Topic : Traditional File System

A traditional file System (Or file based System) is a way of storing and managing data in the form format of files on a Computer System Each file stores related data either in a structured Or unstructured format. Files are stored on Secondary storage devices Such as hard disks Or flash drivers and are accessed using file names and paths.

Examples: Students data stored in a 'Students.txt' file. Employee Salary details stored in 'Salary.CSV'.

Features of traditional file System

- Data is stored in Separate file, text, CSV, doc, etc.
- Users Or programmers must write Code to add, update, delete Or Search data.
- Each file Works independently, there is no Central database to Control all files together.
- Easy to Set up and does not require expensive Software.

Drawbacks of traditional file System

- Data Redundancy - The Same data may be stored in multiple files.
- Data Inconsistency - If one file is updated but another is not, data becomes mismatched.
- Lack of Data Security - files Can be easily opened, edited, Or deleted.
- Difficult Data Access - Searching Or updating data is manual and time Consuming.
- No Backup and Recovery - If a file is deleted Or Corrupted, It Cannot be easily recoverd.

Topic : Database Management System (DBMS)

A database Management System (DBMS) is Software that allows users to Create, Store, manage, update, and retrieve data from a database. It provides a Centralized platform where data is stored in a structed way (tables, rows, Columns) and Can be accessed using queries (SQL).

Examples : Storing Student data in a Student table in MySQL Or Oracle database. Managing employee records in a Single Centralized database instead of multiple text files.

Features of DBMS :

- Centralized Data Storage - data is stored in One place (database) not in Separate file.
- Data Integrity & Consistency - ensures that data remains accurate and Consistent.
- Data Security & Authorization - provides password protection, user rolers, and restricted access.
- Data Sharing & Multi-user Access - many users Can access the Same database Simultaneously.
- Backup & Recovery - automatic backup and recovery helps protect data from loss.
- Query Processing - users Can retrieve, insert, Or modify data using SQL.

Advantages of DBMS Over Traditional File System:

- Reduced Data Redundancy - data is Stored Only Once and Shared among users.
- Improved Data Consistency - any change in data is reflected everywhere automatically.
- Better Security - access is given Only to authorized users.

- Easier Data Access - SQL queries make data retrieval and update simple and fast.
- Backup and Recovery Support - data can be restored after system failure.

Comparison between Traditional File System and DBMS

Aspect	Traditional File System	Database Management System
Data Storage	Data is stored in separate files	Data is stored in a centralized database.
Data Redundancy	High - Same data may be stored multiple times	low - data stored once and shared
Data Consistency	Difficult to maintain	Easy to maintain with automatic updates.
Data Security	low - files can be easily accessed/edited	high - user authentication and permissions
Data Access	Manual and time-consuming	Easy and fast using SQL queries
Multi-User Access	Not suitable for multiple users	Supports multiple users simultaneously
Backup & Recovery	No built-in mechanism	Automatic backup and recovery available
Data Integrity	Hard to maintain	Maintained with constraints like Primary key, Foreign key.