**What is data?**

Whatever we are inputting from the keyword is known as Data. It can also be called as RAWFACTS/FIGURES.

**What is database?**

A database is a organized collection of data stored and retrieved digitally from a remote or local computer.

**What is DBMS?**

DBMS stands for Database Management System, it is a system software responsible for the creation, retrieval, updating and management of the database.

**Diff between DBMS and RDBMS?**

|  |  |
| --- | --- |
| **DBMS** | **RDBMS** |
| The data is saved in the file formats | The data is saved in table format. |
| Individual data element access. | Multiple data elements are available at the same time. |
| There is no support for distributed databases. | Databases support for distributed systems. |
| It provides support only for a single user at a time. | RDMS provides support for multiple users at a time. |
| Designed to handle small amounts of data. | Designed to deal with vast amount of data. |

**What are the rules it must have to be called as a RDBMS?**

EF Codd the famous mathematician has introduced12 rules for the relation model for databased commonly know as codd’s rule. The rules mainly define what is required for a DBMS for it to be considered relational i.e. RDMS.

* Information Rule
* Guaranteed access rule
* Systematic treatment of null values
* Dynamic on line catalogue based on the relational model
* Data sublanguage rule
* View updating rule
* High level insert, update and delete
* Physical data independence
* Logical data independence
* Distribution independence
* Integrity independence
* No subversion rule

**What are the various types of Keys?**

Primary Key

Primary Key uniquely identifies each row in a table. It must contain unique values and has an implicit no null constraint.

Foreign Key

Foreign Key comprises of single or collection of fields in a table that essentially refers to the primary key of another table.

Candidate Key

It is an attribute of set of attributes that can uniquely identify a tuple.

Super Key

It is an attribute set that can uniquely identify a table. A super key is a superset of a candidate key.

**What is SQL Joins? Explain various types of Joins?**

SQL Join clause is used to combine records from two or more fields in a SQL database based on related columns between the two.

Inner Join

Retrieves record that have matching values in both tables involved in the join.

Left Outer Join –

Retrieves all the records from the left and matched rows from the right.

Full Outer Join

Retrieves all the records where there is a match in either the left or right table.

Self Join

Is a case of regular join where a table is joined to itself based on some relation between its columns.

Cross Join

Can we defined as a cartesian product of the 2 tables included in the join.

What is Normalization?

Represents the way of organizing structure data in the database efficiently. It includes the creation of tables, establishing relationships between them and defining rules for those relationships. Inconsistency & redundancy can be kept in check on these rules, hence adding flexibility to the database.

What is Denormalization?

It is the inverse process of normalization, where the normalized schema is converted into a schema that has redundant information.

What are the various types of Normal Forms?

1NF – A relation is in 1NF if it contains an atomic value.

2NF – A relation will be in 2NF if it is in 1NF and all non-key attributes are fully functional dependent on the primary key.

3NF – A relation will be in 3NF if its in 2NF and no transition dependency exists.

BCNF – A strong definition of 3NF is also called Boyce Codd Normal Form

4NF – A relation will be in 4NF it is in 3NF and does not contain any join dependency.

5NF – A relation is in 5NF if its in 4NF and does not contain any join dependency.

What is ACID properties?

They are database transaction properties which are used for guarantying data validity in case of error & failures.

A -> Atomicity

C -> Consistency

I -> Isolation

D -> Durability