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Assignment :- 01

-DBMS-

Q.1] What is DBMS? Explain its advantages

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

ii) The DBMS serves as the intermediary between the user and the database.

iii) Advantages of DBMS

a) Reduction of Redundancies: It controls the avoids of unnecessary duplication of data.

b) Elimination of Inconsistence: Any redundancies that exist in DBMS are controlled and the system ensures that these multiple copies are constant.

c) Shared Data: A database allows the sharing of data under its control

d) Intergrity: It meas data should be correct and accurate. This also handled by DBMS.

iv) There are many more advantages of DBMS.

Q.2] What is Data Abstraction? Explain its levels.

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Ans: There are two levels in which data can be viewed: i) Data Abstraction
ii) Instances and Schema.

i) Data Abstraction: Database system are made up of complex structur. To reduce the complexity, the developers hide internal irrelevant details from user. This hiding process is known as Data Abstraction.

ii) There are three levels of Data Abstraction:

(a) Physical level:- This level is the lowest level that describes how the data is actually stored. Physical level or internal schema contains the definition of the stored record.

(b) Logical level:- This level of data abstraction defines what data are actually stored in database and which kind of relationship exist. In RDBMS, the conceptual schema or logical level describes all relations that are stored in database.

(c) View level:- This is the highest level of abstraction as seen by any user. This level describe the part of database which exist to simplify the interaction.

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

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Ans:- i) A person who has such control over the system is called Database Administrator.

ii) The main fuction of DBA is to have a central control of both data and programs accessing those data.

iii) There are many other function such as: - 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 etc.

- Storage structure and access method definition:- Database tables or indexes are stored in flat files, heaps etc.

- Schema and physical organization modification:- The DBA carries out changes to the existing schema and physical organization.

- Granting authorization for data modification:- The DBA provides different access right to users according to their level.

- Routine Maintenance:- Some of the routine maintenance of a DBA are:

→ Taking backup of database periodically.

→ Ensuring enough disk space is available all the time, etc.

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

Ans:- i) Data Model is a logical structure of Database.

ii) It describe the design of database to reflect entities, attribute etc.

iii) The purpose of data model is to represent data and to make the data understandable.

iv) The components of Data model are

(a) Entity Integrity:- Each instance of entity have a uniqueness.

(b) Referential Integrity Constraints:- The rules concerning the relationship between entity types.

(c) Domains:- The constraints on valid values for attributes.

(d) Triggering Operations: It aims at protecting the validity of attribute.

Q.5] Define:-

1) entity:- Entity is a thing which exist in real world. It is the fundamental item in any data model.

2) attribute:- An attribute is a characteristic of any entity. Each attribute is associated with a set of values called domain.

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3) relationship:- A relationship describe an association among entities.

4) Tuple:- It is nothing but a single row of a table, which contain a single record.

5) degree:- Total number of attributes which is in the relation is called degree.

6) Cardinality:- Total number of rows present in the Table.

Q.6] Write a note on following.

(a) Primary Key:- The primary key constraint uniquely identifies each record in a table. Primary key values must be unique and should not be null. A table can have only Primary Key and in the table it can consist of single or multiple fields.

(b) Alternate Key:- Alternate key or Secondary key is the key that has not been selected to be the primary key, but are candidate key.

(c) Candidate key:- Candidate key is a set of Attributes that uniquely identify tuples in a tables. Candidate Key is a super key and it is a combination of Primary and Alternate key.

d) Attribute and its types:- An attribute is a property or characteristic of an entity.

(i) Simple attribute:- An attribute which can't be further subdivided into component is a simple attribute. Example:- The rollno of student etc.

(ii) Composite attribute:- An attribute which can be splitted into component is a composite attribute. Example:- The address can be further splitted into house number, street number, city etc.

(iii) Singled value attribute:- The attribute which can take up only one value. Example:- The age of student.

(iv) Multi-valued attribute:- The attribute which can take more than one value. Example:- phone number: Landline and Mobile.

(v) Derived value:- An attribute that can be derived from other attribute. Example:- Total and Average marks of student.

(vi) Key value attribute:- An attribut which can identify an entity uniquely in an entity set. Or in simple word the value or attribute which have key is known as key value attribute.

(e) Strong Entity :- Strong Entity set always has a primary key. It is represented by a rectangle symbol. The members of strong Entity set is called as dominant entity set.

(f) Generalization :- Generalization is a bottom-up approach in which multiple lower-level entities are combined to form a single higher level entity. It is usually used to find common attributes among entities ~~have specific~~ to form generalized entity. It can also be said as the opposite of Specialization.

(g) Specialization :- Specialization is a top-down approach in which higher-level entity is divided into multiple specialized lower-level entities. These lower-level entities have specific attributes of their own.

Q.7] Explain relationship with its type.

Ans :- i) A Relationship describes relation between entities. It is represented by a diamond or rhombus.

ii) There are three types of relationship that exist between Entities.

- Binary Relationship :- Binary Relationship means relation between two entities.

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- Recursive Relationship:- When an Entity is related with itself is known as Recursive Relation.
- Ternary Relationship:- Relation of Degree 3 is known as Ternary Relationship. A Ternary relationship involves three entities.

Q.8] Explain DDL and DML commands.

Ans:- i) A database system provides a data-definition Language to specify the database schema and a data-manipulation language to express database queries and dates.

ii) DDL (Data Definition Language):- DDL is used for specifying the database schema. It is used for creating tables, schema, indexes, constraints, etc.

iii) Commands of DDL is CREATE, ALTER, DROP.

iv) DML (Data Manipulation language):- DML is a language that enable users to access or manipulate data as organized by the appropriate data model.

v) The types of access are:- Retrieving data, Insertion of data, Deletion of data, modification of data etc.

vi) Commands listed as SELECT, INSERT, UPDATE, DELETE.