

1) What is a Database Management System (DBMS)?

A Database Management System (DBMS) is software that manages the storage, retrieval, and updating of data in a structured way. It provides an interface for users and applications to interact with the database, ensuring efficiency, security, and data consistency.

2) What are the advantages of using a DBMS?

The main advantages of DBMS include:

- Data security
- Reduced data redundancy
- Data consistency
- Multi-user support
- Backup and recovery
- Efficient query processing

3) What is a relation in DBMS?

A relation in DBMS refers to a table with rows (tuples) and columns (attributes). Each relation has a unique name, and the rows represent records while the columns represent fields.

Example: A 'Student' table with attributes RollNo, Name, Age.

4) What is a primary key? Explain with real world example.

A primary key is a column (or set of columns) in a relation that uniquely identifies each tuple (row). It cannot contain NULL values and must be unique.

Example: In a 'Student' table, RollNo can be a primary key since each student has a unique roll number.

5) What is a foreign key? Explain with real world example.

A foreign key is a column in one table that refers to the primary key of another table. It is used to maintain referential integrity.

Example: A 'Marks' table has RollNo as a foreign key which references the RollNo in the 'Student' table.

6) What are joins in DBMS?

Joins are operations used to combine rows from two or more tables based on a related column between them.

7) Explain various types of joins with examples.

- Inner Join: Returns records that have matching values in both tables.
- Left Join (Left Outer Join): Returns all records from the left table, and matched records from the right table.
- Right Join (Right Outer Join): Returns all records from the right table, and matched records from the left table.
- Full Join (Full Outer Join): Returns all records when there is a match in either left or right table.

8) What is inner join?

An inner join returns only the records that have matching values in both tables.

Example: Joining 'Student' and 'Marks' tables on RollNo will return only those students who have marks entered in the 'Marks' table.