

1 What is DBMS? Explain its advantages.

Ans:- A database management system, or DBMS, is software designed to assist in maintaining and utilizing large collections of data.

DBMS makes it possible for end user to create, read, update and delete data in database. It is a layer between programs and data.

Advantages of DBMS :-

1] Data independence :-

Application programs should be as independent as possible.

a) from details of data representation and storage.

The DBMS can provide an

b) Abstract view of the data to insulate application code from such details.

2] Efficient data access:

A DBMS utilizes a variety of sophisticated techniques to store and retrieve data efficiently. This feature is especially important if the data is stored on external storage devices.

3] Data integrity and security :-

a) DBMS can enforce integrity constraints on the data. For example, before inserting

b) Salary information for an employee, the DBMS can check that the department

c) budget is not exceeded. Also, the DBMS can enforce access controls that govern

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- a) what data is visible to different classes of users
  - b) Data administration is D of data can offer significant improvements. Experienced professionals
  - c) who understand the nature of the data being managed and how different groups.
  - d) redundancy and fine-tuning the storage of the data to make retrieval efficient.
- Q. What is data abstraction? Explain its levels.
- Ans:- There are mainly three levels of data abstraction.
- D) Internal level :- Actual physical storage structure and access paths.
  - D) Conceptual or logical level :- structure and constraints for the entire database.
  - D) External or view level :- Describe various user views
- I). The internal / physical level :-
- Has an internal schema which describes the physical storage structure of the database.
- The internal schema uses a physical data model and describes the complete details of data storage and access paths for the database.

2) The Conceptual level :-

- Has a conceptual schema which describes the structures of the whole database for a community of users.
- The conceptual schema hides the details of physical storage structures and concentrates on describing entities, data type, relationships, user operations, and constraints.
- Usually, a representational data model is used to describe the conceptual schema when a database system is implemented model.

3) The external or view level :

- includes a number of external schemas or user views.
- Each external schema describes the part of the database that a particular user group is interested in and hides the rest of the database from that user group.

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

Ans:- Database administrators (DBAs) use specialized software to store and organize data. The role may include capacity planning, installation, configuration, database design, migration, performance monitoring, security, troubleshooting, as well as backup and data recovery.

1] Data backup :-  
① Automatic dump - facility that produces backup copy of the entire database.  
② Periodic backup :- done on periodic basis.

2] Software installation and maintenance :-

A DBA often collaborates on the initial installation and configuration of a new Oracle, SQL Server etc database. The system administrator sets up hardware and deploys the operating system for the database server then the DBA installs the database software and configures it for use.

3] Data Extraction, Transformation, and Loading :-

Known as as ETL, data extraction, transformation, and loading refers to efficiently importing large volumes of data that have been extracted from multiple systems into a data warehouse environment.

## 4) Security :-

A DBA needs to know potential weaknesses of the database software and the company's overall system and work to minimize risks. No system is one hundred percent immune to attacks, but implementing best practices can minimize risks.

In the case of a security breach or irregularity, the DBA can consult audit logs to see who has done what to the data. Audit trails are also important when working with regulated data.

## 5) Capacity Planning :-

The DBA needs to know how large the database currently is and how fast it is growing in order to make predictions about future needs. Storage refers to how much room the database takes up in server and backup space. Capacity refers to usage level.

In the company is growing quickly and adding many new users, the DBA will have to create the capacity to handle the extra workload.

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

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

Components of data model :-

Data set :-

A data set contains the logic to retrieve data from a single data source.

A data set can retrieve data from a variety of data source (for ex. a database, an existing data file, or URL/URI to an external data provider). A data model can have multiple data sets from multiple source.

Lists of values :-

A list of values is a menu of values from which report consumers can select parameter values to pass to the report.

Parameters :-

A parameter is a variable whose value can be set at runtime. The data model editor supports several parameter types.

5) Define - entity , attribute , relationship , tuple , degree , Cardinality .

Ans:-

1) Relationship :-

→ A relation is a two-dimensional table i.e. the information is arranged in rows and columns.  
→ It is called a relation because the data values in the table are not homogeneous i.e. not all the values in a row or column are of the same type or we can say that, the values in a row or column are not homogeneous.

Tuple :- It is a row. One row in a table is known as a tuple.

Attribute :- It is a column in a table.

Degree :- Number of columns in a table.

Cardinality :- Number of rows in a table.

6. Write a note on following.

a) Primary key :- A primary key, also called a primary keyword, is a key in a relational database that is unique for each record. It is a unique identifier.

b) Alternate key :- is a column that or group of column in a table that uniquely identifier every row in that table.

c) Candidate key :- is a set of attributes that uniquely identify tuple in the Table. Candidate key is a super key with no repeated attributes.

d) Attributes and its type :-

Each entity is described by a set of attributes (eg. Employee = Name, Address, Age, Salary).

Types of attributes :-

1) Simple attributes :- Simple attributes are those drawn from the atomic value domains; they are also called single-valued attributes. In the Company database, an example of this would be : Name = {John}; Age = {23}

2) Composite attributes :- Composite attributes are those that consist of a hierarchy of attributes.

Address may consist of Number, Street and Suburb. So this would be written as  $\Rightarrow$  Address = 259 + 'main street' + 'Kingsford'

③ multivalued attributes :- Multivalued attributes that have a set of values for each entity.

④ Derived attributes :- Derived attributes are attributes that contain values calculated from other attributes

⑤ Strong Entity :- A strong entity is not dependent of any other entity in the Schema. A strong entity will always have a primary key. Strong entity are represented by a single rectangle.

⑥ Generalization :- Generalization is like a bottom-up approach in which two or more entities or more entities of lower level combine to form a higher level entity if they have some attributes in common.

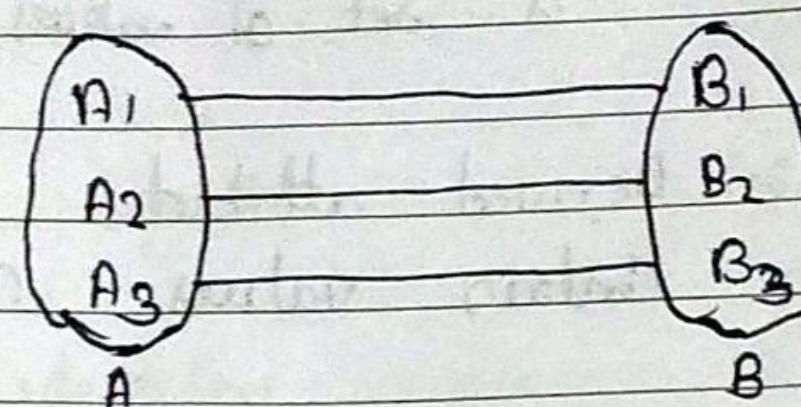
e.g. Faculty and Student can be generalized and create a higher level entity person.

⑦ Specialization :- Specialization is a process in which an entity is divided into sub-entities. It is a reverse process of generalization.

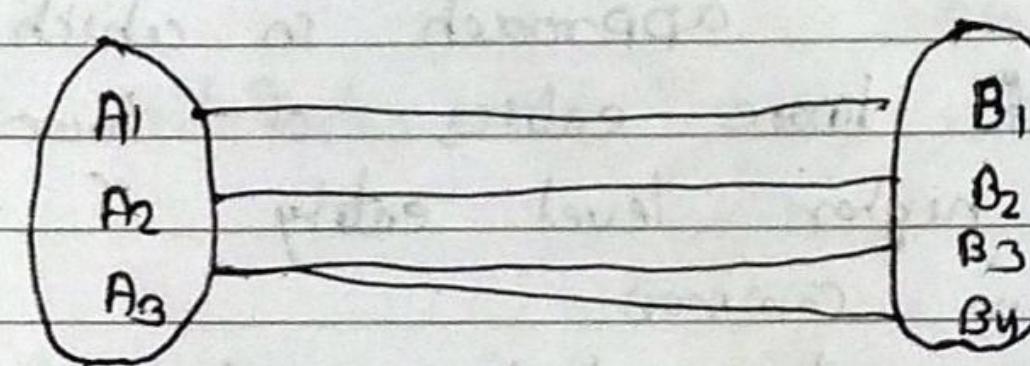
7. Explain relationship with its type.

Answer:-

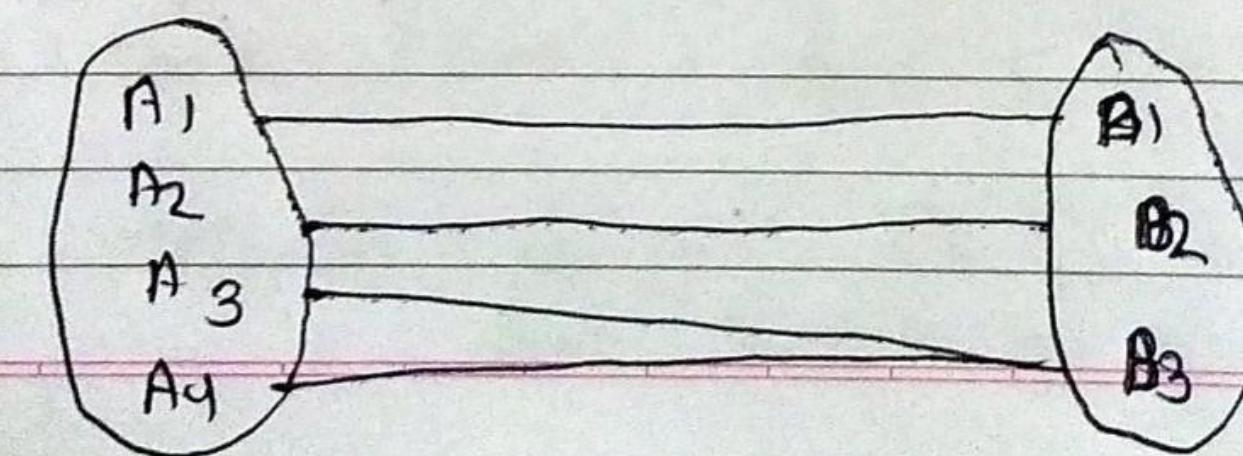
- i) One -to- one : An entity in A is associated with exactly one in B and vice versa.



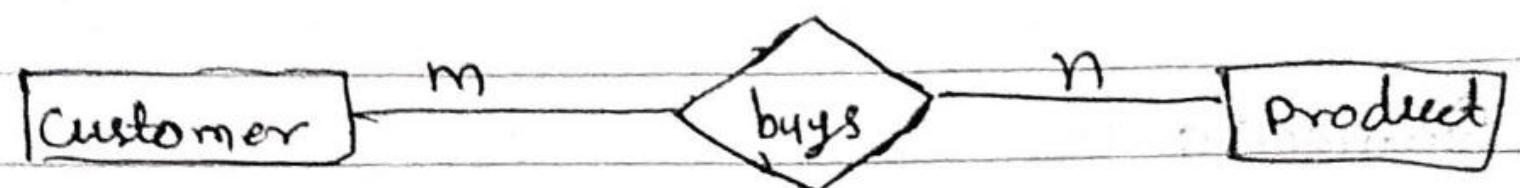
- ii) One -to- many :- An entity in A is associated with any number of entities in B. An entity in B can be associated with at most one entity in A.



- iii) Many -to-one : An entity in A is associated with at most one entity in B. An entity in B can be associated with any number of entities in A.



4) Many-to-many :- An entity in A is associated with any number of entities in B and an entity in B is associated with any number of entities in A



### 8 Explain DDL and DML Commands.

Answer :- 1) DDL :- Data Definition Language or DDL consists of the SQL Command that can be used to define the database Schema. It simply deals with description of the database schema and is used to create and modify the structure of database objects in the database.

Explain of DDL Commands :-

① CREATE - is used to create the database or its objects (like table, index, function, views, store procedure and triggers).

② DROP - is used to delete objects from the database.

③ ALTER - is used to alter the structure of the database.

④ TRUNCATE - is used to remove all records from a table, including all space allocated for the records are removed.

⑤ COMMENT :- is used to add comments to the data dictionary.

⑥ RENAME - is used to rename an object existing in the database.

⑦ DM2 commands - Data manipulation language.

Commands :-

① INSERT - is used to insert data into a table.

② UPDATE - is used to update existing data within a table.

③ DELETE - is used to delete records from a database table.