what is SQL FUNCTIONS

SQL functions are built in operations provided by the databases to perform calculations, manipulate data, format data and return specific values based on the input..

They are often used in:

SELECT queries

WHERE conditions.

GROUP BY and HAVING clauses.

ORDER BY clauses

1. STRING FUNCTIONS

These functions are used to perform operations on character/string data types. They help in modifying, analyzing, or formatting string values.

1.1 UPPER()

Definition:

The UPPER() function is used to convert all characters in a string to uppercase letters. It is useful when we want to compare or display text in a uniform format.

Syntax:

SELECT UPPER(column_name or string);

SELECT UPPER('arjun');

-- Output: 'ARJUN'

1.2 LOWER()

Definition:

The LOWER() function converts all characters in a string to lowercase letters. It is used when you want case-insensitive comparisons or formatting.
Syntax:
SELECT LOWER(column_name or string);
SELECT LOWER('HELLO');
Output: 'hello'
1.3 LENGTH()
<u>Definition:</u>
The LENGTH() function returns the total number of characters in a string, including spaces and special characters. It's useful for validations and data analysis.
characters. It's userul for validations and data analysis.
<u>Syntax:</u>
SELECT LENGTH(string);
Example:
SELECT LENGTH('Python Rocks');
Output: 12
1.4 SUBSTRING() or SUBSTR()
Definition:
The SUBSTRING() function extracts a specific portion of a string, starting from a defined position and length. It
is helpful when you need part of a string like a first name, ID, etc.
<u>Syntax:</u>

SELECT SUBSTRING(string, start_position, length);
Example:
SELECT SUBSTRING('Database', 1, 4);
Output: 'Data'
1.5 CONCAT()
<u>Definition:</u>
The CONCAT() function is used to join two or more strings together into one string. It's useful in combining first name and last name, or adding labels.
Syntax:
SELECT CONCAT(string1, string2);
Example:
SELECT CONCAT('Hello', 'World');
Output: 'HelloWorld'
1.6 TRIM()
<u>Definition:</u>

input or preparing data for comparison.
Syntax:
SELECT TRIM(string);
Example:
SELECT TRIM(' SQL ');
Output: 'SQL'
1.7 REPLACE()
Definition:
The REPLACE() function replaces all occurrences of a substring within a string with a new substring. It's helpful when correcting or updating text in a database.
Syntax:
SELECT REPLACE(original_string, search_string, replace_with);
Example:
SELECT REPLACE('I like Java', 'Java', 'Python');
Output: 'I like Python'

The TRIM() function removes leading and trailing spaces from a string. It's commonly used in cleaning user

2. NUMERIC FUNCTIONS

These functions are used to perform mathematical calculations and are mostly used on numeric columns.
2.1 ROUND()
<u>Definition:</u>
The ROUND() function rounds a numeric value to the nearest whole number or to the specified decimal places. It's used in financial calculations and reports.
Syntax:
SELECT ROUND(number, decimal_places);
Example:
SELECT ROUND(123.4567, 2);
Output: 123.46
2.2 FLOOR()
<u>Definition:</u>
The FLOOR() function returns the largest integer less than or equal to the given number. It always rounds down.
Syntax:

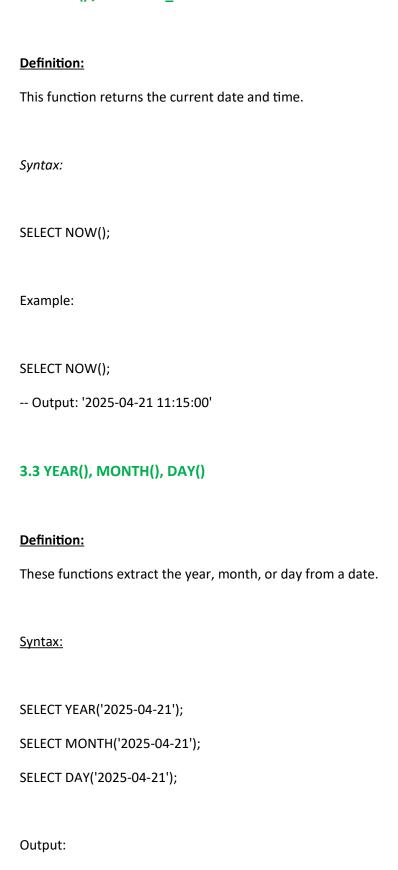
SELECT FLOOR(number);
Example:
SELECT FLOOR(5.9);
Output: 5
2.3 CEIL() or CEILING()
Definition:
The CEIL() function returns the smallest integer greater than or equal to the given number. It always rounds up
Syntax:
SELECT CEIL(number);
Example:
SELECT CEIL(5.1);
Output: 6
2.4 MOD()
Definition:

The MOD() function returns the remainder of division between two numbers. It's helpful in even/odd checks,

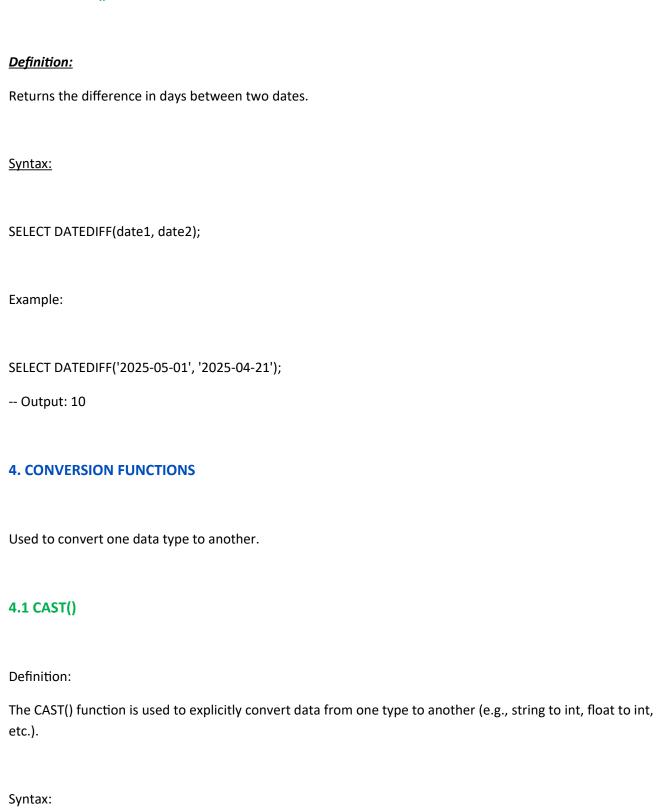
grouping, and logic conditions.

<u>Syntax:</u>
SELECT MOD(dividend, divisor);
Example:
SELECT MOD(10, 3);
Output: 1
3. DATE FUNCTIONS
These functions are used to process and manipulate date and time values.
3.1 CURRENT_DATE / CURDATE()
<u>Definition:</u>
This function returns the current date according to the system clock.
Syntax:
SELECT CURRENT_DATE;
Example:
SELECT CURRENT_DATE;
Output: '2025-04-21'

3.2 NOW() / CURRENT_TIMESTAMP



3.4 DATEDIFF()



SELECT CAST(value AS data_type);
Example:
SELECT CAST('123' AS INT);
Output: 123
5. AGGREGATE FUNCTIONS (GROUP FUNCTIONS)
These functions perform calculations on a group of rows and return a single value. Commonly used with GROUP BY.
5.1 COUNT()
Definition:
Returns the total number of rows in a table or matching a condition.
Syntax:
SELECT COUNT(*) FROM table_name;
Example:
SELECT COUNT(*) FROM employees;
Output: total number of employees

5.2 SUM() Definition: Returns the total sum of values in a numeric column. Syntax: SELECT SUM(column_name) FROM table_name; Example: SELECT SUM(salary) FROM employees; -- Output: total salary 5.3 AVG() Definition: Returns the average value of a numeric column. Syntax: SELECT AVG(column_name) FROM table_name;

SELECT AVG(marks) FROM students;

-- Output: average marks

Example:

Definition: Returns the minimum value in a column. Syntax: SELECT MIN(column_name) FROM table_name; Example: SELECT MIN(age) FROM users; -- Output: youngest age 5.5 MAX() **Definition:** Returns the maximum value in a column. Syntax: SELECT MAX(price) FROM products;

-- Output: highest price

5.4 MIN()