

SQL Interview Questions

Question 1

What is the difference between DELETE and TRUNCATE statements?

Delete

- ✓ Delete command 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 statement.

Truncate

- ✓ Truncate is used to delete all the rows from a table.
- ✓ You cannot rollback data.
- ✓ It is a DDL command.
- ✓ It is faster.

SQL Interview Questions

Question 2

What are the different subsets of SQL?

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

DDL

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

DML

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

DCL

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

TCL

SQL Interview Questions

Question 3

What do you mean by DBMS? What are its different types?

A Database Management System (DBMS) is a software 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.



SQL Interview Questions

Question 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 form of rows and columns.

Field

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

EMPLOYEE_INFORMATION			
EMP_NO	EMP_NAME	EMP_COUNTRY	EMP_AGE
1	Rohan	India	23
2	Rohan	India	34
3	Anay	India	27
4	Suhana	India	25

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SQL Interview Questions

Question 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 there.

There are 4 joins in SQL namely:

INNER JOIN

FULL JOIN

LEFT JOIN

RIGHT JOIN

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SQL Interview Questions

Question 6

What is the difference between CHAR and VARCHAR2 datatype in SQL?

Char

Varchar2

Char

Char is used for strings 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.

Varchar2

Varchar2 is used for character strings of variable length. For example varchar2(10) can store any length i.e. 6,8,2 in this variable.

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Question 7

What is a 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**.

Primary Key

EMPLOYEE_INFORMATION			
EMP_NO	EMP_NAME	EMP_COUNTRY	EMP_AGE
1	Rohan	India	23
2	Rohan	India	34
3	Anay	India	27
4	Suhana	India	25

SQL Interview Questions

Question 8

What are Constraints?

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

NOT NULL

Ensures that a NULL value cannot 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.

SQL Interview Questions

Question 9

What is the difference between SQL and MySQL?

SQL

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 and managing database.

V/S

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.

SQL Interview Questions

Question 10

What is a Unique key?

Uniquely identifies a single row in the table.

Multiple values allowed per table.

Null values are allowed.

Duplicate values are not allowed.

SQL Interview Questions

Question 11

What is a Foreign key?

Foreign key maintains referential integrity by enforcing 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.

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SQL Interview Questions

Question 12

What do you mean by data integrity?

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Data Integrity

Defines

Accuracy of data

Consistency of data

Integrity **C**onstraints to enforce
business rules on data.

SQL Interview Questions

Question 13

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

SQL Interview Questions

Question 14

Write a SQL query to display the current date?

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-clustered indexes.

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

Syntax → GETDATE ()

SQL Server 2017, SQL Server 2016, SQL Server 2014, SQL Server 2012, SQL Server 2008 R2, SQL Server 2008, SQL Server 2005

Example →
SELECT GETDATE();
Result: '2019-03-18 18:17:28.160'

SQL Interview Questions

Question 15

What are the different types of joins?

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SQL

Interview Questions

Question 16

What do you mean by Denormalization?

SQL Interview Questions

Question 17

What are Entities and Relationships?



This join returns those records which have matching values in both the tables.

INNER JOIN



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

FULL JOIN



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

LEFT JOIN



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

RIGHT JOIN

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Denormalization

refers to a technique which is used to access data from higher to lower forms of a database.

Increase 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.

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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 table to store 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).

SQL Interview Questions

Question 18

What is an Index?

Index

Performance Tuning Method

Allows faster retrieval of records from the table

Creates an entry for each value

SQL Interview Questions

Question 19

Explain different types of index.

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 reorders the physical order of the table and searches based on the basis of key values. Each table can only have one clustered index.

Non-Clustered Index

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.

SQL Interview Questions

Question 20

What is Normalization and what are the advantages of it?

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

SQL Interview Questions

Question 21

What is the difference between DROP and TRUNCATE commands?

SQL Interview Questions

Question 22

Explain different types of Normalization.

SQL Interview Questions

Question 22

Explain different types of Normalization.

DROP

Removes a table and it cannot be rolled back from the database

Syntax → `DROP object object_name;`

TRUNCATE

Removes all rows from the table and cannot be rolled back into the database;

Syntax → `TRUNCATE TABLE table_name;`

There are mainly four types of normalizations: INF, 2NF, 3NF & BCNF.



Database Normalization Example

Salutation	Full Name	Address	Movies Rented	Category
Ms.	Alice Johnson	1 st Street House No 3	Mission Impossible: Fallout, Clash of Titans	Action, Action
Mr.	David Allen	3 rd Street 45	Interstellar, Edge Of Tomorrow	Sci-Fi, Sci-Fi
Mr.	David Allen	7 th Avenue	Mission Impossible: Fallout	Action

SQL Interview Questions

Question 22

Explain different types of Normalization.

SQL Interview Questions

Question 22

Explain different types of Normalization.

SQL Interview Questions

Question 22

Explain different types of Normalization.

1NF

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

Salutation	Full Name	Address	Movies Rented
Ms.	Alice Johnson	1 st Street House No 3	Mission Impossible: Fallout
Ms.	Alice Johnson	1 st Street House No 3	Clash of Titans
Mr.	David Allen	3 rd Street 45	Interstellar
Mr.	David Allen	3 rd Street 45	Edge Of Tomorrow
Mr.	David Allen	7 th Avenue	Mission Impossible: Fallout

2NF

Database should be 1NF and should also have single column primary key.

The diagram illustrates the normalization process. Table 1 contains four columns: Salutation, Full Name, Address, and ID. Table 2 contains two columns: ID and Movies_Rented. A primary key constraint is applied to the ID column in Table 1, which is also a foreign key in Table 2. This indicates that each record in Table 1 must have a unique ID, and each ID in Table 1 must correspond to a single record in Table 2.

Salutation	Full Name	Address	ID	Movies_Rented
Ms.	Alice Johnson	1 st Street House No 3	1	Mission Impossible: Fallout
Mr.	David Allen	3 rd Street 45	2	Clash of Titans
Mr.	David Allen	7 th Avenue	3	Interstellar

Table 1

ID	Movies_Rented
1	Mission Impossible: Fallout
1	Clash of Titans
2	Interstellar
2	Edge Of Tomorrow
3	Mission Impossible: Fallout

Table 2

3NF

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

The diagram shows three tables: Table 1 (ID, Full Name, Address, Salutation_ID), Table 2 (ID, Movies_Rented), and Table 3 (Salutation_ID, Salutation). Table 1 has a primary key on ID and a foreign key on Salutation_ID pointing to Table 3. Table 2 has a primary key on ID and a foreign key on ID pointing to Table 1. Table 3 has a primary key on Salutation_ID and a secondary key on Salutation.

ID	Full Name	Address	Salutation_ID	ID	Movies_Rented
1	Alice Johnson	1 st Street House No 3	1	1	Mission Impossible: Fallout

Table 1

ID	Movies_Rented
1	Mission Impossible: Fallout
1	Clash of Titans
2	Interstellar
2	Edge Of Tomorrow
3	Mission Impossible: Fallout

Table 2

Salutation_ID	Salutation
1	Mr.
2	Ms.
3	Mrs.
4	Dr.

Table 3

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SQL Interview Questions

Question 22

Explain different types of Normalization.

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.

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Question 23

What is ACID property in a database?

A Atomicity

C Consistency

I Isolation

D Durability

SQL Interview Questions

Question 24

What do you mean by “Trigger” in 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.

BEFORE INSERT – activated before data is inserted into the table

AFTER INSERT – activated after data is inserted into the table

BEFORE UPDATE – activated before data in the table is updated

AFTER UPDATE – activated after the data in table is updated

BEFORE DELETE – activated before data is removed from the table

AFTER DELETE – activated after data is removed from the table

FOLLOW

Interview Questions

Question 25

What are the different operators available in SQL?

SQL Interview Questions

Question 26

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

SQL Interview Questions

Question 27

What is the difference between cross join and natural join?

01

Arithmetic Operators

02

Bitwise Operators

03

Comparison Operators

04

Compound Operators

05

Logical Operators

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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.

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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.

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Question 28

What is subquery in SQL?

SQL
Interview Questions

Question 29

What are the different types of a subquery?

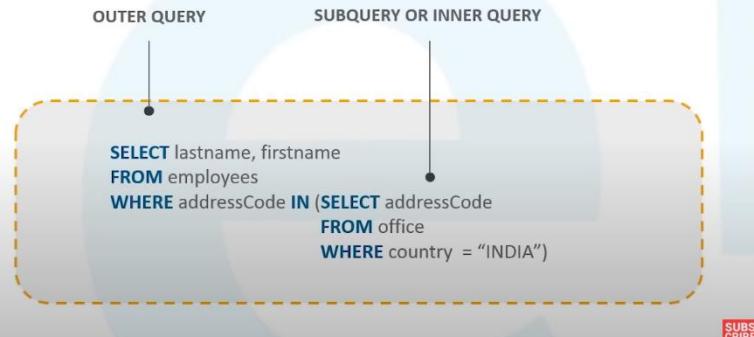
SQL Interview Questions

Question 30

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

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 and the result of the subquery is passed on to the main query.



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.

To count the number of records in a table, you can use the below commands:

```
SELECT * FROM table1;  
  
SELECT COUNT(*) FROM table1;  
  
SELECT rows FROM sysindexes WHERE id =  
OBJECT_ID(table1) AND indid < 2
```

SQL Interview Questions

Question 31

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

To display name of the employees that begin with 'A', type in the below command:

```
SELECT * FROM Table_name WHERE EmpName like 'A%'
```

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SQL Interview Questions

Question 32

Write a SQL query to get the third highest salary of an employee from employee_table?

You can write a query as follows:

```
SELECT TOP 1 salary
FROM(
SELECT TOP 3 salary
FROM employee_table
ORDER BY salary DESC) AS emp
ORDER BY salary ASC;
```

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SQL Interview Questions

Question 33

What is the need for group functions in SQL?

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

Some of the commonly used group functions are:

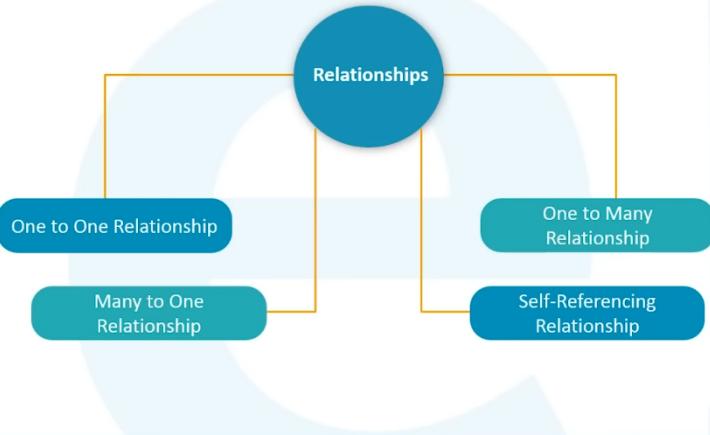
1	AVG	2
3	COUNT	4
5	MAX	6
	MIN	
	SUM	
	VARIANCE	

SQL Interview Questions

Question 34

What is a Relationship and what are the different type of relationships?

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.



SQL Interview Questions

Question 35

How can you insert NULL values in a column while inserting the data?

NULL values can be inserted in the following ways:

01

Implicitly by omitting column from column list

02

Explicitly by specifying NULL keyword in the VALUES clause

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SQL Interview Questions

Question 36

What is the main difference between 'BETWEEN' and 'IN' condition operators?

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Question 37

Why are SQL functions used?

SQL Interview Questions

Question 38

What is the need of MERGE statement?

BETWEEN

Used to display rows based on a range of values in a row

Example of BETWEEN:

```
SELECT * FROM Students where ROLL_NO BETWEEN 10  
AND 50
```

IN

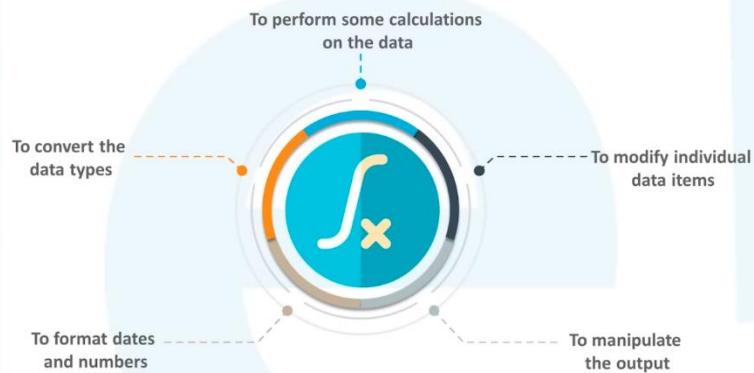
Used to check for values contained in a specific set of values.

Example of IN:

```
SELECT * FROM students where ROLL_NO IN  
(8,15,25);
```

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SQL functions are used for the following purposes:



MERGE

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.

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SQL Interview Questions

Question 39

What do you mean by recursive stored procedure?

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 number of times.

Interview Questions

Question 40

What is CLAUSE in SQL?

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 & HAVING clause

SQL Interview Questions

Question 41

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

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.

SQL Interview Questions

Question 42

List the ways in which Dynamic SQL can be executed.

SQL Interview Questions

Question 43

What are the various levels of constraints?

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

01

Write a query with parameters

02

Using EXEC

03

Using sp_executesql

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Constraints are the representation of a column to enforce data entity and consistency.

There are two levels of a constraint, namely:

01

Column Level Constraint

02

Table Level Constraint

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SQL Interview Questions

Question 44

How can you fetch common records from two tables?

SQL Interview Questions

Question 45

List some case manipulation functions in SQL.

SQL Interview Questions

Question 46

What are the different set operators available in SQL?

You can fetch common records from two tables using INTERSECT.

Syntax

```
SELECT column1 , column2 ....  
FROM table_names  
WHERE condition
```

INTERSECT

```
SELECT column1 , column2 ....  
FROM table_names  
WHERE condition
```

Example

```
Select studentID from student INTERSECT Select  
StudentID from Exam
```

LOWER

This function returns the string in lowercase. It takes a string as an argument and 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')

Set Operations

UNION

LEFT QUERY

RIGHT QUERY

Combines rows from both
the queries

FINAL RESULT

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SQL Interview Questions

Question 46

What are the different set operators available in SQL?

SQL Interview Questions

Question 46

What are the different set operators available in SQL?

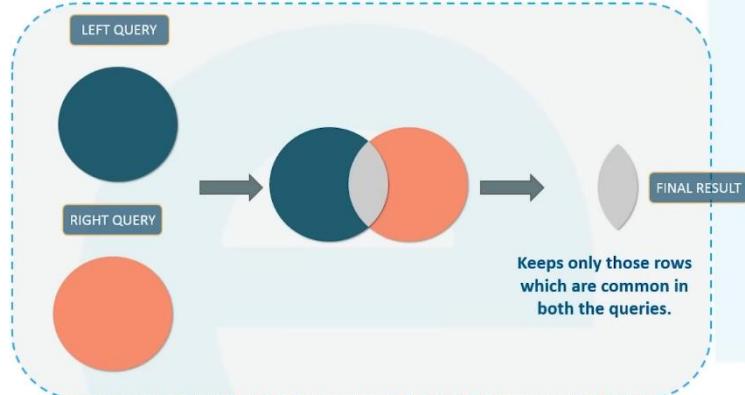
SQL Interview Questions

Question 47

What is an ALIAS command?

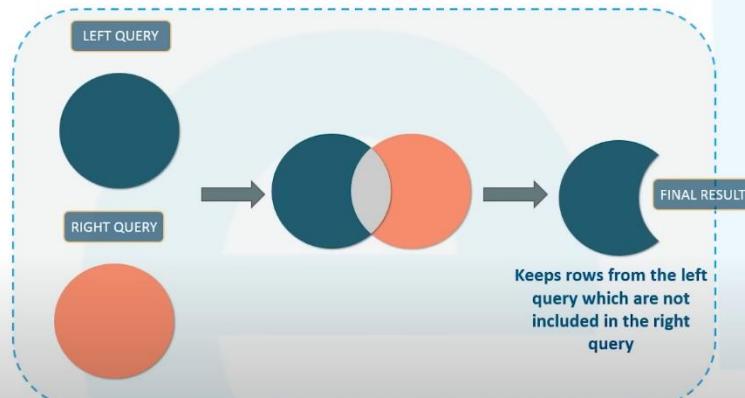
Set Operations

INTERSECT



Set Operations

MINUS



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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.

Example

```
Select emp.empID, dept.Result from employee  
emp, department as dept where  
emp.empID=dept.empID
```

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SQL Interview Questions

Question 48

What are aggregate and scalar functions?

SQL Interview Questions

Question 49

How can you fetch alternate records from a table?

SQL Interview Questions

Question 50

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

AGGREGATE FUNCTIONS

Used to evaluate mathematical calculation and returns a single value. These calculations are done from the columns in a table.

Example : MAX(), COUNT()

SCALAR FUNCTIONS

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

Example : UCASE(), NOW()

You can fetch alternate records i.e. both odd and even row numbers.

Example : To display even numbers, use the following command:

```
Select studentId from (Select rowno, studentId  
from student) where mod(rowno,2)=0
```

Now, to display odd numbers:

```
Select studentId from (Select rowno, studentId  
from student) where mod(rowno,2)=1
```

LIKE operator is used for pattern matching.

% – It matches zero or more characters.

Example :

```
SELECT * FROM students WHERE studentname LIKE  
'a%'
```

_ – It matches exactly one character.

Example :

```
SELECT * FROM student WHERE studentname LIKE  
'abc_'
```

SQL Interview Questions

Question 51

How can you select unique records from a table?

SQL Interview Questions

Question 52

How can you fetch first 5 characters of the string?

SQL Interview Questions

Question 53

What is the main difference between SQL and PL/SQL?

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

Example :

```
SELECT DISTINCT studentID FROM Student;
```

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

Example :

Use **SUBSTRING()**

```
SELECT SUBSTRING(StudentName,1,5) as studentname FROM student
```

Use **RIGHT()**

```
SELECT RIGHT(StudentName,5) as studentname FROM student
```

SQL

is a query language that allows you to issue a single query or execute a single INSERT/UPDATE/DELETE

V/S

PL/SQL

is Oracle's "Procedural Language" SQL, which allows you to write a full program (loops, variables, etc.) to accomplish multiple operations such as SELECTS/INSERTS/UPDATES/DELETES.

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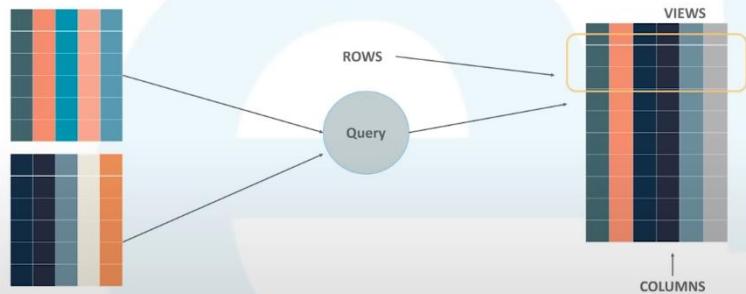
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SQL Interview Questions

Question 54

What is a View?

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. View can have data of one or more tables combined and it depends on the relationship.


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SQL Interview Questions

Question 55

What are Views used for?

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

It is used for the following reasons:

- 01 **Restricting access to data**
- 02 **Making complex queries simple**
- 03 **Ensuring data independence**
- 04 **Providing different views of same data**

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SQL Interview Questions

Question 56

What is a Stored Procedure?

Stored Procedures

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 avoid writing code again and again.

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SQL Interview Questions

Question 57

List some advantages and disadvantages of Stored Procedure.

SQL Interview Questions

Question 58

List all the types of user-defined functions.

SQL Interview Questions

Question 59

What do you mean by Collation?

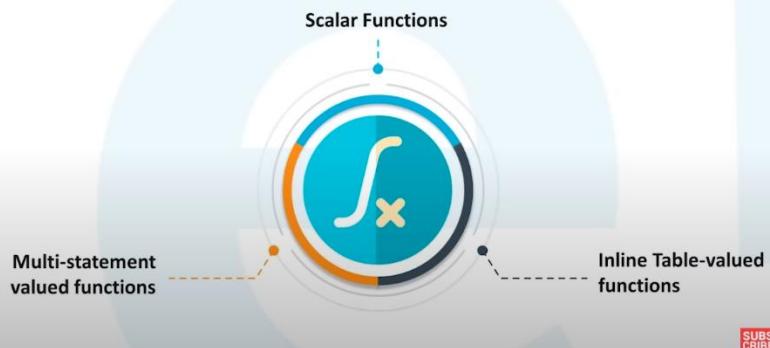
Advantages

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 reduces 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.

There are three types of user-defined functions.



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.

SQL Interview Questions

Question 60

What are the different types of Collation Sensitivity?

SQL Interview Questions

Question 61

What are Local and Global variables?

SQL Interview Questions

Question 62

What is Auto Increment in SQL?

Different types of Collation Sensitivity are as follows:



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Local Variables

These variables can be used or exist only inside the function. These variables are not used or referred by any other function.

Global Variables

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

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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.

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Interview Questions

Question 63

SQL Interview Questions

Question 63

What is a Datawarehouse?

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.

Warehouse data also have a subset of data called Data Marts.

SQL Interview Questions

Question 64

What are the different authentication modes in SQL Server? How can it be changed?

Windows Mode

Mixed Mode

Steps to change authentication mode in SQL Server:

- Click Start-> Programs-> Microsoft SQL Server and click SQL Enterprise Manager to run SQL Enterprise Manager from the Microsoft SQL Server program group.
- Then select the server from the Tools menu.
- Select SQL Server Configuration Properties, and choose the Security page.

SQL Interview Questions

Question 65

What are STUFF and
REPLACE function?

STUFF FUNCTION

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

```
STUFF(string_expression,start, length,  
replacement_characters)
```

REPLACE FUNCTION

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

```
REPLACE (string_expression, search_string,  
replacement_string)
```

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