

## TOP SQL Interview Questions \*\*

Ques-1 What is DataBase?

Ans-1 A DataBase is an organized collection of data, stored and retrieved digitally from computer system.

Ques-2 What is SQL?

Ans-2 SQL stands structured Query Language. It is a language used to interact with the database,

- to create Database
- to create table
- to retrieve data
- to update table

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(Ques-3)

Ques-3 Does SQL support programming features?

(2)

Ans-3 SQL is a language but it does not support programming as it is a command language we only have commands we can use query, update, delete etc.

Ques-4 What is DBMS?

Ans-4 DBMS stands for DataBase Management System.

It is system software responsible for the creation, retrieval, updation and management of database.

Ques-5 What is RDBMS? How it is different from DBMS?

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Ans-5 RDBMS stands for Relational Database Management System. RDBMS stores data in the form of collections of tables.

Ques-6 What is the difference between SQL and MySQL?

Ans-6 SQL is standard language for retrieving and manipulating structured database. MySQL is relational database management system like Oracle, IBM etc.

Ques-7 What are Tables and Fields?

Ans-7 A table is an organized collection of data stored in the form of rows and columns. The columns in a table are called Fields. Row can be referred to as Records.

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Ques-8 What are Constraints in SQL? (4)

Ans-8 Constraints are used to specify the rules concerning data in the table.

- NOT NULL     CHECK     DEFAULT

Ques-9 What is the difference between BETWEEN and IN OPERATOR in SQL?

Ans-9 BETWEEN:- The BETWEEN operator is used to fetch rows based on range of values.

For Example

```
SELECT * FROM students  
WHERE ROLL-NO BETWEEN 20 AND 30;
```

IN:- IN operator is used to check for values contained in specific sets

Example:-

```
SELECT * FROM students  
WHERE ROLL-NO IN (20, 21, 23);
```

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Ques-10 What do you mean by data definition Language? (5)

Ans-10 Data Definition Language allows execution of M.I.M.P. queries like CREATE, DROP and ALTER.

Ques-11 What do you mean by data manipulation language? M.I.M.P.

Ans-11 Data manipulation language or DML is used to access or manipulate data in the DataBase.

- Insert data or rows
- Delete "
- Retrieve
- Update

Ques-12 What is primary key?

Ans-12 Primary key is one of candidate keys. One of candidate key is selected becomes primary key. Primary key is unique it cannot be more than once.

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Ques-13 What is a Foreign Key?

Ans-13 Foreign key is any field in one table that refers to the Primary Key in another table.



Ques-14 Write some SQL Functions?

Ans-14 COUNT() :- It returns the number of rows.

syntax-  
SELECT COUNT(column-name)  
FROM table-name  
Where condition;

Avg() :- It returns the average value.

syntax-  
SELECT AVG(column-name)  
FROM table-name  
Where condition;

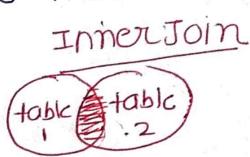
SUM() :- It returns the total sum of numeric column.

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Ques-15 What is a Join? List its different types ~~time~~ 7

Ans-15 A Join clause is used to combine rows from two or more tables.

Inner Join:- Inner Join Keyword selects records that have matching values in both tables.

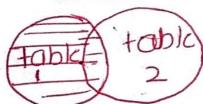


Syntax:-

```
SELECT column_name(s)
FROM table1 INNER JOIN table2
ON table1.column_name = table2.column_name
```

Outer Join:- SQL LEFT JOIN:-

LEFT Join Keyword return all records from the left side (table1) and matching records from right side (table2).

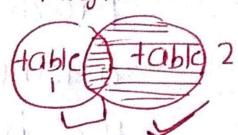


Syntax:-

```
SELECT column_name(s)
FROM table1
LEFT JOIN table2
ON table1.column_name = table2.column_name
```

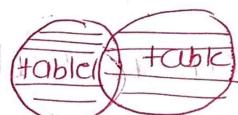
SQL Right Join Keyword:- Right Join keyword return all records from right table (table2) and matching records from left table (table1). ⑧  
Right Join

Syntax:- `SELECT column-name(s) from table1  
RIGHT JOIN table2 ON  
table1.column-name = table2.column-name`



SQL FULL OUTER JOIN :- Full outer join keyword returns all record when there is a match in left (table1) or right (table2) records. FULL OUTER JOIN

Syntax:- `SELECT column-name(s)  
from table1 FULL OUTER JOIN  
table2 ON table1.column-name = table2.column-name`



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Ques-16 What is an Index? Explain its ~~IMP~~ [Ans-16]

Ans-16 A database index is a data structure that provides a quick lookup of data in a column of a table. It enhances the speed of operations to maintain the index data structure.

Ques-17 What is a Query?

Ans-17 A Query is a request for data or information from a database table or combination of tables.

Ques-18 What is Subquery?

Ans-18 A Subquery is query within another query. They are also known as nested query or inner query.

Ques-19 What is a Self Join?

Ans-19 A self join is a case of regular join where a table is joined to itself based on some relation between its own column. This is known as Self Join.

Ques-20 What is a Cross-Join?

Ans-20 Cross Join can be defined as a cartesian product of two tables included in the Join is known as the Cross Join.

Ques-21 What is the difference between Clustered and Non-Clustered Index?

Ans-21 Clustered Index: the way records are stored in a database based on indexed column.

Non-Clustered Index: creates a separate entity within the table which references the original table.

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Ques-22 What are some common clauses used with SELECT query in SQL? (11)

Ans-22 Some common SQL clauses:

- ① Where clause: It is used to filter records that are necessary based on specific conditions.
- ② ORDER BY: It is used to sort the records based on some field in ascending (ASC) or Descending order(DESC).
- ③ GROUP BY: It is used to group records with identical data can be used in conjunction with some aggregations functions.
- ④ HAVING: HAVING clause in SQL is used to filter records in combination with GROUP BY clause. It is different from WHERE , since the WHERE clause cannot filter aggregated records.

Ques-23 What are UNION, MINUS and INTERSECT commands? (12)

Ans-23 UNION: It combines and return the result-set retrieved by two or more SELECT statements.

MINUS: MINUS operator in SQL is used to remove duplicates from the result-set obtained.

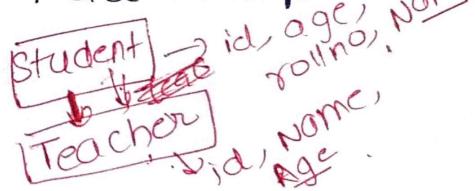
INTERSECT: combines the result-set fetched by the two SELECT statements and then returns this intersection of result-set

Ques-24 What are Entities and Relationships ~~2M.M.I.M.P~~

Ans-24 Entity: A entity can be real-world object that can be easily identifiable. Each entity has some associated properties.

Relationships: Relationship defines the links between the entities is known as Relationship.

Ex →



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Ques-25 List the different types of relationships in SQL imp (13)

Ans-25 One to One :- Relationship between two tables where each record in one table is associated with maximum of one record in other table.

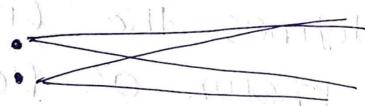


One to Many :- One record in table is associated with multiple records in other table.



Many to Many :- Many record in table is associated with many record in another table.

Table 1                      Table 2



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Ques-26 What is normalization? (14)

Ans-26 It is a process of minimizing Redundancy, is known as the normalization.

⇒ Minimizing the Insertion, Deletion and Update Anomalies.

Ques-27 What is Denormalization?

Ans-27 Denormalization is database optimization technique in which we add redundant data to one or more tables.

Ques-28 What is a trigger? ~~Ans~~

Ans-28 The trigger is a statement that a system executes automatically when there is any modification to database.

\* Action performed when trigger executes.

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Ques-29 What is the difference between DELETE and DROP and TRUNCATE commands?

Ans-29 DELETE command :- delete one or more existing records from the table in the database.

DROP command :- drops the complete table from database.

TRUNCATE command :- delete all the rows from existing database. Leaving row with column names.

ques-30 What is a stored Procedure?

Ans-30 stored Procedure :-

It is used to perform one or more DML (Data Manipulation operation) on database. It is a group of SQL statements.

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Ques-31 What are Aggregate and Scalar Functions? (16)

Ans-31 Aggregate Functions: are often used with GROUP BY and HAVING clause.

AVG() :- calculates the mean ✓

COUNT() :- count the total no. of records in table ✓

MIN() :- calculate minimum of values ✓

MAX() :- calculate maximum of values ✓

SUM() :- calculate sum of all values ✓

Scalar Function: return a single value ✓

LEN() :- calculate total length of column. It works on string.

UCASE() :- converts a string values to uppercase characters.

LCASE() :- converts a string values to lowercase characters.

CONCAT() :- concatenate two or more strings.

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Ques-32 Name all the operators in which is used in the query for appending two strings? ~~IMP~~

Ans-32 concatenate operator

Ques-33 What is main disadvantage of deleting data from existing table using DROP TABLE command?

Ans-33 DROP Table command deletes complete data from table along with removing complete table structure too. If we want to remove data only and maintaining the table structure then use TRUNCATE command.

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Q Database  
It is a container that hold multiple objects, such as tables, views, indexes.  
→ It represents a logical grouping of related data.

Q Schema  
→ It is container within a database that hold objects and defines their ownership.  
→ It provides a way to organise and manage database objects.

Q View:  
→ It is virtual table based on result of SQL statement. It allows to retrieve and manipulate data.

# Transaction  
→ It is a sequence of SQL statements that are executed as a single logical unit of work.  
→ It ensures data consistency and integrity by either committing all changes or rolling them back if error occurs.

# Prevention from SQL injection attacks

- Use prepared statements and Parameterized queries.
- Implement input validation and sanitization
- Avoid dynamic SQL Queries with Concatenated user input
- Apply principle of least privilege to database accounts.

## Q SQL Injection

It is a security vulnerability that occurs when an attacker is able to manipulate a web application's database queries by inserting malicious SQL query into input fields.

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Ans-3 SQL is a language but it does not support programming as it is a command language. We only have commands we can use query, update, delete etc.

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In DBMS, data is stored in either a hierarchical form or mavidian form whereas in rdbms it uses a tabular structure where headers are column names and row contains corresponding values.

DBMS- No normalisation, RDBMS- Normalisation Present