

DATA SYSTEMS AND WEB

TUTORIAL-1

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Q1) Data:

Data can be referred as collection of facts, figures, numbers, words, measurements, observations or even just descriptions of things. It can be of various forms such as text data, audio data, video data, image data and map data..

For ex- video recordings of lecture,songs, age, phone number etc.

Persistent Data:

Persistent data is the data that is durable and remains intact during the course of time,which is available even after we close our application in use, in other words persistent data can be considered as the data which is relatively permanent .i.e non volatile..

For ex- university records about students graduated or taken admission , train records in railways etc.

Database:

Database can be considered as collection of data which is built and designed for a aspecific purpose and can be accessed and manipulated according to the need

For ex- University Database, Covid cases database, vaccination database etc..

DBMS:

DBMS (Database management system) is a software package that is designed to enable us to store, manage, manipulate and bend data according to our needs.

For ex- Oracle, MySql , MongoDB etc.

Q2) Using DBMS system in the organisation with larger dataset will be more suitable as by using DBMS managing and manipulation of large dataset can be handled with ease.

Q3) Web in DBMS play a much vital role as by enabling web in database we can access our data anywhere and at anytime, if database is not linked with web then one can only access DBMS of the systems where data is stored but linking web with DBMS enable us to manage and access data remotely at any part of the world..

for ex- Ecommerce market like amazon, flipkart etc.

Yes, it is important to have a user friendly interface to access DBMS as more user friendly the user interface will be more time can be saved in doing a particular operation and more efficiently one can manage, manipulate and access data in DBMS

Q4) There is a need to migrate the old file processing system to DBMS as old way of file processing has many drawbacks like data duplication, limited data sharing, security issues, hard to update all files and change programs, inconsistent data.

On other hand DBMS enable us with various features like data consistency, centralised sharing of data, data independence, ease of application development and minimal data redundancy.

Thereby abolishing all the drawbacks of old file processing system and enable us to manage and access data easily and efficiently..

Q5) Roles of people involved in handling DBMS are:

- Application programmers
- Sophisticated users
- Specialized users
- Naïve users

Role of Database Administrator (DBA)

Role of database administrator is to design the logical schema and creating structures of entire database, grant/ revoke data access permission to other users and monitors usage and create index structures to speedup query execution.

Q6)**OLTP** (on-line Transaction Processing) system is an operational system that supports transaction-oriented applications in a 3-tier architecture, maintaining data integrity in multi-access environment, have short response time, administrate day to day transaction, supports complex data models and tables and easy access to data, and help in online transaction and process query quickly on internet.

OLTP is related to DBMS as OLTP use same 3- schema architecture like DBMS to store , manage, manipulate and access data to user in order to perform smooth online transactions with short response time for each query

Q7)

- 1) Security facility: he should buy security facility to protect it data from outside attack and also he wants to give access to its data to only it administrator which can be ensured by buying this feature.
- 2) Concurrency control: He should not buy this feature as he is planning to have standalone access on one pc so no need of concurrency control is required.
- 3) Crash recovery: yes he should buy crash recovery in order to prevent loss of data at any circumstance.
- 4) view mechanism: he should not buy view mechanism as his data as his data do not consist of large no of columns only three (name, address, phone number)which can be manually accessed easily
- 5)A query language: yes he should buy this feature in order to manage, manipulate and access data easily and efficiently.

Q8)a) the three level of data abstraction are :

1. Physical level: it tells us about how the data is actually stored in database
For example in given situation physical level will contain the information the data about the student table its attributes and the memory allocation required for storing data and file organisation.
2. Conceptual level: it comprises the information that is actually stored in the database in the form of tables and relationship among data entity
So in the given case it will have information about student name, mobile number, email and picture and how these are inter related to each other so as to enable availability of data for the view level.

3. View level: this level is the highest level of abstraction, only a part of actual database is viewed by the user according to their requirement,

For example in the given case if teacher wants to know student and its picture so the view level will enable teacher with list of information about student containing its name and picture only and hiding unnecessary information i.e. email and mobile number from the teacher

So this level enable user to access only the data which is required and hiding irrelevant data from them.

- b) A schema is a description of particular collection of data, in other words it is the overall design of database.

So here the table name, student, its attributes: name address, email and picture will be considered as schema.

Whereas instance is the current state in the database, it is the information about database at that particular instant

So if at present there is a data of 30 student in the database so the instance of the database at this instant is 30 records of student, if we will add another 20 records tomorrow then for tomorrow the instance of database will be 50 records, it keeps on changing with time.