***53 SQL Interview questions and Answers:***

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**Mostly asked questions (15):**

1. What are tables and fields in database?

A table has records (rows) and fields (columns). Fields have different types of data, such as text, numbers, dates, and hyperlinks. A record: Contains specific data, like information about a particular employee or a product.

1. What is the difference between a primary key, foreign key and Unique Key?

A primary key is used to ensure data in the specific column is unique. A foreign key is a column or group of columns in a relational database table that provides a link between data in two tables. It uniquely identifies a record in the relational database table. ... Only one primary key is allowed in a table.

Primary Key

Primary key cannot have a NULL value.

Each table can have only one primary key.

By default, Primary key is clustered index, and the data in database table is physically organized in the sequence of clustered index.

Primary key can be related to another table as a Foreign Key.

We can generate ID automatically with the help of Auto Increment field. Primary key supports Auto Increment value.

We can define Primary key constraint on temporary table and table variable.

We can't delete primary key value from the parent table which is used as a foreign key in child table. To delete we first need to delete that primary key value from the child table.

Unique Key

Unique Constraint may have a NULL value.

Each table can have more than one Unique Constraint.

By default, Unique key is a unique non-clustered index.

Unique Constraint cannot be related with another table as a Foreign Key.

Foreign Key

Foreign key is a field in the table that is Primary key in another table.

Foreign key can accept multiple null value.

Foreign key does not automatically create an index, clustered or non-clustered. You can manually create an index on foreign key.

We can have more than one foreign key in a table.

Foreign keys do not automatically create an index, clustered or non-clustered. You must manually create an index on foreign keys.

There are actual advantages to having a foreign key be supported with a clustered index, but you get only one per table. What's the advantage? If you are selecting the parent plus all child records, you want the child records next to each other. This is easy to accomplish using a clustered index.

Having a null foreign key is usually a bad idea instead of NULL  referred to as "orphan record".

We can’t define foreign key constraint on temporary table or table variable.

We can delete the foreign key value from the child table even though that refers to the primary key of the parent table.

1. What is the select statement? What are some common clauses used with SELECT Query in SQL?

The SELECT clause specifies the table columns that are retrieved. The FROM clause specifies the tables accessed. The WHERE clause specifies which table rows are used. The WHERE clause is optional; if missing, all table rows are used.

Mainly Five Clauses of the SELECT statement

SELECT – the columns in the result set.

FROM – names the base table(s) from which results will be retrieved.

WHERE – specifies any conditions for the results set (filter)

ORDER BY – sets how the result set will be ordered.

LIMIT – sets the number of rows to be returned.

1. What is a join and what are different types of joins in SQL?

A SQL Join statement is used to combine data or rows from two or more tables based on a common field between them. Different types of Joins are:

INNER JOIN

LEFT JOIN

RIGHT JOIN

FULL JOIN

SELECT StudentCourse.COURSE\_ID, Student.NAME, Student.AGE FROM Student

INNER JOIN StudentCourse ON Student.ROLL\_NO=StudentCourse.ROLL\_NO;

**LEFT JOIN**: This join returns all the rows of the table on the left side of the join and matching rows for the table on the right side of join. The rows for which there is no matching row on right side, the result-set will contain null. LEFT JOIN is also known as LEFT OUTER JOIN.Syntax:

SELECT Student.NAME, StudentCourse.COURSE\_ID FROM Student

**LEFT JOIN** StudentCourse ON StudentCourse.ROLL\_NO = Student.ROLL\_NO;

**RIGHT JOIN:** RIGHT JOIN is similar to LEFT JOIN. This join returns all the rows of the table on the right side of the join and matching rows for the table on the left side of join. The rows for which there is no matching row on left side, the result-set will contain null. RIGHT JOIN is also known as RIGHT OUTER JOIN.Syntax:

SELECT Student.NAME, StudentCourse.COURSE\_ID FROM Student

**RIGHT JOI**N StudentCourse ON StudentCourse.ROLL\_NO = Student.ROLL\_NO;

**FULL JOIN:** FULL JOIN creates the result-set by combining result of both LEFT JOIN and RIGHT JOIN. The result-set will contain all the rows from both the tables. The rows for which there is no matching, the result-set will contain NULL values. Syntax:

SELECT Student.NAME, StudentCourse.COURSE\_ID FROM Student

**FULL JOIN** StudentCourse ON StudentCourse.ROLL\_NO = Student.ROLL\_NO;

1. What is the difference between TRUNCATE, DROP and DELETE Statement?

DROP and TRUNCATE are DDL commands, whereas DELETE is a DML command. DELETE operations can be rolled back (undone), while DROP and TRUNCATE operations cannot be rolled back

1. DELETE :

Basically, it is a [Data Manipulation Language Command (DML)](https://www.geeksforgeeks.org/sql-ddl-dql-dml-dcl-tcl-commands/). It is used to delete one or more tuples of a table. With the help of the “DELETE” command, we can either delete all the rows in one go or can delete rows one by one. i.e., we can use it as per the requirement or the condition using the Where clause. It is comparatively slower than the TRUNCATE command. The TRUNCATE command does not remove the structure of the table.

**SYNTAX –**   
If we want to delete all the rows of the table:

DELETE from;

**SYNTAX –**   
If we want to delete the row of the table as per the condition then we use the WHERE clause,

DELETE from WHERE ;

**Note –** Here we can use the “ROLLBACK” command to restore the tuple because it does not auto-commit.

2. DROP :

It is a Data Definition Language Command (DDL). It is used to drop the whole table. With the help of the “DROP” command we can drop (delete) the whole structure in one go i.e. it removes the named elements of the schema. By using this command the existence of the whole table is finished or say lost.

**SYNTAX –**   
If we want to drop the table:

DROP table ;

**Note –** Here we can’t restore the table by using the “ROLLBACK” command because it auto commits.

3. TRUNCATE :

It is also a Data Definition Language Command (DDL). It is used to delete all the rows of a relation (table) in one go. With the help of the “TRUNCATE” command, we can’t delete the single row as here WHERE clause is not used. By using this command the existence of all the rows of the table is lost. It is comparatively faster than the delete command as it deletes all the rows fastly.

**SYNTAX –**   
If we want to use truncate :

TRUNCATE;

1. What is an Alias in SQL?

SQL aliases are used to give a table, or a column in a table, a temporary name. Aliases are often used to make column names more readable. An alias only exists for the duration of that query. An alias is created with the AS keyword.

Example: SELECT CustomerID AS ID, CustomerName AS Customer  
FROM Customers;

1. What do you mean by constraints and what are different constraints used in sql?

Constraints are the rules enforced on the data columns of a table. These are used to limit the type of data that can go into a table

The following constraints are commonly used in SQL:

[NOT NULL](https://www.w3schools.com/sql/sql_notnull.asp) - Ensures that a column cannot have a NULL value

[UNIQUE](https://www.w3schools.com/sql/sql_unique.asp) - Ensures that all values in a column are different

[PRIMARY KEY](https://www.w3schools.com/sql/sql_primarykey.asp) - A combination of a NOT NULL and UNIQUE. Uniquely identifies each row in a table

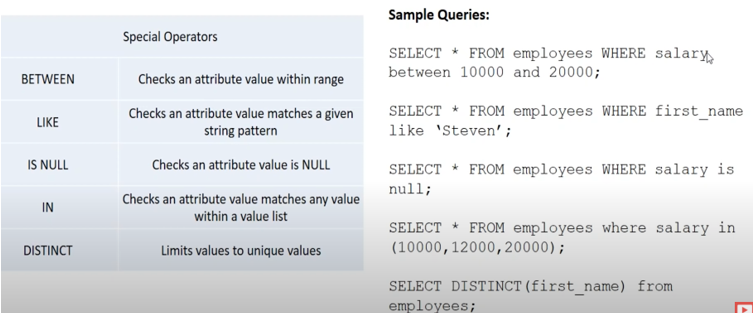
[FOREIGN KEY](https://www.w3schools.com/sql/sql_foreignkey.asp) - Prevents actions that would destroy links between tables

[CHECK](https://www.w3schools.com/sql/sql_check.asp) - Ensures that the values in a column satisfies a specific condition

[DEFAULT](https://www.w3schools.com/sql/sql_default.asp) - Sets a default value for a column if no value is specified

[CREATE INDEX](https://www.w3schools.com/sql/sql_create_index.asp) - Used to create and retrieve data from the database very quickly

1. What are different special operators in SQL.



1. What is the difference between WHERE and HAVING Clause?

The main difference between the WHERE and HAVING clauses comes when used together with the GROUP BY clause. In that case, WHERE is used to filter rows before grouping, and HAVING is used to exclude records after grouping.

SELECT S\_Name, Age FROM Student

WHERE Age >=18;

SELECT Age, COUNT(Roll\_No) AS No\_of\_Students

FROM Student GROUP BY Age

HAVING COUNT(Roll\_No) > 1 ;

1. What is the difference between IN and BETWEEN Operator?

Both of these operators are used to find out the multiple values from the table. Differences between these operators is that the BETWEEN operator is used to select a range of data between two values while The IN operator allows you to specify multiple values.

SELECT Fname, Lname FROM Employee WHERE Salary BETWEEN 30000 AND 45000;

SELECT Fname, Lname FROM Employee WHERE Salary IN (30000, 40000, 25000);

1. What is the default ordering for data using the ORDER BY Clause? How could it be changed?

In SQL ORDER BY clause, we need to define ascending or descending order in which result needs to be sorted. By default, SQL Server sorts out results using ORDER BY clause in ascending order. Specifying ASC in order by clause is optional.

SELECT agent\_code, agent\_name, working\_area, commission FROM agents ORDER BY agent\_code DESC;

1. What is DISTINCT Statement and how to use it?

The SELECT DISTINCT statement is used to return only distinct (different) values. Inside a table, a column often contains many duplicate values; and sometimes you only want to list the different (distinct) values.

SELECT DISTINCT SALARY FROM CUSTOMERS ORDER BY SALARY;

1. What are aggregate functions and Which aggregate function we used in SQL?

An aggregate function allows you to perform a calculation on a set of values to return a single scalar value. We often use aggregate functions with the [GROUP BY](https://www.zentut.com/sql-tutorial/sql-group-by/)and [HAVING](https://www.zentut.com/sql-tutorial/sql-having/) clauses of the [SELECT](https://www.zentut.com/sql-tutorial/sql-select/)statement.The following are the most commonly used SQL aggregate functions:

[AVG](http://www.sqltutorial.org/sql-avg.aspx)– calculates the average of a set of values.

[COUNT](http://www.sqltutorial.org/sql-count.aspx)– counts rows in a specified table or view.

[MIN](http://www.sqltutorial.org/sql-min-max.aspx)– gets the minimum value in a set of values.

[MAX](https://www.zentut.com/sql-tutorial/sql-max/)– gets the maximum value in a set of values.

[SUM](http://www.sqltutorial.org/sql-sum.aspx)– calculates the sum of values.

What are subsets of SQL

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| DDL | DML | DCL | TCL | DQL |
| CREATE | INSERT | GRANT | COMMIT | SELECT |
| ALTER | UPDATE | REVOKE | ROLLBACL |  |
| DROP | DELETE |  | SAVEPOINT |  |
| RENAME |  |  |  |  |
| TRUNCATE |  |  |  |  |

(DDL, DML, DCL, TCL, DQL)

DDL (Data Definition Language) – It allows you to perform various operations on the database such as CREATE, ALTER and DROP objects.

DML ( Data Manipulation Language) – It allows you to access and manipulate data. It helps you to insert, update, delete and retrieve data from the database.

DCL ( Data Control Language) – It allows you to control access to the database. Example – Grant, Revoke access permissions.

TCL commands deal with the transaction within the database. They are also used to make the changes that are done by DML statements. Examples of TCL commands

COMMIT– commits a Transaction.

ROLLBACK– rollbacks a transaction in case any error occurs.

SET TRANSACTION–specify characteristics for the transaction.

SAVEPOINT– sets a savepoint within a transaction.

1. What are different types of relationships in Sql?

There are five types of relations in the databases: one-to-one, one-to-many, many-to-one, many-to-many, and self-referencing relationships. So, what's the difference between these database relationship types? In the article, we'll examine each type separately and provide a working example of their usage

[One-to-many relationship](https://blog.devart.com/types-of-relationships-in-sql-server-database.html#one-to-many)  
[One-to-one relationship](https://blog.devart.com/types-of-relationships-in-sql-server-database.html#one-to-one-relationship)  
[Many-to-many relationship](https://blog.devart.com/types-of-relationships-in-sql-server-database.html#many-to-many-relationship)  
[Many-to-one relationship](https://blog.devart.com/types-of-relationships-in-sql-server-database.html#many-to-one-relationship)  
[Self-referencing relationships](https://blog.devart.com/types-of-relationships-in-sql-server-database.html#self-referencing-relationships)

1. What is RDBMS? How it is different from DBMS?

Database Management System (DBMS) is a software that is used to define, create and maintain a database and provides controlled access to the data. Relational Database Management System (RDBMS) is an advanced version of a DBMS.

|  |  |
| --- | --- |
| DBMS | RDBMS |
| DBMS stores data as file. | RDBMS stores data in tabular form. |
| Data elements need to access individually. | Multiple data elements can be accessed at the same time. |
| No relationship between data. | Data is stored in the form of tables which are related to each other. |
| Normalization is not present. | Normalization is present. |
| DBMS does not support distributed database. | RDBMS supports distributed database. |
| It stores data in either a navigational or hierarchical form. | It uses a tabular structure where the headers are the column names, and the rows contain corresponding values. |
| It deals with small quantity of data. | It deals with large amount of data. |
| Data redundancy is common in this model. | Keys and indexes do not allow Data redundancy. |
| It is used for small organization and deal with small data. | It is used to handle large amount of data. |
| It supports single user. | It supports multiple users. |
| Data fetching is slower for the large amount of data. | Data fetching is fast because of relational approach. |
| The data in a DBMS is subject to low security levels with regards to data manipulation. | There exists multiple levels of data security in a RDBMS. |
| Low software and hardware necessities. | Higher software and hardware necessities. |
| Examples: XML, Window Registry, etc. | Examples: MySQL, PostgreSQL, SQL Server, Oracle, Microsoft Access etc. |

**Common Questions (12):**

1. What do you mean by a query?

A query is a request for data or information from a database table or combination of tables.

1. What do you mean by subquery? What are its types?

A subquery is best defined as a query within a query. ... A subquery can also be nested inside INSERT, UPDATE, and DELETE statements. Subqueries must be enclosed within parentheses. A subquery can be used any place where an expression is allowed providing it returns a single value.

There are five broad divisions of subquery:

**1. Single Row Subquery**

Returns zero or one row in results.

**2. Multiple Row Subquery**

Returns one or more rows in results.

**3. Multiple Column Subqueries**

Returns one or more columns

**4. Correlated Subqueries**

Returns one or more columns according to the main or the outer query, thus called a correlated subquery.

**5. Nested Subqueries**

We have queries within a query (inner and outer query).

1. What is self-join? What is the requirement of Self-join?

A self-join, also known as an inner join, is a structured query language (SQL) statement where a queried table is joined to itself. The self-join statement is necessary when two sets of data, within the same table, are compared.

SELECT

    employee.Id,

    employee.FullName,

    employee.ManagerId,

    manager.FullName as ManagerName

FROM Employees employee

JOIN Employees manager

ON employee.ManagerId = manager.Id

1. What is the difference between now() and current\_date()?

Select Now() will give date and time (YYYY-MM-DD HH:MM:SS) whereas current\_date will provide date (YYYY-MM-DD)

Select CURRENT\_DATE();

Select NOW();

1. What function is used to return remainder in a division operator in SQL?

SQL MOD() function is used to get the remainder from a division.

SELECT MOD( 36, 6) AS Remainder;

SELECT 27 % 4 AS Remainder;

1. What is the main disadvantage of deleting data from an existing table using the drop table command?

The DROP TABLE is another DDL (Data Definition Language) operation. But it is not used for simply removing data from a table; it deletes the table structure from the database, along with any data stored in the table.

DROP TABLE table\_name;

How does DROP TABLE work?

The DROP TABLE operation removes the table definition and data as well as the indexes, constraints, and triggers related to the table.

This command frees the memory space.98088MNCV

No triggers are fired when executing DROP TABLE.

This operation cannot be rolled back in MySQL, but it can in Oracle, SQL Server, and PostgreSQL.

In SQL Server, DROP TABLE requires ALTER permission in the schema to which the table belongs; MySQL requires the DROP privilege; Oracle the requires the DROP ANY TABLE privilege. In PostgreSQL, users can drop their own tables.

1. What is the difference between CHAR and VARCHAR2 Data types in SQL?

|  |  |  |
| --- | --- | --- |
| SR.NO. | CHAR | VARCHAR |
| 1 | CHAR datatype is used to store character string of fixed length | VARCHAR datatype is used to store character string of variable length |
| 2 | In CHAR, If the length of string is less than set or fixed length then it is padded with extra memory space. | In VARCHAR, If the length of string is less than set or fixed length then it will store as it is without padded with extra memory spaces. |
| 3 | CHAR stands for “Character” | VARCHAR stands for “Variable Character” |
| 4 | Storage size of CHAR datatypes is equal to n bytes i.e. set length | Storage size of VARCHAR datatype is equal to the actual length of the entered string in bytes. |
| 5 | We should use CHAR datatype when we expect the data values in a column are of same length. | We should use VARCHAR datatype when we expect the data values in a column are of variable length. |
| 6 | CHAR take 1 byte for each character | VARCHAR take 1 byte for each character and some extra bytes for holding length information |
| 9 | Better performance than VARCHAR | Performance is not good as compared to CHAR |

1. What are scaler functions? Which are the scaler function used in SQL?

Scalar SQL Functions

The Scalar Functions in SQL are used to return a single value from the given input value.  Following are a few of the most commonly used Aggregate Functions:

 Let us look into each one of the above functions in depth.

|  |  |
| --- | --- |
| **Function** | **Description** |
| LCASE() | Used to convert string column values to lowercase |
| UCASE() | This function is used to convert a string column values to Uppercase. |
| LEN() | Returns the length of the text values in the column. |
| MID() | Extracts substrings in SQL from column values having String data type. |
| ROUND() | Rounds off a numeric value to the nearest integer. |
| NOW() | This function is used to return the current system date and time. |
| FORMAT() | Used to format how a field must be displayed. |

1. What is a DATABASE?

A database is an organized collection of structured information, or data, typically stored electronically in a computer system. A database is usually controlled by a database management system (DBMS). ... The data can then be easily accessed, managed, modified, updated, controlled, and organized.

1. What is SQL? What is the difference between NOSQL and SQL?

SQL is the programming language used to interface with relational databases. (Relational databases model data as records in rows and tables with logical links between them). NoSQL is a class of DBMs that are non-relational and generally do not use SQL.

1. What is the difference between SQL and MYSQL?

SQL is used in the accessing, updating, and manipulation of data in a database while MySQL is an RDBMS that allows keeping the data that exists in a database organized. SQL is a Structured Query Language and MySQL is a RDBMS to store, retrieve, modify and administrate a database

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

There are three main types of DBMS data models: relational, network, and hierarchical. Relational data model: Data is organized as logically independent tables. Network data model: All entities are organized in graphical representations. Hierarchical data model: Data is organized into a tree-like structure.

**SQL Command Based Questions (16):**

1. Command used for creating a database and table?

To create a database the query should be as below.

CREATE DATABASE database\_name;

To Create a Table the query is as below.

CREATE table worker(

worker\_id varchar(10),

first\_name varchar(20),

last\_name varchar(20),

salary int,

joining\_date datetime,

department varchar(10),

email varchar(20));

1. Command to create a table with same structure of another table (e.g employee table)

Create table EMP2 AS (Select \* from employee where 1=2)

1. Command to create a table with same structure with data of another table (e.g employee table)

Create table EMP3 AS (Select \* from employee where 1=1)

1. Command to find nth highest salary in SQL? [2nd and 3rd are preferred]

-Using Rank function

-Using Limit

1. SELECT distinct(Salary) FROM Worker ORDER BY Salary DESC LIMIT 2,1;

2. SELECT \* FROM (SELECT worker\_id, first\_name, salary, DENSE\_RANK() OVER(ORDER BY salary DESC) salrank FROM worker) worker WHERE salrank=2;

3. SELECT worker\_id, first\_name, Salary

FROM Worker W1

WHERE 2 = (

SELECT COUNT( DISTINCT ( W2.Salary ) )

FROM Worker W2

WHERE W2.Salary >= W1.Salary

);

1. Command to fetch all employees who also hold manager position?

select w.first\_name, w.last\_name, t.worker\_title from worker w, title t where w.worker\_id = t.worker\_ref\_id and t.worker\_title = 'Manager';

or

select w.first\_name, w.last\_name, t.worker\_title from worker w INNER JOIN title t ON w.worker\_id = t.worker\_ref\_id and t.worker\_title = 'Manager';

1. Command to find the names of employees that begin with ’A’?

select \* from worker where first\_name LIKE 'A%';

1. Command to display the current date?

Select CURRENT\_DATE();

1. Command to fetch common records from two tables and command to fetch alternate records from a table?

Common record from 2 table:

SELECT T1.Id,

T1.FName,

T1.LName,

T1.DOB,

T1.Type,

T1.Contact,

T1.Add

FROM #t1 T1 INNER JOIN #t2 T2

ON T1.FName=T2.FName

AND T1.LName=T2.LName

AND T1.dob=T2.dob

Alternate records from a table:

SELECT \* FROM worker WHERE worker\_id % 2 = 1;

1. Command to find duplicate records from a table and to remove duplicate rows in SQL?

SELECT OrderID, COUNT(OrderID)

FROM Orders

GROUP BY OrderID

HAVING COUNT(OrderID)>1;

Delete command

DELETE c1 FROM contacts c1

INNER JOIN contacts c2

WHERE  c1.id > c2.id AND      c1.email = c2.email;

1. Command to fetch first record from a table & Command to fetch last record from a table?

SELECT

(SELECT column FROM table WHERE [condition] ORDER BY column LIMIT 1) as 'first',

(SELECT column FROM table WHERE [condition] ORDER BY column DESC LIMIT 1) as 'last'

select col1 from tab1 order by col1 asc limit 1;

Otherway

select substring\_index(group\_concat(value\_col), ',',1) as 'first',

substring\_index(group\_concat(value\_col), ',',-1) as 'last'

from table

group by group\_col

1. Command to fetch first 5 records from a table and last 5 records from a table?

First 5 records:

SELECT \* FROM worker ORDER BY worker\_id ASC LIMIT 5;

Last 5 records:

(SELECT \* FROM Employee ORDER BY ID DESC LIMIT 5) ORDER BY ID ASC;

Or

SELECT \* FROM worker WHERE worker\_id > (SELECT COUNT(\*) FROM worker ) - 5;

1. Command to display Nth record from a table

SELECT \* FROM employee LIMIT N-1,1;

1. Command to get distinct records from a table without using distinct keyword

SELECT dup\_id, dup\_name FROM dup\_table

GROUP BY dup\_id, dup\_name;

With CTE Command:

WITH cte (dup\_id, dup\_name, dup\_count)

AS

(SELECT dup\_id, dup\_name,

row\_number() over (partition BY dup\_id,

dup\_name ORDER BY dup\_id) AS dup\_count

FROM dup\_table)

SELECT \* FROM cte WHERE dup\_count = 1;

1. Command to find maximum salary of each department?

Select \* from employee E1 join ( Select Dept, MAX(Salary) Sal from employee group by dept)E2

On E1. Dept = E2.Dept and E1.salary = E2.Sal

1. How will you change the data type of a column?

ALTER TABLE table\_name. ALTER COLUMN column\_name datatype;

or

ALTER TABLE Employees

ADD employee\_name string;

1. What is the SQL Query to fetch the department-wise count of employees sorted by department’s count in ascending order?

select count(worker\_id) no\_of\_workers, department from worker group by department order by no\_of\_workers desc;

* [Aggregate Functions](https://www.edureka.co/blog/sql-functions#aggregate)
  1. [SUM()](https://www.edureka.co/blog/sql-functions#sum)
  2. [COUNT()](https://www.edureka.co/blog/sql-functions#count)
  3. [AVG()](https://www.edureka.co/blog/sql-functions#avg)
  4. [MIN()](https://www.edureka.co/blog/sql-functions#min)
  5. [MAX()](https://www.edureka.co/blog/sql-functions#max)
  6. [FIRST()](https://www.edureka.co/blog/sql-functions#first)
  7. [LAST()](https://www.edureka.co/blog/sql-functions#last)

**Advanced Questions (10)**

1. Is a blank space or ZERO the same as a NULL Value in SQL?

A NULL value is not same as zero or a blank space. A NULL value is a value which is 'unavailable, unassigned, unknown or not applicable'. Whereas, zero is a number and blank space is a character.

1. What is UNION, MINUS and INTERSECT commands?

The most commonly used command, UNION combines the two answer sets into a single answer set. It automatically removes duplicate rows from the results. INTERSECT gives you the rows that are found in both queries by eliminating rows that are only found in one or the other query. MINUS.

**UNION:**

SELECT (coloumn\_names) from table1 [WHERE condition] UNION SELECT (coloumn\_names) from table2 [WHERE condition];

**UNION ALL:**

SELECT color\_name FROM colors\_a UNION ALL SELECT color\_name FROM colors\_b;

The MySQL query for the minus operation using the 'NOT IN' operator can be as follows

SELECT color\_name FROM colors\_a WHERE color\_name NOT IN(SELECT color\_name FROM colors\_b);

**INTERSECT:**

The MySQL query for the intersection operation using the 'IN' operator can be as follows:

SELECT color\_name FROM colors\_a WHERE color\_name IN(SELECT color\_name FROM colors\_b);

1. What do you mean by ACID Property in SQL?

In the context of transaction processing, the acronym ACID refers to the four key properties of a transaction: atomicity, consistency, isolation, and durability. Atomicity. All changes to data are performed as if they are a single operation. That is, all the changes are performed, or none of them are.

1. What do you mean by Normalization in a Database? What are the various forms of Normalizations?

Database normalization is a process used to organize a database into tables and columns. There are three main forms: first normal form , second normal form, and third normal form. The main idea is each table should be about a specific topic and only supporting topics included

1NF (First Normal Form) Rules

Each table cell should contain a single value.

Each record needs to be unique

2NF (Second Normal Form) Rules

Rule 1- Be in 1NF

Rule 2- Single Column Primary Key that does not functionally dependant on any subset of candidate key relation

3NF (Third Normal Form) Rules

Rule 1- Be in 2NF

Rule 2- Has no transitive functional dependencies

To move our 2NF table into 3NF, we again need to again divide our table.

BCNF (Boyce-Codd Normal Form)

Even when a database is in 3rd Normal Form, still there would be anomalies resulted if it has more than one **Candidate**Key.

Sometimes is BCNF is also referred as **3.5 Normal Form.**

1. What are the disadvantages of not using Normalizations in databases?

Non-normalized tables generally means that the same data is stored in more than one location. If this is the case, absent application code to prevent it, it's very possible that one of the values will be updated without updating all copies of the same value in other tables.

1. What is Denormalization?

Denormalization is a strategy used on a previously-normalized database to increase performance. The idea behind it is to add redundant data where we think it will help us the most. We can use extra attributes in an existing table, add new tables, or even create instances of existing tables

1. What is an index in SQL? Explain different types of indexes in SQL?

Indexes are used to speed-up query process in SQL Server, resulting in high performance. ... On the other hand, if you create indexes, the database goes to that index first and then retrieves the corresponding table records directly. There are two types of Indexes in SQL Server: Clustered Index. Non-Clustered Index

1. What is the difference between clustered and Non-Clustered index?

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1. What do you mean by a view in SQL?

In SQL, a view is a virtual table based on the result-set of an SQL statement. A view contains rows and columns, just like a real table. The fields in a view are fields from one or more real tables in the database

CREATE VIEW DetailsView AS

SELECT NAME, ADDRESS

FROM StudentDetails

WHERE S\_ID < 5;

To see the view

SELECT \* FROM DetailsView;

1. What are the differences between OLTP and OLAP?

OLTP is a transactional processing while OLAP is an analytical processing system. ... The basic difference between OLTP and OLAP is that OLTP is an online database modifying system, whereas, OLAP is an online database query answering system

|  |  |
| --- | --- |
| OLAP (Online analytical processing) | OLTP (Online transaction processing) |
| Consists of historical data from various Databases. | Consists only operational current data. |
| It is subject oriented. Used for Data Mining, Analytics, Decision making,etc. | It is application oriented. Used for business tasks. |

