Name: Sahana Vulli
Date : 05/02/2024
Course: IT FDN 130 A Sp 24: Foundations Of Databases & SQL Programming

Introduction: Functions in SQL

Functions in SQL are essential for performing operations on data stored in a database. They can be categorized into several types based on their functionality:

1. Aggregate Functions

Aggregate functions perform a calculation on a set of values and return a single value. Common aggregate functions include:

- **COUNT ()**: Returns the number of rows that match the specified criteria.
- `SELECT COUNT(*) FROM Employees`
-

- **SUM()**: Returns the total sum of a numeric column.

```
SELECT SUM(Salary) FROM Employees;
```

- **AVG()**: Returns the average value of a numeric column.

```
SELECT AVG(Salary) FROM Employees;
```

- **MIN()**: Returns the smallest value in a set.

```
SELECT MIN(Salary) FROM Employees;
```

- **MAX()**: Returns the largest value in a set.

```
SELECT MAX(Salary) FROM Employees;
```

2. Scalar Functions

Scalar functions operate on a single value and return a single value. Common scalar functions include:

- **UCASE() or UPPER()**: Converts a string to upper case.

```
SELECT UPPER(FirstName) FROM Employees;
```

- **LCASE() or LOWER()**: Converts a string to lower case.

```
SELECT LOWER(FirstName) FROM Employees;
```

- **LEN() or LENGTH()**: Returns the length of a string.

```
SELECT LEN(FirstName) FROM Employees;
```

- **ROUND()**: Rounds a numeric field to the number of decimals specified.

```
SELECT ROUND(Salary, 2) FROM Employees;
```

- **NOW()**: Returns the current system date and time.

```
SELECT NOW();
```

3. Date Functions

Date functions are used to manipulate date and time values. Common date functions include:

- **GETDATE()**: Returns the current date and time.

```
SELECT GETDATE();
```

- **DATEADD()**: Adds a specified number of units (e.g., days, months) to a date.

```
SELECT DATEADD(day, 7, GETDATE());
```

- **DATEDIFF()**: Returns the difference between two dates.

```
SELECT DATEDIFF(day, '2024-01-01', '2024-12-31');
```

- **DAY()**: Returns the day part of a date.

```
SELECT DAY('2024-05-30');
```

- **MONTH()**: Returns the month part of a date.

```
SELECT MONTH('2024-05-30');
```

- **YEAR()**: Returns the year part of a date.

```
SELECT YEAR('2024-05-30');
```

4. String Functions

String functions are used to perform operations on strings. Common string functions include:

- **CONCAT()**: Concatenates two or more strings.

```
SELECT CONCAT(FirstName, ' ', LastName) FROM Employees;
```

- **SUBSTRING()**: Extracts a substring from a string.

```
SELECT SUBSTRING(FirstName, 1, 3) FROM Employees;
```

- **REPLACE()**: Replaces occurrences of a specified substring within a string with another substring.

```
SELECT REPLACE(FirstName, 'a', 'e') FROM Employees;
```

- **TRIM()**: Removes leading and trailing spaces from a string.

```
SELECT TRIM(FirstName) FROM Employees;
```

5. Conversion Functions

Conversion functions are used to convert data from one type to another. Common conversion functions include:

- **CAST()**: Converts a value from one data type to another.

```
SELECT CAST(Salary AS varchar) FROM Employees;
```

- **CONVERT()**: Converts a value from one data type to another.

```
SELECT CONVERT(varchar, Salary) FROM Employees;
```

6. Conditional Functions

Conditional functions return different results based on conditions.

- **CASE**: Evaluates a list of conditions and returns one of multiple possible result expressions.

```
SELECT EmployeeName,
       CASE
           WHEN Salary > 50000 THEN 'High'
           WHEN Salary > 30000 THEN 'Medium'
           ELSE 'Low'
       END AS SalaryRange
FROM Employees;
```

Conclusion:

Understanding and using these functions effectively allows for powerful data manipulation and retrieval in SQL.

4o

-