COBOL - FILE ORGANIZATION

File organization indicates how the records are organized in a file. There are different types of organizations for files so as to increase their efficiency of accessing the records. Following are the types of file organization schemes:

- Sequential file organization
- Indexed sequential file organization
- Relative file organization

The syntaxes, in this module, mentioned along with their respective terms only refer to their usage in the program. The complete programs using these syntaxes would be discussed in the chapter 'File handling Verbs'.

Sequential File Organization

A sequential file consists of records that are stored and accessed in sequential order. Following are the key attributes of sequential file organization:

- Records can be read in sequential order. For reading the 10th record, all the previous 9 records should be read.
- Records are written in sequential order. A new records cannot be inserted in between. A new record is always inserted at the end of the file.
- After placing a record into a sequential file, it is not possible to delete, shorten, or lengthen a record.
- Order of the records, once inserted, can never be changed.
- Updation of record is possible. A record can be overwritten, if the new record length is same as the` old record length.
- Sequential output files are good option for printing.

Syntax

Following is the syntax of sequential file organization:

```
INPUT-OUTPUT SECTION.
FILE-CONTROL.
   SELECT file-name ASSIGN TO dd-name-jcl
   ORGANIZATION IS SEQUENTIAL
```

Indexed Sequential File Organization

An indexed sequential file consists of records that can be accessed sequentially. Direct access is also possible. It consists of two parts:

- **Data File** contains records in sequential scheme.
- **Index File** contains the primary key and its address in the data file.

Following are the key attributes of sequential file organization:

- Records can be read in sequential order just like in sequential file organization.
- Records can be accessed randomly if the primary key is known. Index file is used to get the address of a record and then the record is fetched from the data file.
- Sorted index is maintained in this file system which relates the key value to the position of the record in the file.

- Alternate index can also be created to fetch the records.

Syntax

Following is the syntax of indexed sequential file organization:

```
INPUT-OUTPUT SECTION.
FILE-CONTROL.
   SELECT file-name ASSIGN TO dd-name-jcl
   ORGANIZATION IS INDEXED
   RECORD KEY IS primary-key
   ALTERNATE RECORD KEY IS rec-key
```

Relative File Organization

A relative file consists of records ordered by their **relative address**. Following are the key attributes of relative file organization:

- Records can be read in sequential order just like in sequential and indexed file organization.
- Records can be accessed using relative key. Relative key represents the record's location relative to the address of the start of the file.
- Records can be inserted using relative key. Relative address is calculated using relative key.
- Relative file provides the fastest access to the records.
- The main disadvantage of this file system is that if some intermediate records are missing, they will also occupy space.

Syntax

Following is the syntax of relative file organization:

```
INPUT-OUTPUT SECTION.
FILE-CONTROL.
   SELECT file-name ASSIGN TO dd-name-jcl
   ORGANIZATION IS RELATIVE
   RELATIVE KEY IS rec-key
```