z/OS Introduction and Workshop

TSO, ISPF, and SDSF

Unit Objectives

After completing this unit, you should be able to:

- Describe and use TSO
- Describe and use ISPF
- Describe and use SDSF
- Describe and use ISPF editor
- Locate TSO, ISPF, and SDSF Manuals

Terminology

TSO - Time Sharing Option

Interactive command line interface (CLI)
Ready prompt without full screen support

ISPF – Interactive System Productivity Facility

Interactive panel driven interface with full screen support
Requires TSO as base environment

SDSF – System Display and Search Facility

Interactive panel driven interface with full screen support
Requires TSO as base environment

z/OS 3270 Applications

TSO, ISPF, and SDSF

- are fundamental z/OS navigation interfaces
- are primarily accessed using a TN3270 emulator (text based)
- are used for application development
- are used for system and operation tasks
- can be executed in background (batch)

ISPF 3270

Keyboard Function

Function	Key
Enter	Ctrl (right side)
Help	F1
Split	F2
Exit, end, or return	F3
Page Up	F7
Page Down	F8
Swap	F9
Right	F10
Left	F11
Cancel	F12
PA1 or Attention	Alt-Ins or Esc
PA2	Alt-Home
Cursor movement	Arrow keys, Tab key
Clear	Pause
Reset locked keyboard	Ctrl (left side)

z/OS 3270 Navigation and Data Entry

Protected Fields - data entry denied

Unprotected Fields - data entry allowed

Cursor Movement and Positioning

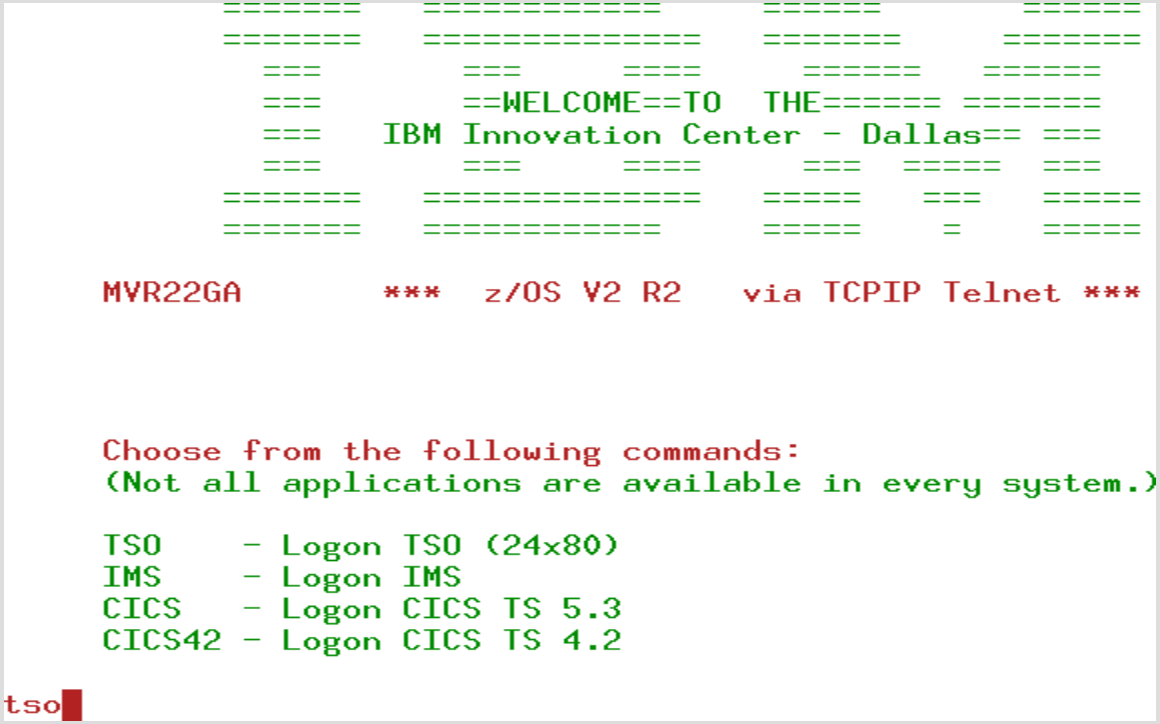
- **Arrow keys** - up, down, right, left
- **Tab key** - position into next unprotected field for data entry
- **Mouse click** - place cursor at position of pointer

PA1 - program attention interrupt

RESET - unlock keyboard

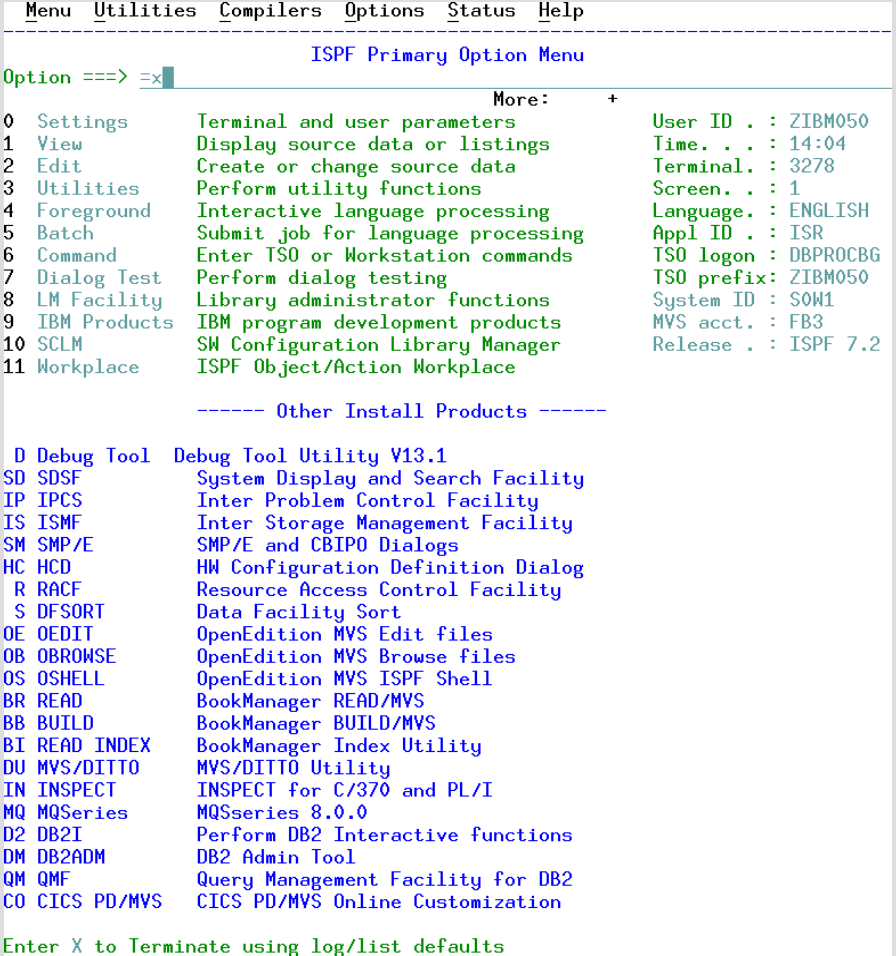
******* requires enter to proceed writing output to terminal screen

TN3270 emulator connection



ISPF Primary Option Menu

using TN3270 emulator
x - terminate ISPF



TSO READY prompt command line interface

then execute SDSF environment

```
 READY
sdsf
```

```
HQX77A0 -----------------  SDSF PRIMARY OPTION MENU  --------------------------
COMMAND INPUT ===>                                            SCROLL ===> PAGE

DA     Active users                      INIT  Initiators
I      Input queue                       PR    Printers
O      Output queue                      PUN   Punches
H      Held output queue                 RDR   Readers
ST     Status of jobs                    LINE  Lines
JG     Job groups                        NODE  Nodes
SYM    System symbols                    SO    Spool offload
LOG    System log                        SP    Spool volumes
SR     System requests                   NS    Network servers
MAS    Members in the MAS                NC    Network connections
JC     Job classes                       RM    Resource monitor
SE     Scheduling environments           CK    Health checker
RES    WLM resources                     LNK   Link list data sets
ENC    Enclaves                          LPA   Link pack data sets
PS     Processes                         APF   APF data sets
SYS    System information                PAG   Page data sets
ENQ    Enqueues                          PARM  Parmlib data sets
DYNX   Dynamic exits                     PROC  Proclib data sets
AS     Address space memory              ULOG  User session log

END    Exit SDSF

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```

TSO READY prompt command line interface

then execute ISPF environment

```
READY
ispf
```

```
  Menu  Utilities  Compilers  Options  Status  Help
------------------------------------------------------------------------------
                          ISPF Primary Option Menu
Option ===>
                                                  More:     +
0  Settings      Terminal and user parameters              User ID . : IBMUSER
1  View          Display source data or listings           Time. . . : 16:30
2  Edit          Create or change source data              Terminal. : 3278
3  Utilities     Perform utility functions                 Screen. . : 1
4  Foreground    Interactive language processing           Language. : ENGLISH
5  Batch         Submit job for language processing        Appl ID . : ISR
6  Command       Enter TSO or Workstation commands         TSO logon : DBPROCBG
7  Dialog Test   Perform dialog testing                    TSO prefix: IBMUSER
8  LM Facility   Library administrator functions           System ID : S0W1
9  IBM Products  IBM program development products          MVS acct. : FB3
10 SCLM          SW Configuration Library Manager          Release . : ISPF 7.2
11 Workplace     ISPF Object/Action Workplace

                 ------ Other Install Products ------
FA IDI           Fault Analyzer 13.1.0
 D Debug Tool  Debug Tool Utility V13.1
SD SDSF          System Display and Search Facility
IP IPCS          Inter Problem Control Facility
IS ISMF          Inter Storage Management Facility
SM SMP/E         SMP/E and CBIPO Dialogs
HC HCD           HW Configuration Definition Dialog
 R RACF          Resource Access Control Facility
 S DFSORT        Data Facility Sort
OE OEDIT         OpenEdition MVS Edit files
OB OBROWSE       OpenEdition MVS Browse files
OS OSHELL        OpenEdition MVS ISPF Shell
BR READ          BookManager READ/MVS
BB BUILD         BookManager BUILD/MVS
BI READ INDEX    BookManager Index Utility
DA DXT ADMIN     Invoke DXT Administrative Dialogs

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 US Government Users Restricted Rights -          ns
 Use, duplication or disclosure restricted
 by GSA ADP Schedule Contract with IBM Corp.       panels

Enter X to Terminate using log/list defaults
```

TSO command line interface
the ready prompt

- Primarily a base environment for ISPF and SDSF Rarely used interactively
- Limited set of commands Execute programs and scripts
- TSO environment can be executed using JCL (Batch)

Examples of using TSO environment interactively follow

TSO PROFILE and LISTC commands

```
 READY
profile
 CHAR(0)  LINE(0)    PROMPT   INTERCOM   NOPAUSE NOMSGID NOMODE  NOWTPMSG NORECO
VER PREFIX(ZIBM050) PLANGUAGE(ENU) SLANGUAGE(ENU) VARSTORAGE(LOW)
 DEFAULT LINE/CHARACTER DELETE CHARACTERS IN EFFECT FOR THIS TERMINAL
 READY
time
 TIME-04:34:56 PM. CPU-00:00:00 SERVICE-27861 SESSION-00:00:25 FEBRUARY 13,2017
 READY
profile msgid
 READY
time
 IKJ56650I TIME-04:35:40 PM. CPU-00:00:00 SERVICE-27959 SESSION-00:01:09 FEBRUAR
Y 13,2017
 READY
profile nomsgid
 READY
time
 TIME-04:35:50 PM. CPU-00:00:00 SERVICE-28053 SESSION-00:01:19 FEBRUARY 13,2017
 READY
listc
 IN CATALOG:CATALOG.USERAA
 ZIBM050.DATA
 ZIBM050.DB2.JCL
 ZIBM050.DB2.SOURCE
 ZIBM050.DB2.SQL
 ZIBM050.EXEC
 ZIBM050.INSTRUCT
 ZIBM050.JCL
 ZIBM050.LOAD
 ZIBM050.OUTPUT
 ZIBM050.RDZ.COBOL
 ZIBM050.SOURCE
 ZIBM050.SOW1.ISPF.ISPPROF
 READY
profile noprefix
 READY
listc
                              LISTING FROM CATALOG -- MASTERV.CATALOG
 CLUSTER ------- 000000000000000000000000000000000000000000000000
    DATA ------- MASTERV.CATALOG
    INDEX ------ MASTERV.CATALOG.CATINDEX
 ***
```

Why? *Same command with completely different results. This will be explained later. PA1 is needed to stop writing output.*

TSO PROFILE and LISTC commands

```
 |
 READY
profile prefix(zibm050)
 READY
listc
 IN CATALOG:CATALOG.USERAA
 ZIBM050.DATA
 ZIBM050.DB2.JCL
 ZIBM050.DB2.SOURCE
 ZIBM050.DB2.SQL
 ZIBM050.EXEC
 ZIBM050.INSTRUCT
 ZIBM050.JCL
 ZIBM050.LOAD
 ZIBM050.OUTPUT
 ZIBM050.RDZ.COBOL
 ZIBM050.SOURCE
 ZIBM050.SOW1.ISPF.ISPPROF
 READY
```

TSO PROFILE, LISTC, and SEND commands

```
 |
 READY
profile prefix(zibm050)
 READY
listc
 IN CATALOG:CATALOG.USERAA
 ZIBM050.DATA
 ZIBM050.DB2.JCL
 ZIBM050.DB2.SOURCE
 ZIBM050.DB2.SQL
 ZIBM050.EXEC
 ZIBM050.INSTRUCT
 ZIBM050.JCL
 ZIBM050.LOAD
 ZIBM050.OUTPUT
 ZIBM050.RDZ.COBOL
 ZIBM050.SOURCE
 ZIBM050.S0W1.ISPF.ISPPROF
 READY
send 'test message' user(zibm050)
 test message ZIBM050
 READY
ispf
```

ISPF Interactive System Productivity Facility

Menu-driven panels

User can select options and specify parameters

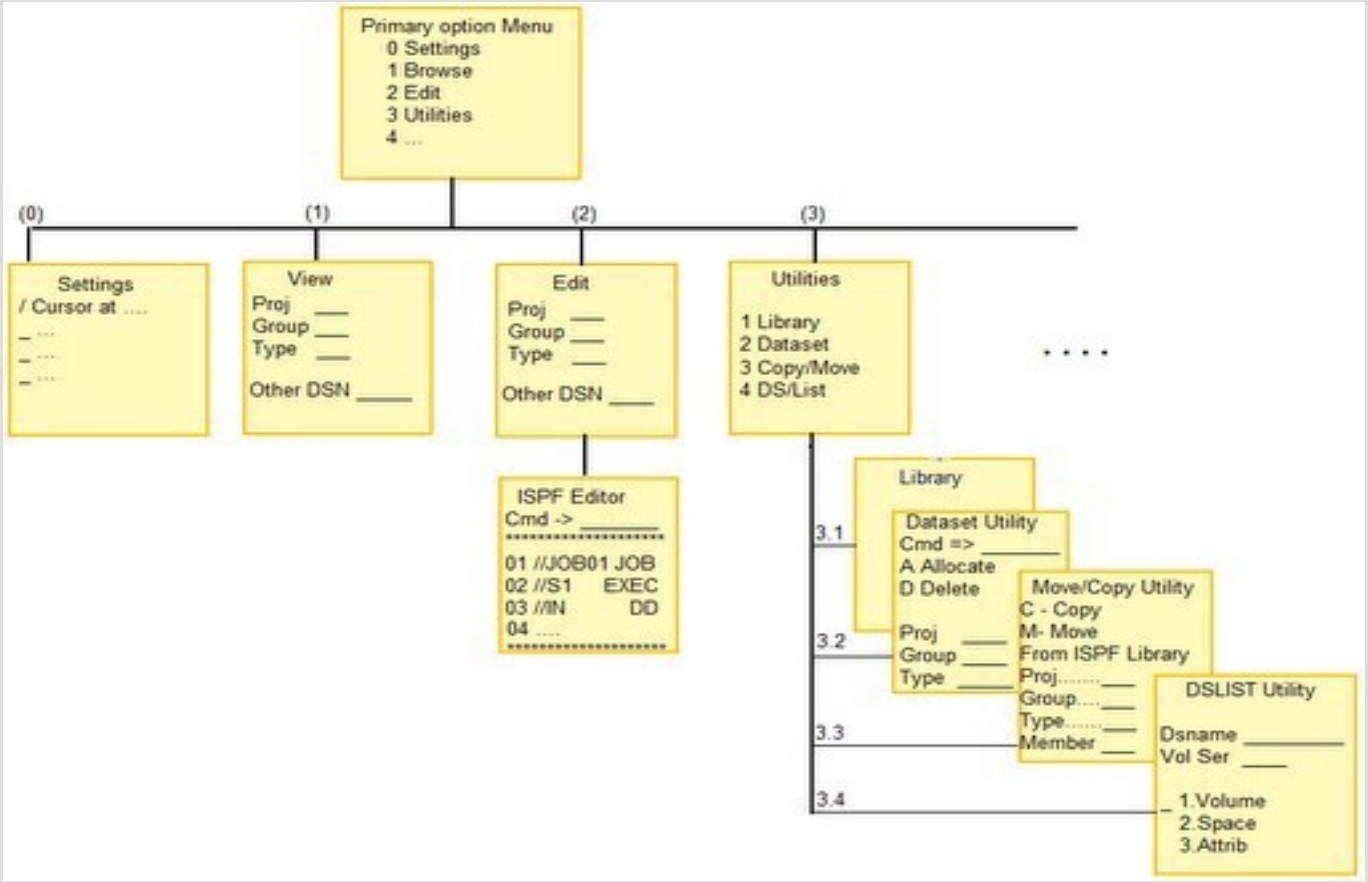
Program function (PF) keys available to simplify requests for common functions

Full screen format for information display and editing

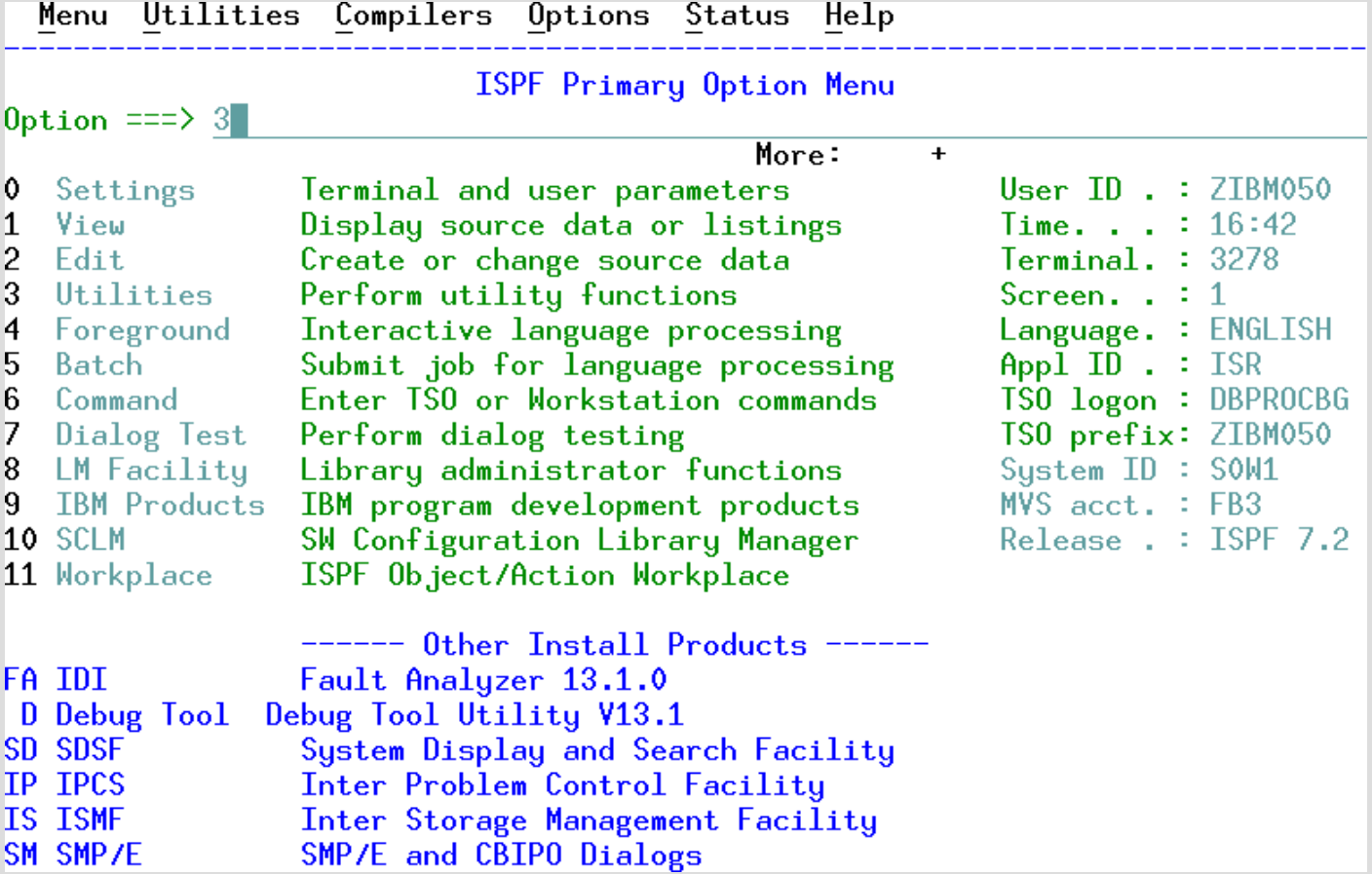
When data does not fit on the screen, ISPF provides scrolling in all four directions

Menus, panels, selections and navigation can be customized

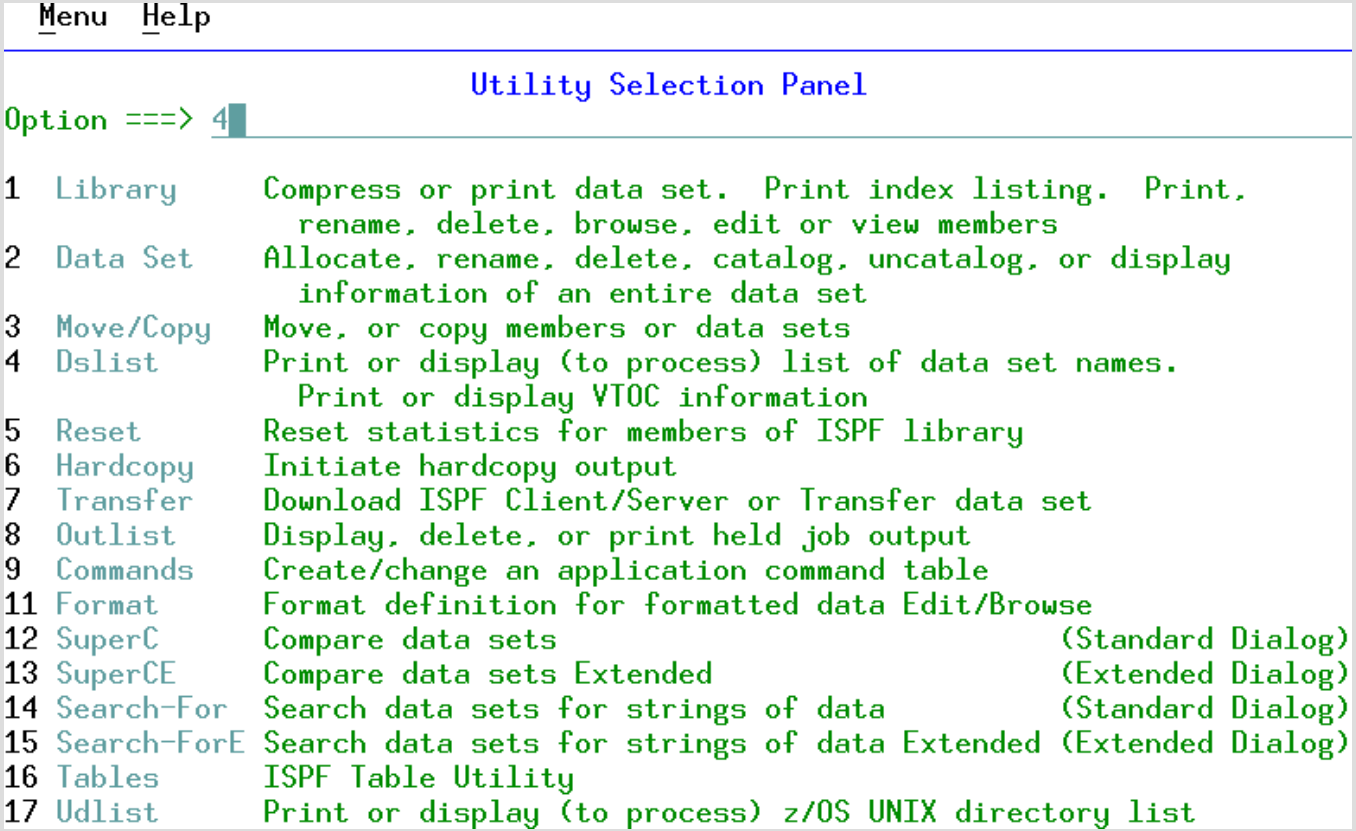
ISPF – A Panel Driven Interface



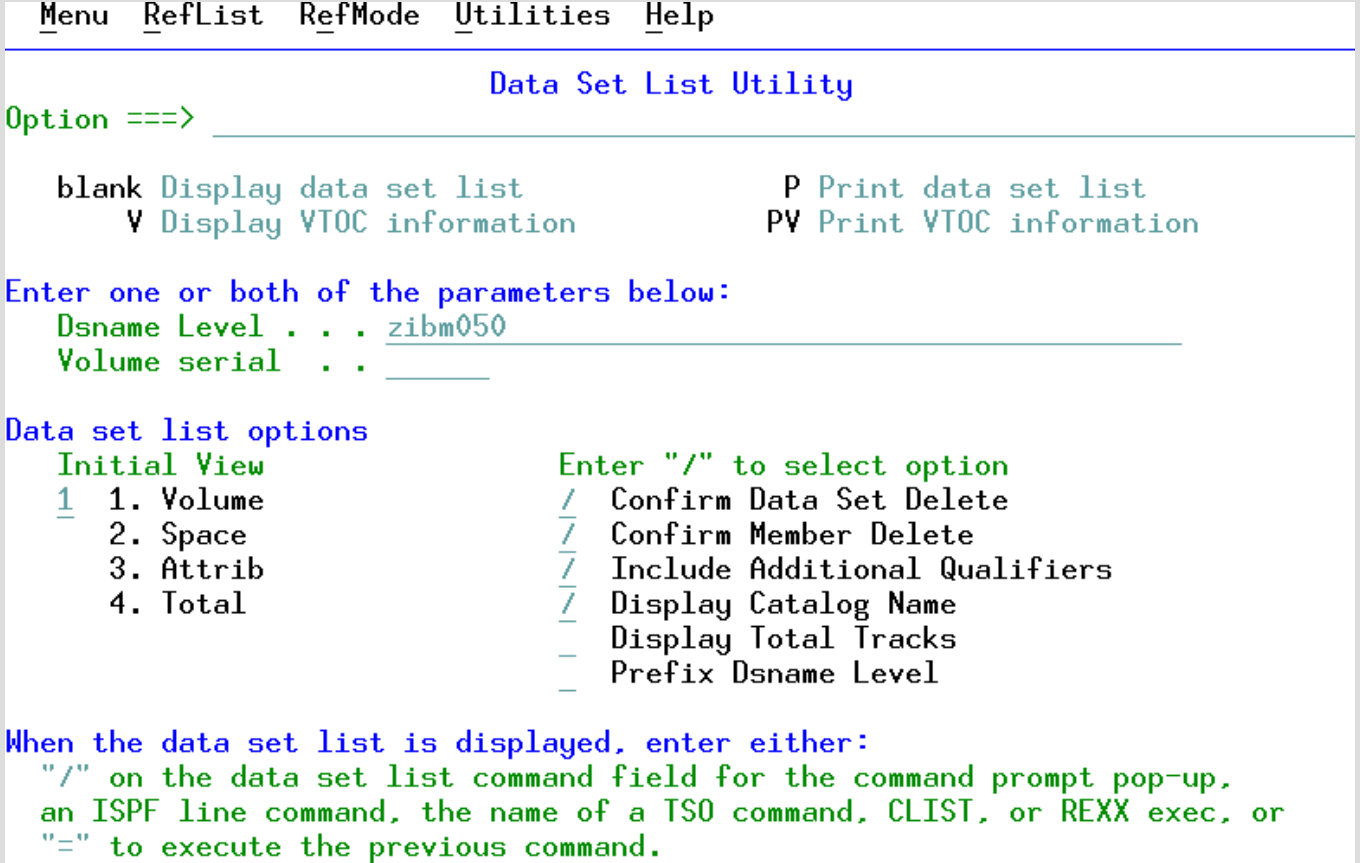
ISPF Panel Navigation



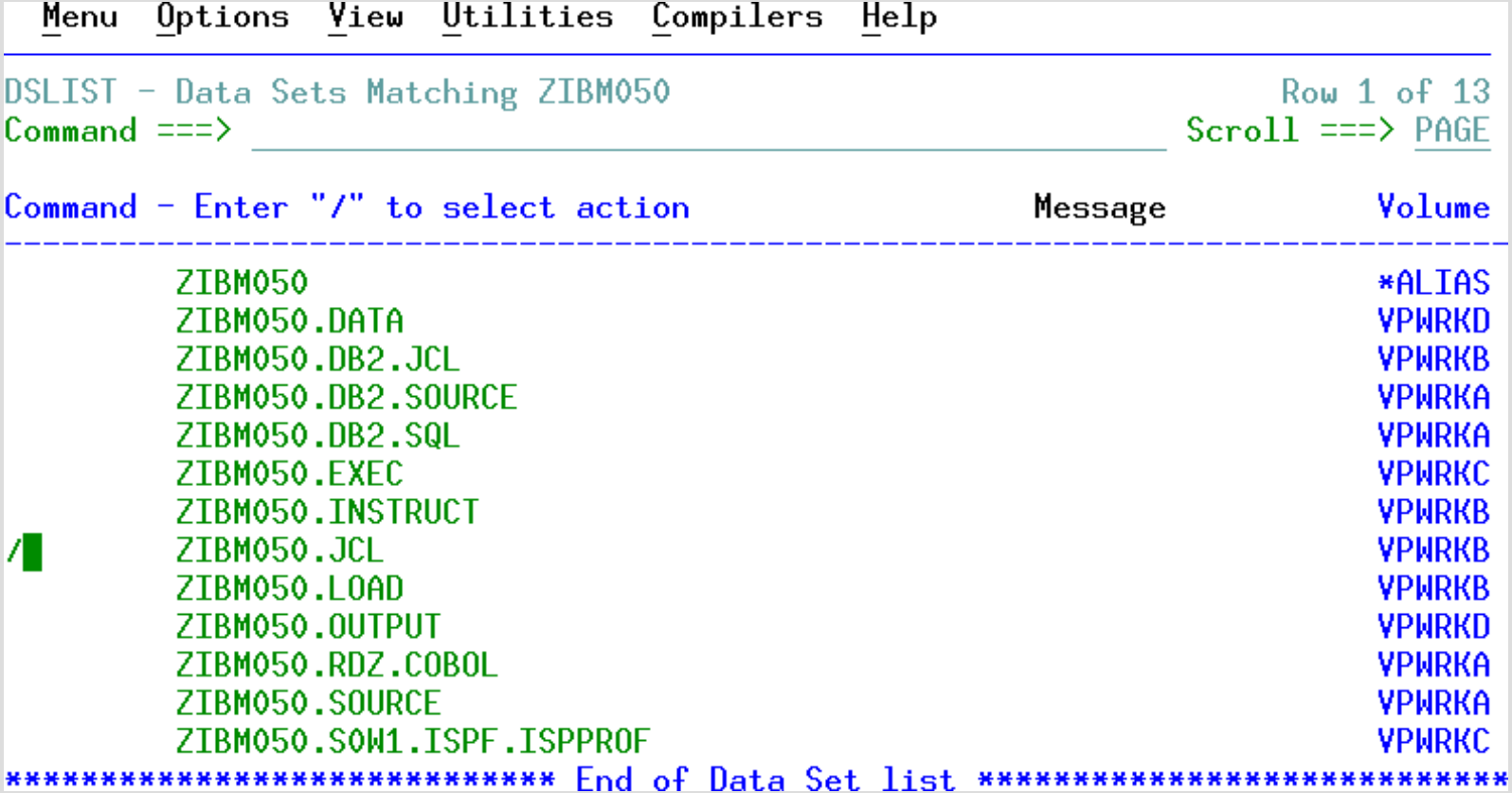
ISPF Panel Navigation



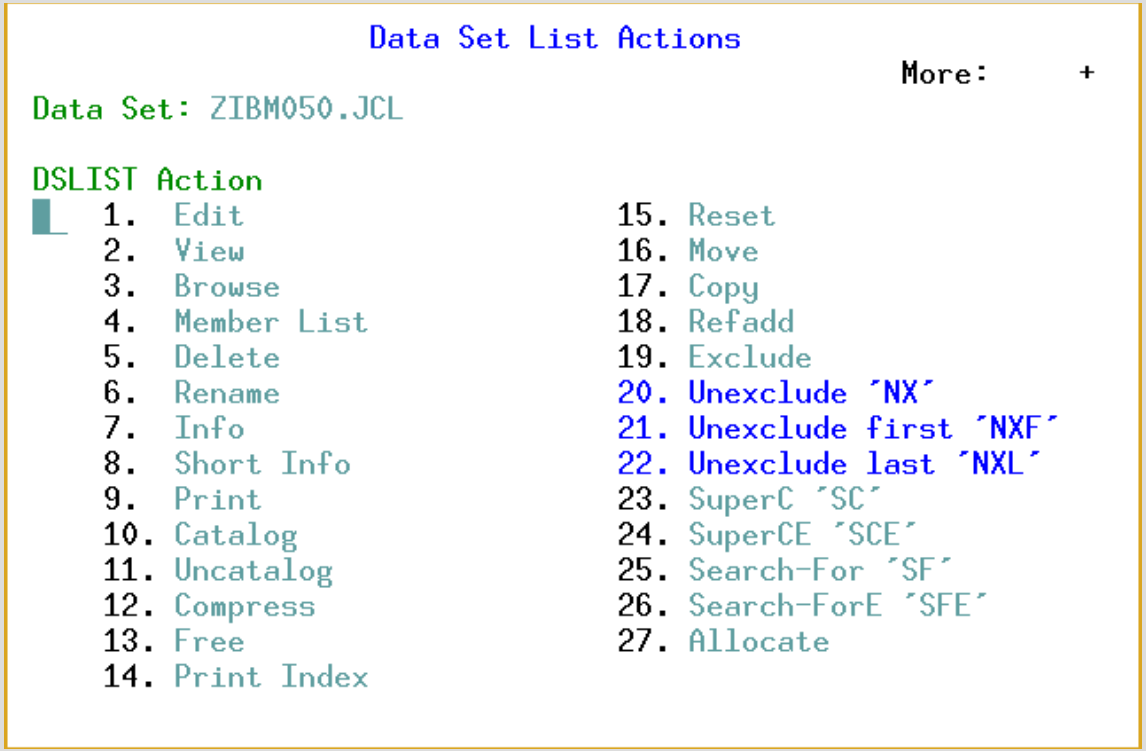
ISPF Panel Navigation
Data Set Name Pattern Matching



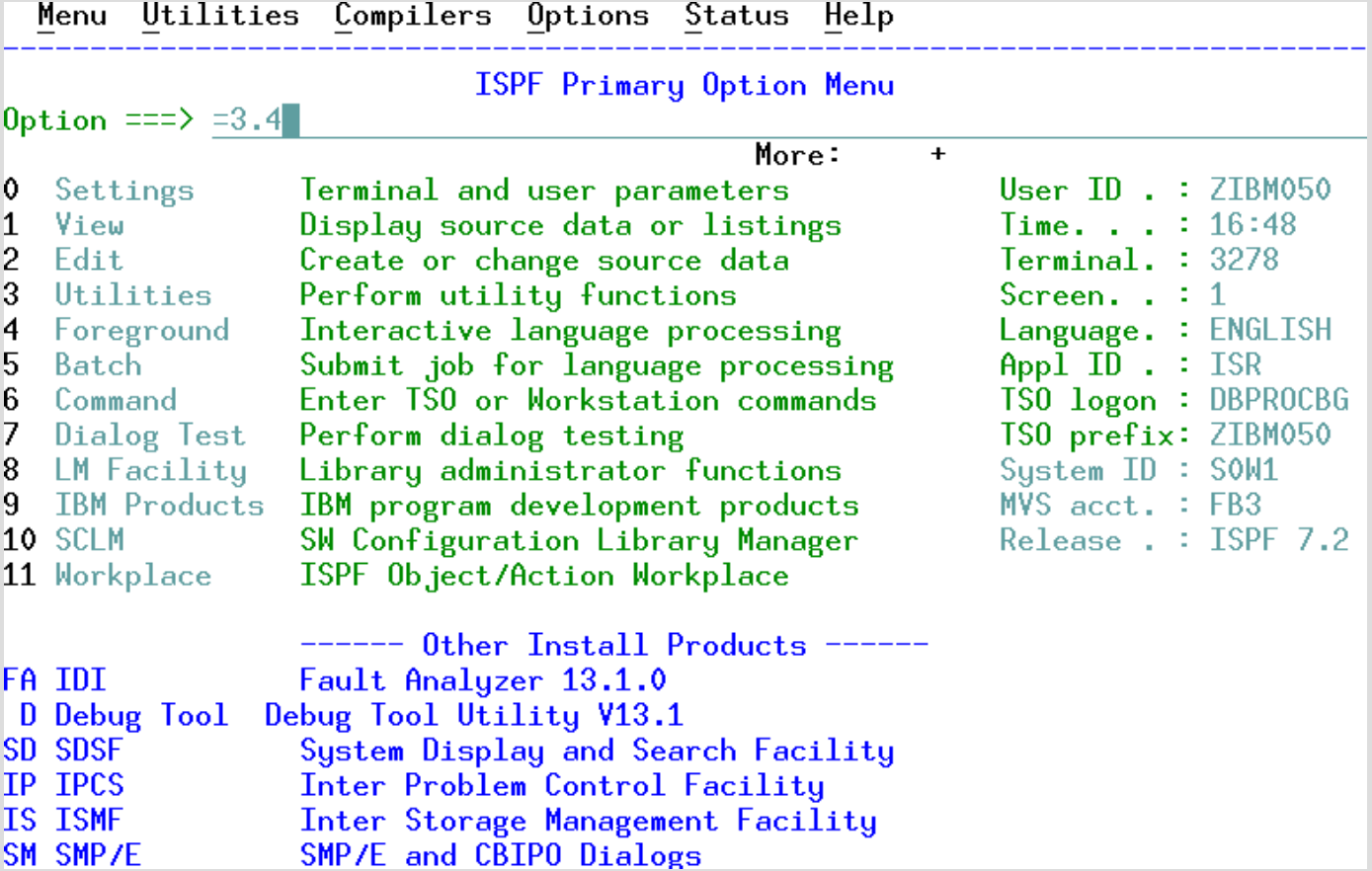
ISPF Command Column in DSLIST Panel



ISPF Command Column in DSLIST Panel



ISPF Panel Navigation

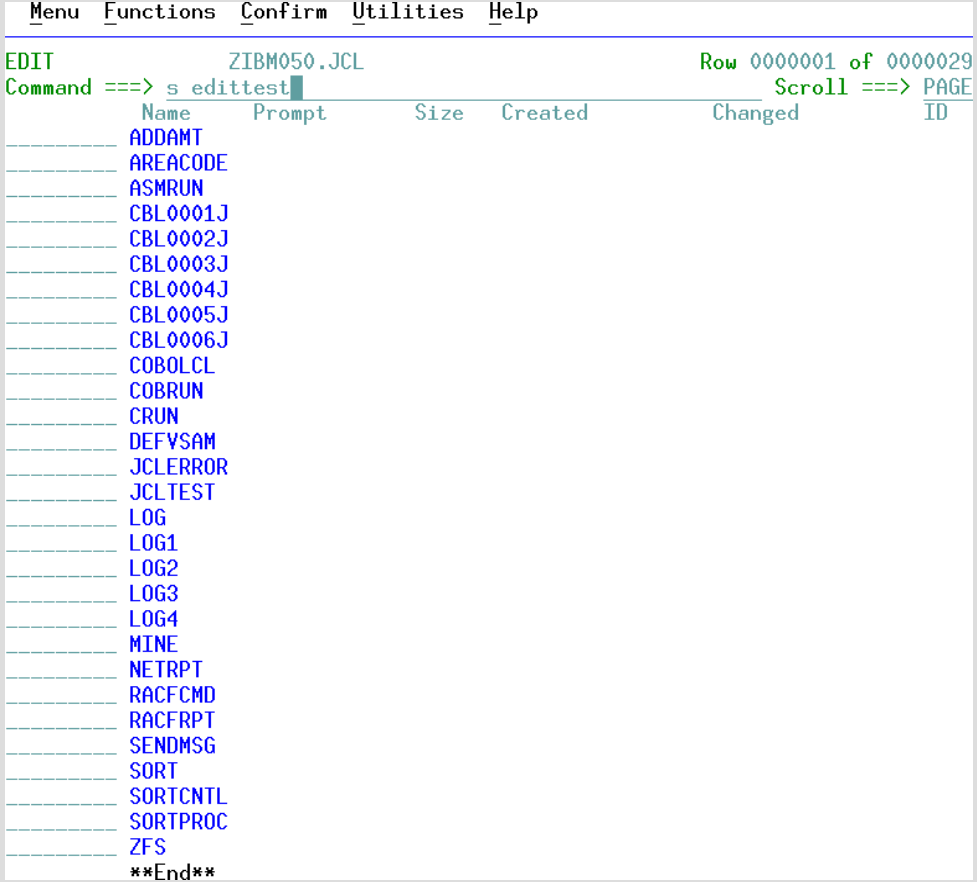


Edit ‘e’ ZIBM050.JCL partitioned data set

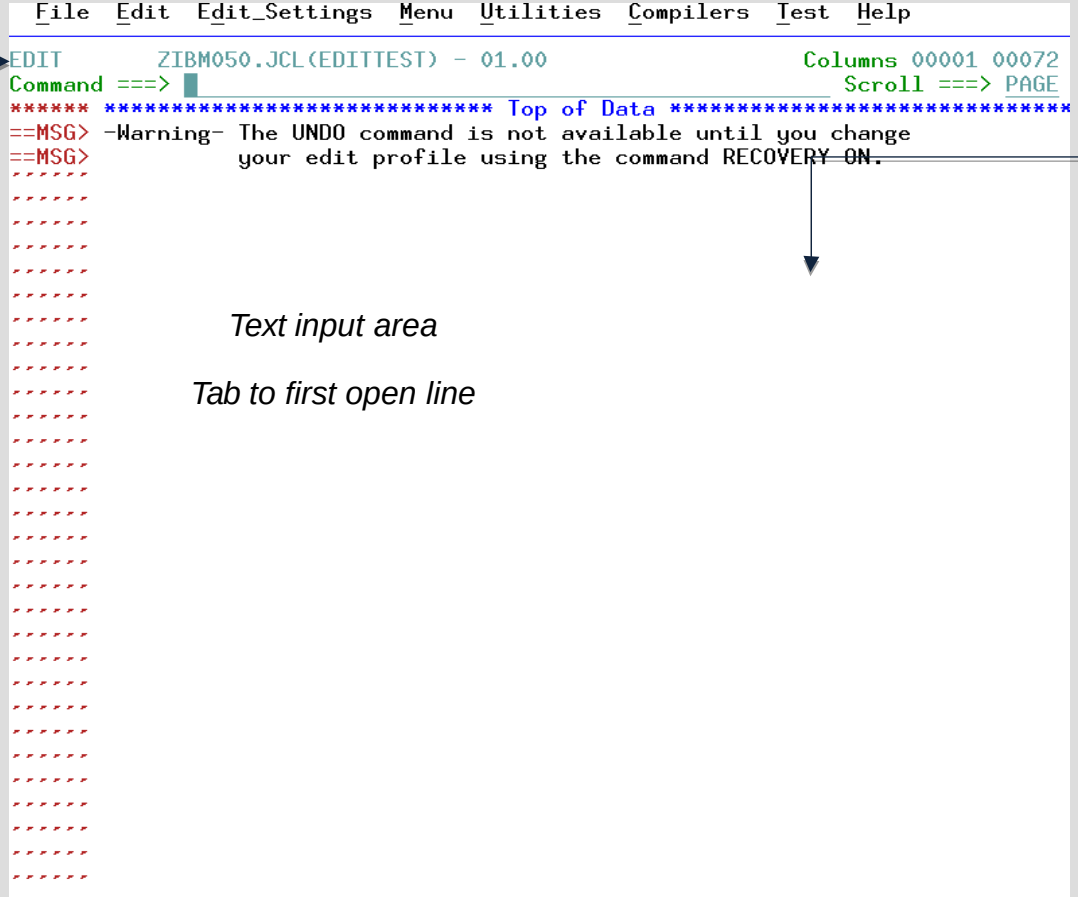
```
 Menu  Options  View  Utilities  Compilers  Help
------------------------------------------------------------------------------
DSLIST - Data Sets Matching ZIBM050                          Row 1 of 13
Command ===> _____________________________________________ Scroll ===> PAGE

Command - Enter "/" to select action                Message          Volume
------------------------------------------------------------------------------
          ZIBM050                                                    *ALIAS
          ZIBM050.DATA                                               VPWRKD
          ZIBM050.DB2.JCL                                            VPWRKB
          ZIBM050.DB2.SOURCE                                         VPWRKA
          ZIBM050.DB2.SQL                                            VPWRKA
          ZIBM050.EXEC                                               VPWRKC
          ZIBM050.INSTRUCT                                           VPWRKB
e         ZIBM050.JCL                                                VPWRKB
          ZIBM050.LOAD                                               VPWRKB
          ZIBM050.OUTPUT                                             VPWRKD
          ZIBM050.RDZ.COBOL                                          VPWRKA
          ZIBM050.SOURCE                                             VPWRKA
          ZIBM050.SOW1.ISPF.ISPPROF                                  VPWRKC
****************************** End of Data Set list ****************************
```

Select ‘s’ new member edittest



ISPF EDIT mode on data set ZIBM050.JCL member name EDITTEST



Type characters into text input area

```
 File  Edit  Edit_Settings  Menu  Utilities  Compilers  Test  Help
EDIT       ZIBM050.JCL(EDITTEST) - 01.00                Columns 00001 00072
Command ===>                                              Scroll ===> PAGE
****** ***************************** Top of Data ********************************
==MSG> -Warning- The UNDO command is not available until you change
==MSG>           your edit profile using the command RECOVERY ON.
000100 abcdefgh
000200 12345678
000300 Line 3
000400 Line 4
000500
000600
000700
```

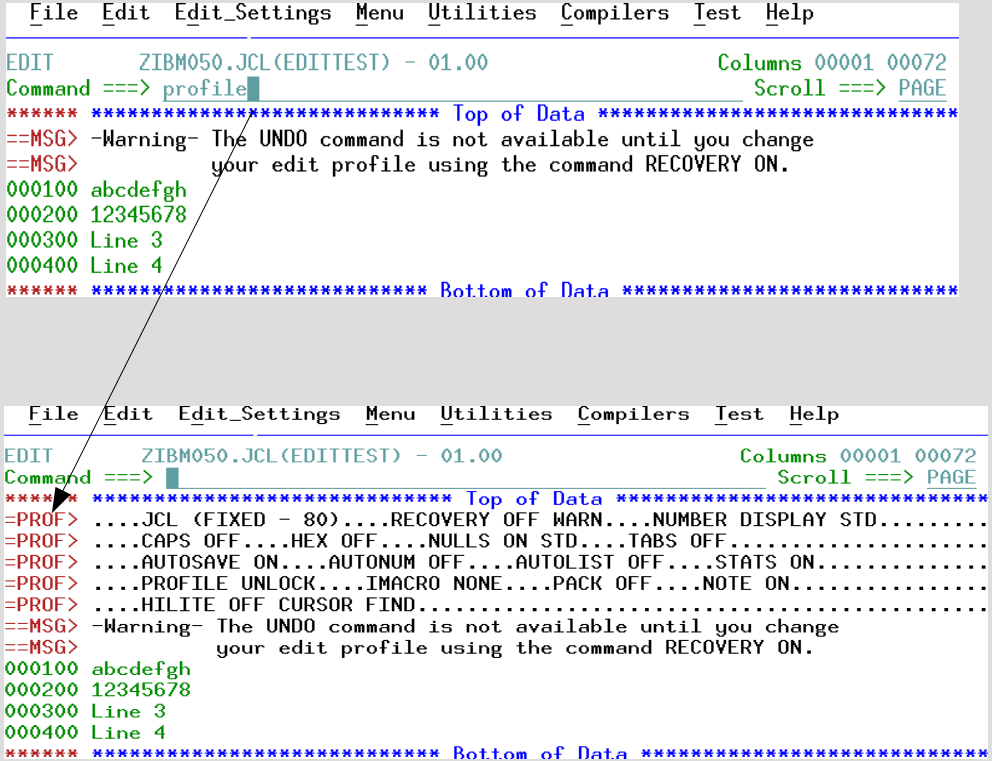
Tab to newlines – wait to 'enter'

Only 'enter' after Line 4

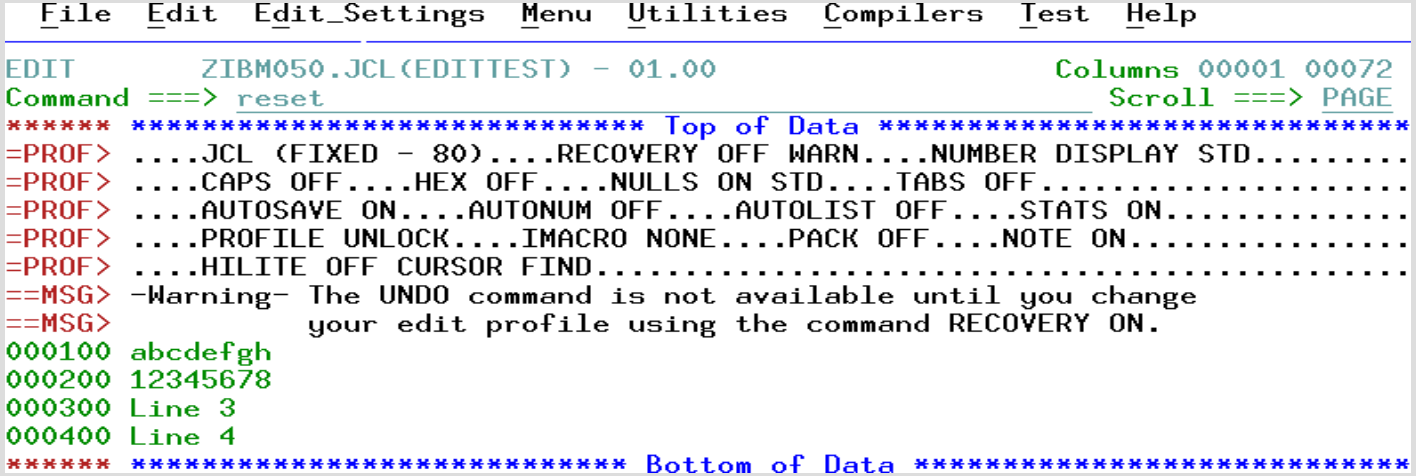
Observe line numbers now present to left of text

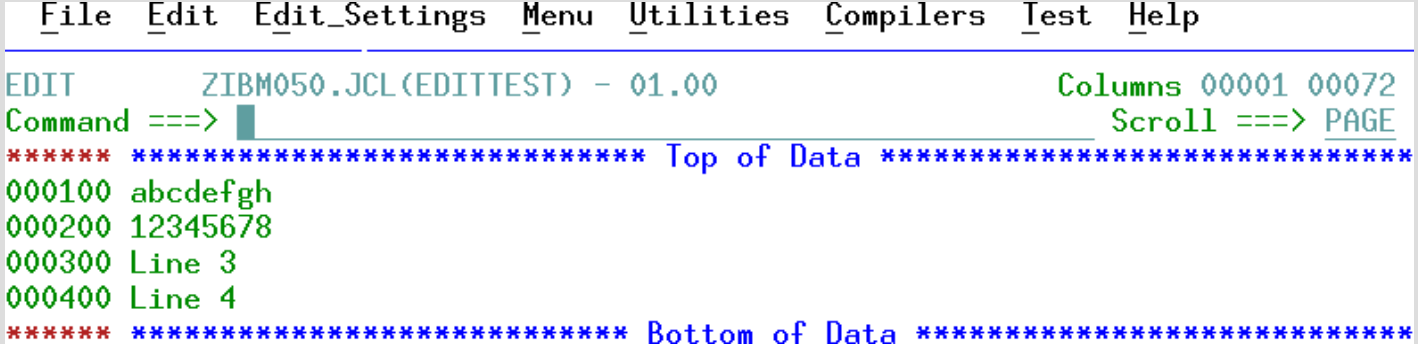
```
 File  Edit  Edit_Settings  Menu  Utilities  Compilers  Test  Help
EDIT       ZIBM050.JCL(EDITTEST) - 01.00                Columns 00001 00072
Command ===> profile                                      Scroll ===> PAGE
****** ***************************** Top of Data ********************************
==MSG> -Warning- The UNDO command is not available until you change
==MSG>           your edit profile using the command RECOVERY ON.
000100 abcdefgh
000200 12345678
000300 Line 3
000400 Line 4
****** **************************** Bottom of Data ******************************
```

Type characters into text input area



ISPF primary edit command
'reset' will remove the '=PROF>' and '==MSG>' lines





Example of using line commands

```
EDIT       ZIBM050.JCL(EDITTEST) - 01.00                Columns 00001 00072
Command ===> _____________________________________________ Scroll ===> PAGE
****** ***************************** Top of Data ******************************
d 0100 abcdefgh
r3 200 12345678
000300 Line 3
i2 400 Line 4
****** **************************** Bottom of Data ****************************
```

Result of 'enter'

```
EDIT       ZIBM050.JCL(EDITTEST) - 01.01                Columns 00001 00072
Command ===> _____________________________________________ Scroll ===> PAGE
****** ***************************** Top of Data ******************************
000200 12345678
000210 12345678
000220 12345678
000230 12345678
000300 Line 3
000400 Line 4
''''''
''''''

****** **************************** Bottom of Data ****************************
```

Example of using primary and line commands at same time

```
EDIT       ZIBM050.JCL(EDITTEST) - 01.01                Columns 00001 00072
Command ===> c 'Line' 'statement' all                    Scroll ===> PAGE
****** ***************************** Top of Data ********************************
==MSG> -Warning- The UNDO command is not available until you change
==MSG>           your edit profile using the command RECOVERY ON.
dd 200 12345678
000210 12345678
dd 220 12345678
000230 12345678
000300 Line 3
000400 Line 4
'''''' ISPF has primary and line edit commands
'''''' Both primary and line edit commands can be typed before enter
****** ***************************** Bottom of Data *****************************
```

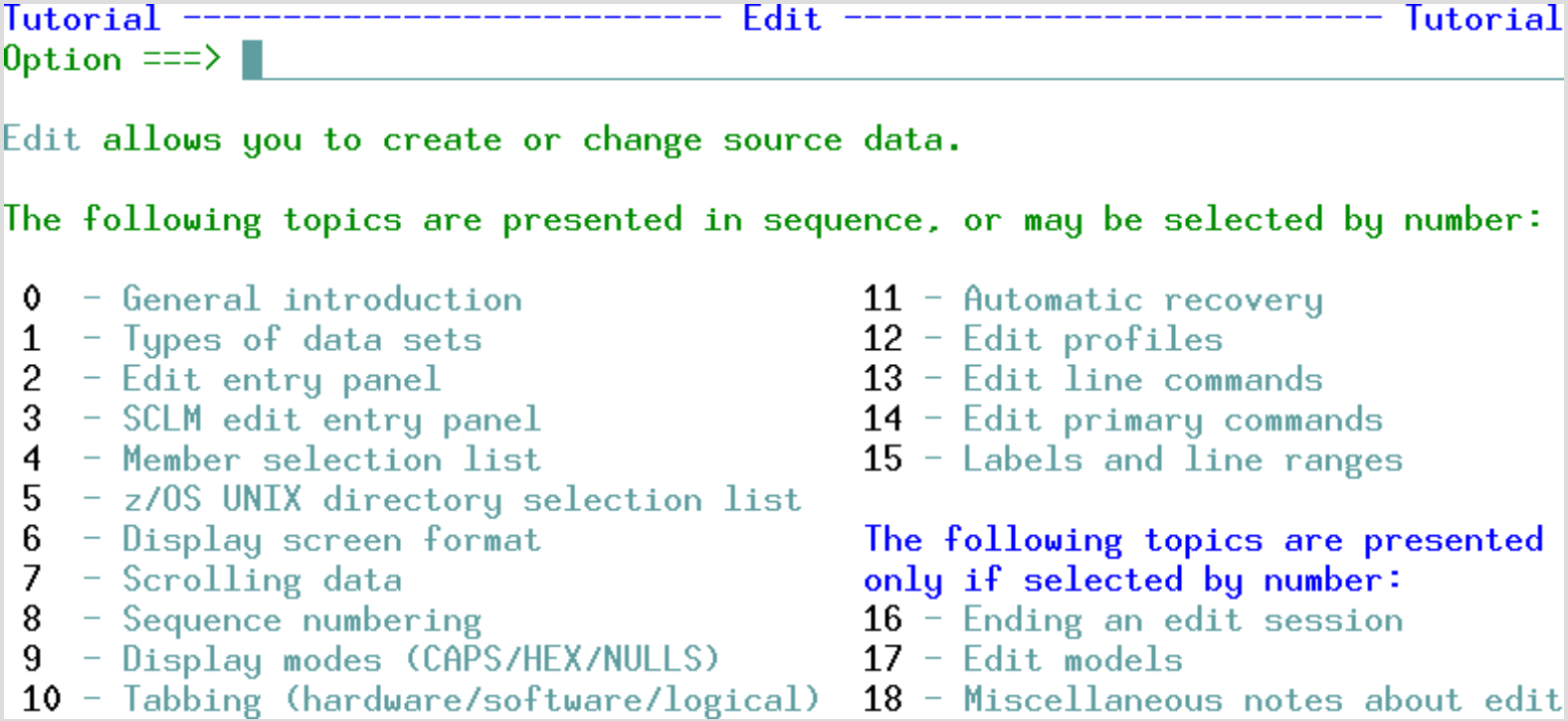
Result of 'enter'

```
EDIT       ZIBM050.JCL(EDITTEST) - 01.01              CHARS 'LINE' changed
Command ===> reset                                       Scroll ===> PAGE
****** ***************************** Top of Data ********************************
==MSG> -Warning- The UNDO command is not available until you change
==MSG>           your edit profile using the command RECOVERY ON.
000230 12345678
==CHG> statement 3
==CHG> statement 4
==CHG> ISPF has primary and statement edit commands
==CHG> Both primary and statement edit commands can be typed before enter
****** ***************************** Bottom of Data *****************************
```

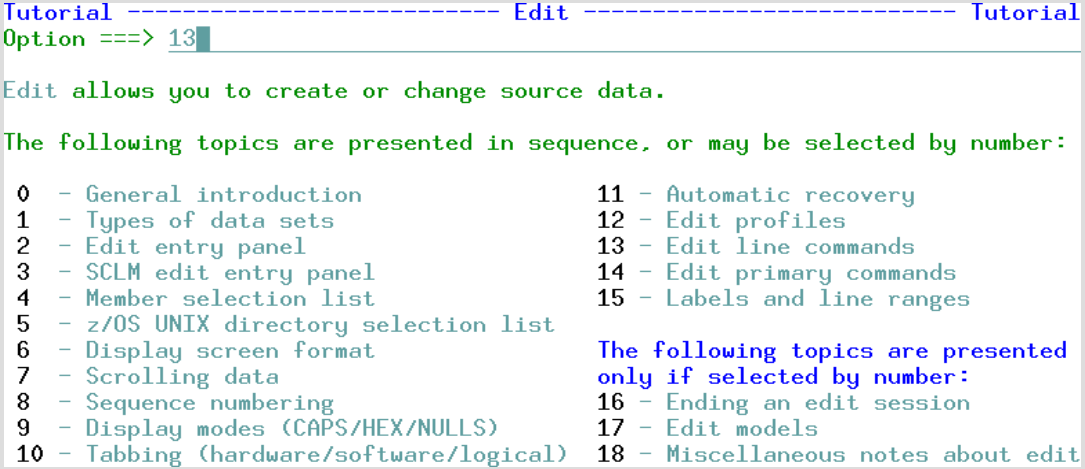
Result of reset, then 'enter'

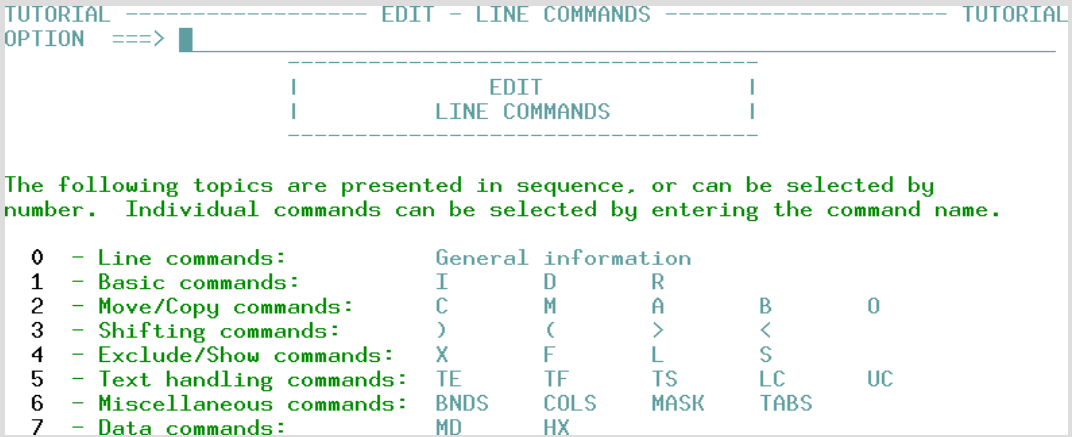
```
EDIT       ZIBM050.JCL(EDITTEST) - 01.01                Columns 00001 00072
Command ===>                                             Scroll ===> PAGE
****** ***************************** Top of Data ********************************
000230 12345678
000300 statement 3
000400 statement 4
000500 ISPF has primary and statement edit commands
000600 Both primary and statement edit commands can be typed before enter
****** ***************************** Bottom of Data *****************************
```

ISPF EDIT online tutorial



Edit Tutorial help on ‘line commands’





Edit Tutorial help on ‘primary commands’

```
Tutorial ---------------------------- Edit ---------------------------- Tutorial
Option ===> 14

Edit allows you to create or change source data.

The following topics are presented in sequence, or may be selected by number:

 0  - General introduction                    11 - Automatic recovery
 1  - Types of data sets                      12 - Edit profiles
 2  - Edit entry panel                        13 - Edit line commands
 3  - SCLM edit entry panel                   14 - Edit primary commands
 4  - Member selection list                   15 - Labels and line ranges
 5  - z/OS UNIX directory selection list
 6  - Display screen format                   The following topics are presented
 7  - Scrolling data                          only if selected by number:
 8  - Sequence numbering                      16 - Ending an edit session
 9  - Display modes (CAPS/HEX/NULLS)          17 - Edit models
 10 - Tabbing (hardware/software/logical)     18 - Miscellaneous notes about edit
```

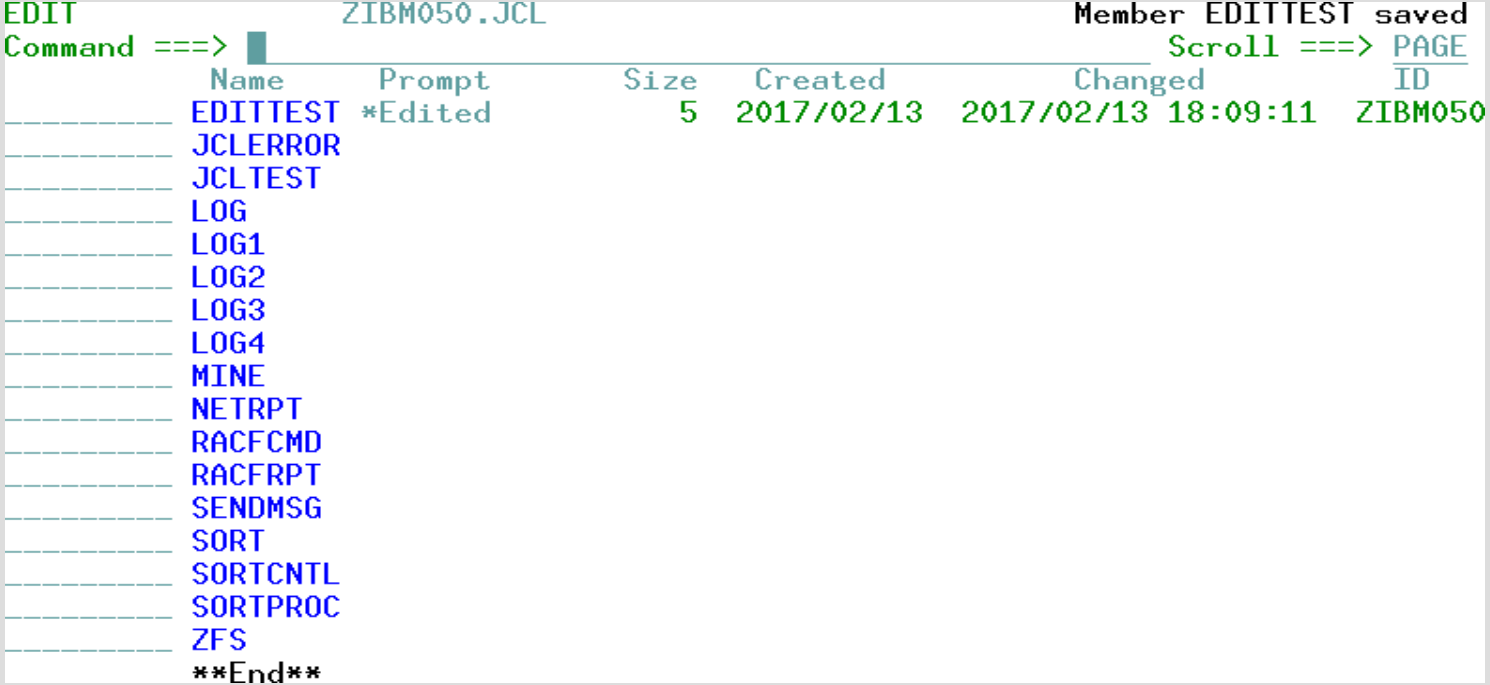
```
Tutorial ------------------- Edit Primary Commands ------------------- Tutorial
Option ===>

The following topics are presented in sequence, or may be selected by number.
Individual commands may be selected by entering the command name.

  0 - Primary commands (general information)
  1 - Miscellaneous commands
  2 - FIND/CHANGE/EXCLUDE commands
  3 - Number control commands
  4 - Display mode control commands
  5 - Termination control commands
  6 - External data commands
  7 - Macro control commands
  8 - Data editing commands
  9 - Edit settings command

Note: Select >CANCEL to see information for the CANCEL command.
```

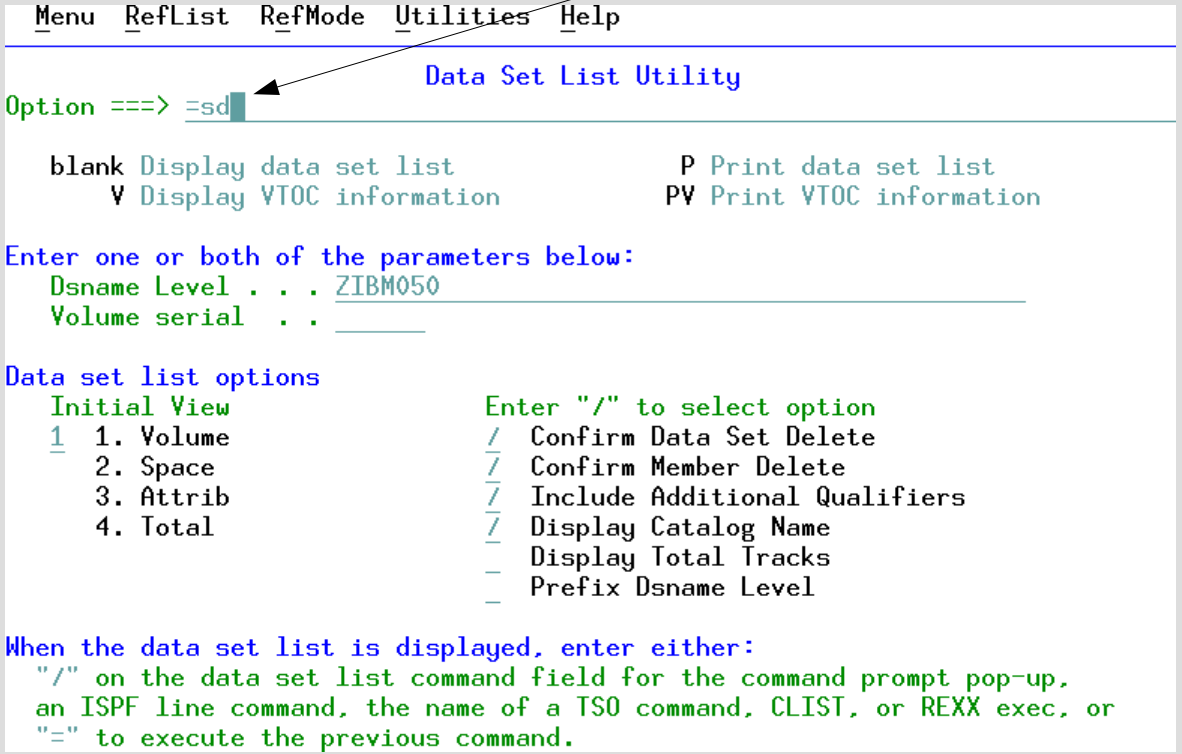
F3 will automatically save changes and return



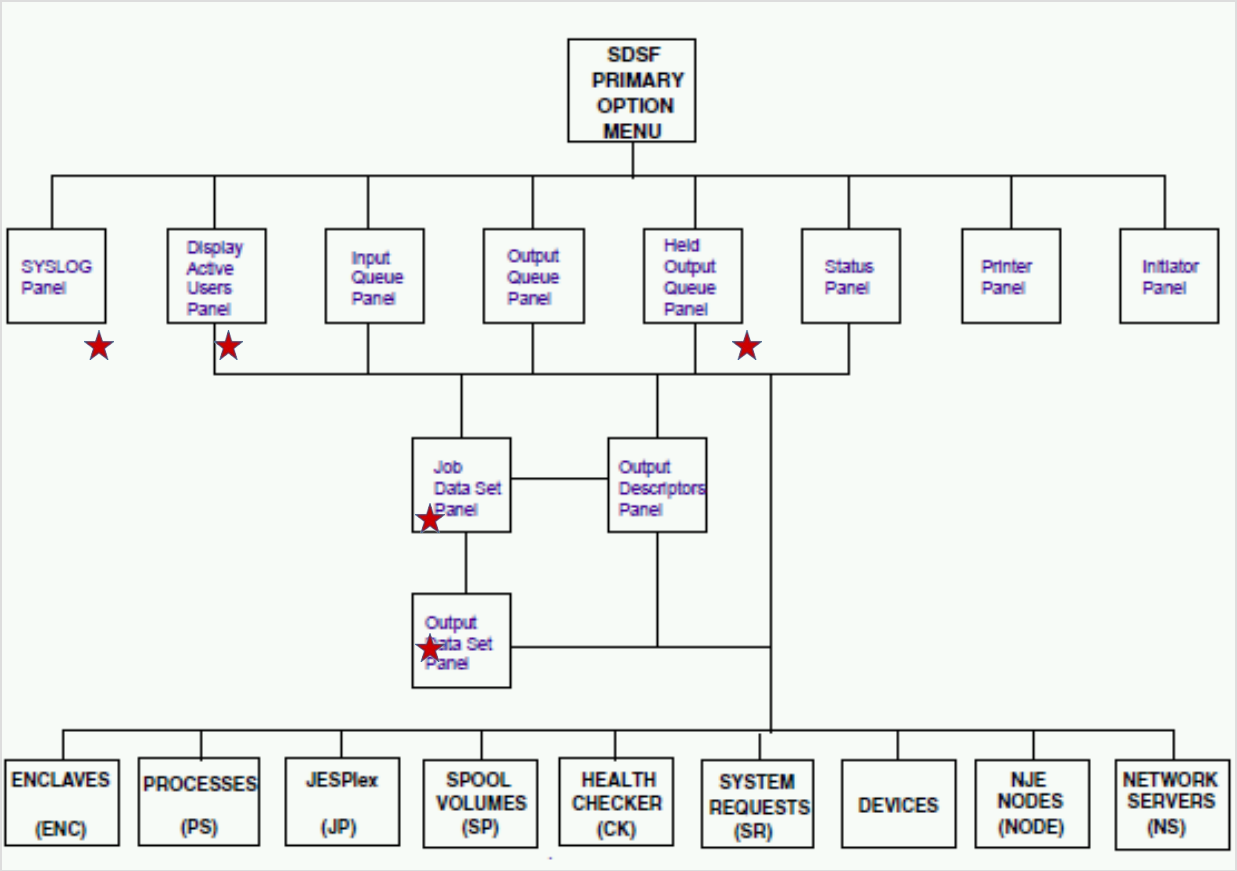
ISPF – Navigate to SDSF environment

sd is SDSF option selection

preceeding = is executing option as if on ISPF Primary Option Menu

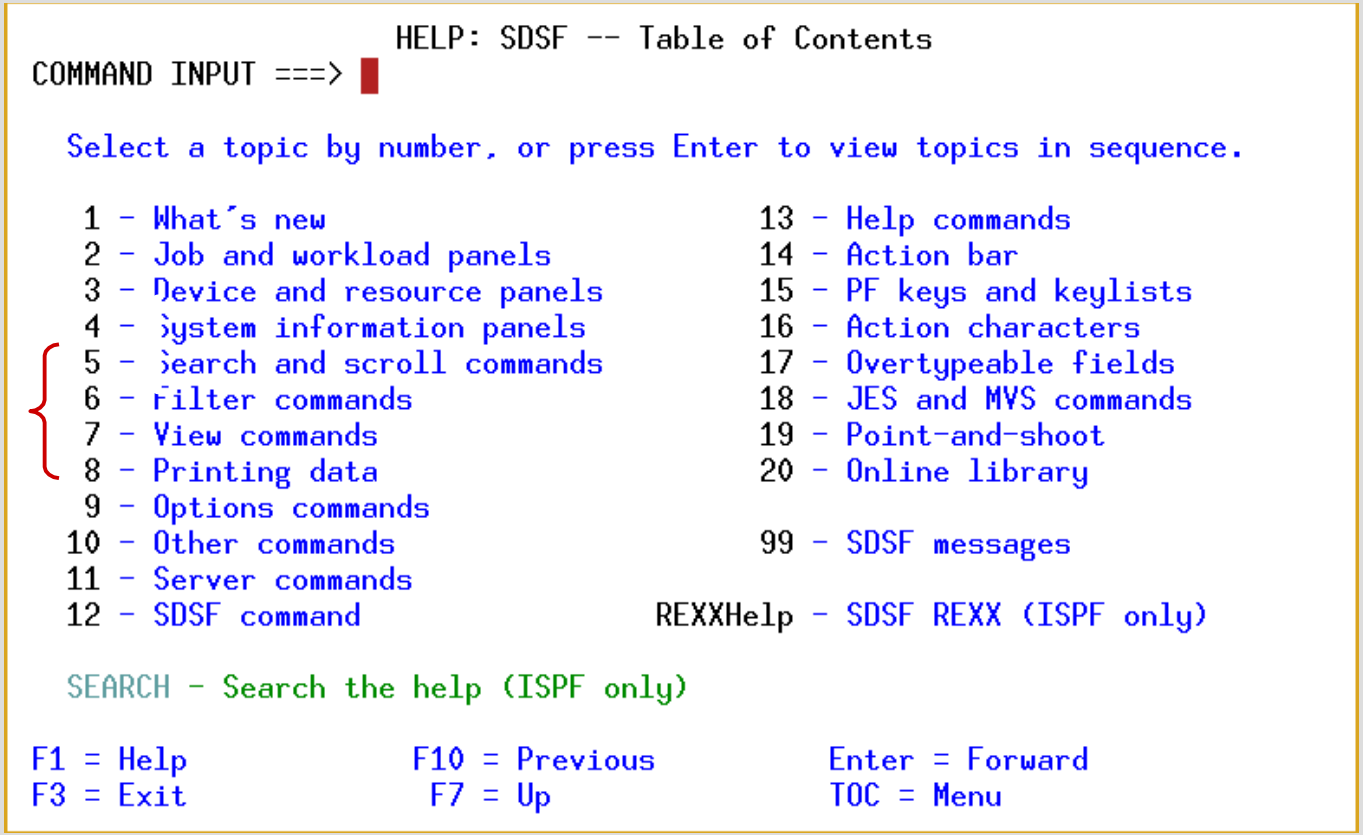


SDSF – A Panel Driven Interface

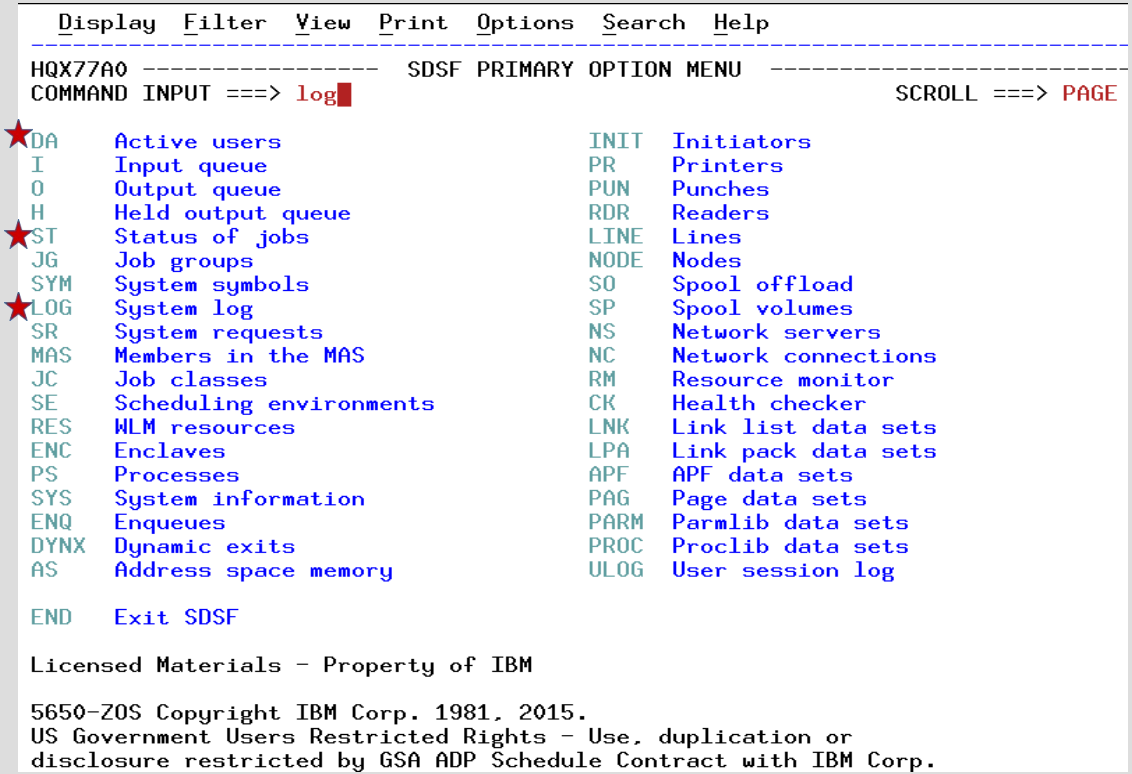


SDSF Panel Driven Interface

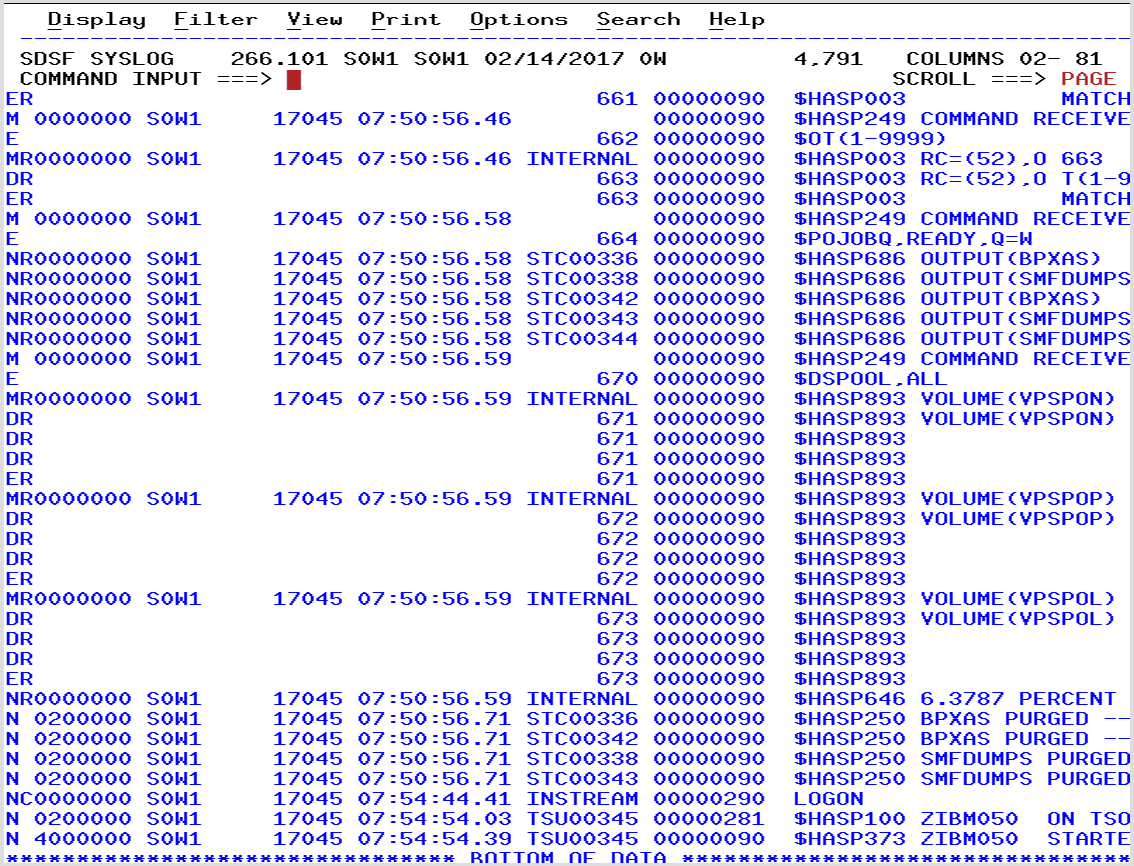
enter help or F1 from Primary Option Menu



SDSF - LOG command



SDSF – System Log (SYSLOG)



SDSF Help

enter help or F1 while in system log

```
                                HELP: SYSLOG Panel
COMMAND INPUT ===>

        Select a topic by number, or press Enter to view them in sequence.

         1 - Introduction to the SYSLOG panel
         2 - Using the SYSLOG panel in the JES3 environment
         3 - Syntax of the LOG command
         4 - Fields on the SYSLOG panel
         5 - Commands: display WTOR messages, search, etc.

        These topics are displayed only if selected:

        97 - What's new
        98 - Search and navigate the help
        99 - Messages

        For system messages, use LookAt at:
        http://www.ibm.com/systems/z/os/zos/bkserv/lookat/

F1 = Help            F10 = Previous          Enter = Forward
F3 = Exit             F7 = Up                TOC = Menu
```

Time Sharing Option & hosted full screen applications

TSO is a command line interface with a limited set of commands

ISPF is a full screen panel driven interface used to edit data sets, edit unix files, and execute system utilities

SDSF is a full screen panel drive interface used to view input queue, execution queue, output queue, system log (syslog), and enter system commands when authorized.

Note: TSO, ISPF, and SDSF interactive functions can be executed using JCL (Batch)

IBM z/OS Manuals
Web Based Bookshelves

+ z/OS TSO/E

+ ISPF

+ SDSF

Unit Summary

Having completed this unit, you should be able to:

- Describe and use TSO command line interface
- Describe and use ISPF panels
- Describe and use SDSF panels
- Describe and use ISPF editor
- Locate TSO, ISPF, and SDSF manuals