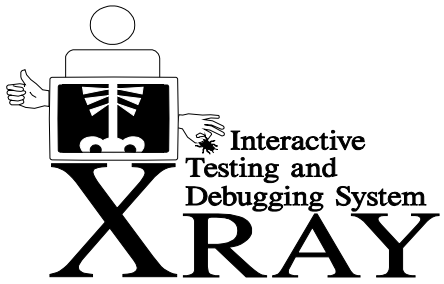
Interactive
Testing and
Debugging System
XRAY

XRAY enables fast and effective debugging of your batch applications (COBOL, Assembler, PL/1) from a CICS screen both during initial development and subsequent maintenance. XRAY allows monitoring of selected programs within a job step by the simple addition of a parameter to the EXEC statement.

XRAY provides

Year 2000 Testing

XRAY accepts a future execute date (i.e. DATE 2000/01/01) for the batch program being debugged. this allows testing selected programs WITHOUT affecting other programs, WITHOUT requiring an LPAR or an IPL, and WITHOUT affecting the rest of the mainframe. Program requests for the CURRENT-DATE will return this date.

Faster Debugging

XRAY provides faster debugging of program logic, coding, and data errors. It provides for user halts at the statement level or in any subroutine, program execution can be halted at programmer defined halt points which may be active only when certain conditions are encountered. Data can be displayed by COBOL dataname and loops can be trapped by setting instruction call limits.

Faster Corrections

XRAY allows single stepping through a program to follow the program logic. This can be done by either single machine instruction or by program statement. It also pinpoints errors for you on the screen. COBOL, PL/1 and Assembler source can then be displayed. Corrections are made interactively and execution of the program then continues. Program flow after a halt can be redirected to test infrequently used logic paths.

Faster Turn Around

Multiple errors can be examined and resolved in one execution of the program. No more waiting to resubmit the program for additional compiles, doing more testing, and looking at more dumps.

Reduced Dump Analysis

It is no longer necessary to plow through core dumps. **XRAY** points out exactly what you need to know on the screen. It takes the drudgery out of debugging and testing.

XRAY features

Program Abend Interception

When a monitored program abends, **XRAY** displays the associated program source code, the reason for the abend, and other related information. All **XRAY** debugging facilities are available at this point for problem determination. Once the fault has been identified the programmer can decide what course of action to take. For example, the programmer could terminate the job and produce a dump, or correct the problem and allow the job to continue, or bypass the code in error entirely.

Storage Protection

XRAY will not allow monitored programs to change areas of storage outside their direct control (unless specifically forced by the user).

Program Loop Detection

XRAY will atuomatically halt the job while a user-defined instruction limit has been excluded. This will pervent potential program loops.

Benefits you will see

Improved programmer productivity

Reduced development times

Reduced requirement for tedious dump analysis

Ability to test infrequently used logic paths to identify and correct obscure program errors

Better tested and more resilient programs

Easy to use

XRAY is easy to use. It is a menu and PF key driven system with on-line help screens. All facilities are accessible from clear informative menus, by use of commands or via ‘fastpath’ identifiers. The interactive screens that highlight error conditions are easy to understand.

XRAY is used by application programmers to locate logic errors, coding errors, and data errors in programs.

XRAY is an outstanding learning aid for junior programmers. They can easily follow program logic and get around the problems always encountered by new programmers.

Menus and Fastpaths

Menu screens giving access to all the main facilities of **XRAY** are available throughout the system. They provide an indication of the functions available and allow easy use of them. The following example of the highest level menu shows how they work.

At the top of the screen are two fields seen throughout the system, Command and Offset.

You may obtain help information relating to a topic by positioning the cursor at the required option and pressing the HELP key.

```
=0                    XRAY V62028 - Primary Menu      CICSUSER 01/30/98 13.53.35
Command-----> _
Offset------>


        1 - Display Program Source, set Halt Points  (=1)
        2 - Display Program Structure                (=2)
        3 - Display/Alter Storage Areas              (=3)
        5 - Current Halt Status                      (=5)
        6 - Continuation Options                     (=6)
        7 - Halt Point Management                    (=7)
        C - Connect to a Batch Job                   (=C)
        S - Session Controls                         (=S)

    Type selected option code in the command field and press the ENTER key
    or press one of the listed function keys




1=HELP 2=STOP 4=STEP 6=? 9=ZOOM 11=FLOW 12=CONT
```

Command is the command input field into which may be typed any valid **XRAY** command. When used at a menu, the option selected may be entered here. You may also enter a ‘fastpath’ id here at any time to take you directly to a particular menu or function screen.

On menus you may select an option by typing its identifier in the command field. Alternatively, you may position the cursor at the required line and press the ZOOM PF key. The values shown in brackets to the right of each option are the fastpath identifiers associated with each activity. They may be used at this or any other screen for direct access to a facility.

For example, to select the Display Program Structure function you could supply either the option value ‘=2’ or if you know the screen you want, you could be more specific (=2.1, for instance). Alternatively, you could position the cursor anywhere on the line containing option 2 and press the ZOOM PF key.

Offset allows you to input a value to modify the effect of certain commands. For example, if an area of storage is to be displayed, the entered value determines the offset within the area at which the display will begin.

Standard Halt Points

XRAY will halt a monitored program's execution at user-specified locations. When the intercept occurs, a halt screen is displayed, including the relevant source code, and all **XRAY** debugging facilities are available for the examination and alteration of storage and program code. In this way errors may be found and corrected or changes made to ensure execution of particular sections of code. After each halt the programmer may terminate the job, produce a dump, continue execution normally, STEP through the program by statement or instruction, or continue from a different point in the program.

```
=5.1                    XRAY - Stop Display          CICSUSER 01/30/98 13.34.36
Command-----> _
Offset------>

Stop Program--> GLOSSARY Current Module-> GLOSSARY
Phase Offset--> 001BBE   Module Offset--> 001BBE   Statement No.-> 001403
Stop Reason---> PROGRAM START
 Stmt  ....+....1....+....2....+....3....+....4....+....5....+....6....+....7..
001399 050500              07  OCP-ERROR       PIC X(16).
001400 050600              07  FILLER          PIC X(5)   VALUE SPACES.
001402 050800 PROCEDURE DIVISION.
001403 050900      PERFORM INITIALIZE-RTN THRU IR-EXIT.
001404 051000      IF OC-CHECK-OPTIONS-ONLY = 'Y'
001405 051100          STOP RUN.
001406 051200      IF OC-CHECK-OPTIONS-ONLY = 'T'
001407 051300          PERFORM PRINT-INPUT-TABLES THRU PIT-EXIT.
001408 051400      IF OC-INPUT-TYPE = 'S'
001409 051500          OPEN INPUT SPM-BACKUP-TAPE.
H01410 051600      IF OC-INPUT-TYPE = 'C' OR 'T' OR 'D'
001411 051700          OPEN INPUT SOURCE-FILE.
001412 051800      IF OC-INPUT-TYPE = 'I'
001413 051900          PERFORM OPEN-ICCF THRU OPEN-ICCF-EXIT.

1=HELP 2=PCK 3=EXIT 4=STEP 6=? 7=BWD 8=FWD 9=ZOOM 10=WINDOW 11=FLOW 12=CONT
```

To set a Halt, key "H" in the statement number and press Enter

When entering program GLOSSARY this screen is displayed with the first executable statement highlighted.

If you press PF12, program execution of GLOSSARY continues until it encounters the halt set for statement 1410. Statement 1410 is then displayed in context with statement 1410 highlighted.

```
=7.2                 XRAY - Halt Point Management      CICSUSER 02/03/98 13.28.22
Command----->
Offset------>

                       Add New Halt Point
Program Name--> GLOSSARY              Module Name---> GLOSSARY

Halt Offset--->
Times to Halt->
1st Halt Pass->
Pass Increment>
Halt Condition>


Date Access Action-> HALT_

1=HELP 2=STOP 3=EXIT 4=STEP 6=? 11=FLOW 12=CONT
```

If you enter =7.2 in the command line and HALT in the Date Access Action field, XRAY will automatically stop each time a system date is accessed.

```
=5.1                    XRAY - Stop Display          CICSUSER 02/03/98 13.35.19
Command-----> _
Offset------>

Stop Program--> GLOSSARY Current Module-> GLOSSARY
Phase Offset--> 004188   Module Offset--> 004188   Statement No.-> 002245
Stop Reason---> DATE ACCESS
 Stmt  ....+....1....+....2....+....3....+....4....+....5....+....6....+....7..
002242 134000 INITIALIZE-RTN.
002243 134100     OPEN INPUT CARD-FILE
002244 134200          OUTPUT PRINT-FILE.
002245 134300     ACCEPT WS-DATE FROM DATE.
002246 134400     ACCEPT WS-TIME FROM TIME.
002247 134500     MOVE WS-MM TO H1-MM.
002248 134600     MOVE WS-DD TO H1-DD.
002249 134700     MOVE WS-YY TO H1-YY.
002250 134800     MOVE WS-HH TO H1-HH.
002251 134900     MOVE WS-NN TO H1-NN.
002252 135000     PERFORM PRINT-INPUT-HEADER.
002253 135100     MOVE 'GLO' TO MST-PRODUCT-CODE.
002254 135200     MOVE WS-PASSWORD TO MST-PASSWORD.
002255 135300 IR-OPTION.

1=HELP 2=PCK 3=EXIT 4=STEP 6=? 7=BWD 8=FWD 9=ZOOM 10=WINDOW 11=FLOW 12=CONT
```

In this case PF4 (STEP) was pressed and execution of program GLOSSARY halts prior to the next statement (2243) to be executed.

```
=5.1                    XRAY - Stop Display          CICSUSER 01/30/98 13.35.00
Command-----> _
Offset------>

Stop Program--> GLOSSARY Current Module-> GLOSSARY
Phase Offset--> 00415A   Module Offset--> 00415A   Statement No.-> 002243
Stop Reason---> STEP REQUEST
 Stmt  ....+....1....+....2....+....3....+....4....+....5....+....6....+....7..
002239 133700          PERFORM SORT-RELEASE.
002240 133800      MOVE 73 TO A.
002242 134000 INITIALIZE-RTN.
002243 134100      OPEN INPUT CARD-FILE
002244 134200           OUTPUT PRINT-FILE.
002245 134300      ACCEPT WS-DATE FROM DATE.
002246 134400      ACCEPT WS-TIME FROM TIME.
002247 134500      MOVE WS-MM TO H1-MM.
002248 134600      MOVE WS-DD TO H1-DD.
002249 134700      MOVE WS-YY TO H1-YY.
002250 134800      MOVE WS-HH TO H1-HH.
002251 134900      MOVE WS-NN TO H1-NN.
002252 135000      PERFORM PRINT-INPUT-HEADER.
002253 135100      MOVE 'GLO' TO MST-PRODUCT-CODE.

1=HELP 2=PCK 3=EXIT 4=STEP 6=? 7=BWD 8=FWD 9=ZOOM 10=WINDOW 11=FLOW 12=CONT
```

Control Debugging and Execution using line commands

A debug session is made easy using LINE commands. You can control where execution of a program is halted, specify special halt conditions, and even alter the logic flow of the program using LINE commands. All of this can be done while viewing the source code of the program.

Halt points can be set in many ways, but the most convenient way is while viewing a module's source code. You can move around in the program's source by paging forward and backward, FINDing a string of characters, or going directly to a statement number.

Once the statement you want is located, simply move the cursor to anywhere in the statement number, key 'H' and press Enter. The halt point is set. When this statement is encountered during execution, XRAY will halt the execution and produce a STOP Display screen.

In the same way, you an turn a halt off. you find the statement, key 'R' (Reset) in the statement number, and press Enter.

```
=5.1                    XRAY - Stop Display          CICSUSER 01/30/98 13.38.05
Command-----> 
Offset------>

Stop Program--> GLOSSARY Current Module-> GLOSSARY
Phase Offset--> 0041A0   Module Offset--> 0041A0   Statement No.-> 002247
Stop Reason---> HALT REQUEST - HALT ID = 2
 Stmt  ....+....1....+....2....+....3....+....4....+....5....+....6....+....7..
002244 134200           OUTPUT PRINT-FILE.
002245 134300      ACCEPT WS-DATE FROM DATE.
002246 134400      ACCEPT WS-TIME FROM TIME.
H02247 134500      MOVE WS-MM TO H1-MM.
-------------------------------------------------------------------------------
OP1--> WS-MM                                                  Type-> Char
00000000  F0F1                                    01                0003F6FA
OP2--> H1-MM                                                  Type-> Char
00000000  0000                                    ..                0003F790
-------------------------------------------------------------------------------
002248 134600      MOVE WS-DD TO H1-DD.
002249 134700      MOVE WS-YY TO H1-YY.
R02250 134800      MOVE WS-HH TO H1-HH.
002251 134900      MOVE WS-NN TO H1-NN.

1=HELP 2=PCK 3=EXIT 4=STEP 6=? 7=BWD 8=FWD 9=ZOOM 10=WINDOW 11=FLOW 12=CONT
```

To reset (turn a halt point off), key 'R' in the statement number

The source of your program is displayed on your request using **XRAY** menu screens. It is also displayed during a debug session on a STOP screen. The above example shows a typical screen that was displayed due to a halt. It illustrates the setting and resetting of additional halt points.

Please note that at any halt point all **XRAY** debugging facilities are available. After each halt the programmer may terminate the program, produce a dump, continue execution normally, STEP through the program by statement or instruction, or continue from a different point in the program.

Besides PF key functions the programmer has available several keyable fields to control testing.

For instance, if we wanted the halt at statement 2483 to occur only when field H1-PAGE-CTR is greater than 2, we could have entered the following:

```
=7.2              XRAY - Halt Point Management      CICSUSER 01/30/98 13.39.39
Command----->
Offset------>

                       Add New Halt Point
Program Name--> GLOSSARY              Module Name---> GLOSSARY

Halt Offset---> S2485
Times to Halt->
1st Halt Pass->
Pass Increment>
Halt Condition> H1-PAGE-CTR > 2_


Date Access Action->









1=HELP 2=STOP 3=EXIT 4=STEP 6=? 11=FLOW 12=CONT
```

Each time program execution passed through statement number 2485 (Halt Offset —> S2485), the contents of H1-PAGE-CTR would be compared with a character value of 2. If H1-PAGE-CTR is greater than 2, a halt would occur.

Show and Modify Storage Areas *within your Program by simply entering the field's dataname.*

If the command field contained a field name such as PRINT-REC, then the display would show the address and storage value for PRINT-REC as displayed here.

```
=3.1                XRAY - Storage Area Display       CICSUSER 01/30/98 13.43.38
Command-----> _
Offset------>

Display of--> D PRINT-REC                                          Type-> Char

00000000  F14040F0  F161F3F0  61F9F840  4040F1F3    1  01/30/98   13   0003F708
00000010  7AF3F840  40404040  40404040  40404040    :38                 0003F718
00000020  40404040  40404040  40404040  40404040                        0003F728
00000030  40404040  404040C7  40D340D6  40E240E2          G L O S S   0003F738
00000040  40C140D9  40E84040  40404040  40404040     A R Y              0003F748
00000050  40404040  40404040  40404040  40404040                        0003F758
00000060  40404040  40404040  40404040  40404040                        0003F768
00000070  40404040  40404040  40404040  D7C1C7C5                 PAGE   0003F778
00000080  40F0F0F0  F1                                0001               0003F788
```

The leftmost column displays the address relative to the data field displayed. The rightmost column shows the virtual storage address. The data in the middle of the display is the usual hexadecimal and character display of data for the field requested. In this case the data field (PRINT-REC) is an 01 level field, so all data for the group is displayed.

When a program is halted prior to executing a statement the values of the variable names in the statement are displayed in a window.

In this example PRINT-REPORTS-SWITCH has both its hex and decimal value displayed (E8 and Y). It can be changed by keying over either one of the representations. When program execution is continued, processing will continue based on the new value.

```
=5.1                      XRAY - Stop Display          CICSUSER 01/30/98 13.42.38
Command----->
Offset------>

Stop Program--> GLOSSARY Current Module-> GLOSSARY
Phase Offset--> 006306   Module Offset--> 006306   Statement No.-> 002981
Stop Reason---> HALT REQUEST - HALT ID = 5
 Stmt  ....+....1....+....2....+....3....+....4....+....5....+....6....+....7..
002977 207500         PERFORM PRINT-LINE.
002978 207600*    EXIT.
002980 207800 PRINT-LINE.
002981 207900     IF PRINT-REPORTS-SWITCH = 'Y'
-------------------------------------------------------------------------------
OP1--> PRINT-REPORTS-SWITCH                                    Type-> Char
00000000  E8                                        Y                 0002C298
-------------------------------------------------------------------------------
002982 208000         PERFORM PRINT-LINE-YES.
002983 208100     MOVE ' ' TO PRINT-REC PRINT-REC-LINE.
002984 208200     MOVE 1 TO F.
002985 208300*    EXIT.
002986 208400 PRINT-LINE-YES.
002987 208500     MOVE PL-LINE   TO PRINT-REC-LINE.

1=HELP 2=PCK 3=EXIT 4=STEP 6=? 7=BWD 8=FWD 9=ZOOM 10=WINDOW 11=FLOW 12=CONT
```

There are other methods to change a data field's values.

```
=1.1           XRAY - STOP Program Source Display    CICSUSER 01/30/98 13.44.28
Command----->
Offset------>
Phase Name--> GLOSSARY Module Name-> GLOSSARY   Stmt-> 2977   Zone-> 1   120

Module was compiled on 01/30/98 at 13.26.12
 Stmt  ....+....1....+....2....+....3....+....4....+....5....+....6....+....7..
002977 207500         PERFORM PRINT-LINE.
002978 207600*    EXIT.
002980 207800 PRINT-LINE.
H02981 207900     IF PRINT-REPORTS-SWITCH = 'Y'
002982 208000         PERFORM PRINT-LINE-YES.
002983 208100     MOVE ' ' TO PRINT-REC PRINT-REC-LINE.
-------------------------------------------------------------------------------
Display of--> D=PRINT-REC                                          Type-> Char
00000000  F14040F0  F161F3F0  61F9F840  4040F1F3    1  01/30/98   13   0003F708
00000010  7AF3F840  40404040  40404040  40404040    :38                 0003F718
00000020  40404040  40404040  40404040  40404040                        0003F728
00000030  40404040  404040C7  40D340D6  40E240E2           G L O S S   0003F738
-------------------------------------------------------------------------------
002991 208900*** RATHER THAN PL-LINE TO PRINT-REC-LINE.
002992 209000     IF SPACING = ' ' MOVE 1 TO CARRIAGE-CONTROL

1=HELP 2=STOP 3=EXIT 4=STEP 5=RFIND 6=? 7=BWD 8=FWD 9=ZOOM 11=FLOW 12=CONT
```

In this example, the cursor was placed on PRINT-REC-LINE (line 2983) and PF9 was pressed. PRINT-REC-LINE can be altered (in either hex or character format) with this window.

```
=1.1           XRAY - STOP Program Source Display    CICSUSER 01/30/98 13.45.0€
Command-----> D PRINT-REC_
Offset------>
Phase Name--> GLOSSARY Module Name-> GLOSSARY   Stmt-> 2977   Zone-> 1   120

Module was compiled on 01/30/98 at 13.26.12
 Stmt  ....+....1....+....2....+....3....+....4....+....5....+....6....+....7..
002977 207500         PERFORM PRINT-LINE.
002978 207600*    EXIT.
002980 207800 PRINT-LINE.
H02981 207900     IF PRINT-REPORTS-SWITCH = 'Y'
002982 208000         PERFORM PRINT-LINE-YES.
002983 208100     MOVE ' ' TO PRINT-REC PRINT-REC-LINE.
002984 208200     MOVE 1 TO F.
002985 208300*    EXIT.
002986 208400 PRINT-LINE-YES.
002987 208500     MOVE PL-LINE   TO PRINT-REC-LINE.
002988 208600*    MOVE PRINT-REC TO PRINT-REC-LINE.
002989 208700*** IF 133 BYTE PRINT LINES WITH CARRIAGE CONTROL IN COLUMN 1
002990 208800*** ARE REQUIRED, CHANGE THE ABOVE 2 LINES TO MOVE PRINT-REC
002991 208900*** RATHER THAN PL-LINE TO PRINT-REC-LINE.
002992 209000     IF SPACING = ' ' MOVE 1 TO CARRIAGE-CONTROL

1=HELP 2=STOP 3=EXIT 4=STEP 5=RFIND 6=? 7=BWD 8=FWD 9=ZOOM 11=FLOW 12=CONT
```

On any XRAY display enter D and a data field's name in the command, PRINT-REC in this case.

Extended Halt Points

Extended halt points are similar to standard halts, but when setting extended halt points the user may specify that the halt is only to take effect if certain conditions are met. For example, a halt could be requested to take place at program statement number 999 when data field WKTERM is equal to T05A. It is possible to make the halt point even more selective by also specifying:

a limit to the number of times it will be honored;

how many passes through the halt point must occur, with any condition met, before the halt takes effect;

how many passes through the halt point must occur, with any condition met, between halts;

any of the relation identifiers, equals, not equals, greater than, greater than or equal, less than, less than or equal can be used.

Alteration of Program Flow

If the programmer decides to continue execution of the program, the continuation can be made at a point other that at which the program was last halted. When the program is terminated, a dump may or may not be requested as the programmer wishes.

```
=5.1                    XRAY - Stop Display          CICSUSER 01/30/98 13.51.24
Command-----> _
Offset------>

Stop Program--> GLOSSARY Current Module-> GLOSSARY
Phase Offset--> 00638C   Module Offset--> 00638C   Statement No.-> 002995
Stop Reason---> DATA EXCEPTION
 Stmt  ....+....1....+....2....+....3....+....4....+....5....+....6....+....7..
H02992 209000     IF SPACING = ' ' MOVE 1 TO CARRIAGE-CONTROL
002993 209100                     ADD 1 TO LINE-CTR.
002994 209200     IF SPACING = '0' MOVE 2 TO CARRIAGE-CONTROL
002995 209300                     ADD 2 TO LINE-CTR.
-------------------------------------------------------------------------------
OP2--> LINE-CTR                                                 Type-> Decimal
00000000  F0F0                                  *INVALID*          0003E661
-------------------------------------------------------------------------------
002996 209400     IF SPACING = '-' MOVE 3 TO CARRIAGE-CONTROL
002997 209500                     ADD 3 TO LINE-CTR.
002998 209600     IF SPACING = '1'
002999 209700         MOVE 1 TO LINE-CTR
003000 209800         WRITE PRINT-REC-LINE AFTER ADVANCING PAGE
003001 209900     ELSE

1=HELP 2=PCK 3=EXIT 4=STEP 6=? 7=BWD 8=FWD 9=ZOOM 10=WINDOW 11=FLOW 12=CONT
```

A program abend (DATA EXCEPTION in this case) stops the execution and highlights the line where the abend occurred (Statement 2995). At this point correct LINE-CTR and continue processing. Without **XRAY**, you would have to print the dump, find the statement causing the abend by adding hexadecimal displacements and matching the result to the procedure division map, then calculate the location of the invalid field and find it in the dump, then fix the error, recompile the program, and start over with the test.

Pressing PF2 causes a related program check information screen to display (sample below). It displays the program register contents as they exist at this particular halt point. Pressing PF2 from this screen toggles the user back to the original halt point screen (displayed above).

```
=5.2                    XRAY - PCK Display           CICSUSER 01/30/98 13.52.07
Command-----> _
Offset------>

Stop Program--> GLOSSARY Current Module-> GLOSSARY
Phase Offset--> 00638C   Module Offset--> 00638C
Stop Reason---> DATA EXCEPTION

Instruction---> FA1098C9AA48 at--> 0002564C = AP    2249(2,R9),2632(1,RA)

GPR 0-7 00000BE8 000202FB 00027E49 000255E8 000255E8 40026668 0002619A FF000000
    8-F 0003ED98 0003DD98 0001F388 00024A4E 0001F340 00026EC0 500256D8 0003FBF8
-------------------------------------------------------------------------------
OP1--> Stg at   0003E661  Length  00000002                     Type-> Decimal
00000000  F0F0                                  *INVALID*          0003E661
OP2--> Stg at   0001FDD0  Length  00000001                     Type-> Decimal
00000000  2F                                    2                  0001FDD0
-------------------------------------------------------------------------------
1=HELP 2=STOP 3=EXIT 4=STEP 6=? 11=FLOW 12=CONT
```

Press PF2 to get back to previous screen

XRAY will also be halted when end of job is requested.

```
=5.1                    XRAY - Stop Display          CICSUSER 01/30/98 13.53.00
Command-----> _
Offset------>

Stop Program--> GLOSSARY Current Module-> GLOSSARY
Phase Offset--> 007BCE   Module Offset--> 007BCE   Statement No.-> 003599
Stop Reason---> END OF JOB
 Stmt  ....+....1....+....2....+....3....+....4....+....5....+....6....+....7..
003596 262800     EXIT.
003597 015700 END-OF-JOB-RTN.
003598 015800     MOVE ZERO TO RETURN-CODE.
003599 015900     GOBACK.
003600 016000*
003601 016100* ********************** LIBRARIAN CODE **********************
003602 016200*                    TO USE CA-LIBRARIAN INTERFACE, REMOVE THE
003603 016300*                    ASTERISK FROM 'COPY GLOLIBPD' AND DELETE
003604 016400*                    THE 'COPY GLOLIBXX' STATEMENT.
003605 016500*    COPY GLOLIBPD.
003606 016600     COPY GLOLIBXX.
003607 000100 OPEN-LIBRARIAN.
003608 000200 OPEN-LIBRARIAN-EXIT.
003609 000300 CLOSE-LIBRARIAN.

1=HELP 2=PCK 3=EXIT 4=STEP 6=? 7=BWD 8=FWD 9=ZOOM 10=WINDOW 11=FLOW 12=CONT
```

Supported Environments

VSE: DOS/VSE and VSE/ESA CICS 1.7 through 2.3
MVS: CICS 1.7 through 4.1
Languages: Cobol, Cobol II, COBOL LE/370, PL/1, Assembler

Free Trial

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