

Title:

Implementation of Different Types of Functions with Suitable Examples

Intro:

In this lab assignment, we will explore various types of SQL functions. Functions are used to perform operations on data and return results. We will cover aggregate functions, scalar functions, string functions, and date functions, demonstrating their usage with examples.

Code:

Creating a Table:

sql

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```
CREATE TABLE Employees (  
    EmployeeID INT PRIMARY KEY,  
    FirstName VARCHAR(50),  
    LastName VARCHAR(50),  
    Department VARCHAR(50),  
    Salary DECIMAL(10, 2),  
    HireDate DATE  
);
```

```
INSERT INTO Employees (EmployeeID, FirstName, LastName, Department,  
Salary, HireDate)  
VALUES  
(1, 'Alice', 'Brown', 'HR', 50000.00, '2018-01-15'),  
(2, 'Bob', 'Smith', 'Engineering', 70000.00, '2019-05-23'),  
(3, 'Charlie', 'Davis', 'Marketing', 60000.00, '2020-07-11'),  
(4, 'David', 'Wilson', 'HR', 45000.00, '2017-03-19'),  
(5, 'Eve', 'Miller', 'Engineering', 80000.00, '2021-10-01');
```

Aggregate Functions:

sql

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```
SELECT Department, AVG(Salary) AS AverageSalary
FROM Employees
GROUP BY Department;
```

Scalar Functions:

```
sql
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SELECT FirstName, LastName, UPPER(FirstName) AS UpperFirstName
FROM Employees;
```

String Functions:

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

Date Functions:

```
sql
Copy code
SELECT FirstName, LastName, HireDate,
      YEAR(HireDate) AS HireYear,
      MONTH(HireDate) AS HireMonth,
      DAY(HireDate) AS HireDay
FROM Employees;
```

Output:

Aggregate Functions:

Department	AverageSalary
HR	47500.00
Engineering	75000.00
Marketing	60000.00

Scalar Functions:

FirstName	LastName	UpperFirstName
Alice	Brown	ALICE
Bob	Smith	BOB
Charlie	Davis	CHARLIE
David	Wilson	DAVID
Eve	Miller	EVE

String Functions:

FirstName	LastName	FullName
Alice	Brown	Alice Brown
Bob	Smith	Bob Smith
Charlie	Davis	Charlie Davis
David	Wilson	David Wilson
Eve	Miller	Eve Miller

Date Functions:

FirstName	LastName	HireDate	HireYear	HireMonth	HireDay
Alice	Brown	2018-01-15	2018	1	15
Bob	Smith	2019-05-23	2019	5	23
Charlie	Davis	2020-07-11	2020	7	11
David	Wilson	2017-03-19	2017	3	19
Eve	Miller	2021-10-01	2021	10	1

Conclusion:

In this lab, we demonstrated the use of various SQL functions. Aggregate functions, such as AVG, help us perform calculations on multiple rows of a table's column. Scalar functions, like UPPER, operate on individual values and return a single value. String functions, such as CONCAT, allow us to manipulate string data. Date functions, like YEAR, MONTH, and DAY, help us extract specific parts of a date. Understanding these functions is essential for effective data manipulation and retrieval in SQL.