SQL

1. Scalar functions are functions in SQL that take one or more input parameters and return a single scalar value. They can be used in SQL queries to perform calculations or manipulate data.

   ```
   CREATE FUNCTION square (@num FLOAT)
   RETURNS FLOAT
   AS
   BEGIN
      RETURN @num * @num
   END
   ```

2. A join is used to combine rows from two or more tables based on a related column between them. The most used types of joins are INNER JOIN, LEFT JOIN, RIGHT JOIN, and FULL OUTER JOIN.

   Example:

   INNER JOIN to combine the "customers" and "orders" tables based on the "customer_id" column.

   ```
   SELECT *
   FROM customers
   INNER JOIN orders
   ON customers.customer_id = orders.customer_id;
   ```

3. The ALTER TABLE statement with the RENAME COLUMN clause.

   ```
   ALTER TABLE table_name
   RENAME COLUMN old_column_name TO new_column_name;
   ```

4. To find duplicate records in SQL the GROUP BY clause is used with the HAVING clause.

   ```
   SELECT email, COUNT(*)
   FROM customers
   GROUP BY email
   HAVING COUNT(*) > 1;
   ```

5. The DISTINCT keyword is used to retrieve unique values from a table. It is used in the SELECT statement to eliminate duplicate rows.

   ```
   SELECT DISTINCT column_name
   FROM table_name;
   ```

6. Remove duplicate from table:

   ```
   DELETE FROM table_name
   WHERE column_name NOT IN (
   ```

```
    SELECT MIN(column_name)
    FROM table_name
    GROUP BY column_name
);
```

7. Max salary

```
SELECT MAX(salary)
FROM employee
WHERE department = 'department_name';
```

8. Operators in sql

1. Comparison operators: Used to compare two values or expressions. The comparison operators include:

- = (Equal to)
- <> or != (Not equal to)
- < (Less than)
- <= (Less than or equal to)
- (Greater than)
- = (Greater than or equal to)

2. Logical operators: Used to combine multiple conditions in a query. The logical operators include:

- AND (Returns true if all conditions are true)
- OR (Returns true if any of the conditions are true)
- NOT (Negates a condition)

3. Arithmetic operators: Used to perform mathematical calculations on data. The arithmetic operators include:

- (Addition)
- (Subtraction)
- (Multiplication)
- / (Division)
- % (Modulo)

Example:

```
SELECT *
FROM employees
WHERE department = 'sales' OR salary > 50000;
```

9.

```
SELECT *
FROM Employee
LIMIT 5;
```

10.

```
SELECT *
FROM Employee
ORDER BY Employee_ID DESC
LIMIT 5;
```

11.

```
SELECT salary
FROM (
  SELECT salary, RANK() OVER (ORDER BY salary DESC) AS salary_rank
  FROM employee
) AS ranked_salaries
WHERE salary_rank = 3;
```

12.

```
CREATE TABLE new_employee
AS SELECT *
FROM employee;
```

13.

```
SELECT e.*
FROM Employee e
LEFT JOIN Department d ON e.Department_ID = d.Department_ID
WHERE d.Department_ID IS NULL;
```