EXPERIMENT: 11

Aim: Develop programs using before and after triggers, row and statement triggers and instead of triggers.

Tigger: A Trigger in Structured Query Language is a set of procedural statements which are executed automatically when there is any response to certain events on the particular table in the database. Triggers are used to protect the data integrity in the database.

Syntax for Trigger:

```
CREATE [OR REPLACE] TRIGGER trigger_name {BEFORE | AFTER } ,
        |DELETE |*OR+ INSERT |*OR+ UPDATE | *OF column_name,… ..... +
ON table_name
[REFERENCING { OLD AS old, NEW AS new }]
[FOR EACH ROW [WHEN condition ]
DECLARE
        Variable declaration; Constant
        declaration;
BEGIN PL/SQL subprogram body;
[EXCEPTION Exception PL/SQL block; ]
END;
```

PL/SQL Code for creation of trigger while insert / update records into a table.

```
SQL> CREATE OR REPLACE TRIGGER display_salary_changes
  2  BEFORE DELETE OR INSERT OR UPDATE ON customers
  3  FOR EACH ROW
  4  WHEN (NEW.ID > 0)
  5  DECLARE
  6  sal_diff number;
  7  BEGIN
  8  sal_diff := :NEW.salary - :OLD.salary;
  9  dbms_output.put_line('Old salary: ' || :OLD.salary);
 10  dbms_output.put_line('New salary: ' || :NEW.salary);
 11  dbms_output.put_line('Salary difference: ' || sal_diff);
 12  END;
 13  /
Trigger created.
```

```
SQL> set serveroutput on;
SQL> insert into customers values(5,'Hardik',27,'Mumbai',5500);
Old salary:
New salary: 5500
Salary difference:

1 row created.

SQL> update customers set salary=salary+500 where id=2;
Old salary: 1800
New salary: 2300
Salary difference: 500

1 row updated.

SQL> select *from customers;

        ID NAME            AGE ADDRESS       SALARY
---------- ---------- ---------- ---------- ----------
         1 ramesh             32 ahmedabad        2200
         2 khilan             25 Delhi            2300
         3 kaushik            23 Kota             2600
         4 chitali            25 Mumbai           6500
         5 Hardik             27 Mumbai           5500
```