Create Trigger in MySQL

Summary: in this tutorial, you will learn how to create **trigger in MySQL** by using the **CREATE TRIGGER** statement.

> You should follow the introduction to SQL triggers and trigger implementation in MySQL first before going forward with this tutorial.

MySQL trigger syntax

In order to create a trigger you use the `CREATE TRIGGER` statement. The following illustrates the syntax of the `CREATE TRIGGER` statement:

```
CREATE TRIGGER trigger_name trigger_time trigger_event
 ON table_name
 FOR EACH ROW
 BEGIN
```


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```
5  ...
6  END
```

Let's examine the syntax above in more details.

- You put the trigger name after the `CREATE TRIGGER` statement. The trigger name should follow the naming convention `[trigger time] [trigger event]` , for example `before_employees_update` .
- Trigger activation time can be `BEFORE` or `AFTER` . You must specify the activation time when you define a trigger. You use `BEFORE` keyword if you want to process action prior to the change is made on the table and `AFTER` if you need to process action after the change is made.
- Trigger event can be `INSERT` , `UPDATE` or `DELETE` . This event causes trigger to be invoked. A trigger only can be invoked by one event. To define a trigger that is invoked by multiple events, you have to define multiple triggers, one for each event.
- A trigger must be associated with a specific table. Without a table trigger would not exist therefore you have to specify the table name after the `ON` keyword.
- The SQL statements are placed between `BEGIN` and `END` block.
- The `OLD` and `NEW` keywords are very handy. The `OLD` keyword refers to the existing record before you change the data and the `NEW` keyword refers to the new row after you change the data.

MySQL trigger example

Let's start creating a trigger in MySQL to audit the changes of the `employees` table.

First, we have `employees` table in our MySQL sample database as follows:

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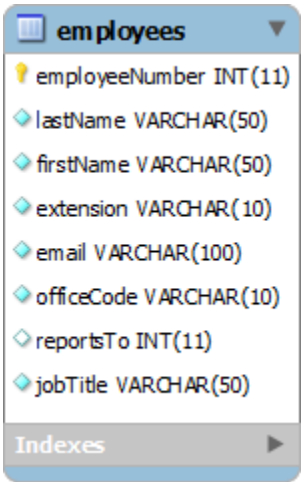


Second, we create a new table named `employees_audit` to keep the changes of the employee records. The following script creates the `employee_audit` table.

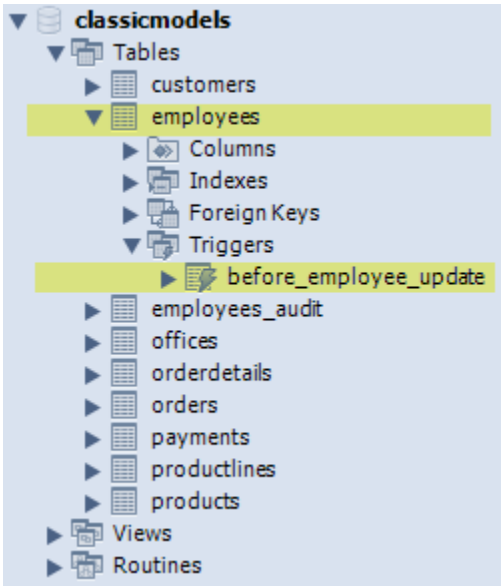
```
CREATE TABLE employees_audit (
    id int(11) NOT NULL AUTO_INCREMENT,
    employeeNumber int(11) NOT NULL,
    lastname varchar(50) NOT NULL,
    changedon datetime DEFAULT NULL,
    action varchar(50) DEFAULT NULL,
    PRIMARY KEY (id)
)
```

Third, we create a `BEFORE UPDATE` trigger to be invoked before a change is made to the `employees` table.

```
DELIMITER $$
CREATE TRIGGER before_employee_update
    BEFORE UPDATE ON employees
    FOR EACH ROW BEGIN

    INSERT INTO employees_audit
    SET action = 'update',
         employeeNumber = OLD.employeeNumber,
        lastname = OLD.lastname,
        changedon = NOW();
END$$
DELIMITER ;
```

If you take a look at the schema, you will see `before_employee_update` trigger under the `employees` table as follows:



Now it's time to update an employee record to test if the trigger is really invoked.

```
1 UPDATE employees
2 SET lastName = 'Phan'
3 WHERE employeeNumber = 1056
```

To check if the trigger was invoked by the `UPDATE` statement, we can query the `employees_audit` table by using the following query:

```
1 SELECT *
2 FROM employees_audit
```

The following is the output of the query:

id	employeeNumber	lastname	changedon	action
1	1056	Phan	2013-01-16 15:59:36	update

As you see, our trigger was really invoked so that we have a new record in the `employees_audit` table.

In this tutorial, you have learned how to create a trigger in MySQL. We also shown you how to develop a trigger to audit the changes of the `employees` table.

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