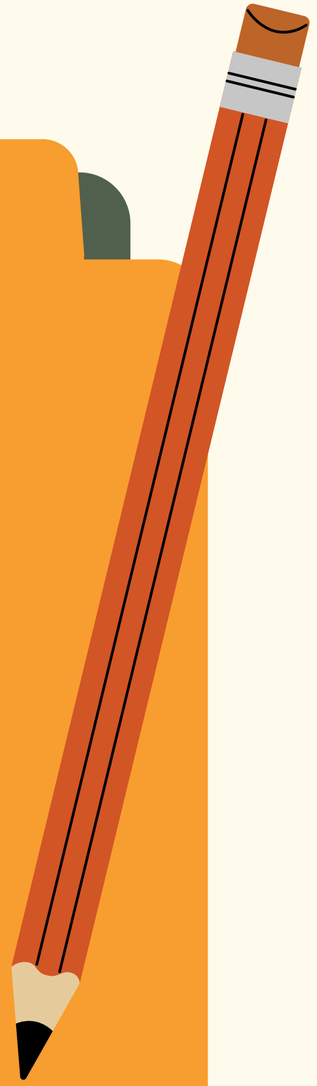
GROUP-7

FILE MANAGEMENT AND FILE ACCESS METHODS



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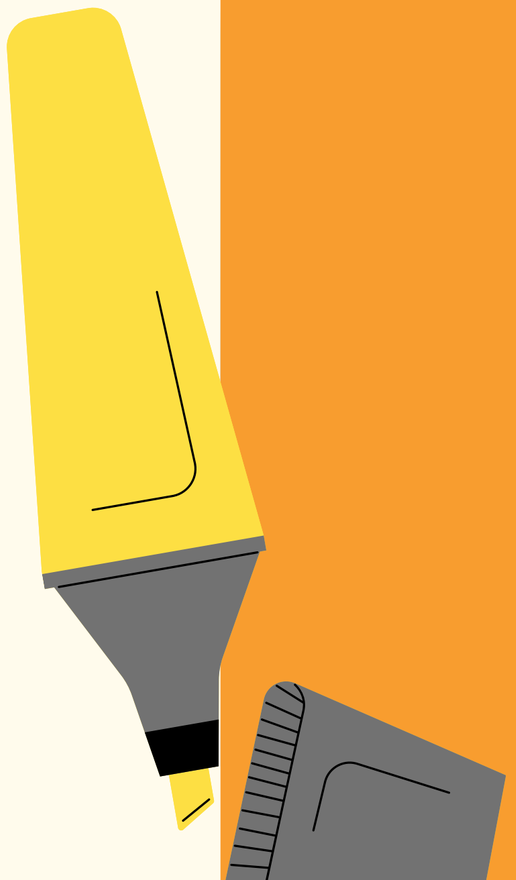
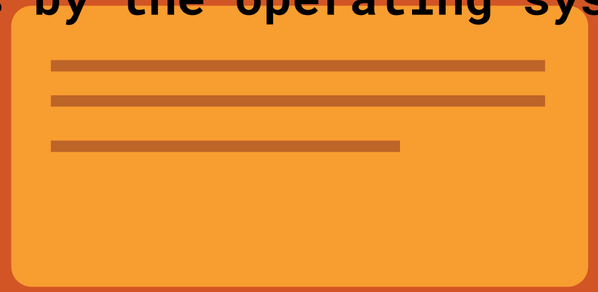
FILE MANAGEMENT



FILE MANAGEMENT SYSTEM

Modern computer system use disks as the primary online storage medium for information.

- File system provides the mechanism for organizing and retrieving files from a storage medium such as a hard drive.
- File system consists of files separated into groups called directories for ease of use.
- The file are mapped onto physical devices by the operating system.
- FAT, NTFS, GFS common file systems



FILE CONCEPT

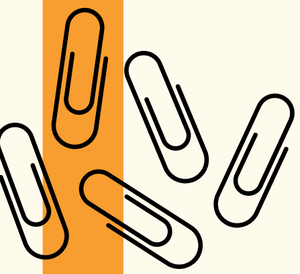
The operating system abstracts from the physical properties of its storage devices to define a logical storage unit called the file

- **A file is a *named collection of related information* that is recorded on secondary storage.**
- **A file is the *smallest allotment of logical secondary storage* ; that is , data cannot be written to secondary storage unless they are written within a file**
- **File represent programs(both source and object forms) and data . Data files may be numeric, alphabetic, alphanumeric, or binary.**

FILE ATTRIBUTES

Attributes of a file are :

- **Name :** Information stored in a human-readable form.
- **Identifier** : Every file is identified by a unique tag number within a file system known as an identifier.
- **Location:** Points to file location on device.
- **Extension(Type) :** This attribute is required for systems that support various types of files.
- **Size:** Attribute used to display the current file size.
- **Protection :** This attribute assigns and controls the access rights of reading, writing, and executing the file.
- **Time, date and security**: It is used for protection, security, and also used for monitoring.



OPERATIONS ON THE FILE

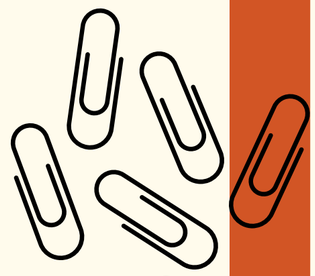
A file is an abstract data type. To define a file properly, we need to consider the operations that can be performed on files.

Creating a file

- Space in the file system must be found for the file.
- An entry for the new file must be made in the directory.

Writing a file

- Make a system call specifying both the name of the file and the information to be written to the file.



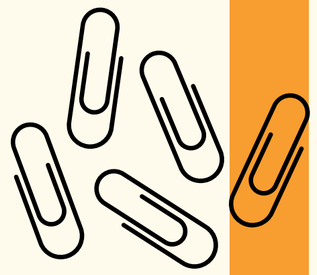
Reading a file

- To read from a file, you use a system call which specifies the name of the file and where within memory the next block of the file should be placed.

OPERATIONS ON THE FILE

Repositioning within a file

- The directory is searched for the appropriate entry, and the current-file-position pointer is repositioned to a given value.This file operation is also known as a file seek.



Deleting a file

- To delete a file, search the directory for the named file.
- Having found the associated directory entry,release all file space and erase the directory entry.

Truncating a file

- The user may want to erase the contents of a file but keep its attributes.
- This function allows all attributes to remain unchanged (except for file length) but lets the file be reset to length zero and its file space released.

ISSUES HANDLED IN FILE MANAGEMENT

- **Easy data retrieval**

When files are stored properly then less time is wasted for the respective files retrieval.

- **Redundancy**

When same type of information exists in different locations leading to memory space wastage.

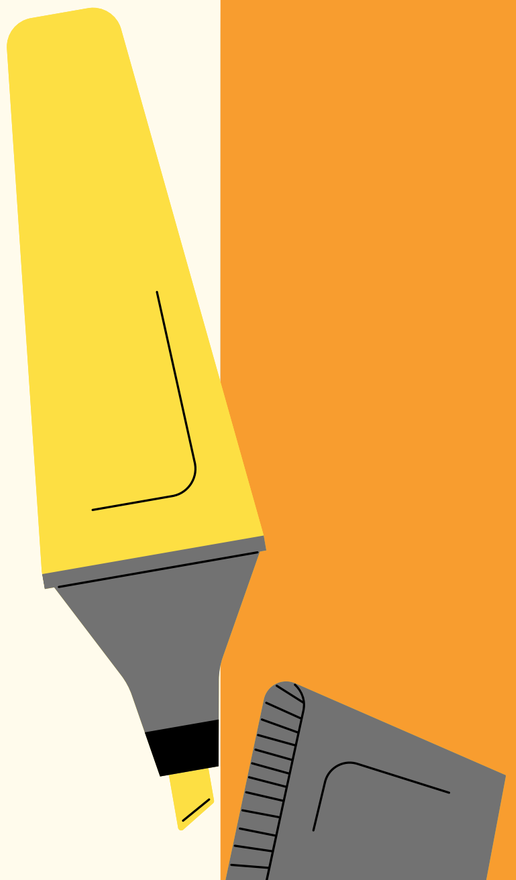
- **Inconsistency**

When same copies of data is there at different places which leads to space wastage.

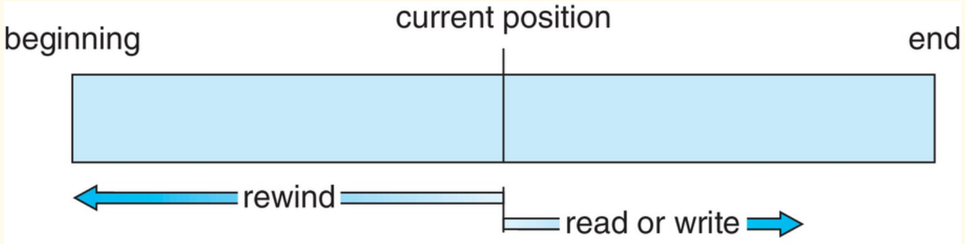
- **Disk space**

Manages the disk space.

FILE ACCESS METHODS



Sequential Access



- It is the simplest and most common access method so far.

- **Operations:**

  read_next()
  write_next()

- **Some other operations are:**

  reset
  skip n block forward/backward

Direct /Relative Access

- File is made of fixed logical records.
- No particular order.
- File is viewed as a numbered sequence of blocks or records.
- File Operations:
  - read(n)
  - write(n)
  - position_file(n)

- Relative Block Number: An index relative to the beginning of the file.
- The absolute disk address of first block can be 3000 and of second block can be 2000.
- How does the system satisfy the request for record N in a file ?
- Databases are often of direct access type.
- Simulation of sequential access on a direct access file.

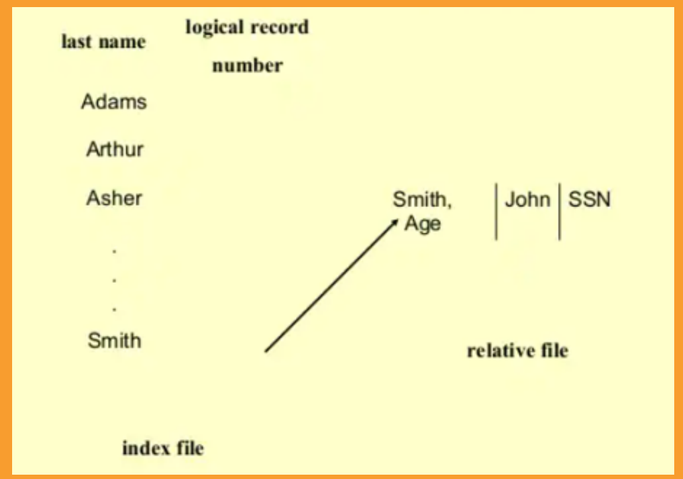
sequential access	implementation for direct access
reset	cp = 0;
read_next	read cp ; cp = cp + 1;
write_next	write cp; cp = cp + 1;

Indexed Access Method

- Built on top of Sequential Access Method.
- Require construction of an index.
- Index is a small table.
- The index contains pointers.

To find an entry in the file

- Search the index.
- Use pointer to access the file.



Primary Index and Secondary Index

- For large files in the memory.
- Create index for index file.
- Primary index points to secondary index.
- Secondary index points to actual data

THANKYOU