Assignment No: - 7

Title: - Write different types of Database Triggers

Problem Definition: -

Database Trigger (All Types: Row level triggers, Before and After Write a database trigger on Library table). The system should keep track of therecords that are being updated or deleted. The old value of updated or deleted recordsshould be added in Library_Audit table.

Learning Objectives:-

1. To write Row level Triggers for a table in mysql.

Learning Outcomes:-
1. Understanding the concept of triggers and their working.

Software and Hardware Requirement

1. OS-Linux
2. Mysql
3. 64 bit machine

Theory:

1. A trigger is a special kind of stored procedure that automatically executes when an event occurs in the database server.

2. DML triggers execute when a user tries to modify data through a data manipulation language (DML) event. DML events are INSERT, UPDATE, or DELETE statements on a table or view.

3. <u>Syntax</u>

```
CREATE
 [DEFINER = { user | CURRENT_USER }]
TRIGGER trigger_name
 trigger_time trigger_event
ON tbl_name FOR EACH ROW
Begin
trigger_body
end;
```

trigger_event: { INSERT | UPDATE | DELETE }

trigger_time: { BEFORE | AFTER }

4. There cannot be multiple triggers for a given table that have the same trigger event and action time.

For example, you cannot have two BEFORE UPDATE triggers for a table. But you can have a BEFORE UPDATE and a BEFORE INSERT trigger, or a BEFORE UPDATE and an AFTER UPDATE trigger.

5. Within the trigger body, you can refer to columns in the subject table (the table associated with the trigger) by using the aliases OLD and NEW.

OLD.col_name refers to a column of an existing row before it is updated or deleted. NEW.col_name refers to the column of a new row to be inserted or an existing row after it is updated.

6. Types of Triggers in mysql

1. Before Row Level Triggers

These Triggers are fired before a particular DML operation is executed (Insert/Delete/Modify).

The action written in the trigger body is executed before the DML operation is executed. Thus these triggers are preventive triggers. However the triggers cannot stop the Operation to be executed, they can only take a certain action.

2. After Row Level Triggers

These Triggers are fired after a particular DML operation is executed (Insert/Delete/Modify).

The action written in the trigger body is executed After the DML operation is successfully executed.

In this assignment we have written total of 6 row level triggers (Before and After for Insert, Deleteand Update operations).

Test Cases:-

Test Case no.	Input	Expected Output	Actual Output
TC_01	Before Insert Trigger on Borrower Table followed by Insert Command for Borrower	Data must be entered in Library_Audit	

	table.	Table	
TC_02	Before Delete Trigger on Borrower Table followed by Delete Command on Borrower Table	Data must be entered in Library_Audit Table	
TC_03	Before Update Trigger on Borrower Table followed by Update command on Borrower Table	Data must be entered in Library_Audit Table	
TC_04	After Insert Trigger on Borrower Table followed by Insert Command for Borrower table.	Data must be entered in Library_Audit Table	
TC_05	After Delete Trigger on Borrower Table followed by Delete Command on Borrower Table	Data must be entered in Library_Audit Table	
TC_06	After Update trigger on Borrower Table followed by Update command on Borrower Table	Data must be entered in Library_Audit Table	

Conclusion: Thus have successfully studied and implemented All Types :Row level and Statement level triggers, before and After Triggers.

Questions:

1. Write a database Trigger

2. Explain difference between Row-Level & Statement-Level Trigger.