String functions in SQL are built-in functions used to manipulate and process string data. They are commonly employed for operations like formatting, extracting, searching, or modifying string values in a database. Below is a list of commonly used string functions in SQL, along with their descriptions:

**1. String Length**

* **LENGTH(string)** or **LEN(string)** (depending on the database system): Returns the number of characters in the given string.
* SELECT LENGTH('SQL Functions'); -- Output: 12

**2. Concatenation**

* **CONCAT(string1, string2, ...)**: Combines multiple strings into one.
* SELECT CONCAT('Hello', ' ', 'World'); -- Output: 'Hello World'
* **||** (Alternative syntax in some databases like Oracle):
* SELECT 'Hello' || ' ' || 'World'; -- Output: 'Hello World'

**3. Substring**

* **SUBSTRING(string, start, length)**: Extracts a portion of a string starting at a specified position and for a specified length.
* SELECT SUBSTRING('SQL Functions', 5, 9); -- Output: 'Functions'
* **LEFT(string, length)**: Returns the first n characters from a string.
* SELECT LEFT('Database', 4); -- Output: 'Data'
* **RIGHT(string, length)**: Returns the last n characters from a string.
* SELECT RIGHT('Database', 4); -- Output: 'base'

**4. Replace**

* **REPLACE(string, old\_substring, new\_substring)**: Replaces occurrences of a substring with another substring.
* SELECT REPLACE('SQL Functions', 'SQL', 'String'); -- Output: 'String Functions'

**5. Trim**

* **TRIM(character FROM string)**: Removes specified characters (or spaces by default) from both ends of a string.
* SELECT TRIM(' X '); -- Output: 'X'
* **LTRIM(string)**: Removes leading spaces from a string.
* SELECT LTRIM(' SQL'); -- Output: 'SQL'
* **RTRIM(string)**: Removes trailing spaces from a string.
* SELECT RTRIM('SQL '); -- Output: 'SQL'

**6. Uppercase and Lowercase**

* **UPPER(string)**: Converts all characters in the string to uppercase.
* SELECT UPPER('sql'); -- Output: 'SQL'
* **LOWER(string)**: Converts all characters in the string to lowercase.
* SELECT LOWER('SQL'); -- Output: 'sql'

**7. Position/Index**

* **POSITION(substring IN string)**: Returns the position of the first occurrence of a substring within a string.
* SELECT POSITION('F' IN 'SQL Functions'); -- Output: 5
* **CHARINDEX(substring, string)** (SQL Server):
* SELECT CHARINDEX('Fun', 'SQL Functions'); -- Output: 5

**8. Repeat**

* **REPEAT(string, number)**: Repeats a string a specified number of times.
* SELECT REPEAT('SQL', 3); -- Output: 'SQLSQLSQL'

**9. Reverse**

* **REVERSE(string)**: Reverses the order of characters in a string.
* SELECT REVERSE('SQL'); -- Output: 'LQS'

**10. Padding**

* **LPAD(string, length, pad\_string)**: Pads the left side of a string with a specified character to achieve a specified total length.
* SELECT LPAD('SQL', 5, '0'); -- Output: '00SQL'
* **RPAD(string, length, pad\_string)**: Pads the right side of a string.
* SELECT RPAD('SQL', 5, '0'); -- Output: 'SQL00'

**11. String Comparison**

* **LIKE**: Used for pattern matching.
* SELECT \* FROM table WHERE column LIKE 'S%'; -- Finds values starting with 'S'
* **INSTR(string, substring)**: Returns the position of the first occurrence of a substring.
* SELECT INSTR('SQL Functions', 'Fun'); -- Output: 5

**Notes**

* String function names and syntax can vary slightly between database systems (e.g., MySQL, PostgreSQL, SQL Server, Oracle). Always refer to the documentation for your specific database for exact details.
* These functions are widely used in queries to clean, format, or analyze textual data.