

Assignment No.	7
Title	Write all types of Database Trigger
Roll No.	
Class	T.E. (C.E.)
Date	
Subject	Database Management System Laboratory
Signature	

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

Objectives : Learning the concept of use of trigger

Theory :-

DATABASE TRIGGERS:-

A database trigger is a PL/SQL program unit, which gets fired automatically whenever the data event such as DML or DDL system event. Triggers are associated with a specific table and are fired automatically whenever the table gets manipulated in a predefined way. The act of executing a trigger is called as firing a trigger.

Triggers are similar to procedures in that they are named PL/SQL blocks with declarative, executable and exception handling sections. But the difference is a procedure is executed explicitly from another block via a procedure call but a trigger is executed implicitly whenever the triggering event happens. A procedure can pass arguments but trigger doesn't accept arguments

A database trigger has following components:-

1.A triggering **Event**

2.A triggering **Constraint**

3.A triggering **Action**

Trigger categories

Triggers are categorized in various ways.

- 1) Trigger type
- 2) Triggering time
- 3) Triggering event

Trigger types

There are two types of triggers

1. **Statement Trigger**:-A statement trigger is a trigger in which the trigger action is executed once for the manipulation operation that fires the trigger.
2. **Row Trigger**:-A row trigger is a trigger in which the trigger action is performed repeatedly for each row of the table that is affected by the manipulation operation that fires the trigger.

Triggering time

Triggers can specify the time of trigger action.

1) Before the triggering event

The trigger action is performed before the operation that fires the trigger is executed. This trigger is used when execution of operation depends on trigger action.

2) After the triggering event

The trigger action is performed after the operation that fires the trigger is executed.

This trigger is used when triggering action depends on the execution of operation.

Triggering Events

Triggering events are the DML operations. These operations are **insert, update and delete**. When these operations are performed on a table, the trigger which is associated with the operation is fired. Triggering events divide triggers into three types.

- 1) DELETE TRIGGER
- 2) UPDATE TRIGGER
- 3) INSERT TRIGGER

General syntax for creation of Trigger

```
Create [or replace] TRIGGER <trigger_name>
<BEFORE | AFTER>
DELETE | [OR] INSERT | [OR] UPDATE[OF <column1>[,<column2>.....]
ON <table_name>
[for each row[when <condition>]
Begin
.....
.....
End;
```

Where

Trigger_name:-trigger name is the name of the trigger.

Table_name :-is the table name for which the trigger is defined.

Trigger-condition:-The trigger condition in the when clause, if present is evaluated first. The body of the trigger is executed only when this condition evaluates to true.

Dropping trigger

Suppose you want to drop trigger then the syntax is

Syntax:-Drop trigger trigger_name;

Enabling and Disabling Triggers

The Trigger can be disabled without dropping them. When the trigger is disabled, it still exists in data dictionary but never fired, To disable trigger, use alter command.

Syntax:-

Alter TRIGGER trigger_name DISABLE/ENABLE;

For all triggers on a particular table

Syntax:-

Alter TRIGGER trigger_name (DISABLE/ENABLE) all triggers;

Conclusion: Thus we have studied Importance & use of TRIGGER

Lab Exercise :-

- 1) Create a trigger that audits the operations on an Emp table.

Steps

Create table emp_audit(id number, operation varchar2(6), Dt date, User_id number, Username varchar2(20));

If any operation like insert, update, delete done on EMP table then insert into EMP_audit table information like the name of the operation with id, user_id and date.

- 2) Create a table Employee(id, Emp_name, Salary, City)

Create a trigger to convert the Emp_name into upper case before inserting or updating on Employee table.

- 3) Create a trigger to check Salary is less than 20000 before inserting or updating on Employee table.
- 4) Create a trigger (Statement Level Trigger) to display messages after inserting or updating or deleting records on Employee Table.

***** ASSIGNMENT NO 08 *****

Database Trigger (All Types: Row level and Statement level triggers, Before and After Triggers).

Write a database trigger on Library table.

- ☐ The System should keep track of the records that are being updated or deleted.
- ☐ The old value of updated or deleted records should be added in Library_Audit table.