

# DBMS interview questions and answer

*by*

**Love Kumar**

[Website](#), [LinkedIn](#), [github](#)

# Contents

<b>1</b>	<b>DBMS interview questions</b>	<b>1</b>
1.1	Introduction . . . . .	1
1.1.1	What is Data? . . . . .	1
1.1.2	What is a database? . . . . .	1
1.1.3	What is DBMS? . . . . .	2
1.1.4	What is a database system? . . . . .	2
1.1.5	What are the different types of DBMS. . . . .	2
1.1.6	What is a database system? . . . . .	3
<b>2</b>	<b>Joins, Key and normalisation</b>	<b>4</b>
2.1	SQL Joins . . . . .	4
2.1.1	INNER JOIN . . . . .	4
2.1.2	LEFT JOIN . . . . .	4
2.1.3	RIGHT JOIN . . . . .	5
2.1.4	FULL OUTER JOIN or FULL JOIN . . . . .	5
2.1.5	Self JOIN . . . . .	5
2.2	Key . . . . .	5
2.2.1	PRIMARY KEY . . . . .	5

2.2.2	FOREIGN KEY . . . . .	6
2.3	Normalization . . . . .	6
2.3.1	1st Normal Form (1NF) . . . . .	6
2.3.2	2nd Normal Form (2NF) . . . . .	6
2.3.3	3rd Normal Form (3NF) . . . . .	7
2.3.4	Boyce Codd Normal Form (BCNF) . . . . .	7
<b>3</b>	<b>sql query</b>	<b>8</b>
3.1	creating table . . . . .	8

# Chapter 1

## DBMS interview questions

### 1.1 Introduction

#### 1.1.1 What is Data?

Data is a collection of a distinct small unit of information. It can be used in a variety of forms like text, numbers, media, bytes, etc. it can be stored in pieces of paper or electronic memory, etc.

#### 1.1.2 What is a database?

A database is an organized collection of data, so that it can be easily accessed and managed.

DBMS is used for extraction of data from the database in the form of the queries.

There are many databases available like MySQL, Sybase, Oracle, MongoDB, Informix, PostgreSQL, SQL Server, etc.

Modern databases are managed by the database management system (DBMS).

### **1.1.3 What is DBMS?**

DBMS is a software in which data is stored in a more secure way as compared to the file-based system.

A software application that interacts with databases, applications, and users to capture and analyze the required data. The data stored in the database can be retrieved, deleted and modified based on the client's requirement.

### **1.1.4 What is a database system?**

The collection of database and DBMS software together is known as a database system.

### **1.1.5 What are the different types of DBMS.**

- **Relational DBMS (RDBMS):** This type of DBMS, uses a structure which allows the users to access data in relation to another piece of data in a database. In this type of DBMS, data is stored in the form of tables.
- **Hierarchical DBMS:** As the name suggests, this type of DBMS has a structure similar to that of a tree, wherein the nodes represent records and the branches of the tree represent fields.
- **Network DBMS:** This type of DBMS supports many-to-many relations wherein multiple member records can be linked.

- **Object-oriented DBMS:** Uses small individual software called object to store pieces of data and the instructions for the actions to be done with the data.

#### 1.1.6 What is a database system?

# Chapter 2

## Joins, Key and normalisation

### 2.1 SQL Joins

A JOIN clause is used to combine rows from two or more tables, based on a related column between them.

#### 2.1.1 INNER JOIN

The INNER JOIN keyword selects records that have matching values in both tables.

#### 2.1.2 LEFT JOIN

The LEFT JOIN keyword returns all records from the left table (table1), and the matched records from the right table (table2). The result is NULL from the right side, if there is no match.

### **2.1.3 RIGHT JOIN**

The RIGHT JOIN keyword returns all records from the right table (table2), and the matched records from the left table (table1). The result is NULL from the left side, when there is no match.

### **2.1.4 FULL OUTER JOIN or FULL JOIN**

The FULL OUTER JOIN keyword returns all records when there is a match in left (table1) or right (table2) table records.

### **2.1.5 Self JOIN**

A self JOIN is a regular join, but the table is joined with itself.

## **2.2 Key**

The UNIQUE constraint ensures that all values in a column are different.

Both the UNIQUE and PRIMARY KEY constraints provide a guarantee for uniqueness for a column or set of columns.

A PRIMARY KEY constraint automatically has a UNIQUE constraint.

### **2.2.1 PRIMARY KEY**

The PRIMARY KEY constraint uniquely identifies each record in a table. Primary keys must contain UNIQUE values, and cannot contain NULL values. A table can have only ONE primary key; and in the table, this primary key can consist of single or multiple columns (fields).



## **2.2.2 FOREIGN KEY**

A FOREIGN KEY is a key used to link two tables together.

A FOREIGN KEY is a field (or collection of fields) in one table that refers to the PRIMARY KEY in another table.

The table containing the foreign key is called the child table, and the table containing the candidate key is called the referenced or parent table.

## **2.3 Normalization**

It is the processes of reducing the redundancy of data in the table and also improving the data integrity.

### **2.3.1 1st Normal Form (1NF)**

- Each table cell should contain a single value.
- Each record needs to be unique.

### **2.3.2 2nd Normal Form (2NF)**

The first condition in the 2nd NF is that the table has to be in 1st NF. The table also should not contain partial dependency. Here partial dependency means the proper subset of candidate key determines a non-prime attribute.

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

### 2.3.3 3rd Normal Form (3NF)

A relation will be in 3NF if it is in 2NF and no transition dependency exists.

### 2.3.4 Boyce Codd Normal Form (BCNF)

- BCNF is the advance version of 3NF. It is stricter than 3NF.
- A table is in BCNF if every functional dependency  $X \rightarrow Y$ ,  $X$  is the super key of the table.
- For BCNF, the table should be in 3NF, and for every FD, LHS is super key.

# Chapter 3

## sql query

### 3.1 creating table

```
CREATE TABLE Persons (  
    ID int NOT NULL,  
    LastName varchar(255) NOT NULL,  
    FirstName varchar(255) NOT NULL,  
    Age int  
);
```