Mysql Stored Procedure Tutorial

Author: Ankur Kumar Singh
Website: www.techflirt.com
Email: info@techflirt.com
MySql 5 introduced concept of stored procedure functionality. If you have already worked on other DBMS(Database management System) or MySql5 then you may be familiar with the concept of stored procedure. But if you are new for MySql 5 then stored procedure may be new for you. In my post “Mysql Stored Procedure Tutorial” we will learn about some topic of attached to mysql stored procedure like what is mysql stored procedure, how to create it, how we program stored procedure, what are advantages and disadvantages of stored procedure. etc. In my post I refer stored procedure word for mysql stored procedure.

What is mysql stored procedure:

Stored procedure is set of SQL code which is stored in database server and can be invoked by program or trigger or stored procedure itself. Stored procedure is way to execute may task on your database server directly, in other words stored procedure is way to execute your business logic directly into database server.

In stored procedure you can perform your some of generic tasks which are dependent to database table data. so rather to go multiple time on database to fetch data into your program and perform your business logic stored procedure give some generic way of coding for your business logic and take data return or you can save your processed data into your database. Let us take an example: Suppose you have normal banking system where you want to update interest of loan of any specific user. What you will normally do from your program? You will fetch capital, rate of interest and duration and calculate interest and then you will go back to database and save data. In this very small example we are going 2 time in database, but if we will use the stored procedure then we need to write all operation within our stored procedure and we will call it through the program one time. In this case you will fetch data like capital, rate of interest and duration within database(with stored procedure) and you will save data after processing. In this case we are only interrupting database server one time. Thanks to the stored procedure which reduced our server overhead.

Advantage of Mysql Stored Procedure:

Following are the condition when mysql stored procedure are very useful:

- Multiple applications are running in multiple environment and need to use the same database. By using stored procedure you can make your business logic independent of programming language.
- When security is main concern use of stored procedure is vital. By doing your operation through the database you can log your all performed action. Banking site is the best example.
- If you are using stored procedure then you do not have table access directly which is one more way to secure the data and transaction.
- Stored procedure increases performance of your application sometime. When stored procedure created it complie and when it call it never go to parser and directly execute and fetch the record whereas normal SQL query fired on database server get parse every time so using stored procedure your can save parsing time.
If your application is big or your database server on remote system then by using stored procedure you can decrease the traffic between your database server and application server.

Since stored procedure is written in your database server and application call it separately then the degree of re-usability increase because despite to going in much detail you can call stored procedure to perform your action.

Disadvantages of using stored procedure:

Following are situation due to which we should avoid using mysql store procedure.

- Sometime use of stored procedure is bit risky. Store procedure follow “define one use many time” philosophy. Doing change in stored procedure directly effect your data so it should always be use with very carefully.
- Stored procedure are set of sql command form our logic so sometime programmer need to debug the stored procedure. In mysql stored procedure it is very hard to debug.
- Managing stored procedure is bit difficult because it does not have any object oriented paradigm like things.

Since stored procedure has its own advantages and disadvantages so before choosing the option of using stored procedure we should be very careful to decide whether we should use stored procedure or not.

A Simple example of mysql stored procedure:

As we have discussed earlier mysql stored procedure are simple SQL statement like normal query but difference is that query never saved and when you will run stored procedure it will be saved in your RDBMS system. Let us create a simple stored procedure which will simply select one string.

```
mysql > create procedure helloworld() Select 'hello test';
Query OK, 0 rows affected (0.00 sec)
```

Above will create a stored procedure in mysql system with name helloworld. To call this procedure you need to run following mysql query

```
mysql > CALL heloworld();
```

Now this CALL helloworld() will run select 'hello test'. This is very small example. Let us move to some big one.

Mysql stored procedure never return value directly. Either you need to specify output parameter in your stored procedure or you have to put select statement inside the procedure which will fill data in your resource.

Creation of the mysql procedure involve 3 steps

- Definition of the procedure: Create procedure syntax with the name
- Definition of the input parameter: There are three type of parameter you can define. in parameter, out parameter and inout parameter. By in parameter you can define inputs of the stored procedure, By out parameter you can specify the output
By *inout* you can define shared parameter, it can be used either as input parameter or output parameter.

- Third is the body of the procedure. Normally we write within the `BEGIN` and `END` tag.

Let us create a simple and a purposeful stored procedure:

```sql
DELIMITER $$
CREATE PROCEDURE `test`(IN capital DOUBLE , IN rate INT , IN duration INT , OUT interest DOUBLE)
BEGIN
  SET interest = (capital * rate * duration)/100;
  INSERT INTO `administrators`(`interest`) VALUES(interest);
END$$
DELIMITER ;
```

Above procedure is created with name `test` which will take input as capital, rate, and duration and will calculate interest and will return interest in output variable and also same the interest into database. Let us run this procedure.

```
mysql > call test(100 , 7 , 3 , @primary_interest);
mysql > select @primary_interest;
```

Now `@primary_interest` will give you the interest calculated by the stored procedure.

You can use input parameter input in query written within stored procedure are. Let us take an example:

```sql
DELIMITER $$
CREATE PROCEDURE `restaurent`.`anoter_test`(IN restaurant_name VARCHAR(255))
BEGIN
  SELECT * FROM `restaurents` WHERE `restaurents`.`name` = restaurant_name;
END$$
DELIMITER ;
```

As we have discussed earlier that in mysql you can put all your database based business operation. It means that in mysql you can do the programming like other language. As per my thinking if you have exposure of programming with some other language then only you need to learn *variable declaration*, *Conditional operator* and *Mysql Cursor* to write a mysql stored procedure program. Let us see these three things.

**Variable Declaration and operation on variable in stored procedure:**
Like other language in mysql stored procedure you can declare variables also. Like other programming language in mysql also you should declare the variable in the begenning of the coding. I mean just after BEGIN tag.
With following style you can declare variable in mysql programming:

```
DECLARE i INT(3)
DECLARE j INT(9) DEFAULT 6;
```

In mysql we use DECLARE tag to declaring the variable. You have to specify the data type of the variable to declare the variable. I recomend to specify size of the variable if it is required like int(4). For some of the varaible you can not declare the variable without the size like varchar.
Scope of the variable in mysql is limited to END tag. If you have declared the variable in stored procedure, then after END tag variable lost. You can initilize the variable after declaration by following way.

```
DECLARE i INT(3);
SET i = 10;
```

In mysql you can take value in the variable from the query also from the help of INTO keyword. For example:

```
DECLARE student_name VARCHAR(23);
SELECT student.name INTO student_name FROM student_table.
```

**Condition statement in Mysql programming:**

Condition statement will give you power to execute code on the basis of the some value. Like programming language here in mysql stored procedure also you can write condition statement.For example

```
DECLARE count_student INT(5) default 0;
SELECT count(*) INTO count_student FROM student_table;
IF count_student > 5 THEN
    SELECT * FROM student_table;
ELSE
    SELECT 'Very less student';
END IF;
```

For every IF statement in Mysql you have to specify END IF statement. In mysql you can also use ELSEIF for recursive statements.
You can also use switch case based conditional statement in mysql, style of writing switch is bit differect. For example:

```
CASE
    WHEN i >2 THEN
    SELECT 'it is two';
    WHEN i < 2 THEN
    Select 'it is less then 2';
    ELSE
    SELECT 'no eyse';
END CASE;
```
Every CASE will be closed with END CASE. Like programming we have default tag with name ELSE.

**Iteration control (Loop control) in mysql:** In mysql you can use loop also as you do in your programming language. Here you can implement loop using WHILE, REPEAT and LOOP Tag.