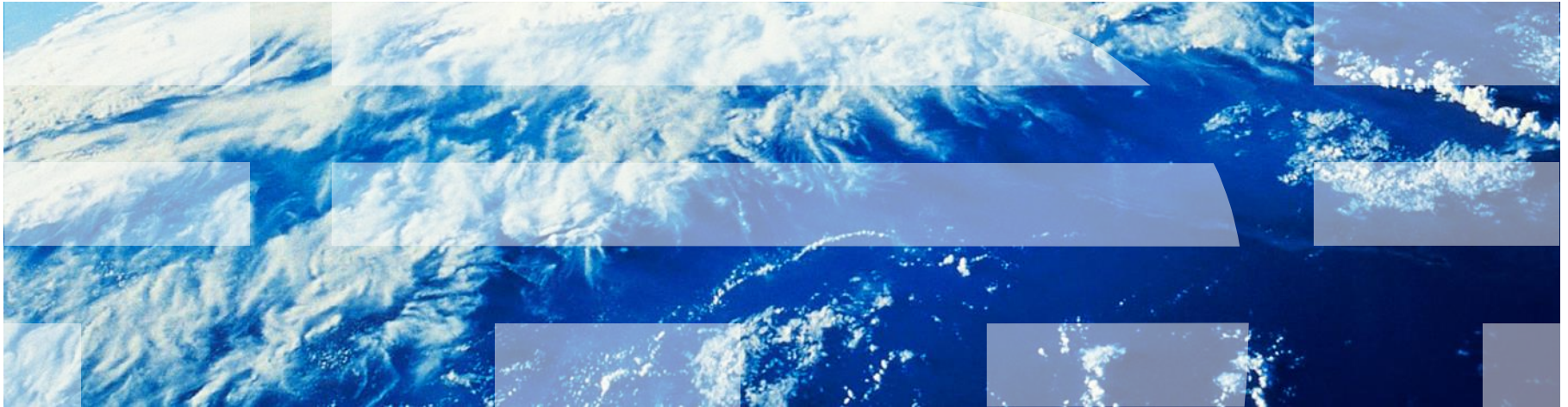


IBM Debug Tool JCL Wizard

IBM Technical Preview



Debug Tool Wizard

Debug Tool Wizard

Help Information

Debug Tool JCL Wizard Help Panel

File Edit Edit_Settings Menu Utilities Compilers Test Help

-DSC- EDIT DNET424 ADLAB.JCL (XSAM) - 01.99 Columns 00001 00072

Command ==> EQAJCL Scroll ==> CSR

***** ***** Top of Data *****

```

000001 //DNET424T JOB (ACCTG), 'IBM TOOLS WORKSHOP', REGION=4M, CLASS=A,
000002 //
000003 //
000004 //PRINT
000005 //SYSPRINT DD SYSOUT=*
000006 //FILE DD DSN=&SYSUID..ADLAB.FILES (CUST2FA), DISP=SHR
000007 //SYSIN DD *
000008 PRINT INFILE(FILE) COUNT(1)
000009 //*
000010 //*
000011 //RUNSAM1 EXEC PGM=SAM1, REGION=4M
000012 //STEPLIB DD DISP=SHR, DSN=&SYSUID..ADLAB.LOAD
000013 //CUSTFILE DD DSN=&SYSUID..ADLAB.FILES (CUST2FA), DISP=SHR
000014 //SYSPRINT DD SYSOUT=*
000015 //SYSOUT DD SYSOUT=*
000016 //CUSRPT DD SYSOUT=*
000017 //CUSTOUT DD SYSOUT=*
000018 //TRANFILE DD *
000019 *TRAN (* IN COL 1 IS A COMMENT)
    
```

The command may have a name other than “debug”. Consult your installation team to determine the command name.

Enter

Debug Tool JCL Wizard Help Panel

```

File Edit Edit_Settings Menu Utilities Compilers Test Help
----- Debug Tool JCL Wizard Option Selection -----
Choose one of the following options:
  G - Debug Tool GUI (Remote Debugger)
  T - Debug Tool Terminal Interface Manager
  M - Debug Tool Main Frame Interface
  R - Remove Debug Tool JCL Lines
  D - Delay Debug Tool Invocation
  C - Code Coverage Only (No Debug Session)

An "A" or "B" line command may be used to place the statements.
If no "A" or "B" line command is provided, programs are listed.

Press Enter to continue.
Press PF1 for additional information.
"A" and "B" can be used to place the Debug Tool Statements
PF1 - HELP      F2=Split      F3=Exit      F4=Return    F5=Rfind    F6=RCHG
F7=UP          F8=DOWN      F9=SWAP     F10=LEFT    F11=RIGHT

000017 *TRAN  (* IN COL 1 ] PF1 - Getting Started
F1=Help      F2=Split      F3=Exit      F4=Return    F5=Rfind    F6=RCHG
F7=Up        F8=Down       F9=Swap     F10=Left     F11=Right   F12=Retrieve
  
```



Debug Tool JCL Wizard Help Panel

Debug Tool Wizard - Getting Started

More: +

The DEBUG command will provide panels to enter information to create JCL or procedure lines to invoke Debug Tool, remove Debug Tool lines, or create Code Coverage information.

The following parameters may be entered:

- o DEBUG G - Invoke Debug Tool using the Remote Graphical User Interface
- o DEBUG T - Invoke Debug Tool using the Terminal Interface Manager
- o DEBUG M - Invoke Debug Tool using the Main Frame Interface
- o DEBUG R - Remove Debug Tool JCL lines added by this tool
- o DEBUG D - Invoke Debug Tool using Delayed Debug Invocation
- o DEBUG C - Code Coverage Only - No Debug Tool Invocation

The DEBUG command can be issued when editing or viewing a JCL member or a procedure member. The macro will create instream DD statements. Instream

F1=PrevPage F2=NextPage F3=Swap F4=PrevPage F5=NextPage F6=

Continue reviewing "Getting Started" with Enter key

Enter

Debug Tool JCL Wizard Help Panel

Debug Tool Wizard - Getting Started

More: - +

procedure member. The macro will create instream DD statements. Instream DD statements for procedures are permitted with JES2 for z/OS 1.3, and for JES3 with z/OS 2.1.

Changes made from the keyboard are not processed by the DEBUG routine unless you press the ENTER key. If you are modifying JCL or procedure lines, press ENTER, then enter the DEBUG command to achieve the correct results. Otherwise, the most recent changes will not be recognized by the routine.

The Debug Tool JCL Wizard has two methods used to place where the Debug Tool invocation statements are placed.

- o An "A" or "B" line command can be used to place the statements. For this method, enter the line "A" or "B" line command, then enter the DEBUG command with the appropriate parameter.

When using the "A" or "B" line command, a panel will be provided to enter a Procedure Step Override.

Continue reviewing "Getting Started" with Enter key

F7=PrevPage F8=NextPage F9=Swap F10=PrevPage F11=NextPage F12=

Enter

Debug Tool JCL Wizard Help Panel

Debug Tool Wizard - Getting Started

More: -

unless you press the ENTER key. If you are modifying JCL or procedure lines, press ENTER, then enter the DEBUG command to achieve the correct results. Otherwise, the most recent changes will not be recognized by the routine.

The Debug Tool JCL Wizard has two methods used to place where the Debug Tool invocation statements are placed.

- o An "A" or "B" line command can be used to place the statements. For this method, enter the line "A" or "B" line command, then enter the DEBUG command with the appropriate parameter.

When using the "A" or "B" line command, a panel will be provided to enter a Procedure Step Override.

- o If no "A" or "B" line command is found, the DEBUG routine will look for EXEC PGM=xxxxx lines. If only one program is found in the JCL or procedure, the statements are inserted below the EXEC PGM command. If more than one EXEC PGM=xxxxx line is found, a list of programs are presented. Only one program may be selected.

Continue reviewing "Getting Started" with Enter key

F7=PrevPage F8=NextPage F9=Swap F10=PrevPage F11=NextPage F12=

PF3

Debug Tool Wizard

Debug Tool Wizard

Scenario 1: Language Environment Program with Terminal Interface Manager

Debug Tool JCL Wizard

LE program with the Terminal Interface Manager

```

File Edit Edit_Settings Menu Utilities Compilers Test Help

-DSC- EDIT DNET424 ADLAB.JCL (XSAM) - 01.99          Columns 00001 00072
Command ==> EQAJCL                               Scroll ==> CSR
***** ***** Top of Data *****
000001 //DNET424T JOB (ACCTG), 'IBM TOOLS WORKSHOP', REGION=4M, CLASS=A,
000002 //          MSGCLASS=H, NOTIFY=&SYSUID, MSGLEVEL=(1, 1)
000003 //          SE  &PROGRAM=SAM1
000004 //PRINT1 EXEC PGM=IDCAMS
000005 //SYSPRINT DD SYSOUT=*
000006 //FILE      DD
000007 //SYSIN DD *
000008 PRINT INFILE(
000009 //*
000010 //RUNSAM1 EXEC PGM=SAM1, REGION=4M
000011 //STEPLIB DD DISP=SHR, DSN=&SYSUID..ADLAB.LOAD
000012 //CUSTFILE DD DSN=&SYSUID..ADLAB.FILES(CUST250) DISP=SHR
000013 //SYSPRINT DD SYSOUT=*
000014 //SYSOUT DD SYSOUT=*
000015 //CUSTRPT DD SYSOUT=*
000016 //CUSTOUT DD SYSOUT=*
000017 //TRANFILE DD *
000018 *TRAN (* IN COL 1 IS A COMMENT)
000019 *-----
  
```

Create JCL statements to debug a Language Environment program using the Terminal Interface Manager

PGM=SAM1, REGION=4M

The program name may be a symbolic name



Debug Tool JCL Wizard

LE program with the Terminal Interface Manager

```

File  Edit  Edit_Settings  Menu  Utilities  Compilers  Test  Help
-----
E  ----- Debug Tool JCL Wizard Option Selection -----
C
*  Choose one of the following options:
0  (I) G - Debug Tool GUI (Remote Debugger)
0  T - Debug Tool Terminal Interface Manager
0  M - Debug Tool Main Frame Interface
0  R - Remove Debug Tool JCL Lines
0  D - Delay Debug Tool Invocation
0  C - Code Coverage Only (No Debug Session)
0
0  An "A" or "B" line command may be used to place the statements.
0  If no "A" or "B" line command is provided, programs are listed.
0
0  Press Enter to continue.
0  Press PF1 for additional information.
0
0  F1=HELP      F2=SPLIT    F3=END      F4=RETURN   F5=RPFND    F6=RCHG
0  F7=UP        F8=DOWN     F9=SWAP     F10=LEFT    F11=RIGHT
0
000017 //TRANFILE DD *
F1=Help      F2=Split    F3=Exit     F4=Return   F5=Rfind    F6=Retrieve
F7=Up        F8=Down     F9=Swap     F10=Left    F11=Right

```



Debug Tool JCL Wizard

LE program with the Terminal Interface Manager

```

File Edit Edit_Settings Menu Utilities Compilers Test Help

----- Debug Tool TIM (Terminal Interface Manager) Parms -----
Enter optional parameters below
LE Program      ==> YES (Language Environment Enabled YES/NO)

Userid         ==> DNET424 (UserId)

Enter '/' to enter additional Debug Tool information
DT Source Libs ==> - (Identify source libraries for ASM or LANGX)
LDD Programs   ==> - (Load Assembler or LANGX COBOL source)
At Entry       ==> / (Request to stop in subprograms)
AutoMonitor on ==> / (Automatically monitor variables)
Warning on     ==> - (Prohibits variable changes for Optimized COBOL)
Code Coverage  ==> - (Code Coverage - Enterprise COBOL/PL1 only)
Debug Tool Log ==> - (Capture Debug Log on SYSOUT=x)
Show Comments  ==> / (Include comments in output programs)

Press Enter to continue
  
```

Cursor under LE Program field

Every field has Field Help Available

PF1

Debug Tool JCL Wizard

Non-LE program with the Terminal Interface Manager

```

File Edit Edit_Settings Menu Utilities Compilers Test Help

----- Debug Tool TIM (Terminal Interface Manager) Parms -----

Enter optional parameters below
LE Program
Userid
Enter '/' to
DT Source L
LDD Program
At Entry
AutoMonitor
Code Covera
Debug Tool
Show Commen

Press Enter

F1=HELP
F6=RCHANGE

F7=Up

Debug Tool Wizard - Language Environment Enabled Program

Enter "YES" if the program invoked by the "EXEC PGM="
statement is language environment enabled. Programs that
are "language environment enabled" are linked with the
language environment library which generally ends in
SCEELKED.

Enter "NO" if the program is not language environment
enabled.

If this option is specified incorrectly, Debug Tool will
not be invoked.

F1=Help      F2=Split      F3=Exit      F4=
F5=Exhelp    F6=Keyshelp   F7=PrvPage   F8=
PF12
  
```

Debug Tool JCL Wizard

LE program with the Terminal Interface Manager

```

File Edit Edit_Settings Menu Utilities Compilers Test Help
----- Debug Tool TIM (Terminal Interface Manager) ParmS -----
Enter optional parameters below
LE Program ==> YES (Language Environment Enabled YES/NO)

Userid ==> DNET424 (UserId)

Enter '/' to enter additional Debug Tool parameters
DT Source Libs ==> _ (Identify source libraries for ASM or LANGX)
LDD Programs ==> _ (Load Assembler or LANGX COBOL source)
At Entry ==> / (Request AT ENTRY breakpoints)
AutoMonitor on ==> / (Automatically monitor program execution)
Warning on ==> _ (Prohibit variable changes for Optimized COBOL)
Code Coverage ==> _ (Code coverage for COBOL only)
Debug Tool Log ==> _ (Capture Debug Log on SYSOUT=*)
Show Comments ==> / (Instructions on how to display subprograms)

Press Enter to continue
F1=HELP F2=SPLIT F3=END F4=IPF view F5=
F6=RCHANGE F7=UP F8=DOWN F9=SWAP F10=
  
```

Identify if the first program is a Language Environment Program

Request AT ENTRY breakpoints

Turn on the Auto Monitor

Show instructions for subprogram

Enter

Debug Tool JCL Wizard

LE program with the Terminal Interface Manager

```

File Edit Edit_Settings Menu Utilities Compilers Test Help

----- Debug Tool TIM (Terminal Interface Manager) Parms -----

----- Request AT ENTRY Sub Program breakpoints -----

Enter the loadmod::>programs to set an AT ENTRY breakpoint.
Note1: The loadmod is not required if it the same as the program name.
Note2: The loadmod name is required for statically linked programs.

Clear Previous At Entry Breakpoints ==> / (Enter / or '')

Loadmod::>pgmname      Loadmod::>pgmname      Loadmod::>pgmname
=====
_____  SAM2
_____  SAM3
_____

Press Enter to continue
F1=HELP      F2=SPLIT
F6=RCHANGE   F7=UP
F8=DOWN      F9=SWAP      F10=>BACK

000017 //CEEOPTS DD * !DEBUG TOOL INVOCATION FOR TERMINAL INTERF
F1=Help      F2=Split      F3=Exit      F4=Return    F5=Rfind    F
F7=Up        F8=Down      F9=Swap     F10=Left    F11=Right   F12=Retrieve
  
```

To clear AT ENTRY breakpoints enter '/'

Enter the program names for the AT ENTRY breakpoints. Loadmod prefix is not required, since the Load Module PDS name is the same as the Program-ID.

Enter

Debug Tool JCL Wizard

LE program with the Terminal Interface Manager

```

----- Program Selection List ----- Row 1 to 3 of 3

Command ==> _____ Scroll ==> CSR

Enter "S" to select a step to Debug
Press "F3" to continue or enter CANCEL to cancel the request.

Sel Num   Program   StepName   Linenum
  1         IDCAMS     PRINT1       4
  2         &PROGRAM   RUNSAM1     10
  3         IDCAMS     PRINT2      30
***** Bottom of data *****

```

Select &PROGRAM (SAM1)

If more than one program is found, the program names, step names and line numbers are presented. Select one program.

Enter

F1=HELP F2=SPLIT F3=END F4=RETURN F5=RPFND F6=PAGE DOWN
 F7=UP F8=DOWN F9=SWAP F10=LEFT F11=RIGHT F12=RETRIEVE

Debug Tool JCL Wizard

LE program with the Terminal Interface Manager

File Edit Edit_Settings Menu Utilities Compilers Test Help

```

-DSC- EDIT DNET424.ADLAB.JCL (XSAM) - 01.99          Columns 00001 00072
Command ==> SUB                                     Scroll ==> CSR
000011 //STEP2 EXEC PGM=SAM1,
000012 //      REGION=4M
000013 //*!LINES BELOW CREATED BY THE DEBUG COMMAND FOR PGM SAM1
000014 //CEEOPTS DD * !INVOCATION FOR TERMINAL INTERFACE MANAGER
000015 TEST(,EQACMD,,VTAM%DNET424:)
000016 //EQACMD DD *
000017 SET LOG OFF;
000018 SET AUTO ON BOTH;
000019 SET WARN OFF;
000020 CLEAR AT ENTRY;
000021 AT ENTRY SAM2;
000022 AT ENTRY SAM3;
000023 COMMENT TO VIEW THE SOURCE OF A SUBPROGRAM FOLLOW THE STEPS BELOW;;
000024 COMMENT 1) ENTER A "STEP" COMMAND;
000025 COMMENT 2) ENTER "QUALIFY PROGRAM" PGMNAME;
000026 COMMENT 3) IF THE LOAD MODULE NAME IS NOT THE SAME AS PROGRAM NAME;;
000027 COMMENT -- ENTER "QUALIFY PROGRAM LOADMOD:>PGMNAME";
000028 //*!LINES ABOVE CREATED BY THE DEBUG COMMAND FOR PGM SAM1
000029 //STEP1 DD DSCR=SUB DSN=SYSUTD ADLAB LOAD
000030 /

```

Annotations:

- Show current and previous variables in Monitor (points to line 17)
- Allow variable change to optimized COBOL Code (points to line 19)
- Stop at subprograms SAM2 and SAM3 (points to lines 21 and 22)
- The comments depicting how to view the source of a subprogram (points to lines 23-27)

Debug Tool JCL Wizard

LE program with the Terminal Interface Manager

```
File Edit Edit_Settings Menu Utilities Compilers Test Help
-DSC- EDIT DNET424 ADLAB.JCL (XSAM) - 01.99 Columns 00001 00072
Command ==> EQAJCL R Scroll ==> CSR
000011 //STEP2 EXEC PGM=SAM1,
000012 // REGION=4M
000013 //*!LINES BELOW CREATED BY THE DEBUG COMMAND FOR PGM SAM1
000014 //CEEOPTS DD * !INVOCATION FOR TERMINAL INTERFACE MANAGER
000015 TEST(,EQACMD,,VTAM%DNET424:)
000016 //EQACMD DD *
000017 SET LOG OFF;
000018 SET AUTO ON BOTH;
000019 SET WARN OFF;
000020 CLEAR AT ENTRY;
000021 AT ENTRY SAM2;
000022 AT ENTRY SAM3;
000023 COMMENT TO VIEW THE SOURCE OF A SUBPROGRAM FOLLOW THE STEPS BELOW;;
000024 COMMENT 1) ENTER A "STEP" COMMAND;
000025 COMMENT 2) ENTER "QUALIFY PROGRAM" PGMNAME;
000026 COMMENT 3) IF THE LOAD MODULE NAME IS NOT THE SAME AS PROGRAM NAME;;
000027 COMMENT -- ENTER "QUALIFY PROGRAM LOADMOD::>PGMNAME";
000028 //*!LINES ABOVE CREATED BY THE DEBUG COMMAND FOR PGM SAM1
000029 //STEPLIB DD DISP=SHR,DSN=&SYSUID..ADLAB.LOAD
000030 //CUSTFILE DD DSN=&SYSUID..ADLAB.FILES(CUST2FA),DISP=SHR
```

Remove Debug Tool commands

Debug Tool JCL Wizard

LE program with the Terminal Interface Manager

```

File Edit Edit_Settings Menu Utilities Compilers Test Help
-----
-DSC- EDIT DNET424.ADLAB.JCL (XSAM) - 01.99          Columns 00001 00072
Command ==> _____ Scroll ==> CSR
***** ***** Top of Data *****
000001 //DNET424T JOB (ACCTG) , 'IBM TOOLS WORKSHOP' , REGION=4M, CLASS=A,
000002 //          MSGCLASS=H, NOTIFY=&SYSUID, MSGLEVEL= (1, 1)
000003 //          SET PROGRAM=SAM1
000004 //PRINT1 EXEC PGM=IDCAMS
000005 //SYSPRINT DD SYSOUT=*
000006 //FILE          DD DSN=&SYSUID..ADLAB.FILES (CUST2FA) , DISP=SHR
000007 //SYSIN DD *
000008 PRINT INFILE (FILE) COUNT (1)
000009 //*
000010 //STEP2 EXEC PGM=&PROGRAM,
000011 //          REGION=4M
000012 //STEPLIB DD DISP=SHR, DSN=&SYSUID..ADLAB.LOAD
000013 //CUSTFILE DD DSN=&SYSUID..ADLAB.FILES (CUST2FA) , DISP=SHR
000014 //SYSPRINT DD SYSOUT=*
000015 //SYSOUT DD SYSOUT=*
000016 //CUSTRPT DD SYSOUT=*
000017 //CUSTOUT DD SYSOUT=*

F1=Help      F2=Split    F3=Exit     F4=Return   F5=Rfind    F6=Rchange
F7=Up        F8=Down     F9=Swap     F10=Left    F11=Right   F12=Retrieve
  
```

The Debug Tool JCL Wizard JCL statements are removed

Debug Tool Wizard

**Scenario 2: Language Environment
Program with Remote GUI using the
“A” line command with a Procedure
Step Override**

Debug Tool JCL Wizard

LE program with the Remote GUI

File Edit Edit_Settings Menu Utilities Compilers Test Help

-DSC- EDIT DNET424 ADLAB.JCL (XSAMG) - 01.09 Debug statements removed

Command ==> **EQAJCL G** Debug the SAM1 program using the GUI **oll ==> CSR**

***** ***** Top of Data *****

```

000001 //DNET424A JOB (ACCTG), 'IBM TOOLS WORKSHOP', REGION=4M, CLASS=A,
000002 //          MSGCLASS=H, NOTIFY=&SYSUID, MSGLEVEL=(1, 1)
000003 //          JCLLIB ORDER=DNET424.ADLAB.JCL
000004 //*
A000005 //TESTSAM1 EXEC TESTSAM1
000006 //*
000007 //PRINT2 EXEC PGM=IDCAMS
000008 //SYSPRINT DD SYSOUT=*
000009 //FILE DD DSN=&SYSUID..ADLAB.
000010 //SYSIN DD *
000011 PRINT INFILE(FILE) COUNT(1)
***** ***** Bottom *****

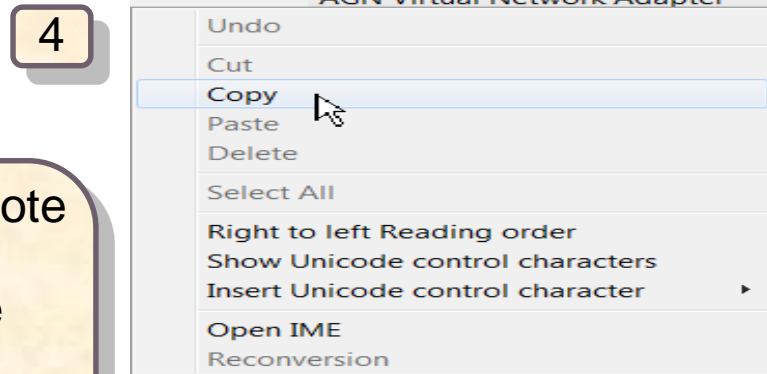
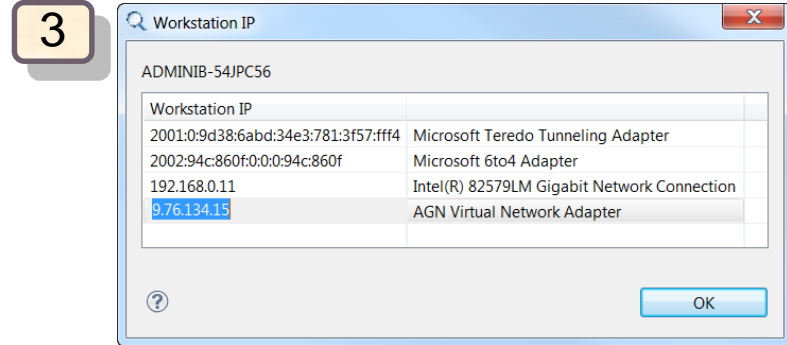
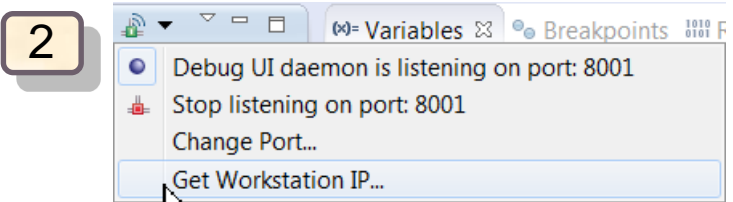
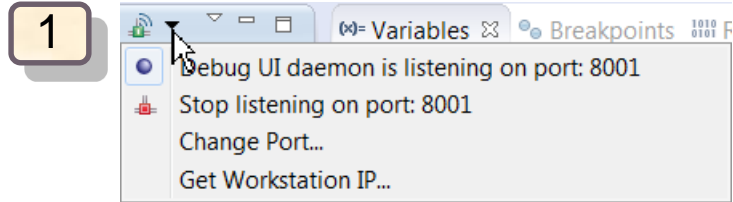
```

Alternate Method:

Use the A (After) or B (Before) line command to position where the JCL lines will be placed.

Enter

Debug Tool JCL Wizard LE program with the Remote GUI



To copy your IP address from the Remote Debugger:

- 1) Click on the down arrow next to the Debug UI Daemon
- 2) Click Get Workstation Address
- 3) Click on the IP address to highlight it
- 4) Right click, the select Copy

Debug Tool JCL Wizard LE program with the Remote GUI

File Edit Edit_Settings Menu Utilities Compilers Test Help

----- Debug Tool GUI (Remote Debugger) Parameters -----

Enter the parameters below:

LE Program ==> YES (Language Environment Enabled YES/NO)

Enter the TCP/IP Address of your workstation and Debug Tool Port

IP Address ==> 9.76.151.68

Port ==> 8001

Paste the workstation IP address, and enter port 8001

Enter '/' to enter additional Debug Tool information:

DT Source Libs ==> - (Identify source libraries for ASM or LANGX)

LDD Programs ==> / (Load Assembler or LANGX COBOL source)

At Entry ==> / (Request to stop in subprograms)

AutoMonitor on ==> / (Automatically monitor variables)

Warning off ==> - (Allows variable changes for Optimized programs)

Show Comments ==> / (Instructions on how to display subprograms)

F1=HELP F2=SPLIT F3=END F4=IPT View F5=RFIND

F6=RCHANGE F7=UP F8=DOWN F9=SWAP F10=>BACK

000021 INCLUDE,MAXMINIDUMPPAGES(1000)

F1=Help

F2=Split

F3=Exit

F4=Return

F5=Rfind

F6=

F7=Up

F8=Down

F9=Swap

F10=Left

F11=Right

F12=Retrieve

Enter

Debug Tool JCL Wizard LE program with the Remote GUI

```

File Edit Edit_Settings Menu Utilities Compilers Test Help

----- Debug Tool TIM (Terminal Interface Manager) Parms -----

----- Request AT ENTRY Sub-Program breakpoints -----

Enter the loadmod::>programs to set an AT ENTRY breakpoint.
Note1: The loadmod is not required if it the same as the program name.
Note2: The loadmod name is required for statically linked programs.

Clear Previous At Entry Breakpoints ==> = (Enter / or '')

Loadmod::>pgmname      Loadmod::>pgmname      Loadmod::>pgmname
-----
      SAM2
-----
      SAM3
-----
      _____

Press Enter to continue
F1=HELP      F2=SPLIT      F3=END      F4=IPT View      F5=RFIND
F6=RCHANGE   F7=UP          F8=DOWN     F9=SWAP          F10=>BACK

000031 /*!LINES ABOVE CREATED BY THE DEBUG COMMAND FOR PGM &PGM
F1=Help      F2=Split      F3=Exit      F4=Return      F5=Rfind      F
F7=Up        F8=Down       F9=Swap      F10=Left       F11=Right     F12=Retrieve
  
```

Subprogram names are remembered, unless you edit another member



Debug Tool JCL Wizard LE program with the Remote GUI

```

File Edit Edit_Settings Menu Utilities Compilers Test Help
----- Debug Tool - Proc Step Override -----
C
* Optionally enter a Proc Step Override
0 Proc Step Override == RUNSAM1
0
0 Press Enter to continue
0
0 [Optionally, you may enter the Procedure Step Override]
0 F1=HELP F2=SPLIT F3=END F4=IPT View F5=RFIND
0 F6=RCHANGE F7=UP F8=DOWN F9=SWAP F10=>BACK
0
000009 //*
A00010 //TESTSAM1 EXEC PROC=TESTSAM1
000011 //*
000012 //PRINT2 EXEC PGM=IDCAMS
000013 //SYSPRINT DD SYSOUT=*
000014 //FILE DD DSN=&SYSUID..ADLAB.FILES(CUST2FA),DISP=SHR
000015 //SYSIN DD *
000016 PRINT INFILE(FILE) COUNT(1)
000017 //IDIOPTS DD *
F1=Help F2=Split F3=Exit F4=Return F5=Rfind F6=
F7=Up F8=Down F9=Swap F10=Left F11=Right F12=

```



Debug Tool JCL Wizard LE program with the Remote GUI

```

File Edit Edit_Settings Menu Utilities Compilers Test Help
-DSC- EDIT DNET424.ADLAB.JCL (XSAMG) -
Command ==> SUB
000005 //TESTSAM1 EXEC TESTSAM1
000006 /*!LINES BELOW CREATED BY THE DEBUG COMMAND FOR PGM
000007 //RUNSAM1.CEEOPTS DD * !INVOCATION FOR REMOTE GUI
000008 TEST(,EQACMD,,TCPIP&9.76.151.68%8001:)
000009 //RUNSAM1.EQACMD DD *
000010 SET AUTO ON BOTH;
000011 SET WARN OFF;
000012 CLEAR AT ENTRY;
000013 AT ENTRY SAM2;
000014 AT ENTRY SAM3;
000015 /* TO VIEW THE SOURCE OF A SUBPROGRAM FOLLOW THE STEPS BELOW: */
000016 /* 1) LEFT CLICK THE "STEP INTO" ICON */
000017 /* 2) IN THE DEBUG TOOL ENGINE COMMAND PANE, ENTER: */
000018 /* 3) QUALIFY PROGRAM PGMNAME; OR */
000019 /* QUALIFY PROGRAM LOADMOD::>PGMNAME (IF LOADMOD NOT = PGMNAME) */
000020 /* 4) CLICK ON THE MODULES PANE */
000021 /* VIEW THE SOURCE */
000022
000023 CALLING
000024

```

JCL lines are placed after the **//TESTSAM1** statement.

//RUNSAM1.CEEOPTS

//RUNSAM1.EQACMD

Procedure Step Override

To debug the program:

1. Start the PD Tools Studio on your workstation
2. Enter your IP address on the previous panel
3. Submit the job

PF3

Debug Tool Wizard

Scenario 3: Non-Language Environment Program with Terminal Interface Manager

Debug Tool JCL Wizard

Non-LE program with the Terminal Interface Manager

```

File Edit Edit_Settings Menu Utilities Compilers Test Help

-DSC- EDIT DNET424 ADLAB.JCL (XASAM1) - 01.99                               Invalid command
Command ==> EQAJCL T                                                         Scroll ==> CSR
***** ***** Top of Data *****
000001 //DNET424X JOB (ACCTG), 'IBM TOOLS WORKSHOP', REGION=4M, CLASS=A,
000002 //                MSGCLASS=H, NOTIFY=&SYSUID, MSGLEVEL=(1,1)
000003 //ASAM1  EXECEQAM=ASAM1, PARM='ABCD',
000004 //
000005 //
000006 //
000007 //FILEIN  DD *,DCB=(LRECL=80)
000008 INPUT RECORD ONE
000009 INPUT RECORD TWO
000010 INPUT RECORD THREE
000011 INPUT RECORD FOUR
000012 INPUT RECORD FIVE
000013 INPUT RECORD SIX
000014 INPUT RECORD SEVEN
000015 INPUT RECORD EIGHT
000016 ABEND    <=== "ABEND" WILL CAUSE THE SAMPLE PROGRAM TO ABEND
000017 //FILEOUT DD SYSOUT=*
000018 //SYSUDUMP DD SYSOUT=*
***** ***** Bottom of Data *****

```

Create JCL statements to debug a Non-Language Environment program using the Terminal Interface Manager



Debug Tool JCL Wizard

Non-LE program with the Terminal Interface Manager

```

File Edit Edit_Settings Menu Utilities Compilers Test Help

----- Debug Tool TIM (Terminal Interface Manager) Parms -----
Enter optional parameters below
LE Program ==> NO (Language Environment Enabled YES/NO)
Userid ==> DNET424
Enter '/' to enter additional Debug Tool information
DT Source Libs ==> / (Identify source libraries for ASM or LANGX)
LDD Programs ==> / (Load Assembler or LANGX COBOL source)
At Entry ==> / (Request to stop in subprograms)
AutoMonitor on ==> / (Automatically monitor variables)
Warning on ==> - (Prohibits variable changes for Optimized COBOL)
Code Coverage ==> - (Code Coverage - Enterprise COBOL/PL1 only)
Debug Tool Log ==> - (Capture Debug Log on SYSOUT=*)
Show Comments ==> - (Show comments in source)
Press Enter to continue
  
```

Specify 'NO' in the LE program field

Non-LE requires specification of a Source Library and LDD statements.

AT ENTRY breakpoints and Auto Monitor requested

Enter

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

Debug Tool JCL Wizard

Non-LE program with the Terminal Interface Manager

```
File Edit Edit_Settings Menu Utilities Compilers Test Help
----- Debug Tool TIM (Terminal Interface Manager) Parms -----
E  ----- Debug Tool Program Name -----
Non-LE program changes require a load module name
Enter Loadmod ==> ASAM1 (PGM=xxxxxxx) in your JCL
E  Press Enter to continue

Code Coverage ==> (Code Coverage - Enterprise COBOL/PL1 only)
Debug Tool Log ==> (Capture Debug Log on SYSOUT=*)
Show Comments ==> (Instructions on how to display subprograms)

Press Enter to continue
```

The Debug Tool JCL Wizard requires the program name for Non-LE initiation

Enter

```
000019 //STEPLIB DD DISP=SHR,DSN=&SYSUID..ADLAB.LOADE
```

Debug Tool JCL Wizard

Non-LE program with the Terminal Interface Manager

```

File Edit Edit_Settings Menu Utilities Compilers Test Help
----- Debug Tool TIM (Terminal Interface Manager) Parms -----
E |----- Debug Tool Program Name -----|
----- Debug Tool Source Libraries -----
Enter Debug Tool Source Libraries (SYSDEBUG or EQALANGX libraries)
Enter fully qualified names without quotes
Library1 ==> DNET424.ADLAB.EQALANGX
Library2 ==> _____
Library3 ==> _____
Library4 ==> _____
Library5 ==> _____
Library6 ==> _____
Press Enter to continue
F1=HELP F5=RFIND
F6=RCHANGE F10=BACK
F7=Up F8=Down F9=Swap F10=Left F11=Right F12=Enter
  
```

Specify up to 6 source libraries. They may be SYSDEBUG or LANGX libraries, created from the Compilation or Assembly process.

Enter

Debug Tool JCL Wizard

Non-LE program with the Terminal Interface Manager

```

File Edit Edit_Settings Menu Utilities Compilers Test Help
----- Debug Tool TIM (Terminal Interface Manager) Parms -----
E |----- Debug Tool Program Name -----|
----- Debug Tool Source Libraries -----
----- Debug Tool Non-LE Programs -----

Enter name of the program and subprogram(s) you plan to debug:
Programs ==> ASAM1      _____
           ==> ASAM2      _____
           ==> ASAM3      _____

LDD instructs the debugger to load the program source. Enter
the names of the source files. The program name
may be different from the source file name. (The program name
is the PDSE member) name.

Press Enter to continue

F1=HELP      F2=SPLIT      F3=END      F4=IPT View      F5=
F6=RCHANGE   F7=UP        F8=DOWN     F9=SWAP         F10=

```

Enter the names of programs
and subprograms (if any) that
you wish to debug

Enter

Debug Tool JCL Wizard

Non-LE program with the Terminal Interface Manager

```

File Edit Edit_Settings Menu Utilities Compilers Test Help
----- Debug Tool TIM (Terminal Interface Manager) Parms -----
E |----- Debug Tool Program Name -----|
----- Request AT ENTRY Sub-Program breakpoints -----

Enter the loadmod::>programs to set an AT ENTRY breakpoint.
Note1: The loadmod is not required if it the same as the program name.
Note2: The loadmod name is required for statically linked programs.

Clear Previous At Entry Breakpoints

Loadmod::>pgmname Load
ASAM2L ASAM2
ASAM3L ASAM3

//SYSLIN DD DSN=&&OBJECT2,DISP=(OLD,PASS)
// DD *
MODE AMODE(31),RMODE(24)
ENTRY ASAM2
NAME ASAM2L(P)

P
F IPT View F5=
F SWAP F10=

```

Enter the LoadMod, since the name of the load module is different than the program name

Enter

Debug Tool JCL Wizard

Non-LE program with the Terminal Interface Manager

```

File Edit Edit_Settings Menu Utilities Compilers Test Help
-DSC- EDIT DNET424.ADLAB.JCL (XASAM1) - C Program name changed to EQANMDBG
Command ==> SUB
000003 //ASAM1 EXEC PGM=EQANMDBG PARM='ABCD',
000004 // COND=(4,LT)
000005 //*!LINES BELOW CREATED BY THE DEBUG COMMAND FOR PGM ASAM1 ASAM1
000006 //EQANMDBG DD * !INVOCATION FOR TERMINAL INTERFACE MANAGER
000007 ASAM1,TEST(,EQACMD,,VTAM%DNET424:)
000008 //EQACMD DD *
000009 SET LOG OFF;
000010 SET AUTO ON BOTH;
000011 SET LDD ALL;
000012 LDD ASAM1;
000013 LDD ASAM2;
000014 LDD ASAM3;
000015 CLEAR AT ENTRY;
000016 AT ENTRY ASAM2L: :>ASAM2;
000017 AT ENTRY ASAM3L: :>ASAM3;
000018 //EQADEBUG DD DISP=SHR,DSN=DNET424.ADLAB.EQALANGX
000019 //CEEOPTS DD * !REQUIRED ONLY FOR LE SUBPROGRAM DEBUGGING
000020 TEST
000021 //*!LINES ABOVE CREATED BY THE DEBUG COMMAND FOR PGM ASAM1 A
000022 //STEPLIB DD DSN=&SYSUID..ADLAB.LOAD,DISP=SHR

```

Parameters created to initiate the debug session

- Auto Monitor is turned on
- LDD statements to load the assembler programs
- AT ENTRY statements generated
- //EQADEBUG DD to identify where the source can be found

Enter

Debug Tool JCL Wizard

Request to remove JCL lines

```

File Edit Edit_Settings Menu Utilities Compilers Test Help
-DSC- EDIT DNET424 ADLAB.JCL (ASAM1) - 01 99 Columns 00001 00072
Command ==> EQAJCL R Request lines to be removed Scroll ==> CSR
000003 //ASAM1 EXEC PGM=EQANMDBG,PARM='ABCD',
000004 // COND=(4,LT)
000005 /*!LINES BELOW CREATED BY THE DEBUG COMMAND FOR PGM ASAM1 ASAM1
000006 //EQANMDBG DD * !INVOCATION FOR TERMINAL INTERFACE MANAGER
000007 ASAM1,TEST(,EQACMD,,VTAM%DNET424:)
000008 //EQACMD DD *
000009 SET LOG OFF;
000010 SET AUTO ON BOTH;
000011 SET LDD ALL;
000012 LDD ASAM1;
000013 LDD ASAM2;
000014 LDD ASAM3;
000015 CLEAR AT ENTRY;
000016 AT ENTRY ASAM2L:;>ASAM2;
000017 AT ENTRY ASAM3L:;>ASAM3;
000018 //EQADEBUG DD DISP=SHR,DSN=DNET424.ADLAB.EQALANGX
000019 //CEEOPTS DD * !REQUIRED ONLY FOR LE SUBPROGRAM DEBUGGING
000020 TEST
000021 /*!LINES ABOVE CREATED BY THE DEBUG COMMAND FOR PGM ASAM1 A
000022 //STEPLIB DD DSN=&SYSUID..ADLAB.LOAD,DISP=SHR

```

Enter

Debug Tool JCL Wizard

Lines removed

```

File Edit Edit_Settings Menu Utilities Compilers Test Help
EDIT          DNET424.ADLAB.JCL (XASAM1) - 01.99          Columns 00001 00072
Command ==> _____ Scroll ==> CSR
***** ***** Top of Data *****
000001 //DNET424X JOB (ACCTG), 'IBM TOOLS WORKSHOP', REGION=4M, CLASS=A,
000002 //          MSGCLASS=H, NOTIFY=&SYSUID, MSGLEVEL=(1,1)
000003 //ASAM1 EXEC PGM=ASAM1, PARM='ABCD',
000004 // COND=(4,LT)
000005 //STEPLIB DD DSN=&SYSUID..ADLAB.LOAD, DISP=SHR
000006 //FILEIN DD *,DCB=(LRECL=80)
000007 INPUT RECORD ONE
000008 INPUT RECORD TWO
000009 INPUT RECORD THREE
000010 INPUT RECORD FOUR
000011 INPUT RECORD FIVE
000012 INPUT RECORD SIX
000013 INPUT RECORD SEVEN
000014 INPUT RECORD EIGHT
000015 //* ABEND <=== "ABEND" WILL CAUSE THE SAMPLE PROGRAM TO ABEND
000016 //FILEOUT DD SYSOUT=*
000017 //SYSUDUMP DD SYSOUT=*
F1=Help      F2=Split      F3=Exit      F4=Return    F5=Rfind     F6=Rchange
F7=Up        F8=Down       F9=Swap     F10=Left    F11=Right   F12=Retrieve
  
```

JCL lines removed and program name changed back to ASAM1

Debug Tool Wizard

Scenario 4: Language Environment DB2 program with Remote GUI

Debug Tool JCL Wizard

LE DB2 program with the Remote GUI

```

File Edit Edit_Settings Menu Utilities Compilers Test Help

-DSC- EDIT DNET424 ADLAB.JCL(TRADER) - 01.52          Columns 00001 00072
Command ==> EQAJCL G                               Scroll ==> CSR
***** ***** Top of Data *****
000001 //DNET4240 JOB (JIM), 'FA UTILITY',
000002 //          NOTIFY=DNET424,
000003 //          MSGCLASS=A, REGION=OM,
000004 //          CLASS=A
000005 //TRADEDB2 EXEC PGM=IKJEFT01, DYNAMNBR=20, COND=(4,LT), REGION=4M
000006 //SYSTSIN DD *
000007 DSN SYSTEM(DSNC)
000008 RUN PLAN(TRADETRIC) -
000009 PROGRAM( TRADERD )
000010 END
000011 //STEPLIB  D SHR
000012 //
000013 //DBRMLIB  D DBRMLIB
000014 //TRANSACT D BATCH.TRANFILE
000015 //REPOUT   D
000016 //TRANREP   DD  SYSOUT=*
000017 //SYSTSPRT  DD  SYSOUT=*
000018 //SYSPRINT  DD  SYSOUT=*
000019 //SYSUDUMP   DD  SYSOUT=*

```

Enter the source library for the VS COBOL II program. It is created by the LANGX step following the COBOL Compile.



Debug Tool JCL Wizard

LE DB2 program with the Remote GUI

File Edit Edit_Settings Menu Utilities Compilers Test Help

----- Debug Tool GUI (Remote Debugger) Parameters -----

Enter the parameters below:

LE Program ==> YES (Language Environment Enabled YES/NO)

Enter the TCP/IP Address of your workstation and Debug Tool Port

IP Address ==> 9.76.151.68

Port ==> 8001

Enter '/' to enter additional Debug Tool information

DT Source Libs ==> _ (Identify source libraries for ASM or LANGX)

LDD Programs ==> _ (Load Assembler or LANGX COBOL source)

At Entry ==> _ (Request to stop in subprograms)

AutoMonitor on ==> (Automatically monitor variables)

Warning off ==> _ (Allows variable changes for Optimized programs)

Show Comments ==> _ (Instructions on how to display subprograms)

Press Enter to

The Auto Monitor is not needed with the GUI with Language Environment programs. Use "Filter Locals" in the GUI Variable pane to set the monitor variables in the GUI.

Enter

```
000017 PROGRAM( TRF
000018 END
000019 //STEPLIB DD DSN=DN1424.TRADER.LOAD,DISP=SHR
```

Debug Tool JCL Wizard

LE DB2 program with the Remote GUI

```

File Edit Edit_Settings Menu Utilities Compilers Test Help

-DSC- EDIT DNET424.ADLAB.JCL (TRADER) - 01.52 DT Statements Added
Command ==> SUB Scroll ==> CSR
***** ***** Top of Data *****
000001 //DNET4240 JOB (JIM), 'FA UTILITY',
000002 //          NOTIFY=DNET424,
000003 //          MSGCLASS=A, REGION=0M,
000004 //          CLASS=A
000005 //TRADEDB2 EXEC PGM=IKJEFT01, DYNAMNBR=20, COND=(4,LT), REGION=4M
000006 /*!LINES BELOW CREATED BY THE DEBUG COMMAND FOR PGM IKJEFT01
000007 //CEEOPTS DD * !INVOCATION FOR REMOTE GUI
000008 TEST(,EQACMD,,TCPIP&9.76.151.68%8001:)
000009 //EQACMD DD *
000010 SET AUTO OFF;
000011 SET WARN OFF;
000012 /*!LINES ABOVE CREATED BY THE DEBUG COMMAND FOR PGM IKJEFT01
000013 //SYSTSIN DD *
000014 DSN SYSTEM(DSNC)
000015 RUN PLAN(TRADERIC) -
000016 PROGRAM( TRADERD )
000017 END
000018 //STEPLIB DD DSN=DNET424.TRADER.LOAD, DISP=SHR
000019 //          DD DSN=DB2.V10.SDSNLOAD, DISP=SHR
  
```

JCL statements created for DB2 program



Debug Tool Wizard

Debug Tool Wizard

Scenario 5: Non-Language Environment DB2 program with Remote GUI

Debug Tool JCL Wizard

Non-LE DB2 program with the Remote GUI

```

File Edit Edit_Settings Menu Utilities Compilers Test Help

-DSC- EDIT DNET424.ADLAB.JCL(TRADER) - 01.52          Columns 00001 00072
Command ==> EQAJCL G                               Scroll ==> CSR
***** ***** Top of Data *****
000001 //DNET4240 JOB (JIM), 'FA UTILITY',
000002 //          NOTIFY=DNET424,
000003 //          MSGCLASS=A, REGION=0M,
000004 //          CLASS=A
000005 //TRADEDB2 EXEC PGM=IKJEFT01, DYNAMNBR=20, COND=(4,LT), REGION=4M
000006 //SYSTSIN DD *
000007 DSN SYSTEM(DSNC)
000008   RUN PLAN(TRADETRIC) -
000009 PROGRAM( TRADERD )
000010 END
000011 //STEPLIB DD DSN=DNET424.TRADER.LOAD, DISP=SHR
000012 //          DD DSN=DB2.V10.SDSNLOAD, DISP=SHR
000013 //DBRMLIB DD DISP=SHR, DSN=DNET424.TRADER.DBRMLIB
000014 //TRANSACT DD DISP=SHR, DSN=DNET424.TRADER.BATCH.TRANFILE
000015 //REPOUT DD SYSOUT=*
000016 //TRANREP DD SYSOUT=*
000017 //SYSTSPRT DD SYSOUT=*
000018 //SYSPRINT DD SYSOUT=*
000019 //SYSUDUMP DD SYSOUT=*

```

Request to debug Non-LE program invoked by TSO Batch

Enter

Debug Tool JCL Wizard

Non-LE DB2 program with the Remote GUI

File Edit Edit_Settings Menu Utilities Compilers Test Help

----- Debug Tool GUI (Remote Debugger) Parameters -----

Enter the parameters below:

LE Program ==> NO (Language Environment Enabled YES/NO)

Enter the TCP/IP Address of your workstation and Debug Tool Port

IP Address ==> 9.76.151.68

Port ==> 8001

Enter '/' to enter additional Debug Tool information

DT Source Libs ==> / (Identify source libraries for ASM or LANGX)

LDD Programs ==> / (Load Assembler or LANGX COBOL source)

At Entry ==> / (Request to stop in subprograms)

AutoMonitor on ==> _ (Automatically monitor variables)

Warning off ==> _ (Allows variable changes for Optimized programs)

Show Comments ==> _ (Instructions on how to display subprograms)

Press Enter to continue

```
000017 //SYSTSPRT DD SYSOUT=*
000018 //SYSPRINT DD SYSOUT=*
000019 //SYSUDUMP DD SYSOUT=*
```

Enter

Debug Tool JCL Wizard

Non-LE DB2 program with the Remote GUI

```

File Edit Edit_Settings Menu Utilities Compilers Test Help

----- Debug Tool GUI (Remote Debugger) Parameters -----
E
  ----- Debug Tool Program Name -----
  Non-LE program changes require a load module name
  Enter Loadmod ==> TRADERD (PGM=xxxxxxx) in your JCL
  Press Enter to continue
E

AutoMonitor on ==> (Automatically monitor variables)
Warning off ==> (Allows variable changes for Optimized programs)
Show Comments ==> (Instructions on how to display subprograms)

Press Enter to continue

000017 //SYSTSPRT DD SYSOUT=*
000018 //SYSPRINT DD SYSOUT=*
000019 //SYSUDUMP DD SYSOUT=*

```



Debug Tool JCL Wizard

Non-LE DB2 program with the Remote GUI


```

File Edit Edit_Settings Menu Utilities Compilers Test Help
----- Debug Tool GUI (Remote Debugger) Parameters -----
E |----- Debug Tool Program Name -----|
----- Debug Tool Source Libraries -----

Enter Debug Tool Source Libraries (SYSDEBUG or EQALANGX libraries)
      Enter fully qualified names without quotes
Library1 ==> DNET424.ADLAB.EQALANGX
Library2 ==> _____
Library3 ==> _____
Library4 ==> _____
Library5 ==> _____
Library6 ==> _____

Press Enter to continue

```



```

000018 //SYSPRINT DD  SYSOUT=*
000019 //SYSUDUMP DD  SYSOUT=*

```

Debug Tool JCL Wizard

Non-LE DB2 program with the Remote GUI

```

File Edit Edit_Settings Menu Utilities Compilers Test Help
----- Debug Tool GUI (Remote Debugger) Parameters -----
E | ----- Debug Tool Program Name ----- |
----- Debug Tool Source Libraries -----
----- Debug Tool Non-LE Programs -----

Enter name of the program and subprogram(s) you plan to debug:
Programs ==> TRADERD      _____
           ==> _____
           ==> _____

LDD instructs Debug Tool to load the program source. Enter
the names of the programs you plan to debug. The program name
may be different from the load module (PDS or PDSE member) name.

Press Enter to continue
    
```

Enter

Debug Tool JCL Wizard

Non-LE DB2 program with the Remote GUI

File Edit Edit Settings Menu Utilities Compilers Test Help
 File Edit Edit_Settings Menu Utilities Compilers Test Help

----- Debug Tool Wizard - Assembler DB2 Invocation -----

Debug Tool Wizard does not support DB2 non-LE JCL changes. To debug a DB2 non-LE program, manually make the changes shown below in White.

```
//STEP5D EXEC PGM=IKJEFT01
....
//SYSTSIN DD *
DSN SYSTEM(DSNA)
RUN PROGRAM( EQANMDBG ) PLAN(MYPROG) -
  PARM('ABC,123')
END
/*
//EQANMDBG DD *
myprog,TEST(,,VTAM userid:)
//INSPREF DD *
  LDD myprog
```

Press PF3 to exit

F1=HELP F2=SPLIT F3=END F4=RETURN F5=RFIND F6=...
 F7=UP F8=DOWN F9=SWAP F10=LEFT F11=RIGHT

PF3

Debug Tool Wizard

Scenario 6: Code Coverage without a Debug Tool Session

Debug Tool JCL Wizard

Code Coverage without Debug Tool Session

Code Coverage Utility:

- Requires Enterprise COBOL or Enterprise PL/I with the SYSDEBUG file
 - TEST parameter with NONE or NOHOOK, and SEP sub-parameter
- Can run without a Debug Tool Session, or with a 3270 Debug Tool Session
 - Not available to run with a Remote GUI session
- Identification of Code Coverage Files
 - Customization of Debug Tool EQAOPTS module to identify the Code Coverage files
 - or
 - Installer sets the variable CODE_COVERAGE_SETUP = 'YES' in the DEBUG routine which will generate the following statements:

```
//EQAOPTS DD *
EQAXOPT  CCPROGSELECTDSN, '&&USERID.DBGTOOL.CCPRGSEL'
EQAXOPT  CCOUPTUTDSN, '&&USERID.DBGTOOL.CCOUPTUT'
EQAXOPT  CCOUPTUTDSNALLOC, 'MGMTCLAS (STANDARD)                +'
          STORCLAS (DEFAULT) LRECL (255) BLKSIZE (0) RECFM (V,B)  +
          DSORG (PS) SPACE (2,2) CYL'
EQAXOPT  END
```


Debug Tool JCL Wizard

Code Coverage without Debug Tool Session

```

File Edit Edit_Settings Menu Utilities Compilers Test Help
-DSC- EDIT DNET424 ADLAB.JCL (XSAM) - 01.99 Columns 00001 00072
Command ==> EQAJCL C Scroll ==> CSR
***** ***** Top of Data *****
000001 //DNET424T JOB (ACCTG), 'IBM TOOLS WORKSHOP', REGION=4M, CLASS=A,
000002 //          MSGCLASS=H, NOTIFY=&SYSUID, MSGLEVEL=(1,1)
000003 //          SET &PROGRAM=SAM1
000004 //PRINT1 EXEC PGM=IDCAMS
000005 //SYSPRINT DD SYSOUT=*
000006 //FILE     DD DSN=&SYSUID..ADLAB.FILES (CUST2FA), DISP=SHR
000007 //SYSIN DD *
000008 PRINT INFILE(FILE) COUNT(1)
000009 /*
000010 //RUNSAM1 EXEC PGM=SAM1, REGION=4M
000011 //STEPLIB DD DISP=SHR, DSN=&SYSUID..ADLAB.LOAD
000012 //CUSTFILE DD DSN=&SYSUID..ADLAB.FILES (CUST2FA), DISP=SHR
000013 //SYSPRINT DD SYSOUT=*
000014 //SYSOUT   DD SYSOUT=*
000015 //CUSTRPT  DD SYSOUT=*
000016 //CUSTOUT  DD SYSOUT=*
000017 //TRANFILE DD *
000018 *TRAN     (* IN COL 1 IS A COMMENT)
000019 *-----
  
```

Request Code Coverage
without Debug Session

Enter

Debug Tool JCL Wizard

Code Coverage without Debug Tool Session

```

File Edit Edit_Settings Menu Utilities Compilers Test Help

-DSC- EDIT DNET424.ADLAB.JCL (XSAM) - 01.99          Columns 00001 00072
Command ==> SUB                                     Scroll ==> CSR
000003 //*****
000004 //* SAM1 PROGRAM                                     **
000005 //STEP3 EXEC PGM=SAM1,                               ****
000006 //          REGION=4M
000008 //*!LINES BELOW CREATED BY THE DEBUG TOOL
000009 //CEEOPTS DD * !INVOCATION FOR
000010 TEST (ALL, *, PROMPT, MFI: *) ENVAR ("EQA_STARTUP_KEY")
000011 //EQAOPTS DD *
000012 EQAXOPT  CCPRGSELECTDSN, '&&USERID.DBGTOOL.CCPRGSEL '
000013 EQAXOPT  CCOUTPUTDSN, '&&USERID.DBGTOOL.CCOUTPUT '
000014 EQAXOPT  CCOUTPUTDSNALLOC, 'MGMTCLAS (STANDARD)
000015          STORCLAS (DEFAULT) LRECL (255) BLKSIZE (0) RECFM (V,B)
000016          DSORG (PS) SPACE (2,2) CYL '
000017 EQAXOPT  END
000018 //*!LINES ABOVE CREATED BY THE DEBUG COMMAND FOR PGM SAM1
000019 //STEPLIB DD DSN=DNET424.ADLAB.LOAD, DISP=SHR
000020
F1
F7=Up      F8=Down    F9=Swap    F10=Left   F11=Right  F12=Retrieve
  
```

Submit the job to create code coverage data in the CCOUTPUT dsn

Code Coverage invocation requested via ENVAR EQA_STARTUP_KEY

ENVAR ("EQA_STARTUP_KEY")

Enter

Code Coverage reporting can be generated using Debug Tool Utilities, option E

Debug Tool Wizard

Debug Tool Wizard

Scenario 7: Code Coverage with a Debug Tool Session

Debug Tool JCL Wizard

Code Coverage with a Debug Tool Session

```

File Edit Edit_Settings Menu Utilities Compilers Test Help
-DSC- EDIT DNET424 ADLAB.JCL (XSAM) - 01.99 Columns 00001 00072
Command ==> EQAJCL T Scroll ==> CSR
***** Top of Data *****
000001 //DNET424T JOB (ACCTG), 'IBM TOOLS WORKSHOP', REGION=4M, CLASS=A,
000002 //          MSGCLASS=H, NOTIFY=&SYSUID, MSGLEVEL=(1, 1)
000003 //          SET &PROGRAM=SAM1
000004 //PRINT1 EXEC PGM=IDCAMS
000005 //SYSPRINT DD SYSOUT=*
000006 //FILE      DD DSN=&SYSUID..ADLAB.
000007 //SYSIN DD *
000008 PRINT INFILE(FILE) COUNT(1)
000009 //*
000010 //RUNSAM1 EXEC PGM=SAM1, REGION=4M
000011 //STEPLIB DD DISP=SHR, DSN=&SYSUID..ADLAB.LOAD
000012 //CUSTFILE DD DSN=&SYSUID..ADLAB.FILES(CUST2FA), DISP=SHR
000013 //SYSPRINT DD SYSOUT=*
000014 //SYSOUT DD SYSOUT=*
000015 //CUSTRPT DD SYSOUT=*
000016 //CUSTOUT DD SYSOUT=*
000017 //TRANFILE DD *
000018 *TRAN (* IN COL 1 IS A COMMENT)
000019 *-----

```

Code Coverage with the Remote GUI is not supported

Enter

Debug Tool JCL Wizard

Code Coverage with a Debug Tool Session

```

File Edit Edit_Settings Menu Utilities Compilers Test Help

----- Debug Tool TIM (Terminal Interface Manager)Parms -----
Enter optional parameters below
LE Program      ==> YES (Language Environment Enabled-YES/NO)

Userid          ==> DNET424 (UserId)

Enter '/' to enter additional Debug Tool information
DT Source Libs ==> _ (Identify source libraries for ASM or LANGX)
LDD Programs   ==> _ (Load Assembler or LANGX COBOL source)
At Entry       ==> _ (Request to stop in subprograms)
AutoMonitor on ==> / (Automatically monitor variables)
Warning on     ==> _ (Prohibits variable changes for Optimized COBOL)
Code Coverage  ==> / (Code Coverage - Enterprise COBOL/PL1 only)
Debug Tool Log ==> _ (Capture ...
Show Comments  ==> _ (Instruc ... programs)

Press Enter to continue
  
```

Program must be LE enabled for Code Coverage

Request Code Coverage during Debug Session

Enter

000019 /***

Debug Tool JCL Wizard

Code Coverage with a Debug Tool Session

```

File Edit Edit_Settings Menu Utilities Compilers Test Help
-DSC- EDIT DNET424.ADLAB.JCL (XSAM) - 01.99          Columns 00001 00072
Command ==> SUB                                     Scroll ==> CSR
000004 //STEP2 EXEC PGM=&PROGRAM,
000005 //          REGION=4M
000006 //*!LINES BELOW CREATED BY THE DEBUG COMMAND FOR PGM &PROGRAM
000007 //CEEOPTS DD * !INVOCATION FOR TERMINAL INTERFACE MANAGER
000008 TEST (,EQACMD,,VTAM%DNET424:),
000009 ENVAR("EQA_STARTUP_KEY=DCC")
000010 //EQACMD DD *
000011 SET LOG OFF;
000012 SET AUTO ON BOTH;
000013 //EQAOPTS DD *
000014 EQAXOPT CCPRGSELECTDSN,'&&USERID.DBGTOOL.CCPRGSEL'
000015 EQAXOPT CCOUTPUTDSN,'&&USERID.DBGTOOL.CCOUTPUT'
000016 EQAXOPT CCOUTPUTDSNALLOC,'MGMTCLAS(STANDARD)
000017          STORCLAS(DEFAULT) LRECL(255) BLKSIZE(0) RECFM(V,B)
000018          DSORG(PS) SPACE(2,2) CYL'
000019 EQAXOPT END
000020 SET WARN OFF;
000021 //*!LINES ABOVE CREATED BY THE DEBUG COMMAND FOR PGM &PROGRA
000022 //STEPLIB DD DSN=DNET424.ADLAB.LOAD,DISP=SHR
000023 //CUSTFILE DD DSN=&SYSUID..ADLAB.FILES(CUST2),DISP=SHR
  
```

Debug Tool Session initiated, and Code Coverage collected

Enter

Debug Tool Wizard

**Scenario 8: Language Environment with
a VS COBOL II Program compiled with
NOTEST option, with the Terminal
Interface Manager**

Debug Tool JCL Wizard

Debug VS COBOL II program with Terminal Interface Manager

```

File Edit Edit_Settings Menu Utilities Compilers Test Help
-DSC- EDIT DNET424 ADLAB.JCL(XSAMII1) - 01.49          Columns 00001 00072
Command ==> EQAJCL T                               Scroll ==> CSR
***** ***** Top of Data *****
000001 //DNET424B JOB (ACCTG), 'IBM TOOLS WORKSHOP', REGION=4M, CLASS=A,
000002 //          MSGCLASS=H, NOTIFY=&SYSUID, MSGLEVEL=(1, 1)
000003 //*****
000004 //*  RUN COBOL II SAMPLE PROGRAM SAMII1
000005 //*****
000006 //RUNSAM1 EXEC PGM=SAMII1,
000007 //          REGION=4M
000008 //STEPLIB DD DSN=&SYSUID..ADLAB.LOAD, DISP=SHR
000009 //CUSTFILE DD DSN=&SYSUID..ADLAB.FILES(CUST2), DISP=SHR
000010 //**  CUSTFILE DD DSN=&SYSUID..ADLAB.FILES(CUST2FA), DISP=SHR
000011 //SYSPRINT DD SYSOUT=*
000012 //SYSOUT DD SYSOUT=*
000013 //CUSTRPT DD SYSOUT=*
000014 //TRANFILE DD *
000015 *TRAN
000016 *-----
000017 PRINT      <== PRINT CUSTOMER LIST
000018 XXXXXX     <== BAD TRANSACTION REQUEST
000019 TOTALS    <== PRINT TOTALS

```



Debug Tool JCL Wizard

Debug VS COBOL II program with Terminal Interface Manager

File Edit Edit_Settings Menu Utilities Compilers Test Help

----- Debug Tool TIM (Terminal Interface Manager) Parms -----

Enter optional parameters below

LE Program ==> YES (Language Environment Enabled YES/NO)

Userid ==> DNET424 (UserId)

Enter '/' to enter additional Debug

DT Source Libs ==> / (Identify source libraries)

LDD Programs ==> / (Load Assembler programs)

At Entry ==> / (Request to stop in subprograms)

AutoMonitor on ==> / (Automatically monitor variables)

Warning on ==> _ (Prohibits variable changes for Optimized COBOL)

Code Coverage ==> _ (Code Coverage - Enterprise COBOL/PL1 only)

Debug Tool Log ==> _ (Capture Debug Log on SYSOUT=*)

Show Comments ==> _ (Instructions on how to display subprograms)

Press Enter to continue

Most VS COBOL II programs are LE. If a SCEELKED library is allocated to the SYSLIB statement in the Link-Edit step, then the program is LE enabled.

Enter

000019 CLEAR AT ENTRY;

Debug Tool JCL Wizard

Debug VS COBOL II program with Terminal Interface Manager

```

File Edit Edit_Settings Menu Utilities Compilers Test Help

-DSC- EDIT DNET424.ADLAB.JCL (XASAM1) - 01.51          Columns 00001 00072
Command ==> debug T                                   Scroll ==> CSR

----- Debug Tool TIM (Terminal Interface Manager) Parms -----

----- Debug Tool Source Libraries -----

Enter Debug Tool Source Libraries (SYSDEBUG or EQALANGX libs)
Library1 ==> DNET424.ADLAB.EQALANGX
Library2 ==> _____
Library3 ==> _____
Library4 ==> _____
Library5 ==> _____
Library6 ==> _____

Press Enter to

F1=HELP      F2=SPLIT    F3=END      F4=IPT View  F5=
F6=RCHANGE   F7=UP       F8=DOWN    F9=SWAP     F10=

```

Enter the source library for the VS COBOL II program. It is created by the LANGX step following the COBOL Compile.

Enter

Debug Tool JCL Wizard

Debug VS COBOL II program with Terminal Interface Manager

```

File Edit Edit_Settings Menu Utilities Compilers Test Help
----- Debug Tool TIM (Terminal Interface Manager) Params -----
----- Debug Tool Source Libraries -----
----- Debug Tool Non-LE Programs -----

Enter name of the program and subprogram(s) you plan to debug:
Programs ==> SAMI I1      _____
              ==> SAMI I2      _____
              ==> SAMI I3      _____

LDD inst
the name
may be

Press Enter to continue

000018 COMMENT TO VIEW THE SOURCE OF A SUBPROGRAM FOLLOW THE STEP
000019 COMMENT 1) ENTER A "STEP" COMMAND
  
```

Enter the name(s) of the programs you want to debug.
 Note: The program name must be entered for Debug tool to locate the source information.

Enter

Debug Tool JCL Wizard

Debug VS COBOL II program with Terminal Interface Manager

```

File  Edit  Edit_Settings  Menu  Utilities  Compilers  Test  Help

----- Debug Tool TIM (Terminal Interface Manager) Parms -----

----- Debug Tool Source Libraries -----

----- Request AT ENTRY Sub-Program breakpoints -----

Enter the loadmod::>programs to set an AT ENTRY breakpoint.
Note1: The loadmod is not required if it the same as the program name.
Note2: The loadmod name is required for statically linked programs.

Clear Previous At Entry Breakpoints ==> = (Enter / or '')

Loadmod::>pgmname      Loadmod::>pgmname      Loadmod::>pgmname
-----
SAMI I2
SAMI I3
-----

Pre
F1=HELP      F2=STEP      F3=END      F4=VIEW      F5=
F6=RCHANGE   F7=UP      F8=DOWN     F9=SWAP      F10=
  
```

AT ENTRY breakpoints will be set for the programs shown.

Enter

Debug Tool JCL Wizard

Debug VS COBOL II program with Terminal Interface Manager

File Edit Edit_Settings Menu Utilities Compilers Test Help

```

-DSC- EDIT DNET424.ADLAB.JCL (XSAMII1) -
Command ==> SUB
000006 //RUNSAM1 EXEC PGM=SAMII1,
000007 //          REGION=4M
000008 /*!LINES BELOW CREATED BY THE DEBUG COMMAND FOR PGM SAMII1
000009 //CEEPTS DD * !INVOCATION FOR TERMINAL INTERFACE MANAGER
000010 TEST(,EQACMD,,VTAM%DNET424:)
000011 //EQACMD DD *
000012 SET LOG OFF;
000013 SET AUTO ON BOTH;
000014 SET WARN OFF;
000015 SET LDD ALL;
000016 LDD SAMII1;
000017 LDD SAMII2;
000018 LDD SAMII3;
000019 CLEAR AT ENTRY;
000020 AT ENTRY SAMII2;
000021 AT ENTRY SAMII3;
000022 //EQADEBUG DD DISP=SHR,DSN=DNET424.ADLAB.EQALANGX
000023 /*!LINES ABOVE CREATED BY THE DEBUG COMMAND FOR PGM SAMII1
000024 //STEPLIB DD DSN=&SYSUID..ADLAB.LOAD,DISP=SHR
000025 //CUSTFILE DD DSN=&SYSUID..ADLAB.FILES(CUST2),DISP=SHR
  
```

Submit the JCL to invoke Debug tool on the Terminal Interface Manager.

Both LDD and //EQADEBUG statements must be present to locate the source information

PF3

Debug Tool Wizard

**Scenario 9: Non-Language Environment
program when the source member
does not match the program name**

Debug Tool JCL Wizard

Source member differs from program name

```

File Edit Edit_Settings Menu Utilities Compilers Test Help

-DSC- EDIT DNET424 ADLAB.JCL (XASAM1) - 01.99          Debug statements removed
Command ==> EQAJCL T                                Scroll ==> CSR
***** ***** Top of Data *****
000001 //DNET424X JOB (ACCTG), 'IBM TOOLS WORKSHOP', REGION=4M, CLASS=A,
000002 //          MSGCLASS=H, NOTIFY=&SYSUID, MSGLEVEL=(1, 1)
000003 //ASAM1 EXEC PGM=ASAM1, PARM='ABCD',
000004 // COND=(4,LT)
000005 //STEPLIB DD DSN=
000006 //INSPREF DD DS
000007 //FILEIN DD *,DCB=(LRECL=80)
000008 INPUT RECORD ONE
000009 INPUT RECORD TWO
000010 INPUT RECORD THREE
000011 INPUT RECORD FOUR
000012 INPUT RECORD FIVE
000013 INPUT RECORD SIX
000014 INPUT RECORD SEVEN
000015 INPUT RECORD EIGHT
000016 ABEND <=== "ABEND" WILL CAUSE THE SAMPLE PROGRAM TO ABEND
000017 //FILEOUT DD SYSOUT=*
000018 //SYSUDUMP DD SYSOUT=*
***** ***** Bottom of Data *****

```

Debug Assembler program ASAM1
using the Terminal Interface Manager



Debug Tool JCL Wizard

Source member differs from program name

```

File Edit Edit_Settings Menu Utilities Compilers Test Help

----- Debug Tool TIM (Terminal Interface Manager) Parms -----

Enter optional parameters below
LE Program ==> NO (Language Environment Enabled YES/NO)

Userid ==> DNET424 (UserId)

Enter '/' to enter DT Source libraries

DT Source Libs ==> / (Identify source libraries for ASM or LANGX)
LDD Programs ==> / (Load Assembler or LANGX COBOL source)
At Entry ==> _ (Request to stop in subprograms)
AutoMonitor on ==> / (Automatically monitor variables)
Code Coverage ==> _ (Code Coverage - Enterprise COBOL/PL1 only)
Debug Tool Log ==> _ (Capture Debug Log on SYSOUT=*)
Show Comments ==> _ (Instructions on how to display subprograms)

Press Enter to continue

F1=HELP F2=SPLIT F3=END F4=IPT View F5=
F6=RCHANGE F7=UP F8=DOWN F9=SWAP F10=

```

Request Source Libraries and LDD Statements

DT Source Libs ==> / (Identify source libraries for ASM or LANGX)
 LDD Programs ==> / (Load Assembler or LANGX COBOL source)

Enter

F7=Up F8=Down F9=Swap F10=Left F11=Right F12=Retrieve

Debug Tool JCL Wizard

Source member differs from program name

```

File Edit Edit_Settings Menu Utilities Compilers Test Help
----- Debug Tool TIM (Terminal Interface Manager) Parms -----
E  ----- Debug Tool Program Name -----
Non-LE program changes require a program name
Enter Program == ASAM1
E  Press Enter to continue

F1=HELP      F2=SPLIT      F3=END      F4=IPT View  F5=RFIND
F6=RCHANGE   F7=UP         F8=DOWN    F9=SWAP     F10=>BACK

F1=HELP      F2=SPLIT      F3=END      F4=IPT View  F5=RFIND
F6=RCHANGE   F7=UP         F8=DOWN    F9=SWAP     F10=>BACK

000014 INPUT RECORD ONE
000015 INPUT RECORD TWO
000016 INPUT RECORD THREE
000017 INPUT RECORD FOUR
F1=Help      F2=Split      F3=Exit     F4=Return    F5=Rfind     F6=
F7=Up        F8=Down      F9=Swap     F10=Left     F11=Right    F12=Retrieve
  
```

ASAM1 is the name of the Non-LE program we want to debug

Enter

Debug Tool JCL Wizard

Source member differs from program name

```

File Edit Edit_Settings Menu Utilities Compilers Test Help

----- Debug Tool TIM (Terminal Interface Manager) Parms -----
E |----- Debug Tool Program Name -----|

----- Debug Tool Source Libraries -----

Enter Debug Tool Source Libraries (SYSDEBUG or EQALANGX libs)
Library1 ==> DNET424.ADLAB.EQALANGX
Library2 ==>
Library3 ==>
Library4 ==>
Library5 ==>
Library6 ==>

Press Enter to continue

F1=HELP      F2=SPLIT    F3=END      F4=IPT View  F5=RFIND
F6=RCHANGE   F7=UP       F8=DOWN    F9=SWAP      F10=
F1=Help      F2=Split    F3=Exit    F4=Return    F5=Rfind    F6=
F7=Up        F8=Down    F9=Swap    F10=Left    F11=Right   F12=Retrieve
  
```

The Source library is identified.

Enter

Debug Tool JCL Wizard

Source member differs from program name

```

File Edit Edit_Settings Menu Utilities Compilers Test Help

----- Debug Tool TIM (Terminal Interface Manager) Parms -----
E | ----- Debug Tool Program Name ----- |
----- Debug Tool Source Libraries -----
----- Debug Tool Non-LE Programs -----

Enter name of the program and subprogram(s) you plan to debug:
Programs ==> ASAM1
              ==> ASAM2
              ==>           
              ==>           

Press Enter to continue

F1=HELP          F2=SPLIT          F3=END          F4=IPT View    F5=RFIND
F6=RCHANGE       F7=UP          F8=DOWN        F9=SWAP        F10=>BACK

F6=RCHANGE       F7=UP          F8=DOWN        F9=SWAP        F10=

```

Request **LDD** statements for ASAM1 and ASAM2

Enter

```

F1=Help          F2=Split          F3=Exit          F4=Return          F5=Rfind          F6=Retrieve
F7=Up            F8=Down           F9=Swap          F10=Left           F11=Right

```

Debug Tool JCL Wizard

Source member differs from program name

----- EQADEBUG Member Selection List ----- Row 1 to 11 of 11

Option ==> _____ Scroll ==> CSR

Select only one member to build the SET SOURCE information from the library 'DNET424.ADLAB.EQALANGX'
 Enter "S" to select or deselect a member for program ASAM1
 Press ENTER to confirm selection, PF3 to continue, CANCEL to cancel request.

<u>Sel</u>	<u>Response</u>	<u>Member</u>
S	-	ASAM1C
-		ASAM2
-		ISAMOS1
-		ISAMOS2
-		PADSTAT
-		RVHTEST2
-		SAM111
-		SAMOS1
-		SAM1
-		SAM2
-		SAM3

The program name, or CSECT name is generally the member name of the source file. In this case, no member ASAM1 was found.

Select the member ASAM1C to map this member to the program name ASAM1.



F1=HELP
F7=UP

F2=SPLIT
F8=DOWN

F3=END
F9=SWAP

F4=IPT View
F10=>BACK

F5=RFIND
F11=RIGHT

F6=...
F12=RETRIEVE

Debug Tool JCL Wizard

Source member differs from program name

----- EQADEBUG Member Selection List ---- Row 1 to 11 of 11

Option ==> _____ Scroll ==> CSR

Select only one member to build the SET SOURCE information from the library 'DNET424.ADLAB.EQALANGX'

Enter "S" to select or deselect a member for program ASAM1

Press ENTER to confirm selection, PF3 to continue, CANCEL to cancel request.

SET SOURCE ON("ASAM1") DNET424.ADLAB.EQALANGX(ASAM1C)

<u>Sel</u>	<u>Response</u>	<u>Member</u>
*	*Selected	ASAM1C
—		ASAM2
—		ISAMOS1
—		ISAMOS2
—		PADSTAT
—		RVHTEST2
—		SAM1I1
—		SAMOS1
—		SAM1
—		SAM2
—		SAM3

The Set Source statement is built to map the program name with the source member.

F1=HELP
F7=UP

F2=SPLIT
F8=DOWN

F3=END
F9=SWAP

F4=IPT View
F10=>BACK

F5=RFIND
F11=RIGHT

F6
F12

PF3

Debug Tool JCL Wizard

Source member differs from program name

```

----- Program Selection List ----- Row 1 to 2 of 2

Command ==> _____ Scroll ==> CSR

Enter "S" to select a step to Debug ASAM1
Press "F3" to continue or enter CANCEL to cancel the request.

Sel Num   Program   StepName   Linenum
  1       IDCAMS   PRINT1     3
  2       ASAM1    ASAM1     9
***** Bottom of data *****

```

Select the step name in to debug

Enter

F1=HELP F2=SPLIT F3=END F4=IPT View F5=RFIND F6=RECALL
 F7=UP F8=DOWN F9=SWAP F10=>BACK F11=RIGHT F12=RETRIEVE

Debug Tool Wizard

Debug Tool Wizard

End of Presentation