

File Organization

File Organization

It describes how records are stored within a file.

There are four file organization methods:

1. **Serial:** Records are stored in chronological order (in order as they are input or occur). **Examples:** Recording of telephone charges, ATM transactions, Telephone queues
2. **Sequential:** Records are stored in order based on a key field which contains a value that uniquely identifies a record.
Examples: Phone directories
3. **Direct (relative):** Each record is stored based on a physical address or location on the device. Address is calculated from the value stored in the record's key field. Randomizing routine or hashing algorithm does the conversion
4. **Indexed:** Records can be processed both sequentially and non-sequentially using indexes.

Comparison between different file Organization

	Serial	Sequential	Direct	Index
Type of Access	Batch	Batch	Online	Batch or Online
Data Organization	Serial	Sequentially by key value	No particular order	Sequentially and by index
Flexibility in handling inquiries	No	No	Yes	Yes
Availability of up to date Data	No	No	Yes	Yes
Speed Retrieval	Slow	Slow	Very Fast	Fast
Activity	High	High	Low	High
Volatility	Low	Low	High	High
Example	ATM Transition Queue	Payroll process script billing operation	Online reservation and banking transaction	Customer ordering and billing

File Access

One can access a file using either Sequential Access or Random Access. File Access methods allow computer programs read or write records in a file.

Sequential Access

Every record on the file is processed starting with the first record until End of File (EOF) is reached. It is efficient when a large number of the records on the file need to be accessed at any given time. Data stored on a tape (sequential access) can be accessed only sequentially

Direct (Random) Access

Records are located by knowing their physical locations or addresses on the device rather than their positions relative to other records. Data stored on a CD device (direct-access) can be accessed either sequentially or randomly.

Types of Files used in an Organization System

Following are the types of files used in an organization system:

1. **Master file:** It contains the current information for a system. For example, customer file, student file, telephone directory.
2. **Table file:** It is a type of master file that changes infrequently and stored in a tabular format. For example, storing Zipcode.
3. **Transaction file:** It contains the day-to-day information generated from business activities. It is used to update or process the master file. For example, Addresses of the employees.
4. **Temporary file:** It is created and used whenever needed by a system.

5. **Mirror files:** They are the exact duplicates of other files. Help minimize the risk of downtime in cases when the original becomes unusable. They must be modified each time the original file is changed.
6. **Log files:** They contain copies of master and transaction records in order to chronicle any changes that are made to the master file. It facilitates auditing and provides mechanism for recovery in case of system failure.
5. **Archive file:** Backup files that contain historical versions of other files

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