Unit 3. Managing Files Through CICS

Objectives

- **VSAM files supported by CICS**
- **Special services of file control**
- **File Control Commands**
- **Transaction deadlocks**

Figure: 5-1. Objectives

Notes :

Introduction

CICS File Control supports :

Virtual Storage Access Method(VSAM)

Basic Direct Access Method(BDAM)

Figure: 5-2. Introduction.

Notes :

VSAM Files

VSAM Files that are supported by CICS are:

- **Key-Sequenced Dataset (KSDS)**
- **Entry-sequenced Dataset (ESDS)**
- **Relative Record Dataset (RRDS)**

Figure: 5-3. VSAM Files.

Notes :

KSDS files are accessed by using Key.
RRDS files are accessed by using Relative Record Number(RRN).
ESDS files are accessed sequentially or by using RBA.

File Concepts

- **A VSAM file used for CICS have atleast one record loaded to initialize the file.**
- **Programs need not open or close the files.**
- **All CICS files must be defined in the File Control Table(FCT).**
- **The file parameter coded by the programmer in the CICS command must be the same as defined name in the FCT.**
- **When a application program accesses a file, the file must be open under CICS.**
- **If the file is closed you can open the file using the Master Terminal Transaction(CEMT) before it gets initiated in an application program.**

Figure: 5-4. File Concepts.

Notes :

Special Services of File Control

- **Special File Control services gives data independence to the application programs.**

- **It gives an exclusive control over update, and file open and close.**

Figure: 5-5. Special Services of File Control

Notes :

READ Command

Syntax :

```
EXEC CICS READ
    FILE(filename)
    [UPDATE]
    [INTO(data_area) | SET(ptr_ref)]
    [LENGTH(data_area)]
    RIDFLD(data_area)
    [KEYLENGTH(data_value)[GENERIC]]
    [SYSID(systemname)]
    [RBA | RRN]
    [GTEQ | EQUAL]
END-EXEC.
```

Figure: 5-6. READ Command.

Notes :

This command reads a record into a record area defined in the working storage. If the read is successful then the contents of the record will be available in the working storage.

Handle Conditions : DISABLED,DUPKEY,FILENOTFOUND,ILLOGIC,INVREQ,IOERR, ISCINVREQ,LENGERR,NOTAUTH,NOTFND,NOTOPEN,SYSIDERR

Example:

```
EXEC CICS READ
        FILE('filename') INTO(ws-area) RIDFLD(ws-key-fld)
END-EXEC.
```

WRITE Command

Syntax :

```
EXEC CICS WRITE
    FILE(filename)
    [MASSINSERT]
    FROM(data_area)
    [LENGTH(data_area)]
    RIDFLD(data_area)
    [KEYLENGTH(data_value)]
    [SYSID(systemname)]
    [RBA | RRN]
END-EXEC.
```

Figure: 5-7. WRITE Command.

Notes :

The WRITE command is to write a new record to a file on either a local or remote system. The required data must be moved into the working storage area of the record to be added before issuing the WRITE command. When the WRITE is successful the record will be added to the file.

Handle Conditions : DISABLED,DUPKEY,FILENOTFOUND,ILLOGIC,INVREQ,IOERR, ISCINVREQ,LENGERR,NOTAUTH,NOTFND,NOTOPEN,SYSIDERR

Example :

```
EXEC CICS WRITE FROM(ws-record) LENGTH(ws-record-length)
                FILE('filename') RIDFLD(ws-record-key)
END-EXEC.
```

REWRITE command

Syntax :

```
EXEC CICS REWRITE
    FILE(filename)
    FROM(data_area)
    [LENGTH(data_area)]
    [SYSID(systemname)]
END-EXEC.
```

Figure: 5-8. REWRITE Command.

Notes :

The command will update a record in a file on either the local or remote system. Prior to execution of this command, the record must be read with the READ UPDATE command. The command may also be used to update a record in a CICS-maintained data table, and the update is made to both the VSAM KSDS and the in-memory data table.

Handle Conditions : DUPREC,FILENOTFOUND,ILLOGIC,INVREQ,IOERR,
ISCINVREQ,LENGERR,NOSPACE,NOTAUTH,SYSIDERR

Example :

```
EXEC CICS  REWRITE  FROM(RECORD)  FILE('filename')
END-EXEC.
```

DELETE command

Syntax :

```
EXEC CICS DELETE
    FILE(filename)
    RIDFLD(data_area)
    [KEYLENGTH(data_value)]
    [GENERIC[NUMREC(data_area)]]
    [SYSID(systemname)]
    [RBA | RRN]
END-EXEC.
```

Figure: 5-9. DELETE Command

Notes :

The command is used to delete one or more records from a VSAM file. The VSAM file format must be KSDS, or RRDS, ESDS format is not valid file type for deleting records with this command.

Handle Conditions : DISABLED,DUPKEY,FILENOTFOUND,ILLOGIC,INVREQ,IOERR, ISCINVREQ,,NOTAUTH,NOTFND,NOTOPEN,SYSIDERR

Example :

```
EXEC CICS DELETE  FILE('filename') RIDFLD(ws-record-key) KEYLENGTH(ws-keylength-field)
          GENERIC  NUMREC(ws-numdel-recs)
END-EXEC.
```

UNLOCK command

Syntax :

```
EXEC CICS UNLOCK
    FILE(filename)
    [SYSID(systemname)]
END-EXEC.
```

Figure: 5-10. UNLOCK Command.

Notes :

The UNLOCK command when executed will release the exclusive control established during the READ UPDATE command. The command is used to release a record that was retrieved for update when it was determined that no update was needed.

Handle Conditions : DUPREC,FILENOTFOUND,ILLOGIC, IOERR,
ISCINVREQ, NOTAUTH,NOTOPEN,SYSIDERR

Example :

```
EXEC CICS  UNLOCK  FILE('filename')
END-EXEC.
```

File Browse Concept

Browsing is a sequential search of any organized body of data.

Browse command can be used to process VSAM and BDAM files sequentially.

A browse operation essentially contains three steps

- **Establishing a starting point**
- **Retrieving of records**
- **Terminating the operation**

The retrieval of records is accomplished using the READPREV and READNEXT commands and the termination of the operation is done using the ENDBR command.

Figure: 5-11. File Browse Concept.

Notes :

STARTBR command

Syntax :

```
EXEC CICS STARTBR
      FILE(filename)
      RIDFLD(data_area)
      [KEYLENGTH(data_value) [GENERIC]]
      [REQUID(data_value)]
      [SYSID(systemname)]
      [RBA | RRN ]
      [GTEQ | EQUAL]
END-EXEC.
```

Figure: 5-12. STARTBR Command.

Notes :

This command is to start a browse from a specified record in a file or in a CICS maintained data table, on a local or a remote system. This command only positions the pointer, no records are retrieved until a READNEXT command or for VSAM and CICS maintained tables only, a READPREV command is executed.

Handle Conditions : DISABLED,FILENOTFOUND,ILLOGIC,INVREQ,IOERR,
ISCINVREQ, NOTAUTH,NOTFND,NOTOPEN,SYSIDERR

Example :

```
EXEC CICS STARTBR
            FILE('filename') RIDFLD(ws-key-value) EQUAL
```

END-EXEC.

READNEXT command

Syntax :

```
EXEC CICS READNEXT
     FILE(filename)
     [INTO(data_area) | SET(ptr_ref)]
     RIDFLD(data_area)
     [LENGTH(data_area)]
     [KEYLENGTH(data_value) [GENERIC]]
     [REQUID(data_value)]
     [SYSID(systemname)]
     [RBA | RRN ]
END-EXEC.
```

Figure: 5-13. READNEXT Command.

Notes :

This command reads the next record in a sequence. The command is used repeatedly to read the records in sequential order from a file on either a local or remote system.

Handle Conditions : DUPKEY,ENDFILE,FILENOTFOUND,ILLOGIC,INVREQ,IOERR,
ISCINVREQ,LENGERR,NOTAUTH,NOTFND,SYSIDERR

Example :

```
EXEC CICS READNEXT
          FILE('filename') INTO(ws-area) RIDFLD(ws-key-fld)
END-EXEC.
```

READPREV command

Syntax :

```
EXEC CICS READPREV
     FILE(filename)
     [INTO(data_area) | SET(ptr_ref)]
     [LENGTH(data_value)]
     RIDFLD(data_area)
     [KEYLENGTH(data_value) [GENERIC]]
     [REQUID(data_value)]
     [SYSID(systemname)]
     [RBA | RRN]
END-EXEC.
```

Figure: 5-14. READPREV Command.

Notes :

This command is to read the previous record in a sequence. The command is used to repeatedly read the records in reverse sequential order from a file on either a local or remote system.

Handle Conditions : DUPKEY,ENDFILE,FILENOTFOUND,ILLOGIC,INVREQ,IOERR,
ISCINVREQ,LENGERR,NOTAUTH,NOTFND,SYSIDERR

Example :

```
EXEC CICS READPREV
          FILE('filename') INTO(ws-area) RIDFLD(ws-key-fld)
END-EXEC.
```

ENDBR command

Syntax :

```
EXEC CICS ENDBR
     FILE(filename)
     [REQUID(data_value)]
     [SYSID(systemname)]
END-EXEC.
```

Figure: 5-15. ENDBR Command.

Notes :

This command is used to terminate a current browse function. Spots a current browse command on a file or CICS maintained table that reside on either local or remote system.

Handle Conditions : FILENOTFOUND,ILLOGIC,INVREQ,
ISCINVREQ, NOTAUTH, SYSIDERR

Example :

```
EXEC CICS ENDBR
          FILE('filename')
END-EXEC.
```

RESETBR command

Syntax :

```
EXEC CICS RESETBR
     FILE(filename)
     RIDFLD(data_area)
     [KEYLENGTH(data_value) [GENERIC]]
     [REQUID(data_value)]
     [SYSID(systemname)]
     [RBA | RRN]
     [GTEQ | EQUAL]
END-EXEC.
```

Figure: 5-16. RESETBR Command.

Notes :

The command when executed will reposition the browse in a file, or CICS maintained data table on either a local or remote system.

Handle Conditions : FILENOTFOUND,ILLOGIC,INVREQ,IOERR,
ISCINVREQ,NOTAUTH,NOTFND,SYSIDERR

Example :

```
EXEC CICS RESETBR
          FILE('filename')  RIDFLD(ws-key-fld)  GTEQ
END-EXEC.
```

EXCEPTIONAL CONDITIONS FOR FILE CONTROL COMMANDS

DISABLED	X	X	X	X	X	The data set has been disabled by a master terminal operator.
DUPREC		X	X			A record with the specified key already exists in the file
FILENOTFND	X	X	X	X	X	The data set isn't defined in the FCT.
ILLOGIC	X	X	X	X	X	A VSAM error has occurred.
IOERR	X	X	X	X	X	An I/O error has occurred.
INVEQ	X	X	X	X		The request is invalid.
LENGERR	X	X	X			The length of the record exceeds the maximum length allowed for the file(WRITE or REWRITE) or length of the INTO area (READ)
NOSPACE		X	X			There is not enough space allocated to the data set to hold the record.
NOTAUTH	X	X	X	X	X	The user is not authorized to access the data set.
NOTFND	X		X	X		The record does not exist.