What is a Stored Procedure (SP) ?

Stored Procedure

- MySQL Server stored procedure is a batch of statements grouped as a logical unit and stored in the database.
- The stored procedure accepts the parameters and executes the T-SQL statements in the procedure, returns the result set if any.
- A stored procedure is a type of code in MySQL that can be stored for later use and can be used many times.
- So, whenever you need to execute the query, instead of calling it you can just call the stored procedure.
- You can also pass parameters to a stored procedure, so that the stored procedure can act based on the parameter values that is passed.

Advantages of using stored procedure

- **Better Performance:** The procedure calls are quick and efficient as stored procedures are compiled once and stored in executable form. Hence the response is quick. The executable code is automatically cached, hence lowers the memory requirements.
- **Reduced network traffic:** When we use stored procedures instead of writing T-SQL queries at the application level, only the procedure name is passed over the network instead of the whole T-SQL code.
- **Reusable:** Stored procedures can be executed by multiple users or multiple client applications without the need of writing the code again.
- **Security:** Stored procedures reduce the threat by eliminating direct access to the tables. we can also encrypt the stored procedures while creating them so that source code inside the stored procedure is not visible.
- **It can be easily modified:** We can easily modify the code inside the stored procedure without the need to restart or deploying the application. For example, If the T-SQL queries are written in the application and if we need to change the logic, we must change the code in the application and re-deploy it. SQL Server Stored procedures eliminate such challenges by storing the code in the database. so, when we want to change the logic inside the procedure we can just do it by simple ALTER PROCEDURE statement.

Syntax of stored procedure

- Create Statement for a stored procedure
- DELIMITER $$

  CREATE PROCEDURE *NameOfSP()*

  BEGIN

  SQL_STATEMENT

  END$$

  DELIMITER $$

  - Call NameOfSP();

MySQL Delimeter

- When writing SQL statements, you use the semicolon (;) to separate two statements like the
- SELECT * FROM products;
- SELECT * FROM customers;
- A MySQL client program such as MySQL Workbench or mysql program uses the delimiter (;) to separate statements and executes each statement separately.
- However, a stored procedure consists of multiple statements separated by a semicolon (;).
- If you use a MySQL client program to define a stored procedure that contains semicolon characters, the MySQL client program will not treat the whole stored procedure as a single statement, but many statements.
- Therefore, you must redefine the delimiter temporarily so that you can pass the whole stored procedure to the server as a single statement.
- To redefine the default delimiter, you use the DELIMITER command:
- DELIMITER delimiter_character

MySQL SP with Parameters

- A parameter in a stored procedure has one of three modes: IN,OUT, or INOUT.
- IN is the default mode. When you define an IN parameter in a stored procedure, the calling program has to pass an argument to the stored procedure.
- The value of an OUT parameter can be changed inside the stored procedure and its new value is passed back to the calling program.
- An INOUT parameter is a combination of IN and OUT parameters. It means that the calling program may pass the argument, and the stored procedure can modify the INOUT parameter, and pass the new value back to the calling program.
- *[IN | OUT | INOUT] parameter_name datatype[(length)]*
- First, specify the parameter mode, which can be IN , OUT or INOUT depending on the purpose of the parameter in the stored procedure.
- Second, specify the name of the parameter. The parameter name must follow the naming rules of the column name in MySQL.
- Third, specify the data type and maximum length of the parameter.