

How do you check one file is empty or not in a JCL?

LIKE &
COMMENT

3 Ways →

- Using IDCAMS
- Using ICETOOL
- Using FileAid

IDCAMS

```
//EMPTYCHK EXEC PGM=IDCAMS  
//INPUT DD DSN=AAAAA.INFILE, DISP=SHR  
//SYSPRINT DD SYSOUT=*  
//SYSIN DD *  
  PRINT INFILE(INPUT) CHARACTER COUNT(1)  
/*
```

Note : If the input file is empty, then this step will give RC = 4. If the input file is not empty, then this step will give RC = 0. Knowing the return code of this step one can say whether the input file was empty.

So, there are 3 ways to check file is empty or not.

Mainframe
Guru

LIKE &
COMMENT!

```
ICETOOL ← 9
//EMPTYCHK EXEC PGM=ICETOOL
//TOOLMSG DD SYSOUT=*
//DFSMSG DD SYSOUT=*
//IN DD DSN=... File
//TOOLIN DD *
COUNT FROM(IN) EMPTY RC8 → SET RC=8 IF THE 'IN' DATA SET IS EMPTY, OR SET RC=0 IF THE 'IN' DATA SET IS NOT EMPTY
/*
// IF STEP1.RC = 0 THEN
// * STEP2 WILL RUN IF 'IN' IS NOT EMPTY
// * STEP2 WILL NOT RUN IF 'IN' IS EMPTY
//STEP2 EXEC ...
...
//ENDIF
```

We are checking count of input file.

Mainframe

FILEAID ←

```
//EMPTYCHK EXEC PGM=FILEAID
//INPUT DD DSN=AAAAA.INFILE,DISP=SHR
//OUTPUT DD DSN=DUMMY,
// DISP=(NEW,CATLG,DELETE),
// UNIT=SYSDA
//SYSOUT DD *
//SYSPRINT DD SYSOUT=*
//SYSLIST DD SYSOUT=*
//SYSTOTAL DD SYSOUT=*
//SYSIN DD DUMMY
```

Note : If the input file is empty, then this step will give RC = '08'. Knowing the return code of this step one can say whether the input file was empty.

If it return RC 8, it means file is empty.

SORT JCL to filter data (want data of previous month from a file)

SUBSCRIBE

Simple -

```
//SYSIN DD *  
  SORT FIELDS=COPY  
  INCLUDE COND=(1,6,CH,EQ,C'ANKIT')  
/*
```

```
//SYSIN DD *  
  SORT FIELDS = COPY  
  INCLUDE COND = (50,8,ZD,GE, 20200301,AND, 50,8, ZD, LE,20200331)  
/*
```

want data of previous month from a file.

Mainframe

What will be file status after reading all records of a file?



END OF FILE

A sequential READ statement was attempted and no next logical record existed in the file because the end of file (EOF) had been reached.

Return Code -> 10

How do you pass the data from JCL to COBOL Program?

LIKE &
COMMENT

We pass data from JCL to cobol program in two ways:

1. Using the PARM keyword
2. Using SYSIN DD in JCL

The basic difference between these two ways of passing are as follows:

- A. Using 'PARM=' on the exec keyword, we can pass only 100 characters of data. Also in cobol we need linkage section to take the values in.
- B. When we pass data through SYSIN, we need to have the accept keyword in COBOL. For each row in SYSIN, we need to have corresponding ACCEPT verb in cobol.

→ ACCEPTING DATA THROUGH JCL PARM IN COBOL

```
...
.....
LINKAGE SECTION.
01 LS-TEST-PARM.
   05 LS-TEST-LENGTH PIC S9(04) USAGE COMP.
   05 LS-VAR1 PIC 9(02).
   05 LS-VAR2 PIC 9(02).
PROCEDURE DIVISION USING LS-TEST-PARM.
DISPLAY LS-VAR1.
DISPLAY LS-VAR2.
DISPLAY LS-TEST-LENGTH.
```

JCL

```
//JSTEP01 EXEC PGM=SAMPLE3,PARM='1211212'
//STEPLIB DD DSN=TEST.LOAD.LIB1,DISP=SHR
//SYSPRINT DD SYSOUT=*
//SYSOUT DD SYSOUT=*
```

Output

```
12
11
007
```

We can pass data from JCL to cobol program in two ways:

Mainframe
Guru

SYSIN METHOD

```
...  
....  
DATA DIVISION.  
WORKING-STORAGE SECTION.  
01 WS-TOTAL  
   05 WS-VAR1 PIC X(02).  
   05 WS-VAR2 PIC X(02).  
PROCEDURE DIVISION.  
INITIALIZE WS-TOTAL.  
ACCEPT WS-VAR1.  
ACCEPT WS-VAR2.  
DISPLAY WS-VAR1.  
DISPLAY WS-VA22 .
```

```
JCL  
//JSTEP01 EXEC PGM=SAMPLE1  
//STEPLIB DD DSN=TEST.LOAD.LIB1,DISP=SHR  
//SYSPRINT DD SYSOUT=*  
//SYSOUT DD SYSOUT=  
//sysin dd*  
12  
31  
/*  
/*  
Result:  
12  
31
```

Note : If we do not have any data to be passed we can make SYSIN DD DUMMY. I tried passing blank values via SYSIN. Was Expecting an abend, but it did not. It displayed spaces in SYSOUT.



File attribute mismatch

LIKE &
COMMENT

Your JCL will abend with U4038 abend. But it will give run time error with an abend of file status 39.

The LRECL defined in the program is different whatever given in the JCL

A file attribute mismatch was detected. File PROCESS-REPORT in program UINSWOC had a record length of 140 and the file specified in the ASSIGN clause had a record length of 139.

When there is file attribute mismatch, what abend comes?

Mainframe
Guru

what is difference between SOC7 and SOC4?

LIKE &
COMMENT

SOC4 abends – Protection Exception

1. Read/Write attempt to unopened file
2. Bad Subscript/Index (Addressability Issue - when you trying to move a larger variable to a small variable.)
3. Missing SELECT statement (During Compile time)
4. Missing parameters in called subprogram
5. Move data to/from unopened file

SOC7 – Data Exception

when we try to move a non-numeric data into a numeric data item.

Not initializing the numeric variable before the first use.

You know SOC4 is Protection abend.

Mainframe
Guru

How will you resolve the SOC7 abend?



1. First check which step has abend through JESMSG LG.
2. THEN Check SYSOUT – You will find module name with unit offset address 12B749397.
3. PRFLOG – Performance stats
4. CEEDUMP- You will find the record at which the abend occurs.
5. DB2DIAG – successful connection set or not for DB2

Linear/Sequential Search

In Search, record need not to be in sorted order.

We have to set index variable to 1 before performing search.

Binary Search

Records should be in sorted order.

No need to set index variable to 1, as the records are in sorted order.

Null value passed in DB2 table?

A null is not the same as 0 or blank. Null means no entry has been made for the column and it implies that the value is either unknown or not applicable.

The null indicator is used by DB2 to track whether its associated column is null or not. Null-indicator variables in COBOL must be declared as a PIC S9(4) COMP-5 data type.

-1 : the field is null

0 : the field is not null

-2 : the field value is truncated

Inserting a record with a nullable column:

- To insert a NULL, move -1 to the null indicator
- To insert a valid value, move 0 to the null indicator

MOVE -1 to Host-Var1-NI.

EXEC SQL

INSERT INTO TABLE NAME (COL1, COL2)

VALUES (:Host-Var1:Host-Var1-NI, :Host-Var2:Host-Var2-NI)

END-EXEC

How will you Null value passed in DB2 table?

Which utility do you use for loading the data in DB2?

SUBSCRIBE

DSNUTILB utility is used to load the records from the data set that is defined by the SYSREC DD statement into table

```
LOAD DATA
RESUME YES
INTO TABLE DSN8A10.DEPT
(DEPTNO    POSITION (1:3)  CHAR(3),
DEPTNAME  POSITION (4:39) CHAR(36),
MGRNO     POSITION (40:45) CHAR(6),
ADMNDEPT  POSITION (46:48) CHAR(3),
LOCATION    POSITION (49:64) CHAR(16))

//STEPM   EXEC PGM=DSNUTILB,
//        PARM=(SSID,'SKUMAR'),REGION=0M
//STEPLIB DD DSN=TEST.PROCLIB,DISP=SHR
//SYSPRINT DD SYSOUT=*
//SYSUDUMP DD SYSOUT=*
//UTPRINT  DD SYSOUT=*
//SYSOUT   DD SYSOUT=*
//SYSREC   DD DSN=TEST.TABLE.INPUT.DATA,DISP=SHR
//SYSCOPY  DD DSN=&&SYSCOPY,DISP=(,DELETE,DELETE),SPACE=(CYL,(10,5))
//SORTOUT  DD DSN=&&SORTOUT,DISP=(,DELETE,DELETE),SPACE=(CYL,(10,5))
//SYSUT1   DD DSN=&TEMP,DISP=(,DELETE,DELETE),SPACE=(CYL,(10,5))
//SYSMAP   DD DSN=&&SYSMAP,DISP=(,CATLG,CATLG),SPACE=(CYL,(10,5))
//SYSIN    DD *
Your load query
```

Which utility do you use for loading the data in DB2?

Mainframe
Guru

Occurrence; it internally converts to displacement and fetches the value.

Slower

Subscript is working-storage variable.

It should be declared in working-storage section.

It can be increment or decrement with compute or perform.

```
COMPUTE K = K + 1  
PERFORM VARYING
```

Displacement; it holds the address of the value and directly fetches the values.

Faster

Index is an internal item.

No need to declare index variable.

To increment index, we have to use SET verb.

```
SET INDEX-VAR TO 1 OR  
SET INDEX-VAR UP/DOWN BY 1.
```

1) What is Message Class Parameters and Message Level parameters ?

- **MSGCLASS** is used to specify the output destination for the system and Job messages when the job is complete.

Syntax - **MSGCLASS=CLASS**

CLASS value can be 'A' to 'Z' and 0 to 9



1) What is Message Class Parameters and Message Level parameters ?

- **MSGLEVEL** is used to Specifies the type of messages to be written to the output destination specified in the **MSGCLASS**.
Syntax - **MSGLEVEL=(Statement, MeSsaGes)**
- **ST** = Type of statements written to output log
 - = 0, Job statements only.
 - = 1, JCL along with symbolic parameters expanded.
 - = 2, Input JCL only.
- **MSG** = Type of messages written to output log.
 - = 0, Allocation and Termination messages written upon abnormal job completion.
 - = 1, Allocation and Termination messages written irrespective of the nature of job completion.

2) How can we eliminate duplicate from file using JCL?

If we give **SUM FIELDS=NONE** it will eliminate duplicates. E.g –

```
//SYSIN DD *  
        SORT FIELDS=(1,3,CH,A)  
        SUM FIELDS=NONE  
/*
```

3) How to copy only first 100 or last 100 record from a file ?

First 100 Record :-

```
//SYSIN DD *  
        OPTION COPY,STOPAFT=100
```

Last 100 Record :-

```
//S1 EXEC PGM=ICETOOL  
//TOOLMSG DD SYSOUT=*  
//DFSMSG DD SYSOUT=*  
//IN DD DSN=... Input file  
//OUT DD DSN=... output file  
//TOOLIN DD *  
        SUBSET FROM(IN) TO(OUT) KEEP INPUT LAST(100)  
/*
```

4) In JCL, what program/utility is used for executing COBOL-DB2 program ?

IKJEFT01

```
//STEP001 EXEC PGM=IKJEFT01
...
...
//SYSTSIN DD *
    DSN SYSTEM(DB2C)
    RUN PROGRAM(MYCOBDB2) PLAN(PLAN1) PARM('100 200 Ram') -
    LIB('TEST.RELC1.LOADLIB')
    END
/*
```

5) What is SQLCA ?

SQL Communication Area

SQLCA Fields -

SQLCAID - An "eye catcher" for storage dumps. A character string (SQLCA) that identifies the beginning of the SQLCA.

SQLCODE - 0 Successful, +Ve with warning, -Ve error

SQLERRD(5) - additional diagnostic information when an error occurs. At 3rd index, it contains numbers of affected rows.

SQLWARN(11) - this field contains warning indicators. Like at 4th index 'W' if an UPDATE or DELETE SQL statement does not contain a WHERE clause was prepared.

SQLSTATE - value that identifies the outcome of the most recently executed SQL statement.

6) SQL Code 100, 911, 180, 805v818 and 803 ?

- 100 - No row found/ end of table
- 911 - Deadlock or timeout. Rollback has been done.
- 913- Deadlock or timeout. No rollback.
- 180 - Bad data in Date/Time/Timestamp.
- 805 - DBRM or package not found in plan.
- 818 - Plan and program: timestamp mismatch.
- 803 - Duplicate key on insert or update.

7) What is Inner Join ? How can we join EMP & Dept table ?

- An inner join only works correctly in cases where every row in the first table has a corresponding row in the second table.

```
SELECT e.EMP_ID, e.NAME, d.DPTNAME
FROM EMP e, DEPT d
WHERE
E.EMP_ID = D.EMP_ID
```

8) Difference between Union and Union All

- UNION and UNION ALL are used to combine result of two separate SQL queries on same or different table
- UNION performs a DISTINCT on the result set, eliminating any duplicate rows.
- UNION ALL does not remove duplicates.
- UNION ALL is faster than UNION but its execution may look slow because it returns more data which takes more time to travel via the network

9) What happens when using Group By Sal, and some row has NULL as Sal?

Eid	Ename	Sal
1	Raj	200
2	Sita	200
3	Mohan	100
4	Ram	
5	Shyam	

Select count(Sal) from EMP
group by Sal;

Count(sal)

0
2

Select sum(Sal) from EMP
group by Sal;

Sum(sal)

400

10) What is ORDER BY ? What is default order ? When It happens while executing SQL ?

- **ORDER BY** clause is used to sort the data in ascending or descending order, based on one or more columns.
- Ascending order is default order.
- ORDER BY clause is the last one to be processed to sort the final data set or result of fetched query.

11) What is 88 Level used for ? Can we use COMP-3 at this level ?

Condition name specifies the value that a field can contain and used as abbreviation in condition checking.

```
01 GENDER PIC X.  
   88 MALE VALUE '1'  
   88 FEMALE VALUE '2' '3'.
```

IF GENDER = 1 can be coded as IF MALE

Set FEMALE to True. Moves 2 to Gender.
If multiple value are coded on VALUE clause,
the first value will be moved when it is set to true.

12) What is String and Unstring ? Can we use it for 9 (Numeric) variable?

```
UNSTRING 'userid@companyname.domain' DELEMATED BY '@' or '.'  
    INTO  WS-USER-ID  
          WS-COMPANY  
          WS-DOMAIN  
END-UNSTRING.
```

```
STRING  WS-USER-ID    DELEMATED BY SIZE  
        'Email ID is' DELEMATED BY SIZE  
        WS-USER-ID    DELEMATED BY SIZE  
        WS-COMPANY    DELEMATED BY SIZE  
        WS-DOMAIN     DELEMATED BY SIZE  
        INTO  WS-MAILID
```

END-STRING;

13) To update a file in Cobol, what Mode will be used ?

Mode	Description
Input	Input mode is used for existing files. In this mode, we can only read the file, no other operations are allowed on the file.
Output	Output mode is used to insert records in files. If a sequential file is used and the file is holding some records, then the existing records will be deleted first and then new records will be inserted in the file.
Extended	Extend mode is used to append records in a sequential file . In this mode, records are inserted at the end. If file access mode is Random or Dynamic , then extend mode cannot be used.
Input-Output	Input-Output mode is used to read and rewrite the records of a file.

14) What are all Locking mechanism available ?

The locks which is set by DB2 have the following attributes :
LOCK SIZE, LOCK MODE, LOCK DURATION.

LOCK SIZE : -

Table space: Lock the entire table space.

Table: Only segmented table spaces permit an individual table to be locked.

Page: Lock an individual page in a table space

Row: Lock an individual row in a table. This is the lowest level of granularity.

When an SQL statement is issued and first accesses data, it takes an intent lock on the table space. Later in the process, actual S-, U-, or X-locks are taken.

LOCK MODE : -

IS: is used when transaction intends to read but not update data pages.

IX: is used when transaction intends to read or change data.

SIX: is used when transaction intends to read or change data; it allows other transactions taking an IS lock on the table space, which is trying to read data by taking S page locks.

S: lock is taken in response to a SELECT statement in the query. It allows 2 or more programs to read at the same time.

X: lock indicates the user needs exclusive use of table or TS for update activity. This this case other access is not allowed.

U: lock is taken when there is a 'possibility to update'. Other applications can get S lock to read the data until the Update(U) lock is promoted to an Exclusive(X) lock at the actual *update occurrence* .

15) What is difference between 99V99 and 99.99 while defining Working storage section variable?

PIC 99V99

is four position numeric field with assumed decimal point.

PIC 99.99

is five position field that actually contains decimal point. Displaying purpose only

A PIC 99.99 VALUE 11.11

B PIC 99v99 VALUE 23.22

DISPLAY A B

A= 11.11

B=2322 (decimal point is not displayed)