPIDXSTS | QUSRSYS | QABBADMTB | PF | OfficeVision text search services administration table. |
| DSPIGCDCT | QSYS | QPDSPDCT | PRTF | DBCS printer file. ${ }^{1}$ |
| DSPJOB | QSYS | QPDSPJOB | PRTF | Display job printer file. ${ }^{1}$ |
| DSPJOBD | QSYS | QPRTJOBD | PRTF | Job description printer file. ${ }^{1}$ |
| DSPJOBLOG | QSYS | QPJOBLOG | PRTF | Job log printer file. ${ }^{1}$ |
|  | QSYS | QPJOBLOGO | PRTF | Job log printer file for jobs prior to Version 2 Release 3 of the AS/400. |
|  | QSYS | QAMHJLPR | PF | Primary job log model file. ${ }^{2}$ |
|  | QSYS | QAMHJLSC | PF | Secondary job log model file. ${ }^{2}$ |

DSPJRN All of the following files for the DSPJRN command having a file type of PF are physical files Command: (model files, not actual output files) that define the record formats of files created to store a group of journal entries retrieved and converted from journal receivers. The retrieved group of entries can be a specific type of information or all types of information that was journaled. Each created file stores the retrieved journal entries after they are converted into one of four basic formats (*TYPE1, *TYPE2, *TYPE3 or *TYPE4) or into the format defined for the specific type of data being retrieved.

- *TYPE1: the basic file format described in the Backup and Recovery
book.
- *TYPE2: all of *TYPE1 plus the user profile field.
- *TYPE3: all of *TYPE2 plus the null value indicators.
- *TYPE4: all of *TYPE3 plus the JID, referential integrity and trigger information.
- Type-dependent format - the format associated with the specific type (as described below for the fourth and following files) of information being retrieved. For example, the model file QASYAFJE has a unique format for storing all retrieved journal entries related to authority failures (AF) on the system.
For the DSPJRN PF files listed below, the common part of all the model files' descriptions begins here and the unique part of each file's description continues under the File Usage column:

Model database file that defines the record format of the file created to contain retrieved and converted journal entries related to...
DSPJRN QSYS QADSPJRN PF


| Command Name | File |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
|  | Library | File Name | File Type | File Usage |
|  | QSYS | QASYPWJE | PF | ...attempted usage of invalid passwords or user profile names. ${ }^{2}$ |
|  | QSYS | QASYRAJE | PF | ...restore of objects when authority changes. ${ }^{2}$ |
|  | QSYS | QASYRJJE | PF | ...restore of job descriptions that contain user profile names. ${ }^{2}$ |
|  | QSYS | QASYROJE | PF | ...restore of objects when ownership was changed to QDFTOWN. ${ }^{2}$ |
|  | QSYS | QASYRPJE | PF | ...restore of programs that adopt their owner's authority. ${ }^{2}$ |
|  | QSYS | QASYRQJE | PF | ...restores of *CRQD object. ${ }^{2}$ |
|  | QSYS | QASYRUJE | PF | ...operations restoring authority for user profiles, using the RSTAUT command. ${ }^{2}$ |
|  | QSYS | QASYRZJE | PF | ...changes on primary group restores. ${ }^{2}$ |
|  | QSYS | QASYSDJE | PF | ...changes to the system distribution directory. ${ }^{2}$ |
|  | QSYS | QASYSEJE | PF | ...changes to subsystem routings. ${ }^{2}$ |
|  | QSYS | QASYSFJE | PF | ...actions with spooled files. ${ }^{2}$ |
|  | QSYS | QASYSMJE | PF | ...system management changes. ${ }^{2}$ |
|  | QSYS | QASYSOJE | PF | ...server security changes. ${ }^{2}$ |
|  | QSYS | QASYSTJE | PF | ...use of system service tools. ${ }^{2}$ |
|  | QSYS | QASYSVJE | PF | ...changes to system values. ${ }^{2}$ |
|  | QSYS | QASYVAJE | PF | ...changes to access control list. ${ }^{2}$ |
|  | QSYS | QASYVCJE | PF | ...connection starts and ends. ${ }^{2}$ |
|  | QSYS | QASYVFJE | PF | ...closes of server files. ${ }^{2}$ |
|  | QSYS | QASYVLJE | PF | ...exceeding account limit. ${ }^{2}$ |
|  | QSYS | QASYVNJE | PF | ...network logons and logoffs. ${ }^{2}$ |
|  | QSYS | QASYVPJE | PF | ...network password errors. ${ }^{2}$ |
|  | QSYS | QASYVRJE | PF | ...accesses to network resources. ${ }^{2}$ |
|  | QSYS | QASYVSJE | PF | ...server session starts and ends. ${ }^{2}$ |
|  | QSYS | QASYVUJE | PF | ...changes to network profiles. ${ }^{2}$ |
|  | QSYS | QASYVVJE | PF | ...changes to service status. ${ }^{2}$ |
|  | QSYS | QASYYCJE | PF | ...changes to document library objects. ${ }^{2}$ |
|  | QSYS | QASYYRJE | PF | ...read operations of document library objects. ${ }^{2}$ |
|  | QSYS | QASYZCJE | PF | ...changes to objects. ${ }^{2}$ |
|  | QSYS | QASYZMJE | PF | ...object method access. ${ }^{2}$ |
|  | QSYS | QASYZRJE | PF | ...read operations of objects. ${ }^{2}$ |
|  | QSYS | QAWCTPJE | PF | ...performance tuning. ${ }^{2}$ |
|  | QSYS | QAZDCFLG | PF | ...configuration changes to SNADS distribution queues table. ${ }^{2}$ |
|  | QSYS | QAZDERLG | PF | ...SNADS logged errors. ${ }^{2}$ |
|  | QSYS | QAZDJRNL | PF | ...SNADS logged data. ${ }^{2}$ |
|  | QSYS | QAZDRTLG | PF | ...changes to SNADS routing and secondary system name tables. ${ }^{2}$ |
|  | QSYS | QAZDSYLG | PF | ...SNADS miscellaneous logged system-level occurrences. ${ }^{2}$ |
|  | QSYS | QAZMFCF | PF | ...Mail server framework (MSF) configuration changes logging. ${ }^{2}$ |
|  | QSYS | QAZMFER | PF | ...Mail server framework (MSF) error logging. ${ }^{2}$ |


|  | File |  |  |  |
| :--- | :--- | :--- | :--- | :--- |
|  | File Name | File Type | File Usage |  |
|  | QSYS | QAZMFLG | PF | ...Mail server framework (MSF) data |
|  |  | logging. ${ }^{2}$ |  |  |



|  | File |  |  |  |
| :--- | :--- | :--- | :--- | :--- |
| Command Name | Library | File Name | File Type | File Usage |
|  | QUSRSYS | QASXPROB $^{3}$ | PF | Problem log problem file. |
|  | QUSRSYS | QASXPTF $^{3}$ | PF | Problem log PTF file. |
|  | QUSRSYS | QASXSYMP $^{3}$ | PF | Problem log symptom string file. |
|  | QSYS | QADSPPTF | PF | Model database file that defines the |
|  |  |  |  | record format of the file created to |


| Command Name | File |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
|  | Library | File Name | File Type | File Usage |
| DSPTRNSTS | QSYS | QSYSPRT | PRTF | Token-ring network status printer file. ${ }^{1}$ |
| DSPUSRPMN | QSYS | QSYSPRT | PRTF | Display document authority printer file. ${ }^{1}$ |
| DSPUSRPRF | QSYS | QADSPUPA | PF | Model database file that defines the record format of user profiles for TYPE(*OBJAUT). ${ }^{2}$ |
|  | QSYS | QADSPUPB | PF | Model database file that defines the record format of user profiles for TYPE(*BASIC). ${ }^{2}$ |
|  | QSYS | QADSPUPO | PF | Model database file that defines the record format of user profiles for TYPE(*OBJOWN). ${ }^{2}$ |
|  | QSYS | QPUSRPRF | PRTF | User profile printer file. ${ }^{1}$ |
| DSPWSUSR | QSYS | QSYSPRT | PRTF | Work station user printer file. ${ }^{1}$ |
| DUPTAP | QSYS | QSYSTAP | TAPF | Tape device file used for input and output. |
| EDTIGCDCT | QSYS | QPDSPDCT | PRTF | DBCS printer file. |
| EDTQST | QSYS | QPQAPRT | PRTF | Q \& A printer file. |
| EJTEMLOUT | QSYS | QPEMPRTF | PRTF | Emulation printer file. |
| ENDDSKCOL | QPFR | QAPTDDS | PF | Performance data DDS source file. |
|  | QPFR | QAPTDSKD | PF | Performance data collection file: disk activity data. |
| ENDIDXMON | QUSRSYS | QABBADMTB | PF | OfficeVision text search services administration table. |
| ENDJOBTRC | QPFR | QAPTDDS | PF | Performance data DDS source file. |
|  | QPFR | QAPTTRCJ | PF | Performance data collection file: job trace data. |
|  | QPFR | QPPTTRCD | PRTF | Performance printer file containing job trace analysis detail data. |
|  | QPFR | QPPTTRC1 | PRTF | Performance printer file containing job trace analysis summary data of physical disk activity. |
|  | QPFR | QPPTTRC2 | PRTF | Performance printer file containing job trace analysis I/O summary data. |
| ENDPRTEML | QSYS | QPEMPRTF | PRTF | Emulation printer file. |
|  | QPFR | QAPTSAMH | PF | Performance data collection file: high-level sampled address monitor (SAM) data. |
|  | QPFR | QAPTSAMV | PF | Performance data collection file: low-level sampled address monitor (SAM) data. |
| FMTDTA | QSYS | QSYSPRT | PRTF | Data format printer file. |
|  | QGPL | QFMTSRC | PF | Sort source default input file. |
| FNDSTRPART | QPDA | QPUOPRTF | PRTF | PDM printer output file for user's find string requests. |
| FNDSTRPDM | QPDA | QPUOPRTF | PRTF | PDM printer output file for user's find string requests. |
| HLDDSTQ | QUSRSYS | QASNADSQ | PF | SNADS distribution queues table. |
| INZDKT | QSYS | QSYSDKT | DKTF | Diskette device file used for output. |
| INZTAP | QSYS | QSYSTAP | TAPF | Tape device file used for output. |
| LODPTF | QSYS | QSYSDKT | DKTF | Diskette device file used for input. |
|  | QSYS | QSYSTAP | TAPF | Tape device file used for input. |
| LODQSTDB | QQALIB | QAQAxxxx00 | PF | Q \& A supplied model database files. ${ }^{2}$ |


| Command Name | File |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
|  | Library | File Name | File Type | File Usage |
|  | QSYS | QAQA00xxxx | LF | Q \& A database model files. ${ }^{2}$ |
|  | QSYS | QAQA00xxxx | PF | Q \& A database model files. ${ }^{2}$ |
|  | QSYS | QPQAPRT | PRTF | Q \& A printer file. |
| MRGFORMD | QPDA | QPAPFPRT | PRTF | Merge form description printer file. |
| MRGTCPHT | QUSRSYS | QATOCHOST | PF | TCP/IP hosts file. |
| PRTACTRPT | user-lib | QAITMON | PF | Performance data collection file: job and Licensed Internal Code task data. |
|  | QPFR | QAPTDDS | PF | Performance data DDS source file. |
|  | QPFR | QPITACTR | PRTF | Performance printer file containing job and Licensed Internal Code task data. |
| PRTAFPDTA | QSYS | QSYSPRT | PRTF | Advanced Function Printing data printer file. |
| PRTCMDUSG | QSYS | QSYSPRT | PRTF | Command usage printer file. |
| PRTCMNTRC | QSYS | QASCCMNT | PF | Model database file that defines the record format of the file created to store communications trace records. ${ }^{2}$ |
|  | QSYS | QPCSMPRT | PRTF | Communications trace printer file (concurrent service monitor). ${ }^{1}$ |
| PRTCPTRPT | QPFR | QAPTDDS | PF | Performance data DDS source file. |
|  | QPFR | QPPTCPTR | PRTF | Performance printer file containing component-level activity data. |
|  | QSYS | QAPMxxxx | PF | QAPMxxxx performance data collection files, where $\mathrm{xxxx}=\mathrm{ASYN}$, BSC, CIOP, CONF, DIOP, DISK, ECL, ETH, HDLC, JOBS, LIOP, MIOP, POOL, RESP, RWS, and SYS. ${ }^{2}$ |
| PRTDEVADR | QSYS | QPDDEVA | PRTF | Print device address printer file. |
| PRTDOC | QSYS | QAOPOUFL | PF | Document output database file. ${ }^{1}$ |
|  | QSYS | QSYSPRT | PRTF | Print document printer file. ${ }^{1}$ |
| PRTDSKINF | QSYS | QAEZDISK | PF | Model outfile for disk space information. |
|  | QUSRSYS | QAEZDISK | PF | Database input file of disk space information. |
|  | QSYS | QPEZDISK | PRTF | Disk space report printer file. |
|  | QSYS | QSYSPRT | PRTF | Disk space report printer file. This file must be specified if using OVRPRTF. |
| PRTDSKRPT | QPFR | QAPTDDS | PF | Performance data DDS source file. |
|  | QPFR | QAPTDSKD | PF | Performance database input file of disk activity collection data. |
|  | QPFR | QPPTDSK | PRTF | Printer file of disk unit I/O activity data. |
| PRTERRLOG | QSYS | QAPRTELG | PF | Model database file that defines the record format of the file created to store error log records. ${ }^{2}$ |
|  | QSYS | QAVOLSTA | PF | Model database file that defines the record format of the file created to store volume statistics. ${ }^{2}$ |
|  | QSYS | QPCSMPRT | PRTF | Error log (for concurrent service monitor) printer file. ${ }^{1}$ |
| PRTINTDTA | QSYS | QPCSMPRT | PRTF | Internal data (for concurrent service monitor) printer file. |
|  | QSYS | QSYSTAP | TAPF | Tape device file used for output. |
| PRTJOBRPT | QPFR | QAPTDDS | PF | Performance data DDS source file. |


| Command Name | File |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
|  | Library | File Name | File Type | File Usage |
|  | QPFR | QPPTITVJ | PRTF | Performance printer file containing job interval collection data. |
|  | QSYS | QAPMxxxx | PF | QAPMxxxx performance data collection files, where xxxx = CONF and JOBS. ${ }^{2}$ |
| PRTJOBTRC | QPFR | QAJOBTRC | PF | Performance data collection file: job trace data. |
|  | QPFR | QAPTDDS | PF | Performance data DDS source file. |
|  | QPFR | QAPTTRCJ | PF | Performance data collection file: job trace data. |
|  | QPFR | QPPTTRCD | PRTF | Performance printer file containing job trace analysis detail data. |
|  | QPFR | QPPTTRC1 | PRTF | Performance printer file containing job trace analysis summary data of physical disk activity. |
|  | QPFR | QPPTTRC2 | PRTF | Performance printer file containing job trace analysis I/O summary data. |
| PRTLCKRPT | user-lib | QAPTLCKD | PF | Performance data collection output file containing lock and seizure conflict data. |
|  | QPFR | QAPTDDS | PF | Performance data DDS source file. |
|  | QPFR | QPPTLCK | PRTF | Performance data collection printer file containing lock and seizure conflict data. |
|  | QSYS | QAPMDMPT | PF | Performance data collection input file containing system lock and seizure conflict trace data. ${ }^{2}$ |
| PRTPOLRPT | QPFR | QAPTDDS | PF | Performance data DDS source file. |
|  | QPFR | QPPTITVP | PRTF | Performance printer file containing subsystem and pool activity interval data. |
|  | QSYS | QAPMxxxx | PF | QAPMxxxx performance data collection files, where xxxx = CONF, JOBS, and POOL. ${ }^{2}$ |
| PRTRSCRPT | QPFR | QAPTDDS | PF | Performance data DDS source file. |
|  | QPFR | QPPTITVR | PRTF | Performance printer file containing disk and communications line activity interval data. |
|  | QSYS | QAPMxxxx | PF | QAPMxxxx performance data collection files, where $x x x x=A S Y N$, BSC, CIOP, CONF, DIOP, DISK, ECL, ETH, HDLC, LIOP, MIOP, RESP, RWS, and SYS. ${ }^{2}$ |
|  | QPFR | QAPTSAMH | PF | Performance data collection file: high-level sampled address monitor (SAM) data. |
|  | QPFR | QAPTSAMV | PF | Performance data collection file: low-level sampled address monitor (SAM) data. |
|  | QPFR | QPPTSAM | PRTF | Printer file of SAM performance data. |
| PRTSYSRPT | QPFR | QAPTDDS | PF | Performance data DDS source file. |
|  | QPFR | QPPTSYSR | PRTF | Performance printer file containing system workload and resource utilization data. |


|  | File |  |  |  |
| :--- | :--- | :--- | :--- | :--- |
| Command Name | Library | File Name | File Type | File Usage |
|  | QSYS | QAPMxxxx | PF | QAPMxxxx performance data |
|  |  |  | collection files, where xxxx ASYN, |  |
|  |  |  | BSC, CONF, DISK, ECL, ETH, |  |
|  |  |  | HDLC, JOBS, POOL, SYS, and |  |
|  |  |  | X25.2 |  |


|  | File |  |  |  |
| :--- | :--- | :--- | :--- | :--- |
| Command Name | Library | File Name | File Type | File Usage |
|  | QSYS | QPRSTDLO | PRTF | Printer file for restored documents |
|  |  |  | and folders. ${ }^{1}$ |  |


| Command Name | File |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
|  | Library | File Name | File Type | File Usage |
|  | QSYS | QSYSTAP | TAPF | Tape device file used for output. |
| SBMDKTJOB | QSYS | QKSPLDKT | DKTF | Diskette device file used for all diskette reading. |
| SBMFNCJOB | QSYS | QDFNDATA | DSPF | Non-ICF finance display file. |
|  | QUSRSYS | QFNDEVTBL | PF | File containing data for device tables. |
|  | QUSRSYS | QFNPGMTBL | PF | File containing data for program tables. |
|  | QUSRSYS | QFNUSRTBL | PF | File containing data for user tables. |
| SETTAPCGY | QUSRSYS | QATACGY | PF | Category database file. |
|  | QUSRSYS | QLTACGY | LF | Category logical file. |
| SNDDSTQ | QUSRSYS | QASNADSQ | PF | SNADS distribution queues table. |
| SNDFNCIMG | QSYS | QCRFDWNL | ICFF | ICF file used for communication with 4701 controller. |
| SNDPTFORD | QGPL | Qnnnnnnn | SAVF | PTF save file, where nnnnnnn is the PTF number. |
|  | QSYS | QESPRTF | PRTF | Printer file for PTF cover letters. |
| SNDSRVRQS | QGPL | Qnnnnnnn | SAVF | PTF save file, where nnnnnnn is the PTF number. |
|  | QSYS | QESPRTF | PRTF | Printer file for PTF cover letters. |
|  | QUSRSYS | QAEDCDBPF | PF | File containing service contact data. |
| STRCODE | user-lib | EVFCICFF | ICFF | ICF file used for communication with workstation. |
| STRCPYSCN | QSYS | QASCCPY | PF | Pattern for copy screen output file. |
| STRDFU | QSYS | QDFUPRT | PRTF | DFU printer file. |
|  | QSYS | QPDZDTALOG | PRTF | DFU run-time audit log. |
|  | QSYS | QPDZDTAPRT | PRTF | DFU run-time printer data file. |
| STRDKTRDR | QSYS | QKSPLDKT | DKTF | Diskette device file used for all diskette reading. |
| STRDKTWTR | QSYS | QKSPLDKT | DKTF | Diskette device file used for all diskette writing. |

Note E STRIDXMON Command:

The STRIDXMON and STRRGZIDX commands use 9 of the 10 files in OfficeVision text search services that are also used by the STRUPDIDX command. For those 9 files (all named as QABBxxxxx), see the list under the STRUPDIDX command; the 10th and last file in that list (QABBLADN) is not used by STRIDXMON or STRRGZIDX.

| STRIDXMON | QUSRSYS | QABBxxxxx | PF | See Note E. |
| :--- | :--- | :--- | :--- | :--- |
| STRPDM | QPDA | QPUOPRTF | PRTF | Printer file for displayed lists in PDM. |

CRTPFRDTA All of the following files for the CRTPFRDTA command are physical files (PF) or logical files (LF) Command: that are used as model files (not actual output files) to define the record formats of files created to store performance data collected by this command. All of these model files are in the QSYS library, and the files they create are in a library determined by the user (defaults to the same library specified for the *MGTCOL object - usually QPFRDATA). Each created file stores the specific type of performance data in the format defined for the specific type of data being collected.
For the files listed below, the common part of each model file's description begins here and the unique part of each description continues under the File Usage column:

Model performance monitor database file that defines the record format of the data collection file created to store...

| CRTPFRDTA | QSYS | QAPMAPPN | PF | ...APPN data. ${ }^{2}$ |
| :--- | :--- | :--- | :--- | :--- |
|  | QSYS | QAPMASYN | PF | ...asynchronous data. ${ }^{2}$ |
|  | QSYS | QAPMBSC | PF | ...binary synchronous data. ${ }^{2}$ |
|  | QSYS | QAPMJOBMI | PF | ...job data from MI. |
|  | QSYS | QAPMJOBOS | PF | ...job data from $O S / 400$. |



|  | File |  |  |  |
| :--- | :--- | :--- | :--- | :--- |
| Command Name <br> STRQST | Library | File Name | File Type | File Usage |
|  | QQALIB | QAQAxxxx00 | PF | Q \& A supplied model database |
|  |  |  | files. ${ }^{2}$ |  |


|  | File |  |  |  |
| :--- | :--- | :--- | :--- | :--- |
| Command Name | Library | File Name | File Type | File Usage |
| TRCJOB | QSYS | QATRCJOB | PF | Database file that defines the record |
|  |  |  |  | format of the file created to store $^{\text {trace records. }}{ }^{2}$ |



| Command Name | File |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
|  | Library | File Name | File Type | File Usage |
|  | QUSRSYS | QATOCMODEM | PF | TCP/IP point-to-point modem configuration. |
| WRKTIE | QSYS | QPTIRCV | PRTF | Printer file summary of files received. |
| WRKTRA | QSYS | QSYSPRT | PRTF | Printer file containing list of token-ring network adapters. ${ }^{1}$ |
| WRKTXTIDX | QUSRSYS | QABBADMTB | PF | OfficeVision text search services administration table. |
| WRKUSRJOB | QSYS | QPDSPSBJ | PRTF | User jobs display printer file. ${ }^{1}$ |
| WRKUSRTBL | QUSRSYS | QFNUSRTBL | PF | File containing data for user tables. |
| WRKWTR | QSYS | QPRTRDWT | PRTF | Writer display printer file. ${ }^{1}$ |

## Printing command descriptions on the server

To print the parameter and value descriptions for a command on your iSeries server, follow these instructions:

- To print help for an entire command, do either of the following:
- From any command line, type the command name (for example, CRTUSRPRF) and press F1. The display shows general help for the command and help for each command parameter. Press F14 to print the command help.
- On a prompt display for a given command, move the cursor to the top line and press F1. Then press F14.
- To print the help for one CL command keyword parameter, do the following:
- From a command line, type the CL command name and press F4 to display the command prompt display. Position the cursor anywhere on the line of the keyword parameter for which you want help. Press F1 to display the help for the keyword parameter. Press F14 to print the help.

For information about how to print PDF versions of CL information, see "Print these topics" on page 2.

## Related Information for CL

See the following resource for more information about using CL.

## CL Programming

This book provides a wide-range discussion of programming topics, including control language programming, programming concepts, objects and libraries, message handling, and user-defined commands and menus.

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