Functions:

**User-Defined Functions in MySQL**

Graphical user interface, text, application

Description automatically generated

Text

Description automatically generated

Graphical user interface, text

Description automatically generated

Graphical user interface, text, application

Description automatically generated

Graphical user interface, text, email, website

Description automatically generated

**Example 1:**

**use employees;**

**drop function if exists f\_emp\_avg\_sal;**

**delimiter $$**

**create function f\_emp\_avg\_sal (p\_emp\_no integer) returns decimal(10,2)**

**begin**

**declare v\_avg\_sal decimal(10,2);**

**select avg(s.salary) into v\_avg\_sal from employees e**

**join**

**salaries s on e.emp\_no = s.emp\_no**

**where e.emp\_no = p\_emp\_no;**

**return v\_avg\_sal;**

**end$$**

**delimiter ;**

**Error:**

**Error Code: 1418. This function has none of DETERMINISTIC, NO SQL, or READS SQL DATA in its declaration and binary logging is enabled (you \*might\* want to use the less safe log\_bin\_trust\_function\_creators variable) 0.000 sec**

* **Deterministic**
* **No sql**
* **Reads sql data**

**Modified Code:**

**use employees;**

**drop function if exists f\_emp\_avg\_sal;**

**delimiter $$**

**create function f\_emp\_avg\_sal (p\_emp\_no integer) returns decimal(10,2)**

**#Deterministic**

**#no sql**

**#reads sql data**

**begin**

**declare v\_avg\_sal decimal(10,2);**

**select avg(s.salary) into v\_avg\_sal from employees e**

**join**

**salaries s on e.emp\_no = s.emp\_no**

**where e.emp\_no = p\_emp\_no;**

**return v\_avg\_sal;**

**end$$**

**delimiter ;**

**Error Code: 1418.**

**Error Code: 1418. This function has none of DETERMINISTIC, NO SQL, or READS SQL DATA in its declaration and binary logging is enabled…**

Let’s begin by saying that a *log* is a software component where you can save information about some events or errors that happened during the execution of a certain application. A log is preserved for traceability or debugging reasons and this is how it is used in MySQL as well.

Consequently, a *Binary* Log is a log that contains database changes. This type of logging affects the way in which we need to structure our code when creating MySQL functions.

**When the Binary Log has been enabled**, it will always check whether a function is changing the data in the database and what is the result to be produced. The situation can be described like this.

Unless we specify what the exact behavior of our function should be, our code will lead to an error. This error is with code 1418 and states that the function has none of the following characteristics in its declaration: DETERMINISTIC, NO SQL, or READS SQL DATA.

To solve this error, we must include one (or more) of these characteristics in our code. They must be placed right after we ‘ve specified the return type of the function. Here’s the syntax to use:

**create function <function name> <function parameters> returns <type> <characteristics> …**

Let’s check the meaning of these characteristics:

· DETERMINISTIC – it states that the function will always return identical result given the same input

· NO SQL – means that the code in our function does not contain SQL (rarely the case)

· READS SQL DATA – this is usually when a simple SELECT statement is present

When none of those is present in our code, MySQL assumes that our function is non deterministic and that it changes data. This might not be the case, but still, in the end, an error is raised just because MySQL cannot know a priori what our function will do. Adding one of those to our code will prevent this error of showing up.

That said, there is another way to stop the error - by *disabling* the binary log when creating functions. And we can achieve this by executing the following command:

SET @@global.log\_bin\_trust\_function\_creators := 1;

Technically speaking, this operation isn’t the safest one out there. Nevertheless, for the purposes of this course, it is the one that will solve the potential problems regardless of the version of MySQL.

In conclusion, remember that sometimes the Binary Log may be disabled anyway and you don’t have to take any of the above actions. In that case, we simply hope you’ve enjoyed reading this article! Thank you!

**Example 2:**

**delimiter $$**

**drop function if exists f\_emp\_avg\_sal;**

**create function f\_emp\_avg\_sal (p\_emp\_no integer) returns decimal(10,2)**

**deterministic**

**begin**

**declare v\_avg\_sal decimal(10,2);**

**select**

**avg(s.salary) into v\_avg\_sal**

**from employees e**

**join**

**salaries s on e.emp\_no = s.emp\_no**

**where**

**e.emp\_no = p\_emp\_no;**

**return v\_avg\_sal;**

**end$$**

**delimiter ;**

**select f\_emp\_avg\_sal(11300);**

Graphical user interface, text

Description automatically generated

Graphical user interface, text, application

Description automatically generated

**11300**

Graphical user interface, text

Description automatically generated

**Example 03:**

**DELIMITER $$**

**CREATE FUNCTION emp\_info(p\_first\_name varchar(255), p\_last\_name varchar(255)) RETURNS decimal(10,2)**

**DETERMINISTIC NO SQL READS SQL DATA**

**BEGIN**

**DECLARE v\_max\_from\_date date;**

**DECLARE v\_salary decimal(10,2);**

**SELECT**

**MAX(from\_date)**

**INTO v\_max\_from\_date FROM**

**employees e**

**JOIN**

**salaries s ON e.emp\_no = s.emp\_no**

**WHERE**

**e.first\_name = p\_first\_name**

**AND e.last\_name = p\_last\_name;**

**SELECT**

**s.salary**

**INTO v\_salary FROM**

**employees e**

**JOIN**

**salaries s ON e.emp\_no = s.emp\_no**

**WHERE**

**e.first\_name = p\_first\_name**

**AND e.last\_name = p\_last\_name**

**AND s.from\_date = v\_max\_from\_date;**

**RETURN v\_salary;**

**END$$**

**DELIMITER ;**

**SELECT EMP\_INFO('Aruna', 'Journel');**

**select emp\_info('Sumant','Peac');**

A picture containing table

Description automatically generated

A picture containing calendar

Description automatically generated

Timeline

Description automatically generated with low confidence

Calendar

Description automatically generated with medium confidence

Graphical user interface

Description automatically generated