



What is a Function?



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- A function is a set of SQL statements that perform a specific task.
- Basically, it is a set of SQL statements that accept only input parameters, perform actions and return the result. Function can return an only single value or a table.
- We can't use a function to Insert, Update, Delete records in the database table(s).
- If you have to repeatedly write large SQL scripts to perform the same task, you can create a function that performs that task.
- A function accepts inputs in the form of parameters and returns a value.
- Of course, you could create a stored procedure to group a set of SQL statements and execute them, however, stored procedures cannot be called within SQL statements. Functions, on the other hand, can be.



Basic Syntax of Function

- *CREATE FUNCTION [database_name.]function_name (parameters)*

RETURNS data_type AS

BEGIN

SQL statements

RETURN value

END;



Built-In Functions

- SQL server adds some built-in functions to every database.
- Built-in functions are grouped into different types depending upon their functionality.
- **Scalar Function:** Scalar functions operate on a single value and return a single value
 - upper('dotnet'), lower('DOTNET'), convert(int, 15.56)
- **Aggregate Functions:** Aggregate functions operate on a collection of values and return a single value.
 - max(), min(), avg(), count()
- **Date and Time Functions:** Related to date and time
 - GETDATE(), Datediff(), DateAdd(), Day(), Month(), Year()



User-Defined Functions

- These functions are created by the user in the system database or in a user-defined database.
- **Scalar Function:** The user-defined scalar function also returns a single value as a result of actions performed by the function.
- **Inline Table-Valued Function:** The user-defined inline table-valued function returns a table variable as a result of actions performed by the function.
- **Multi-Statement Table-Valued Function:** A user-defined multi-statement table-valued function returns a table variable as a result of actions performed by the function. In this, a table variable must be explicitly declared and defined whose value can be derived from multiple SQL statements.



Difference between Functions and Stored Procedures

- The function must return a value but in **Stored Procedure** it is optional. Even a procedure can return zero or n values.
- Functions can have only input parameters for it whereas Procedures can have input or output parameters.
- Functions can be called from Procedure whereas Procedures cannot be called from a Function.
- The procedure allows SELECT as well as DML(INSERT/UPDATE/DELETE) statement in it whereas Function allows only SELECT statement in it.
- Procedures cannot be utilized in a SELECT statement whereas Function can be embedded in a SELECT statement.
- Stored Procedures cannot be used in the SQL statements anywhere in the WHERE/HAVING/SELECT section whereas Function can be.
- An exception can be handled by try-catch block in a Procedure whereas try-catch block cannot be used in a Function.
- We can use Transactions in Procedure whereas we can't use Transactions in Function.