

Q1.

## File Access Methods.

### ① Sequential Access:-

Simplest access method information is processed in order, one record after another. This is the most common access method by far the files. For eg. editor & compiler usually access the file in the fashion.

Read & write make up bulk of operation on a file. Data is accessed one record right after another record in an order. When we write a command it will allocate memory & move the pointer to the end of the file.

### ② Direct Access

It is also known as relative access method. A fixed-length logical record that allows the program to read & write records rapidly in no particular order. It is based on disk model of a file since disk allows random access to any file block, it is viewed as a numbered sequence of block or record.

### ③ Index Sequential method.

It is built on top of the sequential access method. It constructs an index for the file. The index is like an index of a book. reduces the time required to access a file. Controls pointer using index.

Q2.

→ There are 3 typical file allocation methods:

- ① Contiguous allocation.
- ② Linked allocation.
- ③ Indexed allocation.

1) Contiguous allocation → Advantages - easy to implement.

Disadvantages - considered as an form of dynamic memory allocation, external fragmentation may occurs & compaction may be needed.

2) Linked allocation → Advantages - no specified file size.

Disadvantages -

- sequential access efficiently & is not for direct access

- each block contains a pointer (wastes space)

3) Indexed allocation → Advantages - multiple index blocks, chained to linked list.

Disadvantages -

- indexed block may not be used.

- pointer overhead for indexed allocation is greater than linked allocation.

Q3.

→ I'll prefer indexed allocation as it removes all the problems of contiguous & linked list. Eg. it solves the problem of external fragmentation. & it also provides direct access. Indexed allocation contains an additional block (known as index block). For each file, an individual index block is created, it holds the disk address of the  $i$ th file block.

We can see the eg.

Index block		
file	start	end
1	2	12

→ \* \* \* \*