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Homework
Chapter - 1

1. Find out the merits and drawbacks of database/DBMS.

Advantages/Merits of Database/DBMS

① Data Abstraction:

- Data abstraction means to hide the complexity of data from the basic users.
- DBMS abstracts the data from the users, which is not useful for the users. It shows only those data which are useful to the users.

② Controlling Data Redundancy:

- Data redundancy means having multiple copies of the same data.
- DBMS controls the data redundancy & integrates all data into a single database file.
- Controlling the data redundancy also helps to save our storage space & increase retrieval and update speed.

③ Minimized Data inconsistency

- Data inconsistency means that different files may contain different info. about a particular object or person.
- If DBMS has reduced the data redundancy then the database system leads the better data consistency.
- Our data items appear only once (no redundancy) so the updated values are immediately available to all users.

④ Data Manipulation Easily

- In DBMS, Data can be manipulated easily, because data is centralized so once the data structure is defined, we can easily change in the data like-insertion, modification or deletion.

⑤ Data can be shared

- Data can be shared by multiple centralized DBMS.
- The DBMS helps to develop a friendly environment where end-user can access

and manage data.

⑥ Concurrent Access

- Several users can access the database concurrently

⑦ Data Security

- DBMS provides security means protecting data from unauthorized access.
- A database can be accessed only by proper authentication usually by verifying login & password.

Drawback of Database:

① Cost of Hardware and Software:

To run the DBMS software, we need a high-speed processor & a large memory size is required which causes expensive hardware is needed.

② Cost of Data Conversion:

When a computer file-based system is replaced with a database system,

then the data stored in data files must be converted into database files.

It's the difficult & time-consuming method to convert the data of data files into database.

③ Cost of Staff Training:

DBMS are often complex systems, so training is required for the users to use the DBMS. The organization has to be paid of amount for the training of workers to run the database management system.

2 Find out the architecture for a database system

Database Architecture

A database architecture is a representation of DBMS design. It helps to design, develop, implement & maintain the database management system. A DBMS architecture allows dividing the database system into

individual components that can be independently modified, changed, replaced and altered. It also helps to understand the components of database.

There are 3 types of DBMS architectures:

- 1) One Tier Architecture (Single Tier Architecture)
- 2) Two " "
- 3) Three " "

1-Tier Architecture

1-Tier Architecture in DBMS is the simplest architecture of Database in which the client, server and Database all reside on the same machine. A simple one tier architecture example would be anytime we install a DB in our system & access it to practice SQL queries

2-Tier Architecture

A 2-Tier Architecture in DBMS is a DB architecture where the presentation layer runs on a client (PC, Mobile, Tablet, etc) and data is stored on a server called the second tier. Two tier architecture provides added security to the DBMS as it is not exposed to the end user directly. It also provides direct & faster communication.

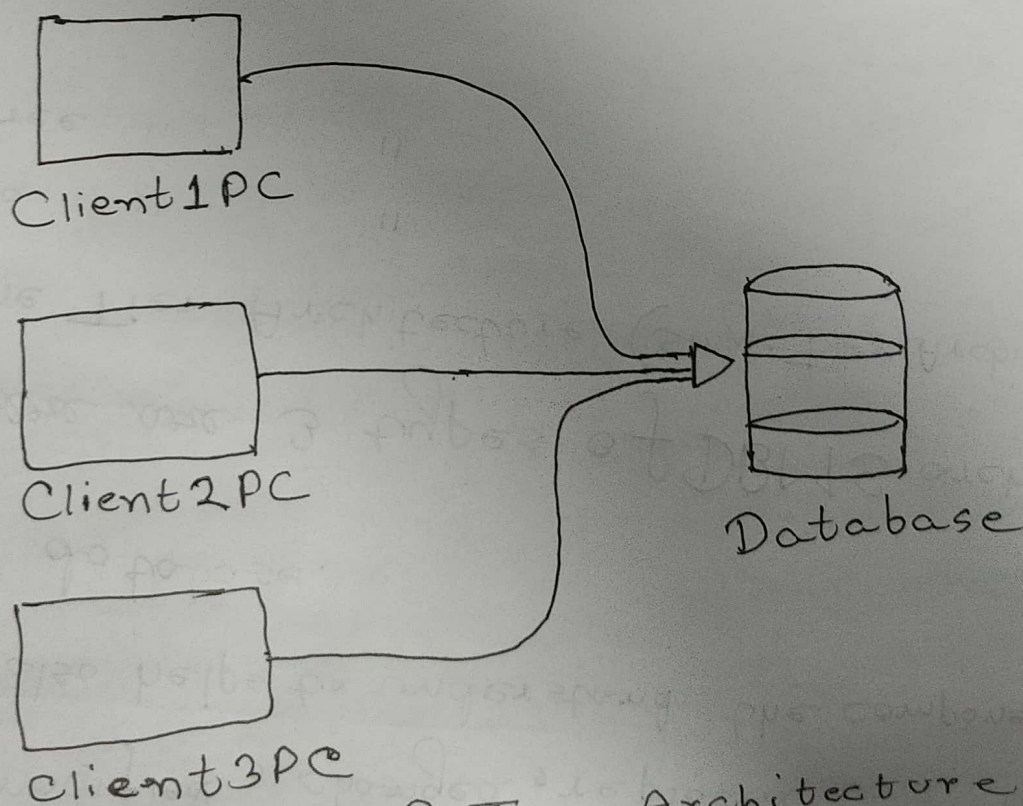


Fig: 2-Tier Architecture

3-Tier Architecture

A 3-Tier Architecture in DBMS is the most popular client server architecture in DBMS in which the development & maintenance of functional processes, logic, data access, data storage & user interface is done independently as separate modules.

It contains a presentation layer, an application layer & a database server.

3-Tier database architecture design is an extension of the 2-tier client-server architecture. It has the following layers:

- 1) Presentation (Our PC, Tablet, Mobile, etc)
- 2) Application layer (server)
- 3) Database server

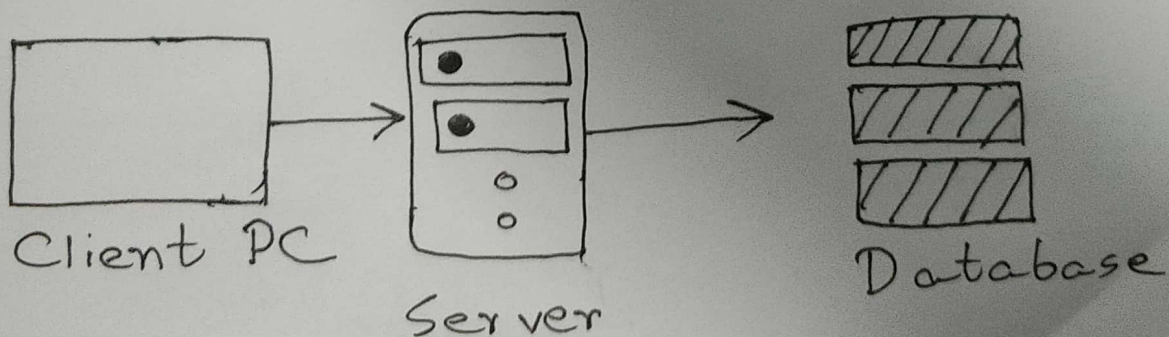


Fig: 3-Tier Architecture