

1. What is DBMS? Explain its advantages.

Ans : 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.

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

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

Advantages of DBMS

1. Shared Data : A database allows the sharing of data under its control by any number of application programs or users. For example; the application of the public relations and payroll departments can share the same data.

2. Reduction of Redundancies :- Centralized control of data by the DBA avoids unnecessary duplication of data and effectively reduces the total amount of data storage required. It also eliminates the extra processing to trace the required data in large mass of data.

3 Data Independence :- The ability of modify a schema definition in one level without affecting a schema definition in the level without affecting high level is called data independence.

Q2 What is Data Abstraction? Explain its levels

Ans Database system are made up of complex data structure. To ease the user interaction 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 as :-

1 Physical level

2 Logical level

3 View level

1 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 stored record the method of representing the data

2 logical level :- The logical level of data abstraction defines what are actually stored in the database and what relationships exist among those data. In relational DBMS, the conceptual schema

describes all relations that are stored in the database.

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.

Q3 What is Database Administrator? Explain the various functions of DBA.

Ans A person who has such control over the system is called a Database Administrator (DBA).

The following are the functions of a Database Administrator:

• Schema definition:- The Database Administrator creates the database schema by executing DDL statements. Schema includes the logical structure of database table (relation) like data type of attributes, length of attributes, integrity constraints, storage structure and access method definition:- Database tables or indexes are stored in flat files, heaps, BT Tree etc.

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

+ Granting authorization for data modification:- The DBA provides different access right to

the users according to their level ordinary users while you go up in the hierarchy to the administrator you will get more access rights.

5. Routine Maintenance :- Some of the routine maintenance

- i. Taking backup of database periodically
- ii. Ensuring enough disk space is available all the time
- iii. Performing tuning
- iv. Monitoring jobs running on the database

Q4 Why data models are used in database?

Explain its components

Ans A database model defines logical structure of Database. It describes the design of database to reflects entities, attributes, relationship among data constraints etc. Data model can be defined as an integrated collection of concepts.

i) Hierarchical Model:- This database model organises data in after adding child nodes to the parent node. In this model a child node will only have a single parent node.

ii) Network model:- In the network data model data model data are represented by collecting of records. Relationships among data are represented by lines. In this data model graph

Data structure is used.

3 Relation Model:- Relational model is the most popular model and the most extensively used model. In this model the data can be stored in the tables and this storing is called as relations, the relations can be normalised and the normalised relation values are called atomic values.

Q5 Define

1 Entity :- An entity is a person, place, things or event about which the data are to be collected and stored. An entity is the fundamental item in any data model as it is distinguishable i.e each entity occurrence is unique and distinct

2 Attribute :- An attribute is the characteristics of any entity. For eg. CUSTOMER entity can be described by attributes such as name, phone, address, gender. Each attribute is associated with a set of values called domain

3 Tuple:- It is anything but a single row of table, which contains a single record.

4 **Degree** :- The total number of attributes which in the relation is called degree of relation.

5 **Cardinality** :- Total number of rows present in the table

Q6 Write a note on following

a **Primary key** :- The primary key constraint uniquely each record in a table. Primary keys must contain unique values and cannot contain null values. A table has only one primary key.

b **Alternate key** :- Alternate key is a secondary key. If a table has more than one candidate key, one of them will become the primary key and rest of all are called alternate key. Eg:-
Eg - student contain (NAME, Roll No, ID) Here RollNo is primary key and rest of all column like NAME, ID are alternate key.

c **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 key. A table can have multiple candidate key but only one primary key.

d Attribute and its types :- Attributes are the descriptive properties which are owned by each entity of an set. There exist a specific domain or set of values.

Types of attributes

- i) ^{Simple attribute} Shared data :- A database allows the sharing of data under its control by any number of application programs or users
- ii) Composite attributes :- Composite attributes are those which are composed of many other simple attribute
- iii) Single valued attributes :- Those attributes which can take only one value for a given entity from an entity set
- iv) Multi valued attributes :- Those attributes which can be take one value for a given entity from an entity set
- v) Derived attributes :- Those attributes which can be derived from other attribute
- vi) Key attribute :- Those attributes which can identify an entity uniquely in an entity set.

e strong entity :- strong entity set always has a primary key . It represented by a rectangular symbol . It contains a primary key represented by underlining symbol . The member of a strong entity ~~form~~ ^{set} is entity called as domain entity set

f Generalization :- A generalization hierarchy is a form of abstraction that specifies that two or more entities that share common attributes can be generalized into higher level entity type called supertype . The lower level of entities become the subtypes to the supertype and is dependent entities

g Specialization :- Specialization is the abstracting process of introducing new characteristics to an existing class of objects to create one or more new classes of objects . This involves taking a higher level entity and using additional characteristics generating ^{lower} _{level} entities .

Q7 Explain relationship with its type

Ans A relationship describes relation between entities

Relationship is represented using diagram

There are three types of relationship that exists between entities

i) Binary Relationship : Binary relationship means relation between two entities cardinality constraint defines the maximum number of relationship instances in which an entity can participate

Many -to -many

cardinality ratios

many - to - one

one - to - many

one - to - one

ii) Recursive Relationship :- When an entity is related with itself it is known as Recursive relationship. In the below table example an employee can be a supervisor or be supervised, so there is a recursive relationship.

iii) Ternary Relationship : Relationship of degree three is called Ternary relationship. A ternary relationship involves three entities. In such relationships we always consider two entities together and then look upon the third.

Q8 Explain DDL and DML commands

Ans DDL - DDL stands for Data Definition language
DDL changes the structure of the table like
creating a table, altering a table etc. All the
command of DDL are auto-commited that
means its permanently save all the changes
in the database

command that come under DDL

1. CREATE :- It is used to create new table in the
database

syntax :- CREATE TABLE TABLE_NAME(column_name,
DATATYPE, ...);

2. DROP :- It is used to delete both the structure
and record stored in the table

syntax :- DROP TABLE TABLE_NAME

3. ALTER :- It is used to alter structure of the
database. This changes could be either
to modify the characteristics of an existing
attribute or probably to add a new attribute

syntax :- To add a new column in the table

ALTER TABLE table-name

ADD column-name column_definition;

To modify existing column in the table

ALTER TABLE table-name

MODIFY (column_definition);

DML :- DML stands Data Manipulation language

DML commands are used to modify the datatype
It responsible for all form of changes in database.

The command of DML is not auto-committed that means it can't permanently save all the changes in the database.

Commands that come under DML

1. INSERT :- It is used to insert data into the row of the table

2. UPDATE :- It is used to update or modify the values of a column in the table

3. DELETE :- It is used to remove one or more row from a table

Syntax :- DELETE FROM TABLE-NAME
WHERE CONDITION

g
file

Table