IMPERIAL COLLEGE OF ENGINEERING

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Course Name : Database Management System

Assignment-1

Submitted to,

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1. Define Database. (Marks 2)

Answer:

An organized collection of structured information, or data, which can be stored electronically in a computer system is called database. Simply, it is a systematic collection of data. A database is usually controlled by a database management system (DBMS).

Databases are used anywhere that data needs to be stored and easily retrieved.

2. What is the full form of DBMS? (Marks 1)

Answer:

The Full form of DBMS is Database Management System (DBMS)

3. Give 2 examples of Database Application and explain. (Marks 5)

Answer:

Two examples of Database Application are:

1. Application in Banking Sector: Database allows distributed system which lets banks access the information needed at any time, regardless the uptime status of a central server. For storing customer info, tracking day to day credit and debit transactions, generating bank statements etc. all this work has been done with the help of Database management system. During ATM transaction, money is debited and account is updated at the same time in the Database System of the bank. Also has faster performance with higher growth rate.

2. Application in Manufacturing Sector: Starting with production of goods, managing inventory items, tracking orders and monitoring the supply chain; everything of a manufacturing company can be enlisted in the Database allowing faster operations. Database stores a large amount of information that is needed to provide the necessary report for efficiency, automation, and quick decision making in the manufacturing process.

4. Explain the advantage of a DBMS over file system. (Marks 5)

Answer:

File Management system allows users to access a single files or tables at a time. Data are directly stored in set of files. One file does not have relation to other files.
Database Management System (DBMS) is application software which is used to manipulate with databases. Users can define, create,update, maintain and share information of the databases.

Advantages of DBMS over File system:

- **Data redundancy:** In File system the user may save the same file in multiple folders. This raises the number of same data causing redundancy i.e. the repetition of data. File system cannot control the redundancy. But using DBMS we can reduce the redundancy of the data.

- **Data inconsistency:** Multiple users access same device and updates the same data file which are stored in multiple folders. In that case change of one file does not reflect in the other. This scenario raises the risk like data inconsistency. As in database the data are stored in a manner which does not allow redundancy so the data remains consistent.

- **Data sharing:** The file system does not allow sharing of data. In DBMS, data can be shared easily.

- **Data concurrency:** Multiple users cannot access the same data file at the same time. Concurrent access leads to incorrect data. DBMS provides a locking system to stop such situation with request for access.

- **System crashing:** If the system where file are stored while working on them crashes there is no recovery option causing data loss. But DBMS has recovery manager which retrieves the data making it another advantage over file systems.

- **Data security:** A file system provides a password mechanism to protect the database but cannot insure the protection. This doesn't happen in the case of DBMS. DBMS has specialized features that help provide shielding to its data.

- **Backup:** DBMS creates a backup subsystem to restore the data if required.

So, these are some advantages of DBMS over File System.

5. Draw architecture of a Database System. (Marks 2)

Answer:

The diagram for Database System is drawn below:

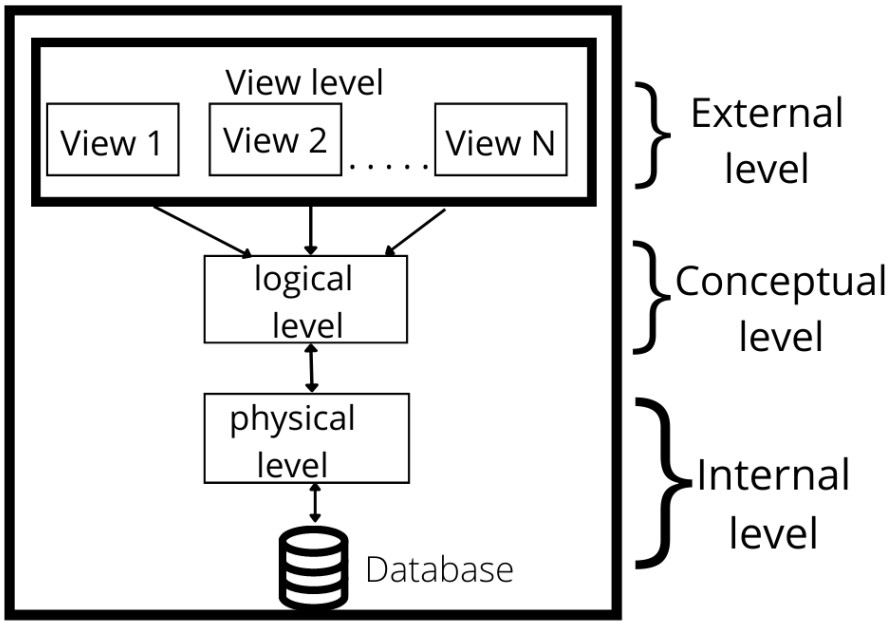

Figure: Diagram for Database system

1. **External level:** This is the highest level of database abstraction.
2. **Conceptual level:** The conceptual level describes the structure of the whole database.
3. **Internal level:** It describes how the data is actually stored in the database and provides methods to access data from the database.

6. What do you mean by Database Administrator? Explain the duties of Database Administrator. (Marks 5)

Answer:

Database Administrator: An Individual who is responsible for controlling, maintenance, coordinating, and operating database management system. A DBA makes sure an organization's database and its related applications operate functionally and efficiently by managing, securing, and taking care of database system.

Some duties of Database Administrator include:

1. Defining schema and Design of database. The DBA has control over the whole database. So, starting with defining schema to design of logical, physical level, external model design, and integrity and security are the core responsibility.

2. Granting user authority to access the database. Also manages the access level of users. Data integrity is checked and managed accurately as it protects and restricts data from unauthorized use.

3. Modifying schema and physical organization as per needed.

4. Tuning Database Performance. If user is not able to get data speedily with accuracy then it may cause organizational loss. So, DBA enhances the performance of Database by SQL commands. DBA enhances query processing by improving their speed, performance and accuracy.

6. Monitoring performance and responding to changes as per required.

So, these are some duties of database administrator.

Thank you