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Subject :- Data Base Management System.

## DBMS Assignment No :- 1.

Theory :-

1. what is DBMS ? Explain its advantages .

Answer :-

A database management system (DBMS) is a collection of program that manages the database structure and controls access to the data stored in the database.

\* Advantages of DBMS :-

- ① Reduction of Redundancies : → Centralized control of data by the DBA avoids unnecessary duplication of data & effectively reduces the total amount of data storage required . It also eliminates the extra processing necessary to trace the required data in a large mass of data.
- ② Elimination of Inconsistencies : → The main advantage of avoiding the duplication is the elimination of inconsistencies that tend to be present in redundant data files . Any redundancies that exist in the DBMS are controlled and the system ensures that these multiple copies are consistent.
- ③ Shared Data : → A database allows the sharing of data under its control by any number of application program or users . For example , the applications for the public relations & payroll departments can share the same data .

- (4) Integrity: → centralized control can also ensure that adequate checks are incorporated in the DBMS to provide data integrity. Data Integrity means that the data contained in the database is both accurate & consistent. Therefore, data values being entered for the storage could be checked to ensure that they fall within a specified range & are of the correct format.
- (5) Security: → Data is of vital importance to an organization and may be confidential. Such confidential data must not be accessed by unauthorized persons. The DBA who has the ultimate responsibility for the data in the DBMS can ensure that proper access procedures are followed including proper authentication schemes for access to the DBMS & additional checks before permitting access to sensitive data. Different levels of security could be implemented for various types of data & operations.
- (6) Data Independence: → The ability to modify a schema definition in one level without affecting a schema definition in the next level is called Data Independence. Application programs should be as independent as possible from details representation & storage. The DBMS can provide an abstract view of the data insulate application data from such details.
- Data Independence is usually considered from two points of view:-
- ① Physical data Independence.
  - ② Logical data Independence.

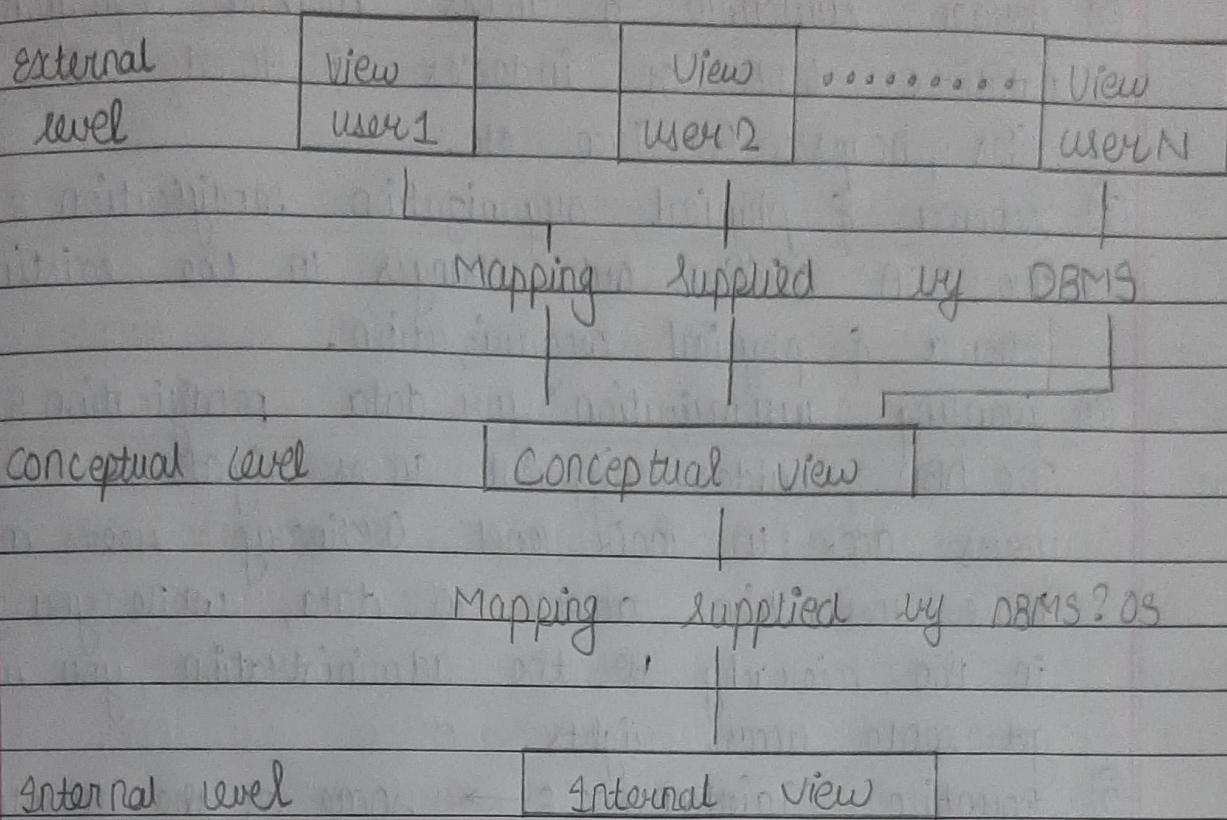
2. What is Data Abstraction? Explain its levels.

Answer:-

Database system are made-up of complex data structures. To ease the user interactions with database, the developers hide internal irrelevant details from users. This process of hiding irrelevant details from user is called data abstraction.

The three levels of abstraction are :-

- ① Physical level : → The physical level of abstraction is the lowest level of abstraction that describes how data is actually stored. The physical level or internal schema, which contains the definition of the stored record, the method of representing the data fields, express the internal view & the access aids used.
- ② Logical level : → The logical level of data abstraction defines what data are actually stored in the database & what relationships exist among those data. In relational DBMS, the conceptual schema describes all relations that are stored in the database. For example, in university database, these relations contain information about entities, such as students & faculty, & about relationships, such as students enrollment in courses.
- ③ View level : → This is the highest level of abstraction as seen by a user. This level of abstraction describes only the part of entire database which exists to simplify the interaction with the system.



\* Shows the relationship among the 3 levels of abstraction.

3. Who is Database Administrator? Explain the various functions of DBA.

Answer :-

One of the main reasons of using DBMS is to have a central control of both data & the programs accessing those data. A person who has such control over the system is called a Database Administrator (DBA).

\* The functions of DBA are :-

① Schema Definition : → The DBA creates the database schema by executing DDL statements. Schema includes the logical structure of database table like data type of attributes, length of attributes ; integrity constraints etc.

- ② Storage structure & access method definition : → Database tables or indexes & stored in flat files, heaps, B+ Tree etc.
- ③ Schema & physical organization modification : → The DBA carries out changes to the existing schema & physical organization.
- ④ Granting authorization for data modification : → The DBA provides different access rights to the users acc. to their level. Ordinary users might have restriction access to data, while you go up in the hierarchy to the administration, you will get more access rights.

- ⑤ Routine Maintenance : → Some of the routine maintenance activities of a DBA are given below:

- (a) Taking backup of database periodically.
- (b) Ensuring enough disk space is available all time.
- (c) Monitoring jobs running on the database.
- (d) Performance tuning.
- (e) Ensure that performance is not degraded by some expensive task submitted by some users.

4. Why data models are used in database? Explain its components.

Answer :-

Data models give an idea that how the final system will look like after its complete implementation. It defines the data elements & the relationships between the data elements. Data models are used to show how data is stored connected, accessed & updated in the database management system.

5. Define :-

- (1) Entity :- An entity is a person, place, thing or event about which the data are to be collected & stored. Each entity occurrence is unique & distinct.
- (2) Attribute :- An attribute is the characteristics of any Entity. Eg:- customer entity can be described by attributes such as name, phone, gender.
- (3) Relationship :- A relationship describes an association among entities. Eg:- Relationship exists between publisher & book can be described as : many books are published by a publisher.
- (4) Tuple :- Each row in a relation contains unique value which is known as a tuple.
- (5) Degree :- The total number of attributes which is the relation is called the degree of the relation.
- (6) Cardinality :- Total number of rows present in table.

6. write a note on following :-

- (1) Primary Key :- A Primary Key must contain unique values.  
It cannot have Null Value.
- (2) Alternate Key :- Is a column or grp of column in a table that uniquely identify every row in that table.
- (3) Candidate Key :- Is a set of attributes that uniquely defines tuple in tables.

④ Attribute & its types :- Attributes are the descriptive properties which are owned by each entity of an Entity set.

\* Types :-

- ① Simple : cannot be divided further.
- ② composite : composed of many other simple attributes.
- ③ single valued : can take only one value for a given entity from an entity set.
- ④ Multi-valued : can take more than one value from a given entity from an entity set.
- ⑤ derived : derived from other attributes.
- ⑥ Key : Key attributes can identify an entity uniquely in an entity set.

⑤ Strong Entity :- Always has a primary key.

Represented by a rectangle symbol.  
Contain primary key represented by underline symbol.

The member of a strong entity set is called as dominant entity set.

Primary key helps identify its members.

⑥ Generalization :- Form of abstraction that specifies that two or more entities that share common attributes can be generalised into a higher level entity type called as super-type. The lower level entity becomes the subtypes to the super-type & is dependent entities.

⑦ specialization 8- Specialization in the abstraction process of introducing new characteristics to an existing class of obj. create one or more new classes of obj. This involves taking a higher-level entity & using additional characteristics, generation lower-level entities also inherit the characteristics of the higher level entity.

7. Explain relationships with its types.

Answer :-

A relationship describes relation between entities. It is represented using diamond or rhombus.

\* There are three types of relationships that exist between Entities :-

(1) Binary Relationship :- relation between two entities.

Cardinality constraint defines the max number of relationship instance in which an entity can participate.

(a) One-to-One :- when only one instance of an entity is associated with the relationship, it is marked as '1-1'. One instance of each entity should be associated with relationship.

(b) One-to-Many :- when more than one instance of an entity is associated with a relationship it is marked as '1:N' or '1:M'. only one instance of entity on the left & more than one instance of any entity on the right can be associated with the relationship.

(c) Many - to - One :- When more than one instance of entity is associated with the relationship, it is marked as 'N:1' or 'M:1'. More than one instance of an entity on the left & only one instance of an entity on the right can be associated with the relationship.

(d) Many - to - Many :- More than one instance of an entity on the left & more than one instance of an entity on the right can be associated with the relationship.

② Recursive Relationship :- When an Entity is related with itself it is known as Recursive relationship.

③ Ternary Relationship :- Relationship of degree three is called Ternary relationship. A Ternary relationship involves three entities.

### 8. Explain DDL and DML commands.

Answer :-

① DDL command are CREATE, ALTER, DROP.

→ Create : creates object.

Eg: table in the database.

→ Alter : Alter object of the database.

Eg: modifying a column in a table.

→ Drop : Deletes objects from the database.

Eg: remove table from a sql database.

② DML command are SELECT, INSERT, UPDATE .

→ Select : This command or statement is used to retrieve data from a table .

→ Insert : Inserts new data into table .

→ update : Updates or modifies existing data into a table .