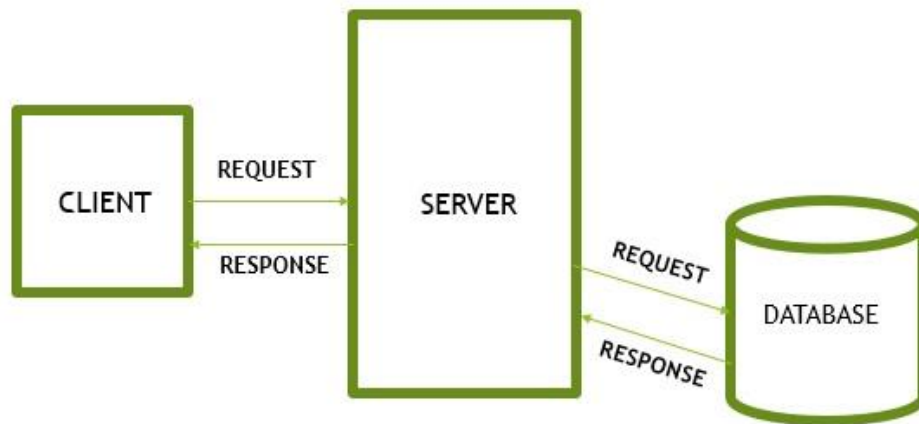




INDIAN SCHOOL AL WADI AL KABIR
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Class: X	SUBJECT: COMPUTER SCIENCE
Handout-1	TOPIC : Introduction to DBMS

CLIENT-SERVER ARCHITECTURE:



STEPS:

- Client sends request to the server for the data.
- Server in turn searches for the data in the database.
- Finally Server responds back the client with the required data.

DEFINATION OF A DATABASE:

A Database is defined as a collection of interrelated data stored together to serve multiple applications.

FEW LIVE EXAMPLE FOR DATABASE:

- ERP System
- Any email account.. etc

DBMS:

DBMS stands for Data Base Management System.

DBMS refers to a software that is responsible for storing, maintaining and utilizing databases.

A database along with a DBMS is referred to as a database system.

Why to Learn DBMS?

A database system is widely used as a repository of the data needed for an organization's data processing.

- **Real-world entity** – A modern DBMS is more realistic and uses real-world entities to design its architecture. It uses the behavior and attributes too. For example, a school database may use students as an entity and their age as an attribute.
- **Relation-based tables** – DBMS allows entities and relations among them to form tables. A user can understand the architecture of a database just by looking at the table names.
- **Isolation of data and application** – A database system is entirely different than its data. A database is an active entity, whereas data is said to be passive, on which the database works and organizes. DBMS also stores metadata, which is data about data, to ease its own process.
- **Less redundancy** – DBMS follows the rules of normalization, which splits a relation when any of its attributes is having redundancy in values. Normalization is a mathematically rich and scientific process that reduces data redundancy.
- **Consistency** – Consistency is a state where every relation in a database remains consistent. There exist methods and techniques, which can detect attempt of leaving database in inconsistent state. A DBMS can provide greater consistency as compared to earlier forms of data storing applications like file-processing systems.
- **Query Language** – DBMS is equipped with query language, which makes it more efficient to retrieve and manipulate data. A user can apply as many and as different filtering options as required to retrieve a set of data. Traditionally it was not possible where file-processing system was used.

APPLICATIONS OF DBMS:

- **ACID Properties** – DBMS follows the concepts of Atomicity, Consistency, Isolation, and Durability (normally shortened as ACID). These concepts are applied on transactions, which manipulate data in a database. ACID properties help the database stay healthy in multi-transactional environments and in case of failure.
- **Multiuser and Concurrent Access** – DBMS supports multi-user environment and allows them to access and manipulate data in parallel. Though there are restrictions on transactions when users attempt to handle the same data item, but users are always unaware of them.
- **Multiple views** – DBMS offers multiple views for different users. A user who is in the Sales department will have a different view of database than a person working in the Production department. This feature enables the users to have a concentrate view of the database according to their requirements.
- **Security** – Features like multiple views offer security to some extent where users are unable to access data of other users and departments. DBMS offers methods to impose constraints while entering data into the database and retrieving the same at a later stage. DBMS offers many different levels of security features, which enables multiple users to have different views with different features. For example, a user in the Sales department cannot see the data that belongs to the Purchase department. Additionally, it can also be managed how much data of the Sales department should be displayed to the user. Since a DBMS is not saved on the disk as traditional file systems, it is very hard for miscreants to break the code.

A **Relational Database Management System (RDBMS)** is software that:

- Enables you to implement a database with tables, columns and indexes.
- Guarantees the Referential Integrity between rows of various tables.
- Updates the indexes automatically.
- Interprets an SQL query and combines information from various tables.

RDBMS Terminology:

Before we proceed to explain MySQL database system, let's revise few definitions related to database.

- **Database:** A database is a collection of tables, with related data.
- **Table:** A table is a matrix with data. A table in a database looks like a simple spreadsheet.
- **Column (Attributes):** One column (data element) contains data of one and the same kind, for example the column postcode.
- **Row (Record):** A row (= tuple, entry or record) is a group of related data, for example the data of one subscription.
- **Primary Key:** A primary key is unique. A key value cannot occur twice in one table. With a key, you can find at most one row.
- **Foreign Key:** A foreign key is the linking pin between two tables.
- **Index:** An index in a database resembles an index at the back of a book.