MMSQL

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Agenda

- Security
  - Stored Procedures
  - Stored Functions
  - Triggers

Stored Functions

HERZING COLLEGE

Stored Functions

- A stored function is a special kind stored program that returns a single value. You use stored functions to encapsulate common formulas or business rules that are reusable among SQL statements or stored programs.

Stored Functions

- Different from a stored procedure, you can use a stored function in SQL statements wherever an expression is used. This helps improve the readability and maintainability of the procedural code.

Stored Functions vs Stored Procedure

- Main
  - 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.

Stored Functions vs Stored Procedure

- Other Differences
  - The Stored Procedure allows SELECT as well as Add, Change or Delete statement in it whereas Function allows only SELECT statement in it.
  - Stored Procedures cannot be used 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.
  - Functions that return tables can be treated as another rowset. This can be used in JOINs with other tables.
  - Inline Function can be thought of as views that take parameters and can be used in JOINs and other Rowset operations.
  - 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.

Stored Functions

```
CREATE FUNCTION
function_name(param1,param2,…)
RETURNS datatype
   [NOT] DETERMINISTIC
   BEGIN
Statements
END
```

Stored Functions

- First, you specify the name of the stored function after CREATE FUNCTION clause.

- Second, you list all parameters of the stored function inside the parentheses. By default, all parameters are IN parameters. You cannot specify IN, OUT or INOUT modifiers to the parameters.

Stored Functions

- Third, you must specify the data type of the return value in the RETURNS statement. It can be any valid MySQL data types.

Stored Functions

- Fourth, if the stored function returns the same result for the same input parameters, it is considered deterministic; otherwise, the stored function is not deterministic. You have to decide whether a stored function is deterministic or not. If you declare it incorrectly, the stored function may produce an unexpected result, or the available optimization is not used, degrading the performance.

Stored Functions

- Fifth, you write the code in the body of the stored function. It can be a single statement or a compound statement. Inside the body section, you have to specify at least one RETURN statement. The RETURN statement returns a value to the caller. Whenever the RETURN statement is reached, the stored function's execution is terminated immediately.

Stored Functions

- Examples
  - REFER to workspace-functions.sql