SNS COLLEGE OF TECHNOLOGY

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Department of MCA

DBMS Introduction

Course Name : 23CAT603 - DATA BASE MANAGEMENT SYSTEM

Class : I Year / II Semester

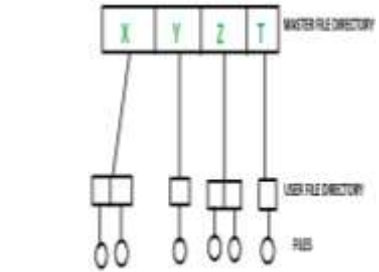
Unit I – File System Versus Database Management System

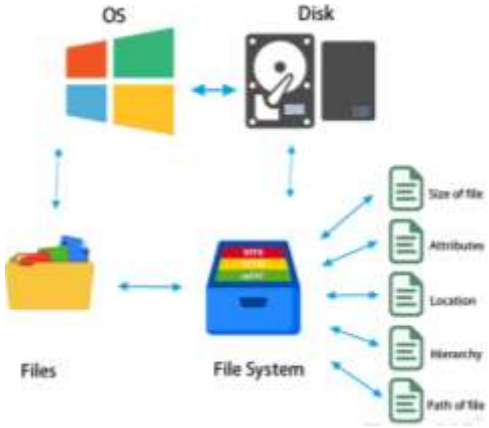
Agenda

- File System
- DBMS

What is a File System?

- File system is a method of organising the files with a hard disk or other medium of storage.
- File system arranges the files and helps in retrieving the files, when required.
- It is compatible with different file types, such as mp3, doc, txt, mp4,etc and these are also grouped into directories.
- It also influences the method of writing and reading data to the hard disk.
- Examples are NTFS or the New Technology File System and EXT, the Extended File System.

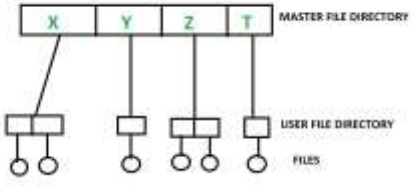


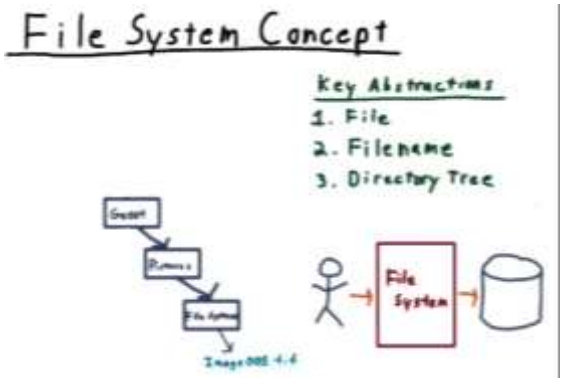


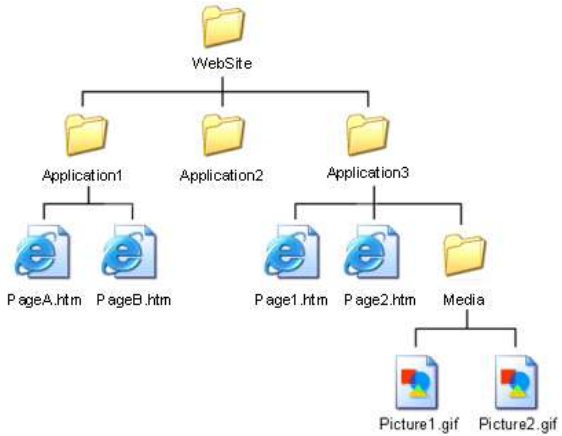
File System

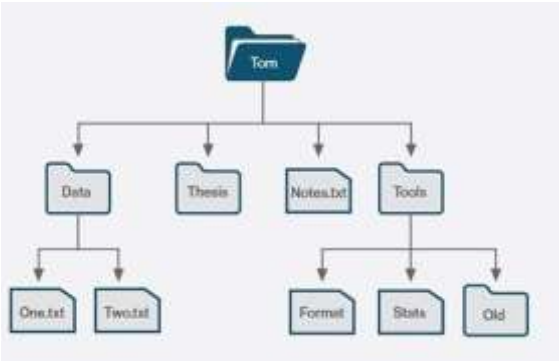
The directories further contain other folders and files.

Example: NTFS(New Technology File System), EXT(Extended File System).





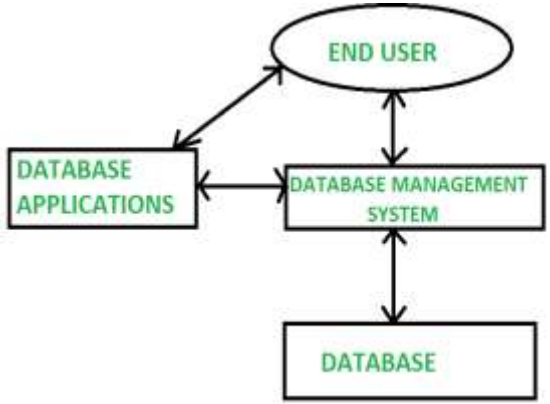




What is a DBMS?

- Database Management System is a software used to store and regain user's data, while also maintaining the required security measures.
- This includes a group of programmes that can help to manipulate the database.
- In bigger systems, DBMS helps the users as well as third party software to store and recover the data.

- Examples are MySQL, MS SQL Server, Oracle and so on.

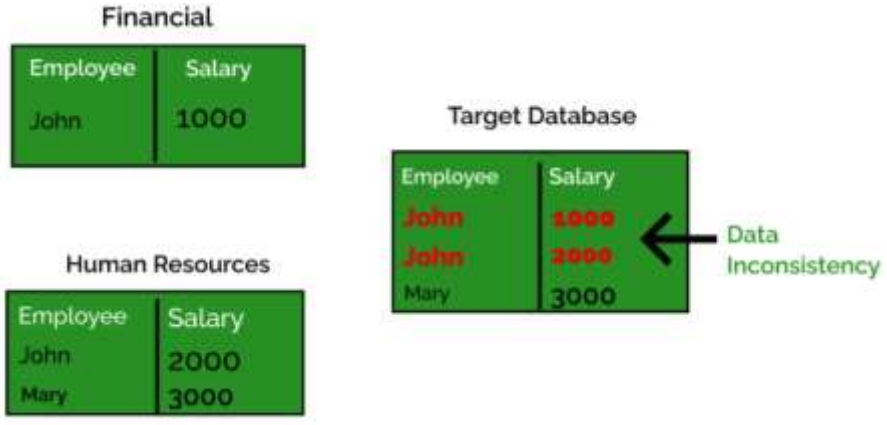


DBMS


Database Management System
Reporting
Data Utilities
Monitoring
Query Language
Storage Engine
Access Controls
Logs
Performance
Query Processor
Users
Policies

Difference between File System and DBMS

- Data Inconsistency and redundancy
- Difficulty in accessing the data
- Data Isolation
- Integrity Problems
- Atomicity Problems
- Concurrent – access anomalies
- Security Problems



Difference between File System and DBMS

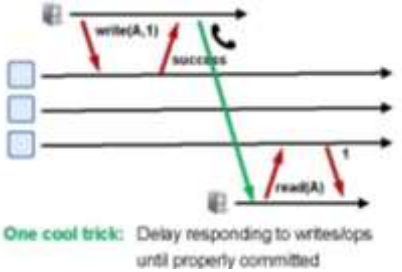
Basis	File System	DBMS
Structure	The file system is software that manages and organizes the files in a storage medium within a computer.	DBMS is software for managing the database.
		

Difference between File System and DBMS

Basis	File System	DBMS
Data Redundancy	Redundant data can be present in a file system.	In DBMS there is no redundant data.
		Products Product Id | Product Name | Product Description | Product Price 001 | PlainSounder | AM/FM Radio, 2 speakers | $51.00 002 | BetterBox | Radio, CD, 6 Speakers | $123.00 003 | UltraX | CD, MP3, 8 Speakers | $270.00 Customers Customer ID | Customer Name | Customer Location | Product ID C1 | Chrysler | Germany | 001 C2 | Circuit City | California | 001 H1 | Hyundai | Korea | 001 G1 | GM | Michigan | 002 F1 | Ford Motors | Michigan | 002 H2 | Honda | Japan | 003 B1 | BMW | Germany | 003

Difference between File System and DBMS

Basis	File System	DBMS
Backup and Recovery	It doesn't provide backup and recovery of data if it is lost.	It provides backup and recovery of data even if it is lost.
Query processing	There is no efficient query processing in the file system.	Efficient query processing is there in DBMS.
Consistency	There is less data consistency in the file system.	There is more data consistency because of the process of normalization.



Difference between File System and DBMS

Basis	File System	DBMS
Complexity	It is less complex as compared to DBMS.	It has more complexity in handling as compared to the file system.
Security Constraints	File systems provide less security in comparison to DBMS.	DBMS has more security mechanisms as compared to file systems.
Cost	It is less expensive than DBMS.	It has a comparatively higher cost than a file system.

Difference between File System and DBMS

Basis	File System	DBMS
Data Independence	There is no data independence.	In DBMS data independence exists.
User Access	Only one user can access data at a time.	Multiple users can access data at a time.

Difference between File System and DBMS

Basis	File System	DBMS
Cost	It is less expensive than DBMS.	It has a comparatively higher cost than a file system.
Data Independence	There is no data independence.	In DBMS data independence exists.
User Access	Only one user can access data at a time.	Multiple users can access data at a time.
Meaning	The user has to write procedures for managing databases	The user not required to write procedures.

Difference between File System and DBMS

Basis	File System	DBMS
Sharing	Data is distributed in many files. So, not easy to share data	Due to centralized nature sharing is easy
Data Abstraction	It give details of storage and representation of data	It hides the internal details of Database
Integrity Constraints	Integrity Constraints are difficult to implement	Integrity constraints are easy to implement
Example	Cobol, C++	Oracle, SQL Server

Features of a File system

- It helps you to store data in a group of files.
- Files data are dependent on each other.
- C/C++ and COBOL languages were used to design the files.
- Shared File System Support
- Fast File System Recovery.

Features of DBMS

- A user-accessible catalog of data
- Transaction support
- Concurrency control with Recovery services
- Authorization services
- The value of data is the same at all places.
- Offers support for data communication
- Independent utility services
- Allows multiple users to share a file at the same time

Advantages of File system

- Enforcement of development and maintenance standards.
- Helps you to reduce redundancy
- Avoid inconsistency across file maintenance to get the integrity of data independence.
- Firm theoretical foundation (for the relational model).
- It is more efficient and cost less than a DBMS in certain situations.
- The design of file processing is simpler than designing Database.

Advantages of DBMS system

- DBMS offers a variety of techniques to store & retrieve data
- Uniform administration procedures for data
- Application programmers never exposed to details of data representation and Storage.
- A DBMS uses various powerful functions to store and retrieve data efficiently.
- Offers Data Integrity and Security
- The DBMS implies integrity constraints to get a high level of protection against prohibited access to data.
- Reduced Application Development Time
- Consume lesser space
- Reduction of redundancy.
- Data independence.

Application of File system

- Language-specific run-time libraries
- API programs using it to make requests of the file system
- It is used for data transfer and positioning.
- Helps you to update the metadata
- Managing directories.

Application of the DBMS system

- Admission System Examination System Library System
- Payroll & Personnel Management System
- Accounting System Hotel Reservation System Airline Reservation System
- It is used in the Banking system for Customer information, account activités, Payments, déposits, loans, etc.
- Use for Airlines for reservations and schedules
- DBMS system also used by universities to keep call records, monthly bills, maintaining balances, etc.
- Finance for storing information about stock, sales, and purchases of financial instruments like stocks and bonds.

Disadvantages of File system

- Each application has its data file so, the same data may have to be recorded and stored many times.
- Data dependence in the file processing system are data-dependent, but, the problem is incompatible with file format.
- Limited data sharing.
- The problem with security.
- Time-consuming.
- It allows you to maintain the record of the big firm having a large number of items.
- Required lots of labor work to do.

Disadvantages of the DBMS system

- Cost of Hardware and Software of a DBMS is quite high, which increases the budget of your organization.
- Most database management systems are often complex systems, so the training for users to use the DBMS is required.
- The use of the same program at a time by many users sometimes lead to the loss of some data.
- DBMS can’t perform sophisticated calculations
- Data-sets begins to grow large as it provides a more predictable query response time.
- It required a processor with the high speed of data processing.
- The database can fail because or power failure or the whole system stops.
- The cost of DBMS is depended on the environment, function, or recurrent annual maintenance cost.

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