

SQ2 Interview questions

Q1. What is the diff. betw delete and truncate statements?

→ Delete

- ↳ Delete Commands is used to delete a row in a table.
- ↳ you can rollback data after using delete statement.
- ↳ It is a DML command.
- ↳ It is slower than truncate statements.

→ Truncate

- ↳ Truncate is used to delete all the rows from a table.
- ↳ you can't rollback data.
- ↳ It is a DDL Command.
- ↳ It is faster.

Q. What are the different subsets of SQL?

→ DDL

↳ Consists of the commands that can be used to define the database schema.

DM2

↳ Consists of commands that deals with the manipulation of data present in database.

DCL

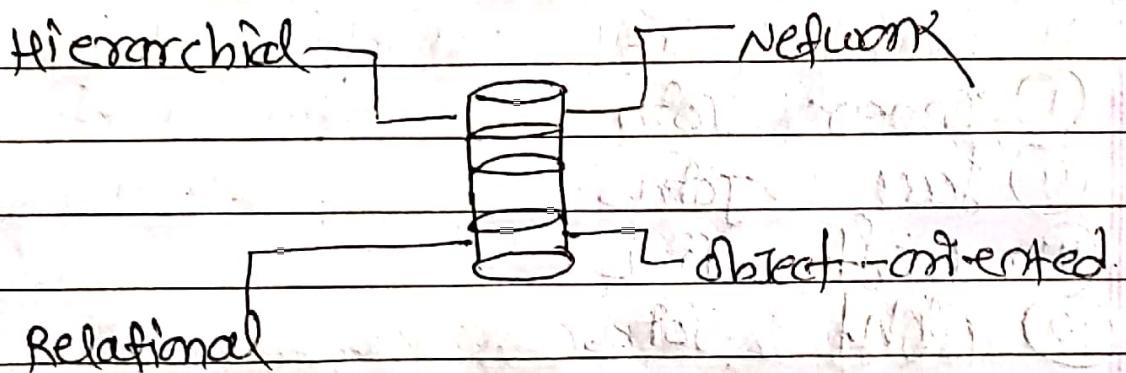
↳ Includes commands which deal with the rights, permissions and other controls of the database system.

TCL

↳ Includes the commands which mainly deal with the transaction of database.

Q.3. What do you mean by DBMS ?
what are it's diff. types ?

→ A database management system (DBMS) is a SW application that interacts with the user, applications and the database itself to capture and analyse data. The data stored in the database can be modified, retrieved and deleted, and can be of any type like strings, numbers, images etc.



Q.4. what do you mean by table and field in SQL ?

→ Table

↳ A table refers to a collection of data in an organised manner in forms of rows and columns.

field

= A field refers to the number of columns in a table.

Q.5 what are joins in SQL?

→ A join clause is used to combine rows from two or more tables, based on a related column between them.
It is used to merge two tables or retrieve data from these.

There are 4 Joins in SQL namely:

- (1) Inner Join
- (2) Full Join
- (3) Left Join
- (4) Right Join

Q.6 what is the diff. betw CHAR and VARCHAR datatype in SQL?

→ char

→ char is used for storing of fixed length
for example, char(10) can only store
10 characters and will not be able
to store a string of any other length.

varchar

↳ varchar is used for character strings of variable length. For example ~~varchar~~ varchar(Lo) can store any length i.e. 6, 8, 2 in this variable.

Q.7 What is primary key?

↳ A set of attributes that can be used to uniquely identify every tuple is a primary key. So, if there are 3-4 candidate keys present in a relationship, then out of those, one can be chosen as a primary key.

Q.8 What are constraints?

↳ Constraints are used to specify the limit on the data types of the table. It can be specified while creating or altering the table statement.

NOT NULL → Ensures that a null value can't be stored in a column.

UNIQUE → This constraint makes sure that all the values in a column are different.

CHECK → This constraint ensures that all the values in a column satisfy a specific condition.

Default → This constraint consists of a set of default values for a column when no value is specified.

INDEX → This constraint is used to create and retrieve data from the database very quickly.

Q.9 What is the difference b/w SQL vs MySQL?



SQL

If it is a standard language which stands for structured query language based on the English language. SQL is the core of relational database which is used for accessing & managing language. SQL is the core of relational database which is used for accessing and managing database.

MySQL

MySQL is an open-source relational database management system that works on many platforms. It provides multi-user access to support many storage engines and is backed by Oracle.

Q. 10 What is a unique key?

- ↳ uniquely identifies a single row in table.
- ↳ multiple values allowed per table.
- ↳ NULL values are allowed.
- ↳ Duplicate values are not allowed.

Q. 11 What is a foreign key?

Sol: → Foreign key maintains referential integrity by ensuring a link between the data in two tables.

↳ The foreign key in the child table references the primary key in the parent table.

↳ The foreign key constraint prevents actions that would destroy links between the child and parent tables.

Q. 18 What is the difference between clustered and non clustered index in SQL?

Sol:-

→ Clustered Index

= = =

- ↳ Clustered index is used for easy retrieval of data from the database and is faster.
- ↳ Clustered index alters the way records are stored in a database as it sorts out rows by the column which is set to be Clustered index.
- ↳ one table can only have one Clustered index.

Non Clustered Index

= = =

- ↳ Non-clustered index is used for easy retrieval of data from the database and is slower.
- ↳ Non-clustered index does not alter the way it was stored but it creates a separate object within a table which points back to the original table rows after searching.

One table can have many non-clust
ered indexes.

Q.14 Write a SQL query to display the
current date?

Sol:-

In SQL, there is a built-in function called `getdate()` which helps to return the current timestamp/date.

Syntax → `getdate()`

In postgres,

`select now()::date;`

Q.15 what are the diff. type of joins?

Sol:-

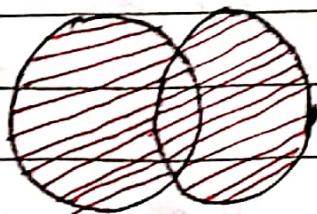
Inner Join



This join returns those records which have matching values

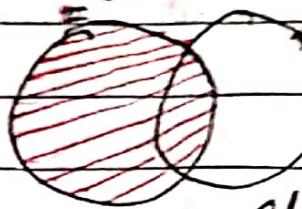
full join

in both the tables.



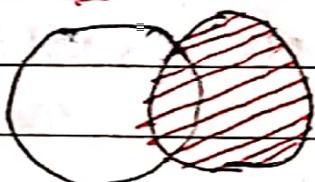
This join returns all those records which either have a match in the left or right table.

Left Join



This join returns records from the left table, and also those records which satisfy the condition from the right table.

Right Join



This join returns records from the right table, and also those records which satisfy the condition from the left table.

Q.16 what do you mean by denormalization?

- Denormalization refers to a technique which is used to access data from higher to lower forms of a database.
- Increases the performance of the entire infrastructure as it introduces redundancy into a table.
- Adds the redundant data into a table by incorporating database queries that combine data from various tables into a single table.

Q.17 what are entities and relationships?

Sol:- Entities

→ A person, place, or thing in the real world about which data can be stored in a database. Tables store data that represents one type of entity. For example - A bank database has a customer information. Customer table stores this information as a set of attributes (columns within the table) for each customer.

Relationships

→ Relation or links between entities that have something to do with each other. For example - The customer name is related to the customer account number and contact information, which might be in the same table. There can also be relationships between separate tables (for example, customer to accounts).

Q.18 what is an index?

Ans:-

- ↳ performance tuning method.
- ↳ Allows faster retrieval of records from the table.
- ↳ creates an entry for each value.

Q.19 Explain different types of index?

Ans:-

→ unique index

This index does not allow the field to have duplicate values. If the column is unique indexed. If a primary key is defined, a unique index can be applied automatically.

clustered index

This index ~~records~~ maintains the physical order of the table and searches based on the blocks of key values. Each table can only have one clustered index.

Non-clustered Index

$= \quad = \quad =$

Non-clustered Index does not alter the physical order of the table and maintains a logical order of the data. Each table can have many non-clustered indexes.

Q. 20 What is normalization and what are the advantages of it?

A:-
→ Normalization is the process of organizing data to avoid duplication and redundancy.

Advantages

- * Better database organization
- * more tables with smaller rows
- * efficient data access
- * greater flexibility for queries
- * quickly find the information
- * easier to implement security
- * allows easy modification.
- * Reduction of redundant and duplicate data
- * more compact database.
- * ensure consistent data after modification.

Q.21. What is the difference between DROP and TRUNCATE Commands?

Sol:-

→ **DROP**

Removes a table and it can't be rolled back from the database.

Syntax :- `Drop object object-name;`

TRUNCATE

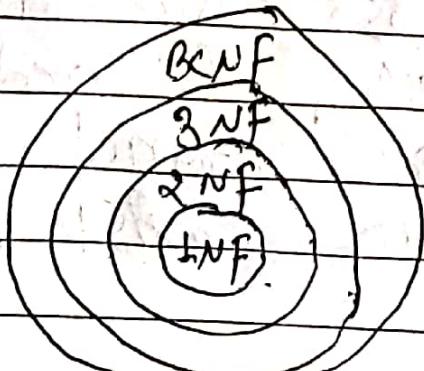
→ Removes all rows from the table and can't be rolled back into the database.

Syntax :- `TRUNCATE table table-name;`

Q.22 Explain diff. types of normalization?

Sol:-

→ There are mainly four types of normalizations: 1NF, 2NF, 3NF, & BCNF



Database Normalization Example

Salutation	fullName	Address	movie	Category
			Rented	
ms.	Alice Johnson	1st street House no3	mission impossible, fallout, clash of titans	Action
mr.	David Allen	3rd street 45	Intersteller, edge of tomorrow	Sci-Fi
mrs.	David Allen	7th Avenue	mission impossible: fallout	Action

INF

each table cell should have a single value, so, basically all the records must be unique.

Date:

Page:

Salutation	Surname	Address	Movie Rented
ms.	Alice Johnson	1st street House no. 3	Mission Impossible Fallout
ms.	Alice Johnson	1st street House no. 3	Clash of Titans
mrs.	David Allen	3rd street 45	Intersteller
mrs.	David Allen	3rd street 45	Edge of Tomorrow
mr.	David Allen	7th Avenue	Mission Impos. Fallout

2NF

Database should be 2NF and should also have single column primary key.

Salutation	Surname	Address	Movie-Rented
ms.	Alice Johnson	1st street House no. 3	Mission Impossible Fallout
ms.	Alice Johnson	1st street House no. 3	Clash of Titans

Table → Table ↘

ID	Sal.	full-name	Address
1	ms	Alice Johnson	1st street House no. 3
2	mr	David Allen	3rd street No. 45
3	mr	David Allen	7th Avenue

Table 1

ID	movies-rented
1	mission impossible fallout
2	clash of titans
3	mission impossible fallout

Table 2

3NF

The database should be in 2NF and must not have any transitive functional dependencies.

Table 1

Table 2

ID	full-name	Address	Sal-ID	ID	movie-rents

Salutation-ID

Salutation

1

mr.

2

ms.

3

ms.

4

dr.

Table 3

BCNF

= If your database is in 3rd normal form, there would be some scenarios where anomalies would be present, if you have more than Candidate key. Then BCNF comes into role, where you divide your tables further so that there would be only one Candidate Key present.

Q.23 What is ACID property in a database?

Ans:-

A Atomicity

C Consistency

I Isolation

D Durability

Q.24 What do you mean by "Triggers" in SQL?

SQL:-

- Triggers in SQL are a special type of stored procedures that are defined to execute automatically in place or after data modifications. It allows you to execute a batch of code when an insert, update or any other query is executed against a specific table.

Q.25 What are the different operators available in SQL?

SQL:-

- (I) Arithmetic operators (+, -, /, *)
- (II) Bitwise operators (&, |, ^)
- (III) Comparison operators (=, >, <)
- (IV) Compound operators (+=, -=, *=)
- ✓ Logical operators (OR, AND, ALL)

Q.26 Are NULL values same as that of zero or a blank space?

SQL:-

- A NULL value is not at all same as that of zero or a blank space.

NULL value represents a value which is unavailable, unknown, assigned or not applicable whereas a zero is a number and blank space is a character.

Q.27 What is the difference between Cross Join and natural Join?

Soln:-

→ **Cross Join** produces the cross product or Cartesian product of two tables.

Natural Join

Based on all the columns having the same name and data types in both the tables.

Q.28 what is subquery in SQL?

Soln:- A subquery is a query inside another query where a query is defined to retrieve data or information back from the database.

subqueries are always executed first & the result of the subquery is passed on to the main query.

Outer query

Subquery or inner query

Select l-name, f-name,
from employees

where add-city in (select add-city

from office

where Country = 'Nepal')

Q.29 What are the diff. types of subquery?

Sol:-

(i) Correlated Subquery

These are queries which select the data from a table referenced in the outer query. It is not considered as an independent query as it refers to another table and refers the column in a table.

Non - Correlated Subquery

This query is an independent query where the output of subquery is substituted in the main query.

Q. 30 Can you list the ways to get the count of records in a table?

Ans:-

To Count the number of records in a table, you can use the below Commands:

Select * from table-name;

Select Count(*) from table-name;

Select rows from sysindex where ID = Object-ID (table-name) And indID > 2.

Q. 31 Write a SQL query to find the names of employees that begin with 'A'?

To display name of the employee that begin with 'A', type in the below command.

Select * from table-name where emp-name like 'A %';

Q. 32 write an SQL query to get the third highest salary of an employee from employee-table?

Sol:-

→ Select Top 1 Salary
from (Select Top 3 salary
from employee-table
order by salary DESC) As emp
order by salary ASC;

Q. 33 what is the need for group function in SQL?

Sol:-

→ Group function work on the set of rows and returns one result per group.

Some of the commonly used group function are:

- ① AVG
- ② COUNT
- ③ MAX
- ④ MIN
- ⑤ SUM
- ⑥ VARIANCE

Q.34 what is a Relationship and what are the diff. type of relationships?

Ans:-

→ Relation or links are between entities that have something to do with each other. Relationships are defined as the connection between the tables in a database.

Relationship

one to one Relationship

one to many
Relationship

many to

one Relationship

self-referencing
Relationship

Q.35 How can you insert null values in a column while inserting the data?

Ans:-

→ Null values can be inserted in the following ways:

- ① Implicitly by omitting column from column list.
- ② Explicitly by specifying NULL keyword in the values clause.

Q. 36 What is the main diff. between 'BETWEEN' and 'IN' operators?

→ 'BETWEEN'
Used to display rows based on a range of values in a column.

Example of Between:

Select * from students where Roll-no
Between 10 and 50;

'IN'

Used to check for values contained in a specific set of values.

Example of IN:

Select * from students where Roll-no
IN (8, 15, 25);

Q. 37 Why are SQL functions used?

Sol:-

→ SQL functions are used for the following purposes:

- (i) To perform some calculations on the data.
- (ii) To convert the data types.
- (iii) To format dates and numbers.
- (iv) To manipulate the output.
- (v) To modify individual data items.

Q. 38 What is the need of merge statement?

Sol:-

↳ Allows conditional update or insertion of data into a table.

↳ It performs an update if a row exists, or an insert if the row does not exist.

Q. 39 What do you mean by recursive stored procedure?

Sol:-

→ Recursive stored procedure refers to a stored procedure which calls by itself.

until it reaches some boundary condition.

This recursive function or procedure helps the programmers to use the same set of code n numbers of times.

Q.40 What is CLAUSE in SQL?

Ans:-

→ SQL clause helps to limit the result set by providing a condition to the query. A clause helps to filter the rows from the entire set of records.

Example:

WHERE and HAVING clause.

Q.41 What is the difference between 'HAVING' CLAUSE and a 'WHERE' CLAUSE?

Ans:-

→ HAVING CLAUSE

Can be used only with select statement.
It is usually used in a group by clause.

WHERE CLAUSE

WHERE clause is applied to each row before they are a part of the GROUP BY function in a query.

Q.42 List the ways in which dynamic SQL can be executed.

Sol:- → Following are the ways in which dynamic SQL can be executed:

- (i) Write a query with parameters
- (ii) Using EXEC
- (iii) Using sp-executeSQL

Q.43 What are the various levels of constraints?

Sol:- → Constraints are the representation of a column to enforce data entity and consistency.

There are two levels of a constraint:

- (i) Column level constraint.
- (ii) Table level constraint.

Q.44 How can you fetch common records from two tables?

Sol:-

→ You can fetch common records from two tables using intersect.

Syntax:-

```
Select Col-1, Col-2 ...  
from table-names  
where condition
```

INTERSECT

```
Select column1, Col-2 ...  
from table-names  
where Condition.
```

Q.45 List some case manipulation functions in SQL.

Sol:-

→ lower

This function returns the string in lowercase. It takes a string as an argument & returns it by converting it into lower case.

Syntax: LOWER ('String')

UPPER

This function returns the string in uppercase. It takes a string as an argument and returns it by converting it into uppercase.

Syntax: `upper ('string')`

INITCAP

= This function returns the string with the first letter in uppercase and rest of the letters in lowercase.

Syntax: `INITCAP ('string')`

Q. 46 What are the different set operators available in SQL?

Ans: → ① union

Combines rows from both the queries.

(II) INTERSECT

↳ Keeps only those rows which are common in both the queries.

(III) MINUS

↳ Keeps rows from the left query which are not included in the right query.

Q. 47 What is an ALIAS command?

ANS:-
↳ ALIAS name can be given to any table or a column. This alias name can be referred in where clause to identify a particular table or a column.

Q. 48 What are aggregate and scalar functions?

ANS:-
Agg. Functions

= used to evaluate mathematical calculation and returns a single value. These calculations are done from the column in a table.

E.g.: MAX(), COUNT()

Scalar Functions

Scalar functions return a single value based on the input value.

Example:- UCASE(), NOW().

Q.49 How can you fetch alternate records from a table?

Sol:-

→ You can fetch alternate records i.e. 1st, 3rd and even 2nd numbers.

Example: To display even no, use the following command:

Select studentID from (Select studentno, studentID from student) where
 $\text{mod}(\text{studentno}, 2) = 0$;

Q.50 Name the operator which is used in the query for pattern matching?

Sol:-

→ LIKE operator is used for pattern matching.

q. - It matches zero or more characters.

Example:

= Select * from Students where
StudentName like ('%')

Q.51 How can you select unique
records from a table?

Ans:-

→ You can select unique records from
a table by using the DISTINCT
keyword.

Example:

Select distinct StudentID, from Students;

Q.52 How can you fetch first 5
characters of the string?

Ans:-

→ There are a lot of ways to fetch
characters from a string.

Example:

= use SUBSTRING()

Select substr(StudentName, 1, 5)
from Students;

use RIGHT()

Select Right (studentname, 5) from Student;

Q-53 What is the main diff. between SQL and PL/SQL?

SQL:-

SQL

Is a query language that allows you to issue a single query or execute a single insert / update / delete.

PL/SQL

Is oracle's "procedural language" SQL which allows you to write a full program (loops, variable, etc.) to accomplish multiple operations such as selects / inserts / updates / deletes.

Q-54 what is view?

SQL:- A view is a virtual table which consists of a subset of data contained in a table. Since views are not present, it takes less space to store. Views can

have data of one or more tables Combined and It depends on the relationship.

Q.55 What are views used for?

Sol:- A view refers to a logical snapshot based on a table or another view.

It is used for the following reasons:

- (i) Restricting access to data.
- (ii) making complex queries simple.
- (iii) ensuring data independence.
- (iv) providing diff. views of same data.

Q.56 What is stored procedure?

Sol:- A function which consists of many SQL statements to access the database system.

Several SQL statements are consolidated into a stored procedure and are executed whenever and wherever required.

This saves time and avoids writing code again and again.

Q.57 List some advantages and disadvantages of stored procedure.

Sol:

→ Advantages

A stored procedure can be used as a modular programming which means create once, store and call for several times whenever it is required. This supports faster execution, it also reduce network traffic and provides better security to the data.

Disadvantages

The only disadvantage of stored procedure is that it can be executed only in the database and utilizes more memory in the database server.

Q.58 List all the types of user define functions.

Sol: There are three types of user-defined functions.

- (I) scalar functions.
- (II) Multi-Statement Value Functions.
- (III) Inline Table-value Functions.

Q. 59 What do you mean by collation?

Ans:-

→ Collation is defined as a set of rules that determine how data can be sorted as well as compared.

Character data is sorted using the rules that define the correct character sequence along with options for specifying case sensitivity, character width etc.

Q. 60. What are the diff. types of collation sensitivity?

Ans:-

→ Diff. types of collation sensitivity are as follows:

- ① Case sensitivity
- ② Kana sensitivity
- ③ Width sensitivity
- ④ Accent sensitivity

Q. 61. What are local and global variable?

(i) → Local Variable

→ These variables can be used or exist only inside the function. These variable

are not used or referred by any other function.

Global Variable

= =

These variables are the variables which can be accessed throughout the program. Global variable can't be created whenever that function is called.

q. 62 What is Auto increment in SQL?

→ Allows the user to create a unique number to get generated whenever a new record is inserted into the table.

This keyword is usually required whenever primary key is used.

Auto increment keyword can be used in oracle and Identity keyword can be used in SQL Server.

Q. 63 What is Datawarehouse?

Sol:-

→ Datawarehouse refers to a central repository of data where the data is assembled from multiple sources of information.

Those data are consolidated, transformed and made available for the mining as well as online processing.

~~Data~~ warehouse data also have a subset of data called data marts.

Q. 64 What are the diff. authentication modes in SQL Server? How can it be changed?

Sol:-

Windows mode Mixed mode.

Steps to change authentication mode in SQL Server.

- ① Click Start → programs → Microsoft SQL Server and click SQL Enterprise Manager to run SQL Enterprise Manager from the Microsoft SQL Server program group.

- ① Then select the Server from the Tools menu.
- ② Select SQL Server Configuration Properties, and choose the Security page.

Q.65 what are STUFF and REPLACE functions?

→ STUFF Function

This function is used to overwrite existing character or insert a string into another string.

STUFF (string-exp, start, length, rep-char)

REPLACE Function

This function is used to replace the existing characters of all the occurrences.

REPLACE (string-exp, search-string, replacement-string)