Define Database:

A database is an organized collection of structured information, or data, typically stored electronically in a computer system. A database is usually controlled by a database management system (DBMS). Together, the data and the DBMS, along with the applications that are associated with them, are referred to as a database system, often shortened to just database.

Relational Database (RDBMS)

A relational database is a type of database that stores and provides access to data points that are related to one another. Relational databases are based on the relational model, an intuitive, straightforward way of representing data in tables. In a relational database, each row in the table is a record with a unique ID called the key. The columns of the table hold attributes of the data, and each record usually has a value for each attribute, making it easy to establish the relationships among data points.

Difference between record and attribute

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Difference between entity and attribute

Entity and attribute are the most common terms of DBMS. The fundamental difference between the entity and attribute is that an **entity** is an object that exists in a real-world and can be easily distinguished among all other objects of real-world whereas, the **attributes** define the characteristics or the properties of an entity on the basis of which it is easily distinguishable among other entities of the real-world.

Difference between primary and foreign key

A primary key is used to ensure that data in the specific column is unique. A column cannot have NULL values. It is either an existing table column or a column that is specifically generated by the database according to a defined sequence.

A foreign key is a column or group of columns in a relational database table that provides a link between data in two tables. It is a column (or columns) that references a column (most often the primary key) of another table.

Define Table.

Table also known as a relation, in a relational database contains one or more data categories in columns or attributes. Each row, also called a record or tuple, contains a unique instance of data -- or key -- for the categories defined by the columns. Each table has a unique primary key that identifies the information in a table. The relationship between tables can be set via the use of foreign keys -- a field in a table that links to the primary key of another table.

What is RDBMS? Give Example.

A relational database management system (RDBMS) is a program used to create, update, and manage relational databases. Some of the most well-known RDBMSs include MySQL, PostgreSQL, MariaDB, Microsoft SQL Server, and Oracle Database.

What is SQL?

Structured query language (SQL) is a programming language for storing and processing information in a relational database. A relational database stores information in tabular form, with rows and columns representing different data attributes and the various relationships between the data values. You can use SQL statements to store, update, remove, search, and retrieve information from the database. You can also use SQL to maintain and optimize database performance.

Normalization Process:

Database normalization is the process of organizing the attributes of the database to reduce or eliminate data redundancy (having the same data but at different places).

Redundancy:

Data redundancy unnecessarily increases the size of the database as the same data is repeated in many places. Inconsistency problems also arise during insert, delete and update operations.

Functional Dependency:

Functional Dependency: Functional Dependency is a constraint between two sets of attributes in relation to a database. A functional dependency is denoted by an arrow (→). If an attribute A functionally determines B, then it is written as A → B.

For example, employee_id → name means employee_id functionally determines the name of the employee. As another example in a timetable database, {student_id, time} → {lecture_room}, student ID and time determine the lecture room where the student should be.