

What is the difference between stored procedure and stored functions?

Stored procedures and **stored functions** are both database objects that are precompiled and stored on the database server. They are used to encapsulate a set of SQL statements for reusability and performance optimization. While they serve a similar purpose, there are key distinctions between them:

Stored Procedures

- **Purpose:** Primarily used to perform complex tasks or business logic.
- **Return Value:** Can return multiple result sets or update multiple rows.
- **Output Parameters:** Can have output parameters to return values to the calling program.
- **Side Effects:** Can have side effects like modifying data or performing DML operations.

Stored Functions

- **Purpose:** Primarily used to calculate a single value.
- **Return Value:** Returns a single scalar value.
- **Side Effects:** Typically have no side effects and do not modify data.
- **Usage:** Can be used within SQL statements, such as in SELECT, WHERE, or HAVING clauses.

stored procedures are more versatile and can perform a wider range of tasks, while stored functions are specialized for calculating single values. The choice between the two depends on the specific requirements of your application.

What is the difference between IN and OUT Parameters in stored Procedure.

The main difference between IN and OUT parameters in a stored procedure is that IN parameters pass values into a procedure, while OUT parameters pass values out of a procedure:

- **IN parameters**

These parameters allow the caller to pass values to the stored procedure. The procedure may modify the value, but the caller won't see the modification when the procedure returns.

- **OUT parameters**

These parameters return values from the procedure back to the caller. The value is recorded in a session variable that can be accessed after the procedure is executed. OUT parameters must be variables, not constants, and they can only be found on the left-hand side of an assignment in the module.

How a stored procedure and Stored function is being called or invoked?

Calling Stored Procedures and Functions

Stored procedures and functions are typically called from within a SQL statement. Here are the general methods:

Calling a Stored Procedure

```
CALL my_procedure(parameter1, parameter2);
```

Within a SELECT statement:

```
SELECT * FROM my_table WHERE column_name = CALL  
my_function(parameter);
```

Calling a Stored Function

Within a SELECT statement:

```
SQL
```

```
SELECT my_function(column_name) FROM my_table;
```

The function's return value is directly used in the **SELECT** statement.