

**MOTHER TERASA COLLEGE OF ARTS & SCIENCE**

**METTUSALAI-ILLUPPUR**

**SUBJECT : DATABASE SYSTEMS**

**CLASS : II BCA**

1. . Define Database Management System.

A Database-management system consists of a collection of interrelated data and a set of programs to access those data. The collection of data, usually referred to as the database, contains information about one particular enterprise. The primary goal of a DBMS is to provide an environment that is both convenient and efficient to use in retrieving and storing database information.

2. What are the purpose of Database System ?

1. Data redundancy and inconsistency

2. Difficulty in accessing data

3. Difficulty in data isolation

4. Integrity problems

5. Atomicity problems

6. Concurrent-access anomalies

7. Security problems

### 3. Define Data Abstraction and list the levels of Data Abstraction.

A major purpose of a database system is to provide users with an abstract view of the data. That is, the system hides certain details of how the data are stored and maintained. Since many database systems users are not computer trained, developers hide the complexity from users through several levels of abstraction, to simplify users' interaction with the System: Physical level, Logical Level, View Level.

### 4. What is Network Model?

Data in the network model are represented by collections of records, and relationships among data are represented by links, which can be viewed as pointers. The records in the database are organized as collections of arbitrary graphs.

### 5. Define Hierarchical Model.

The hierarchical model is similar to the network model in the sense that data and relationships among data are represented by records and links, respectively. It differs from the network model in that the records are organized as collection of trees rather than arbitrary graphs.

### 6. Define entity and entity set.

An entity is a "thing" or "object" in the real world that is distinguishable from other objects. For example, each person is an entity, and bank accounts can be considered to be entities. The set of all entities of the same type are termed an entity set

### 7. . What is Entity-relationship data modal?

The entity-relationship data modal is based on perception of a real world that consists of a collection of basic objects, called entities, and of relationships among these objects. The overall logical structure of a database can be expressed graphically by an E-R diagram, which is built up from the following components:  
Rectangles, which represent entity sets. Ellipses, which represent attributes  
Diamonds, which represent relationships among entity sets  
Lines, which link attributes to entity sets and entity sets to relationships

## 8. Define DML.

By data manipulation language, we mean

The retrieval of information stored in the database.

The insertion of new information into the database

The deletion of information from the database

The modification of information stored in the database.

A DML is a language that enables users to access or manipulate data as organized by the appropriate data model. There are two types: Procedural DMLs and Nonprocedural DMLs.

## 9. Define Query and Query language.

A query is a statement requesting the retrieval of information. The portion of a DML that involves information retrieval is called query language.

## 10. Define DDL.

A database schema is specified by a set of definitions expressed by a special language called a data-definition language. The result of compilation of DDL statements is a set of tables that is stored in a special file called data dictionary. A data dictionary is a file that contains metadata—that is, data about data. The storage structure and access methods used by the database system are specified by a set of definitions in a special type of DDL called a data storage and definition language.

## 11. List the role of DBA.

The person who has central control over the system is called the database administrator. The functions of the DBA include the following:

Schema definition

Storage structure and access-method definition

Schema and physical-organization modification

Granting of authorization for data access

Integrity-constraint specification

## 12. Define Super key?

A super key is a set of one or more attributes that, taken collectively, allow us to identify uniquely an entity in the entity set. For example, the social-security attribute

of the entity set customer is sufficient to distinguish one customer entity from another. Similarly, the combination of customer-name and social security is a super key for the entity set customer 13. Define Attributes.

Entities are described in a database by a set of attributes. For example, the attributes account-number and balance describe one particular account in a bank.

An attribute, as used in the E-R model, can be characterized by the following attribute types.

Simple and composite attributes

Single-valued and multi valued attributes

Null attributes

Derived attributes.

14. List the different types of database-system users.

There are four different types of database-system users, differentiated by the way that they expect to interact with the system.

Application programmers

Sophisticated Users

Specialized users

15. What is Mapping Constraints?

An E-R enterprise schema may define certain constraints to which the contents of a database must conform. Two of the most important types of constraints are

Mapping Cardinalities: express the number of entities to which another entity can be associated via a relationship set. Existence Dependencies: If the existence of entity x depends on the existence y, then x is said to be existence dependent on y.

16. Define Nested Sub queries.

SQL provides a mechanism for the nesting of sub queries. A sub query is a select-from-where expression that is nested within another query. A common use of sub queries is to perform tests for set membership, set comparisons, and set cardinality.

17. Define Null Values.

SQL allows the use of null values to indicate absence of information about the value of an attribute.

18. Define Aggregate Functions.

Aggregate functions are functions that take a collection of values as input and return a single value. SQL offers five built-in aggregate functions:

- Average: avg

- Minimum: min
- Maximum: max
- Total: sum
- Count: count

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20. List out the operations in Relational Algebra functions.

- Select operation
- Project operation
- Union operation
- Set Difference operation
- Cartesian Product operation
- Rename operation
- Set-Intersection operation
- Natural-join operation
- Division
- Assignment operation

21. Define Embedded SQL.

The SQL standard defines embedding's of SQL in a variety of programming languages, such as Pascal, PL/I, Fortran, C, and COBOL. A language in which SQL queries are embedded is referred to as a host language, and the SQL structures permitted in the host language constitute embedded SQL.

22. Define Normalization.

The decomposition technique we can avoid the Pitfalls in Relational Database Design. This process is termed as normalization

23 Define BCNF.(Boyce-codd Normal Form)

A relation schema R is in BCNF with respect to a set F of FD's if for all FD's of the form  $A \rightarrow B$ , where A is contained in R and B is contained in R, at least one of the following holds: 1.  $A \rightarrow B$  is a trivial FD

A is a super key for schema R.

#### 24. Define Functional Dependency.

Functional dependencies are constraints on the set of legal relations. They allow us to express facts about the enterprise that we are modeling with our database. Syntax: A → B e.g.) account no → balance for account table.

#### 25..Define Triggers.

A trigger is a statement that is executed automatically by the system as a side effect of a modification to the database. To design a trigger mechanism, we must meet two requirements:

1. Specify the conditions under which the trigger is to be executed.
2. Specify the actions to be taken when the trigger executes