DBMS

1. What is database?

A database is a logically coherent collection of data with some inherent meaning, representing some aspect of real world and which is designed, built and populated with data for a specific purpose.

2. What is DBMS?

It is a collection of programs that enables user to create and maintain a database. In other words it is general-purpose software that provides the users with the processes of defining, constructing and manipulating the database for various applications.

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. Describe the three levels of data abstraction?

The are three levels of abstraction:

1. Physical level: The lowest level of abstraction describes how data are stored.

2. Logical level: The next higher level of abstraction, describes what data are stored in database and what relationship among those data.
3. View level: The highest level of abstraction describes only part of entire database

6. What is Data Independence?

Data independence means that "the application is independent of the storage structure and access strategy of data". In other words, The ability to modify the schema definition in one level should not affect the schema definition in the next higher level.
Two types of Data Independence:

1. Physical Data Independence: Modification in physical level should not affect the logical level.
2. Logical Data Independence: Modification in logical level should affect the view level.

NOTE: Logical Data Independence is more difficult to achieve

7. What is the job of DBA?
Ans: A database administrator is a person or a group responsible for authorizing access to the database, for coordinating and monitoring its use, and for acquiring s/w and h/w resources as needed.

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9. What are different types of end users?

1. Casual end-users
2. Naive or parametric end users
3. Sophisticated end users
4. Stand alone users.

10. What are the advantages of using a dbms?

1. Controlling redundancy.
2. Restricting unauthorized access.
3. Providing persistent storage for program objects and data structures.
4. Permitting inferencing and actions using rules.
5. Providing multi-user interfaces.
6. Representing complex relationships among data.
7. Enforcing integrity constraints.
8. Providing backups and recovery.

11. What are the disadvantages of using a dbms?

1. High initial investments in h/w, s/w, and training.
2. Generality that a DBMS provides for defining and processing data.
3. Overhead for providing security, concurrency control, recovery, and integrity functions.

12. What is a data model?

It is a collection of concepts that can be used to describe the structure of a database. It provides necessary means to achieve this abstraction. By structure of a database we mean the data types, relations, and constraints that should hold on the data.

13. What are different categories of data models?

1. High-level or conceptual data models.
2. Representational data models.
3. Low-level or physical data models.

High level data models provide the concepts that are close to the way many users perceive data.
Representational data models are provide concepts that provide the concepts that may be understood by end users but that are not too far removed from organization of data in the database.
Physical data models describe the details of how data is stored in the computers.

14. What is schema?

The description of a data base is called the database schema , which is specified during database design and is not expected to change frequently . A displayed schema is called schema diagram .We call each object in the schema as schema construct.

15. What are types of schema?

1. internal schema.
2. Conceptual schema.
3. External schemas or user views.

16. What is Data independency?

Data independency is defined as the capacity to change the conceptual schema without having to change the schema at the next higher level. We can define two types of data independence:
1. Logical data independence.
2. Physical data independence.

LDI is the capacity to change the conceptual schema without having to change external schemas or application programs.
PDI is the capacity to change the internal schema without having to change conceptual (or external) schemas.

17. 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

18. What are different DBMS languages?

Ans:

1. DDL (Data definition language)
2. SDL (Storage definition language)
3. VDL (View definition language)
4. DML (Data manipulation language)

19. What is difference between a super key, a key, a candidate key and a primary key?

A super key specifies a uniqueness constrain that no two distinct tuples in a state can have the same value for the super key. Every relation has at least one default super key. A key is a minimal super key or the subset of the super key which is obtained after removing redundancy. A relation schema may have more than one key .In this case each key is called a candidate key. One of the candidate key with minimum number of attributes is chosen as primary key.

20. What is a foreign key?

A key of a relation schema is called as a foreign key if it is the primary key of some other relation to which it is related to.

21.What is a weak entity types?

The entity types that do not have key attributes of their own are called weak entity types. Rests are called strong entity types .The entity that gives identity to a weak entity is called owner entity. And the relationship is called identifying relationship. A weak entity type always has a total participation constraint with respect to its identifying relationship.

22. What is RDBMS?

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

23. 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.

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26. What is a transaction?
A transaction is a logical unit of database processing that includes one or more database access operations.

27. What are the properties of transaction?
1. Atomicity 2. Consistency preservation 3. Isolation 4. Durability (permanence)

28. What is a lock?
A lock is a variable associated with a data item that describes the status of the item with respect to the possible operations that can be applied to it.

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 are E-R diagrams?

E-R diagram also termed as Entity-Relationship diagram shows relationship between various tables in the database.

32. How many types of relationship exist in database designing?

There are three major relationship models:-
One-to-one
One-to-many
Many-to-many

33. What is normalization?

There is set of rules that has been established to aid in the design of tables that are meant to be connected through relationships. This set of rules is known as Normalization.
Benefits of Normalizing your database include:
=>Avoiding repetitive entries
=>Reducing required storage space
=>Preventing the need to restructure existing tables to accommodate new data.
=>Increased speed and flexibility of queries, sorts, and summaries

34. What is denormalization ?

Denormalization is the process of putting one fact in numerous places (its vice-versa of normalization).Only one valid reason exists for denormalizing a relational design – to enhance performance.The sacrifice to performance is that you increase redundancy in database.

35. What is Cardinality ratio?

The cardinality ratio for a binary relationship specifies the number of relationship instances that an entity can participate in.

36. What is a Participation constraint?

The participation constraint specifies whether the existence of an entity depends on its being related to another entity via the relationship type. This is of two types: 1. Total participation. 2. Partial participation.

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38.What is RAID Technology?

Redundant array of inexpensive (or independent) disks. The main goal of raid technology is to even out the widely different rates of performance improvement of disks against those in memory and microprocessor. Raid technology employs the technique of data striping to achieve higher transfer rates. 42. What is Hashing technique? Ans: This is a primary file organization technique that provides very fast access to records on certain search conditions. The search condition must be an equality condition on a single field, called hash field of the file. 1. Internal hashing 2. External hashing 3. Extendible hashing 4. Linear hashing 5. Partitioned hashing

39. What are indexes? What are B-Trees?

Index makes your search faster. So defining indexes to your database will make your search faster.Most of the indexing fundamentals use “B-Tree” or “Balanced-Tree” principle. It’s not a principle that is something is created by SQL Server or ORACLE but is a mathematical derived fundamental.In order that “B-tree” fundamental work properly both of the sides should be balanced.

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.