Friend Class A friend class can access private and protected members of other class in which it is declared as friend. It is sometimes useful to allow a particular class to access private members of other class. For example a LinkedList class may be allowed to access private members of Node.

```
class Node
{
private:
   int key;
   Node *next;
   /* Other members of Node Class */

   friend class LinkedList; // Now class  LinkedList can
                            // access private members of Node
};
```

Friend Function Like friend class, a friend function can be given special grant to access private and protected members. A friend function can be:

a) A method of another class

b) A global function

```
class Node
{
private:
   int key;
   Node *next;

   /* Other members of Node Class */
   friend int LinkedList::search(); // Only search() of linkedList
                                    // can access internal members
};
```

1. What is database?

A database is a collection of information that is organized. So that it can easily be accessed, managed, and updated.

2. What is DBMS?

DBMS stands for Database Management System. It is a collection of programs that enables user to create and maintain a database.

3. What is a Database system?

The database and DBMS software together is called as Database system.

4. What are the advantages of DBMS?

I. Redundancy is controlled.

II. Providing multiple user interfaces.

III. Providing backup and recovery

IV. Unauthorized access is restricted.

V. Enforcing integrity constraints.

5. What is normalization?

It is a process of analysing the given relation schemas based on their Functional Dependencies (FDs) and primary key to achieve the properties
(1).Minimizing redundancy, (2). Minimizing insertion, deletion and update anomalies.

6. What is Data Model?
A collection of conceptual tools for describing data, data relationships data semantics and constraints.

7. What is E-R model?

This data model is based on real world that consists of basic objects called entities and of relationship among these objects. Entities are described in a database by a set of attributes.

8. What is Object Oriented model?

This model is based on collection of objects. An object contains values stored in instance variables with in the object. An object also contains bodies of code that operate on the object. These bodies of code are called methods. Objects that contain same types of values and the same methods are grouped together into classes.

9. What is an Entity?
An entity is a thing or object of importance about which data must be captured.

10. What is DDL (Data Definition Language)?

A data base schema is specifies by a set of definitions expressed by a special language called DDL.

11. What is DML (Data Manipulation Language)?

This language that enable user to access or manipulate data as organised by appropriate data model. Procedural DML or Low level: DML requires a user to specify what data are needed and how to get those data. Non-Procedural DML or High level: DML requires a user to specify what data are needed without specifying how to get those data

12. What is DML Compiler?

It translates DML statements in a query language into low-level instruction that the query evaluation engine can understand.

13. What is Query evaluation engine?

It executes low-level instruction generated by compiler.

14. What is Functional Dependency?

Functional Dependency is the starting point of normalization. Functional Dependency exists when a relation between two attributes allows you to uniquely determine the corresponding attribute's value.

15. What is 1 NF (Normal Form)?

The first normal form or 1NF is the first and the simplest type of normalization that can be implemented in a database. The main aims of 1NF are to:

1. Eliminate duplicative columns from the same table.

2. Create separate tables for each group of related data and identify each row with a unique column (the primary key).

16. What is Fully Functional dependency?

A functional dependency X Y is full functional dependency if removal of any attribute A from X means that the dependency does not hold any more.

17. What is 2NF?

A relation schema R is in 2NF if it is in 1NF and every non-prime attribute A in R is fully functionally dependent on primary key.

18. What is 3NF?

A relation is in third normal form if it is in Second Normal Form and there are no functional (transitive) dependencies between two (or more) non-primary key attributes.

19. What is BCNF (Boyce-Codd Normal Form)?

A table is in Boyce-Codd normal form (BCNF) if and only if it is in 3NF and every determinant is a candidate key.

20. What is 4NF?

Fourth normal form requires that a table be BCNF and contain no multi-valued dependencies.

21. What is 5NF?

A table is in fifth normal form (5NF) or Project-Join Normal Form (PJNF) if it is in 4NF and it cannot have a lossless decomposition into any number of smaller tables.

22. What is a query?

A query with respect to DBMS relates to user commands that are used to interact with a data base.

23. What is meant by query optimization?

The phase that identifies an efficient execution plan for evaluating a query that has the least estimated cost is referred to as query optimization.

24. What is an attribute?
It is a particular property, which describes the entity.

25. What is RDBMS?

Relational Data Base Management Systems (RDBMS) are database management systems that maintain data records and indices in tables.

26. What's difference between DBMS and RDBMS?

DBMS provides a systematic and organized way of storing, managing and retrieving from collection of logically related information. RDBMS also provides what DBMS provides but above that it provides relationship integrity.

27. What is SQL?

SQL stands for Structured Query Language. SQL is an ANSI (American National Standards Institute) standard computer language for accessing and manipulating database systems. SQL statements are used to retrieve and update data in a database.

28. What is Stored Procedure?

A stored procedure is a named group of SQL statements that have been previously created and stored in the server database.

29. What is a view?

A view may be a subset of the database or it may contain virtual data that is derived from the database files but is not explicitly stored.

30. What is Trigger?

A trigger is a SQL procedure that initiates an action when an event (INSERT, DELETE or UPDATE) occurs.

31. What Is Index?

An index is a physical structure containing pointers to the data.

32. What is extension and intension?

Extension -It is the number of tuples present in a table at any instance. This is time dependent.

Intension -It is a constant value that gives the name, structure of table and the constraints laid on it.

33. What do you mean by atomicity and aggregation?

Atomicity-Atomicity states that database modifications must follow an "all or nothing" rule. Each transaction is said to be "atomic." If one part of the transaction fails, the entire transaction fails.

Aggregation - A feature of the entity relationship model that allows a relationship set to participate in another relationship set. This is indicated on an ER diagram by drawing a dashed box around the aggregation.

34. What is RDBMS KERNEL?

Two important pieces of RDBMS architecture are the kernel, which is the software, and the data dictionary, which consists of the system- level data structures used by the kernel to manage the database.

35. Name the sub-systems of a RDBMS?

I/O, Security, Language Processing, Process Control, Storage Management, Logging and Recovery, Distribution Control, Transaction Control, Memory Management, Lock Management.

36. How do you communicate with an RDBMS?

You communicate with an RDBMS using Structured Query Language (SQL)

37. Disadvantage in File Processing System?

·   Data redundancy & inconsistency.

·   Difficult in accessing data.

·   Data isolation.

·   Data integrity.

·   Concurrent access is not possible.

·   Security Problems.

38. What is VDL (View Definition Language)?

It specifies user views and their mappings to the conceptual schema.

39. What is SDL (Storage Definition Language)?

This language is to specify the internal schema. This language may Specify the mapping between two schemas.

40. Describe concurrency control?

Concurrency control is the process managing simultaneous operations against a database so that database integrity is no compromised. There are two approaches to concurrency control.

The pessimistic approach involves locking and the optimistic approach involves versioning.

41. Describe the difference between homogeneous and heterogeneous distributed database?

A homogenous database is one that uses the same DBMS at each node. A heterogeneous database is one that may have a different DBMS at each node.

42. What is a distributed database?

A distributed database is a single logical database that is spread across more than one node or locations that are all connected via some communication link.

43. Explain the difference between two and three-tier architectures?

Three-tier architecture includes a client and two server layers.

The application code is stored on the application server and the database is stored on the database server. A two-tier architecture includes a client and one server layer. The database is stored on the database server.

44. Briefly describe the three types of SQL commands?

Data definition language commands are used to create, alter, and drop tables. Data manipulation commands are used to insert, modify, update, and query data in the database. Data control language commands help the DBA to control the database.

45. List some of the properties of a relation?

Relations in a database have a unique name and no multivalued attributes exist. Each row is unique and each attribute within a relation has a unique name. The sequence of both columns and rows is irrelevant.

46. Explain the differences between an intranet and an extranet?

An Internet database is accessible by everyone who has access to a Web site. An intranet database limits access to only people within a given organization.

47. What is SQL Deadlock?

Deadlock is a unique situation in a multi user system that causes two or more users to wait indefinitely for a locked resource.

48. What is a Catalog?

A catalog is a table that contains the information such as structure of each file, the type and storage format of each data item and various constraints on the data .The information stored in the catalog is called Metadata.

49. What is data ware housing & OLAP?

Data warehousing and OLAP (online analytical processing) systems are the techniques used in many companies to extract and analyze useful information from very large databases for decision making .