1. File organisation

Serial file organisation

> Method of file organisation in which records of data are physically stored in a file, one after another, **in the order they were added to the file**

New records are appended to the end of the file. Serial file organisation is often used for temporary files storing transactions to be made to more permanent files. e.g. storing customer meter reading for gas/electricity before they are used to send the bills to all customers.

- Each transaction is added to the file in the order of arrival
- These records will be in chronological order
- High hit rate
- Suitable for batch processing
- Order not important
- The records will be accessed one after another[1]
  1: Sequential file access

Sequential file organisation

> Method of file organisation in which records of data are physically stored in a file, one after another, **in a given order**

Physically stores records of data in a file, one after another, in a given order. The order is usually based on the **key field** of the records as this is the unique identifier.

- High hit rate
- Suitable for batch processing of records
- File organised using unique ID called **key field**
  The difference between key fields in a file and primary keys in a database table. In the database table the primary key values must all be unique. This is not a requirement for key fields in any type of file. It may be sensible in certain applications to ensure key fields have unique values, but it is not mandatory.
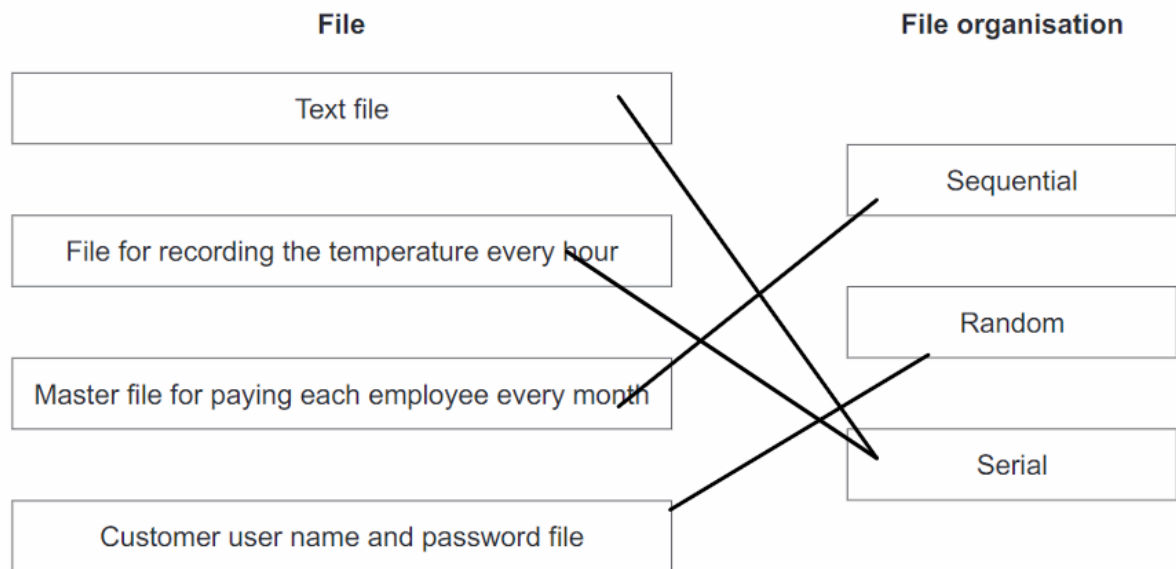
Random file organisation

> Method of file organisation in which records of data are physically stored in a file in **any available** position, the position of any record in a field is found by applying a **hash algorithm** on the **key field** of the record/record key.

- Records can be added to any empty position
- Key field is hashed to produce the home location
- If home location is free, insert the data
- Else, use overflow method to find free location to store the data
- If no free location is available, the file is full and data cannot be added/stored
- `--`
- Real-time processing
- Fast access to data
- No need to search through records
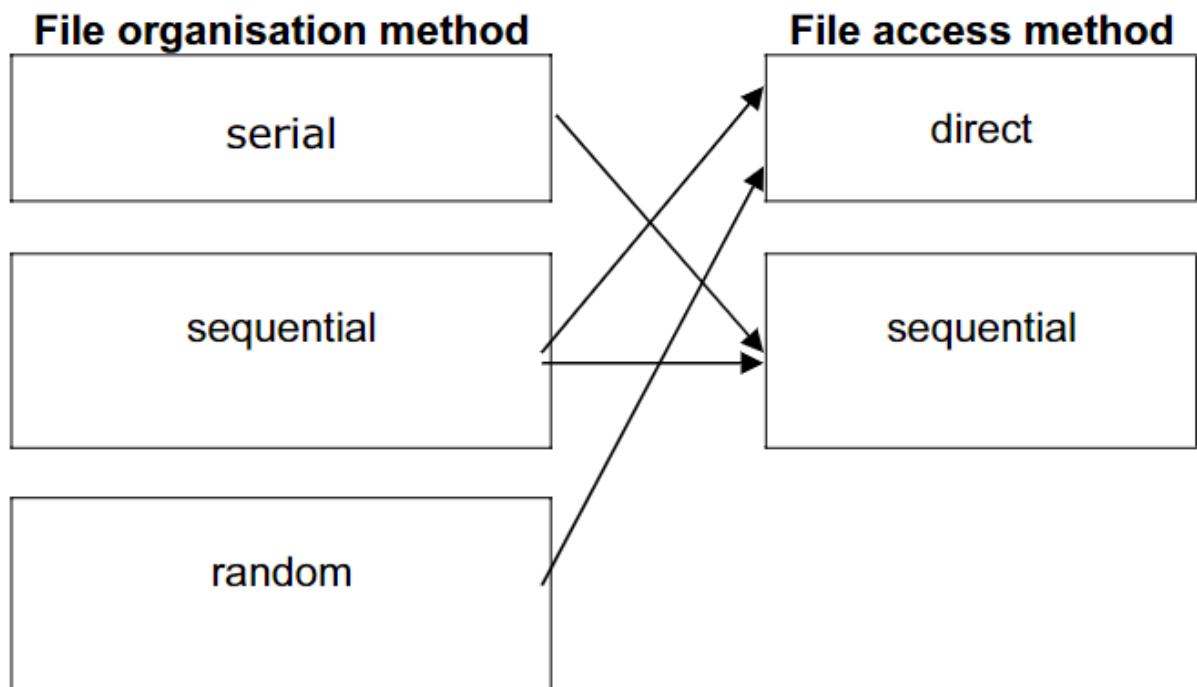
Past-paper Questions:

1. Compare Serial and Sequential file organisation:

- In both serial and sequential organisation, Records are added to the file one after another
- ... and they needs to be accessed one after another
- For serial file organisation, records are added in a chronological order
- For sequential file organisation, records are stored with a given order
- … in the order of the key field
- For serial file organisation, records are added in the next available space // records are appended to the file
- For sequential file organisation, records are inserted into the correct position

File   **File organisation**

File		File organisation
Text file		Sequential
File for recording the temperature every hour		Random
Master file for paying each employee every month		Serial
Customer user name and password file		

[4]

2.

File organisation method   **File access method**

File organisation method		File access method
serial		direct
sequential		sequential
random		

3.

4. The programmer decides to store all the data in a file. Initially, data from 27 locations will be stored. More rainfall locations will be added over time and will never exceeds 100. The programmer has to choose between two types of file organisation: serial and sequential.

Give two reasons for choosing Serial file organisation:

- No need to re-sort data every time new data is added
- Only a small file so searching would require little processing
- New records can be easily added