

How to Resolve SOC7 Using Abend-Aid

Author: Polsani Anil Kumar

Source of Document: <http://mainframes-online-training.weebly.com/>

ABEND Code: SOC7

Reason for SOC7 ABEND:

1. Performing arithmetic operations on Non-Numeric values
2. Moving Non- Numeric values to a Numeric/COMP data items also known as variables

In the sense we say SOC7 is caused due to Bad data but not your Business logic.

Requirement:

To solve the SOC7 ABEND easily and fast we need to see that our Source code (in example as COBOL program) Need to complied with PARM Options LIST and TEST.

Yes both LIST and TEST PARM options are required to resolve SOC7.

Assuming that your Load module (executable code of the Source code) is compiled with above options and been used in Production.

Solution Steps:

To resolve this ABEND all we need to follow 2 steps:

1. Find the COBOL line/statement that is causing the abend (LIST Option)
2. Trace back the data that is causing the problem (TEST Option)

Below Screen Helps to solve the SOC7, for security reason hiding of few part of the screen shot and will not affect the understanding of the resolution process.

To find the statement that causing the ABEND.

Screen1: List of Abended jobs and corresponding ABEND code in Abend Aid

Abend-AID ----- Abend-AID Directory ----- Row 000055 of 000330										
COMMAND ===>				SCROLL ===> CSR ==>						
Shared Directory/Database... DXIM.12.REPORT.SHRDIR										
For a list of databases, select DBLIST										
M Menu	L Lock	H Dup History	R Recall	T Terminate Analysis						
S Diag	U Unlock	I Information	E Migrate	C Change Priority						
D Delete	G Messages	A Analyze	P Print	N Contact Information						

Abend										
Entry	Job Name	Code	JESID	Tran	Program	Offset	Dups	Time	Date	
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
0021153	DXIM2086	U3606	J0005471		P07	0000007A	0	15:15	21MAY	
0021152	DXIM2085	S0C7	J0020787		619	0000B42E	0	13:23	21MAY	
0021151	DXIM2039	U4083	J0003874			00000000	0	12:54	21MAY	
0021150	DXIM2039	U3780	J0003874		S14	00019EBE	0	12:54	21MAY	
0021149	DXIM2010	U3629	J0003835		260	0000764C	0	12:47	21MAY	
0021148	DXIM2087	U3812	J0003961		P07	0000007A	0	11:38	21MAY	
0021147	DXIM2081	U3606	J0018081		P07	0000007A	0	11:11	21MAY	
0021146	DXIM2087	U3606	J0001727		P07	0000007A	0	11:10	21MAY	
0021145	DXIM2086	U4094	J0002077		P07	0000007A	0	11:08	21MAY	

Screen2: Option 1 from primary option menu of Abend-aid to see the summary where you will see the COBOL statement that was executing during the execution

Abend-AID		Primary Options	
OPTION		====> 1	
1	DIAG	Diagnostic Summary	5 DB2 DB2 Information
2	PROG	Program Information	6 *IDMS IDMS Information
3	FILE	File Summary	7 *MQINFO WebSphere MQ Information
4	IMS	IMS Information	8 LEINFO LE Information
D	DIRECTRY	Abend-AID Directory	R SRCDIR Source Directory
S	SUMMARY	Fault Summary	U USER User Control Facility
I	IMPORT	SVC Dump Import	C CSSUTIL CSS Utilities
N	NEWS	Product News	X EXIT Exit

Screen3: Screen show the statement details in here its COMPUTE statement suing 3 different variables and also the paragraph is showed in which these statements are coded

```
Abend-AID ----- Diagnostic Summary ----- Row 000001 of 000082
COMMAND ==> SCROLL ==> CSR

A data exception occurred during execution of program BRDNC010. The expected
completion code is S0C7.

Analysis of Error
Root cause analysis is available for this abend.

The data exception occurred in the following statement:

013684 06215 COMPUTE UNSIGNED-DOLLAR-ERROR =
013685 06216 ( WS-MO-QTY * PART-NET-PRICE-BY-COUNTRY OF RDXPT2
013686 06217 / WS-SPLITS-MADE) .

This statement is contained in paragraph 6117-AUDIT-DOLLAR-LIMIT in program
BRDNC010 .

Current values of fields on this statement:
```

Level/Field Name	Picture/Type	Value
02 UNSIGNED-DOLLAR-ERROR	9(09) COMP-3	+0
02 WS-MO-QTY	9(07)	0000006

Screen 4: We can see the affected statement using Compiler List/Program Listing using option 2.L as in below screens (4, 5 & 6)

Abend-AID ----- Primary Options -----	
OPTION	==> 2
1	DIAG Diagnostic Summary
2	PROG Program Information
3	FILE File Summary
4	IMS IMS Information
5	DB2 DB2 Information
6	*IDMS IDMS Information
7	*MQINFO WebSphere MQ Information
8	LEINFO LE Information
D	DIRECTRY Abend-AID Directory
S	SUMMARY Fault Summary
I	IMPORT SVC Dump Import
N	NEWS Product News
R	SRCDIR Source Directory
U	USER User Control Facility
C	CSSUTIL CSS Utilities
X	EXIT Exit

<http://mainframe3>

Screen 5:

```
. . . . .
Abend-AID ----- Program Summary Information ---- Row 000001 of 000001
COMMAND ===>                                SCROLL ===> CSR
MSDDE0001W Link to DevEnterprise is not available.
To display the current Data Locator search criteria, select FINDDDATA

  D Program Detail          L Program Listing          S Program Storage
  C Compiler Options        R Data Locator             X Extended Search
  I Impact Analysis        W COBOL PERFORM Flow

Program / Procedure Name      Load      Length  Language      Compil
                             Module      Date
*****
L DDPMG619                   DDPMG619   00F9B6   COBOL for z/OS  11NOV2
*****
                             BOTTOM OF DATA *****
. . . . .
```

<http://mainframe.com>

Screen 6:

```

Abend-AID ----- COBOL Listing ----- Row 005205
COMMAND ===> SCROLL ===> CSR
                               ==>

Source Program Name... RDROC619
Program Compile Date.. 11NOV2013      Source Listing Date... 11NOV2013
Program Compile Time.. 07:55:24      Source Listing Time... 07:55:24

To reset display to the abending/last executed statement, select RESET
To reset display to the point of entry into this listing, select ENTRY

Source Line
*****
013684 06215      COMPUTE UNSIGNED-DOLLAR-ERROR =
013685 06216      ( WS-MO-QTY * PART-NET-PRICE-BY-COUNTRY OF RDXPT22
013686 06217      / WS-SPLITS-MADE) .
013687 06218
013688 06219      ****      EXT-$-/-SPLITS IS MORE THAN $100000 VERIFY(Y)&PASSWD
013689 06220      IF UNSIGNED-DOLLAR-ERROR > HIGH-DOLLAR-LIMIT
013690 06221      MOVE 'Y'                                TO LINE-ERROR-SW (S
013691 06222      MOVE CRS-HI-PREM-ATTR
013692 06223      TO UNIT-MOVE-ORDER-QUANTITY-ATTR OF RDROC619 (SUB)
013693 06224      MOVE NODISP-PREM-ATTR
013694 06225      TO OVERRIDE-PASSWORD-ATTR                OF RDROC619 (SUB)

```

Now then we have found the Statement that was causing the ABEND; in here we can see the variables that are used in the Execution. Now all we need to find the data present in these three variables

And resolve the issue

Stage2:

Screen 7: Goto to Program Storage Area (option 2.S) where in you can find the variables and corresponding data in them. This is extracted due to TEST option while compiling.

```
Abend-AID ----- COBOL Storage Areas -----
COMMAND ==> 2
Program..... DDND619

1  FILE  File Section
2  WORK  Working Storage
3  LINK  Linkage Section
4  SUPPORT Supporting Data
5  TGT   Task Global Table
6  DSA   Dynamic Storage Area
```


Screen 8:

```
. . . . .
Abend-AID ----- Program Summary Information ---- Row 000001 of 000001
COMMAND ===>                                SCROLL ===> CSR
                                         ==>

To display the current Data Locator search criteria, select FINDDDATA

D Program Detail          L Program Listing          S Program Storage
C Compiler Options        R Data Locator             X Extended Search
I Impact Analysis        W COBOL PERFORM Flow

Program / Procedure Name      Load      Length  Language      Compil
                             Module      Date
*****
S DDNC619                    DDNC619    00F9B6    COBOL for z/OS  11NOV2
*****
                             BOTTOM OF DATA *****
```

<http://mainframe.com>

Screen 9: We can very well use "F" (find) command to locate the variable as highlighted below and if you see through below screen I have shown you the three variable data.

Now in the Screen 11 We can see the variable WS-SPLITS-MADE contains value which does not suit the PIC clause.

```
Abend-AID ----- COBOL Listing ----- Row 000089 of 006405
COMMAND ===>                                SCROLL ===> CSR
FDBSI1000I Chars 'WS-MO-QTY' found
Source Program Name... 00000019
Program Compile Date.. 11NOV2013      Source Listing Date... 11NOV2013
Program Compile Time.. 07:55:24      Source Listing Time... 07:55:24

To reset display to the abending/last executed statement, select RESET
To reset display to the point of entry into this listing, select ENTRY

Source Line
*****
02 LAST-SEQ-NO          S9(05)    COMP-3    +0
02 PKL10-SEGS-UPDATED  S9(07)    COMP-3    +0
02 LINES-UPDATED       S9(07)    COMP-3    +0
02 PAGE-NO-WS          S9(07)    COMP-3    +0
02 PAGE-THIS-TRAN      S9(07)    COMP-3    +0
02 LINES-RECEIPTED     S9(07)    COMP-3    +0
02 WS-LENGTH           S9(04)    COMP      +5
02 ACCUM-REC-QTY       # S9(07)    COMP-3    LOW-VALUES
02 WS-MO-QTY           9(07)      0000006
02 WS-SPLITS-MADE      # 9(03)    X'FOF2FB'
02 UNSIGNED-DOLLAR-ERROR 9(09)    COMP-3    +0
```

Screen 10:

```
Abend-AID ----- COBOL Listing ----- Row 004038 of 006405
COMMAND ===>                                SCROLL ===> CSR
FDBSI1000I Chars 'PART-NET-PRICE-BY-COUNTRY' found
Source Program Name... DBS1000I
Program Compile Date.. 11NOV2013      Source Listing Date... 11NOV2013
Program Compile Time.. 07:55:24      Source Listing Time... 07:55:24

To reset display to the abending/last executed statement, select RESET
To reset display to the point of entry into this listing, select ENTRY

Source Line
*****
03 PART-NET-PRICE-BY-COUNTRY          S9(13)V9(4)  COMP-3
                                         +388900
03 PART-LIST-PRICE-BY-COUNTRY        S9(13)V9(4)  COMP-3
                                         +733800
03 PART-NET-EXCHANGE-PRICE           S9(13)V9(4)  COMP-3
                                         +0
03 PART-LIST-EXCHANGE-PRICE           S9(13)V9(4)  COMP-3
                                         +0
03 PT-PRICE-BASED-ON-COUNTRY-CODE     X(02)        US
03 PT-PRICING-RESP-COUNTRY-CODE       X(02)        US
```

<http://mainframe.com>

Screen 11:

```

Abend-AID ----- COBOL Listing ----- Row 000089 of 006405
COMMAND ==> SCROLL ==> CSR ==>

Source Program Name... BRDNC319
Program Compile Date.. 11NOV2013      Source Listing Date... 11NOV2013
Program Compile Time.. 07:55:24      Source Listing Time... 07:55:24

To reset display to the abending/last executed statement, select RESET
To reset display to the point of entry into this listing, select ENTRY

Source Line
*****
02 LAST-SEQ-NO          S9(05)    COMP-3    +0
02 PKL10-SEGS-UPDATED  S9(07)    COMP-3    +0
02 LINES-UPDATED       S9(07)    COMP-3    +0
02 PAGE-NO-WS          S9(07)    COMP-3    +0
02 PAGE-THIS-TRAN      S9(07)    COMP-3    +0
02 LINES-RECEIPTED     S9(07)    COMP-3    +0
02 WS-LENGTH           S9(04)    COMP      +5
02 ACCUM-REC-QTY       # S9(07)    COMP-3    LOW-VALUES
02 WS-MO-QTY           9(07)                0000006
02 WS-SPLITS-MADE      # 9(03)                X'F0F2FB'
02 UNSIGNED-DOLLAR-ERROR 9(09)    COMP-3    +0

```

<http://mainframe.com>

Now we need to do some analysis from where exactly the value is assign to this variable, Below Screen shows in details to help you how to get to the bottom of the issue.

Screen 12: Show the COBOL code of moving the data to WS-SPLITS-MADE field.

```
COMMAND ===> SCROLL ===> CSR
06190
06191     MOVE UNIT-MOVE-ORDER-QUANTITY      OF RDRWHM10
06192     TO WS-MO-QTY.
06193     MOVE PACKLIST-TOTAL-SPLITS-MADE     OF RDRPKL21
06194     TO WS-SPLITS-MADE.
06195     MOVE OVERRIDE-PASSWORD              OF RDRIC619 (SUB)
06196     TO QTY-AUDIT-PASSWORD
06197     PERFORM 6117-AUDIT-DOLLAR-LIMIT      THRU 6117-EXIT.
06198
06199
06200 6115-EXIT.    EXIT.
06201 /
06202 6117-AUDIT-DOLLAR-LIMIT.
06203 *****
06204 *   THIS MODULE:                                *
06205 *   - AUDITS THE DOLLAR LIMIT OF THE RECEIPT-QTY (M/O-QTY) .      *
06206 *****
06207
06208     IF PART-NET-PRICE-BY-COUNTRY OF RDXPT225 NOT NUMERIC
06209     OR PART-NET-PRICE-BY-COUNTRY OF RDXPT225 NOT > ZEROS
06210     OR WS-SPLITS-MADE NOT > ZEROS
06211     OR VALID-QTY-AUDIT-PASSWORD
```

Screen 13: Below screen shows you the value that was moved to our split variable and we can see the value is "2." Which is a clear proof of non-Numeric value which cannot be used for any type of arithmetic operations?

```

Abend-AID ----- COBOL Listing ----- Row 000298 of 006405
COMMAND ==> SCROLL ==> CSR ==>

Source Program Name... 19
Program Compile Date.. 11NOV2013      Source Listing Date... 11NOV2013
Program Compile Time.. 07:55:24        Source Listing Time... 07:55:24

To reset display to the abending/last executed statement, select RESET
To reset display to the point of entry into this listing, select ENTRY

Source Line
*****
04 PACKLIST-SHIPPED-QUANTITY(1) X(07) 6
04 UNIT-MOVE-ORDER-QUANTITY(1) X(07) 6
04 MOVE-ORDER-STORAGE-METHOD(1) X(03) HBP
04 PACKLIST-TOTAL-SPLITS-MADE(1) X(03) 2.
04 ORDER-REFERENCE-NUMBER(1) X(11) 5500592195
04 OVERRIDE-IND(1) X(01) SPACES
04 OVERRIDE-PASSWORD(1) X(04) SPACES
03 DETAIL-LINE(2)
04 ACTION-CODE(2) X(01) SPACES
04 PACKLIST-SEQUENCE-NO(2) X(05) SPACES

```

Conclusion:

So now you might be able to figure out the right process to resolve SOC7 issue. You can very well use this explanation in your interview and clear the question in High colours. But if you have a doubt how we gone resolve the SOC7 without using Abend-Aid tool please see through my site for other document where I explained using CEEDUMP/SYSOUT – Offset values. Both ways the requirement and the process look similar.

Please visit my site <http://mainframes-online-training.weebly.com/> for more information and do write to me for any required details on Training (polsani285@gmail.com)