

Assignment - 1

1) What is DBMS? Explain its advantages

→ A database management system (DBMS) is a collection of programs that manages database structure and control access to the data stored in the device.

→ The DBMS serve as the intermediary between the users and the database. The database structure itself is stored as a collection of files, so we can access the data in those files through DBMS.

→ The DBMS receives all application requests and translates them into the complex operation required to fulfill those requests. The DBMS hides much of the database's internal complexity from the application program and users.

→ The purpose of a database is to store and retrieve information in a way that is accurate and efficient. and to manage the different databases it contains (performance, security, availability, integrity, etc.)

* Advantages of DBMS :-

1. Reduction of Redundancy :- centralized control of data by the DBA. avoids unnecessary duplication of data. and effectively reduces the total amount of data storage required.

2. Elimination of inconsistencies :- The main advantage of avoiding duplication is the elimination of inconsistencies that tend to be present in redundant data files.

3. Shared data :- A database allows the sharing of data and its controls by any number of application programs or users.

4. Integrity :- Centralized control can also ensure that adequate checks are incorporated in the DBMS to prevent

data integrity.

5). Security:- data is of vital importance to an organization and may be confidential. Such confidential data must not be accessed by unauthorized persons.

Q2) What is Data abstraction? Explain its levels.

→ Database systems are made up of complex data structures to ease the user interaction with databases, the developers hide internal irrelevant details from users. This is called data abstraction.

• The three levels of abstraction are as:-

a) Physical level.

b) Logical level

c) View level.

a) Physical level:- The Physical level of abstraction is the lowest level of abstraction that describes how the data is actually stored. The Physical level or internal schema, which contains the definition of the stored record.

b) Logical level:- The logical level of data abstraction defines what data are actually stored in the database and what relationship exists among those data. In real-time DBMS, the conceptual schema describes all relations that are stored in the database.

c) View level:- This is the highest level of abstraction as seen by a user. This level of abstraction only the part of the entire database which exists to simplify the interaction with the system.

External level

View

user 1

View

user 2

View

user IV

Mapping supplied by DBMS

Conceptual level

Conceptual view

Mapping supplied by DBMS & OS.

Internal level

Internal view

Q 3.

Who is database administrator? Explain the various functions of DBA.

→ One of the main reasons of using DBMS is to have a central control who has such control over the system is called a database administrator (DBA).

The following are the functions of a database administrator.

- (i) Schema definition :- The database administrator creates the database schema by executing of DDL statement schema includes the logical structure of database table (relation) like data type of attributes, length of attributes, integrity constraints etc.
- (ii) Storage structure and access method definition :- database tables or indexes are stored in flat files, heaps, B+ trees etc etc.
- (iii) schema and physical organization's modification :- The DBA carrying out changes to the existing schema and physical organization.
- (iv) Granting authorization for data modification :- The DBA provides different access rights to the users according to their levels.

Ordinary users might have higher restricted access to data while if you go up in the hierarchy to the administrators you will get more access right.

• Routine Maintenance :- Some of the routine maintenance activities of DBA are given below:-

- Taking backup of database periodically.
- Ensuring enough disk space is available all the time.
- Monitoring jobs running on the database.
- Performance tuning.

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

95. Define entity, attribute, relationship, tuple, degree, cardinality.

→ i] Entity :- An entity set is a group of similar entities and these entities can have attributes.

ii] Attribute :- Attributes describe the characteristics or properties of an entity in a database. Table is defined with the first set of attributes in a relational database.

iii] Relationship :- A relationship in the context of database is a situation that exists between two relational database tables.

When one table has a foreign key of the other side.

iv] Tuple :- A single row of a table which contains a single record. For the relation is called a tuple.

v] degree :- The degree of a relationship is the number of entity types that participate (associated) in a relationship.

vi] Cardinality :- The term cardinality refers to the uniqueness of data values contained in a particular (tuple) of a database table.

96. Write a note of the following.

a) Primary key.

→ Primary key is a column or group of columns in a table that uniquely identify every row in that table. The primary key can't be a duplicate meaning the same value can't appear more than once in the table. A table cannot have more than one primary key.

b) Alternate key :-

→ Alternate key is a column or group of columns in a table that uniquely identify every row in that table. A table can have multiple choices for a primary key but only one can be set as the primary key. All the keys which are not

primary key are called an alternate key.

1) Candidate key.

→ Candidate key is a set of attributes that uniquely identify tuples in a table. Candidate key is a super key with no repeated attributes. The primary key should be selected from the candidate keys. Every table must have at least a single candidate key. A table can have multiple candidate keys but only a single primary key.

2) Attributes and its types.

→ An attribute is a property or characteristics of an entity. An entity may contain any number of attributes one of the attribute is considered as the primary key.

There are five types of attributes are as follows.

- i) simple.
- ii) composite.
- iii) single-valued.
- iv) multi-valued.
- v) derived attribute.

3) Strong entity.

→ The strong entity has a primary key. weak entities are dependent on strong entity its existence is not dependent on any other entity. Continuing our previous example. Professor is a strong entity here and the primary key is professor.

4) Generalization.

→ Generalization is a bottom-up approach in which multiple lower level entities are combined to form a single higher level entity. Generalization is usually used to find common attributes among entities to form a generalized entity. It also

We thought of as the opposite of specialization.

c) Specialization

→ Specialization is a top-down approach in which a higher-level entity is divided into multiple specialized lower-level entities in addition to sharing the attributes of the higher-level entity have specific attributes of their own. These entities have their own attributes as well.

Q4 Explain relationship with its types.

→ There are four relationship in database.

i) one to one :- one entity is associated with another entity. Ex. Each Employee is associated with an department.

ii) One to many :- One entity is associated with many other entities. For ex. A company is associated with all working employees in a branch / office / country.

iii) Many to one :- many entities are associated with only one entity.

iv) Many to Many :- Many entities are associated with many other entities.

Q8 Explain DDL and DML commands

DDL is Data Definition Language which is used to define data structures. For Example :- create table, alter table, or instruction in SQL.

DML :- DML is Data Manipulation Language which is used to manipulate data itself. For Example insert, update, delete or instructions in SQL.