

1 Difference Between Stored Procedure and Stored Function

Feature	Stored Procedure	Stored Function
Definition	A group of SQL statements that performs one or more specific tasks.	A subprogram that performs a task and must return a single value .
Return Type	May or may not return a value (can use OUT parameters).	Must return exactly one value using the RETURN statement.
Usage in SQL Queries	Cannot be used directly in SQL statements.	Can be used directly inside SQL expressions (like SELECT, WHERE, etc.).
Parameters	Can have IN, OUT, or INOUT parameters.	Has only IN parameters.
Purpose	Used to perform operations such as insert, update, delete, or complex business logic.	Used to perform calculations and return a single result.
Invocation Syntax	Called using the CALL statement.	Called inside a SQL query or using SELECT statement.
Transaction Control	Can use COMMIT and ROLLBACK.	Cannot use transaction control commands.

Example: Stored Procedure

```
DELIMITER //  
  
CREATE PROCEDURE GetHighSalaryEmployees()  
  
BEGIN  
  
    SELECT First_Name, Last_Name, Salary  
    FROM Employees  
    WHERE Salary > 60000;  
  
END //  
  
DELIMITER ;
```

-- Calling the procedure

```
CALL GetHighSalaryEmployees();  
  
→ Output: Returns all employees with salary greater than 60000.
```

Example: Stored Function

```
DELIMITER //  
  
CREATE FUNCTION AnnualSalary(monthly_salary DECIMAL(10,2))  
RETURNS DECIMAL(10,2)
```

DETERMINISTIC

BEGIN

```
    RETURN monthly_salary * 12;
```

END //

DELIMITER ;

-- Calling the function

```
SELECT First_Name, AnnualSalary(Salary) AS Annual_Salary  
FROM Employees;
```

→ Output: Returns each employee's **annual salary**.

⌚ 2 Difference Between IN and OUT Parameters in Stored Procedure

Parameter Type	Direction of Data Flow	Description	Example Usage
IN	Input only	Passes a value into the procedure. Cannot be changed by the procedure.	IN emp_id INT
OUT	Output only	Used to return a value back from the procedure.	OUT total_count INT
INOUT	Input and Output	Passes a value into the procedure, and the procedure modifies it before returning.	INOUT counter INT

✳ Example Using IN and OUT Parameters

DELIMITER //

```
CREATE PROCEDURE GetEmpSalary(IN emp_id INT, OUT emp_salary DECIMAL(10,2))
```

BEGIN

```
    SELECT Salary INTO emp_salary
```

```
    FROM Employees
```

```
    WHERE Emp_ID = emp_id;
```

END //

DELIMITER ;

-- Declaring a variable to hold the output

```
SET @salary = 0;
```

-- Calling the procedure

```
CALL GetEmpSalary(2, @salary);
```

-- Display the output

```
SELECT @salary AS Employee_Salary;
```

→ Output: Displays the salary of employee with Emp_ID = 2.

3 How Stored Procedures and Functions Are Called / Invoked

Type	Call Syntax	Example
Stored Procedure	CALL procedure_name(parameters);	CALL GetHighSalaryEmployees();
Stored Function	Used inside SQL statements like SELECT, WHERE, or ORDER BY	SELECT AnnualSalary(Salary) FROM Employees;
