Experiment 7

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Semester: 5 **Date of Performance:16/08/25**
Subject Name: Advanced Database and Management System **Subject Code: 23CSP-333**

1. Aim:

[MEDIUM] Design a Trigger such that whenever there is an insertion on student table then currently inserted or deleted row should be printed as it is on the output console window.

[HARD] Design a Postgres Trigger that (i) Whenever a new employee is inserted in tbl_employee, a record should be added to tbl_employee_audit like: “Employee name <emp_name> has been added at <current_time>. Do the same for deletion operation.

2. Tools Used: pgAdmin4

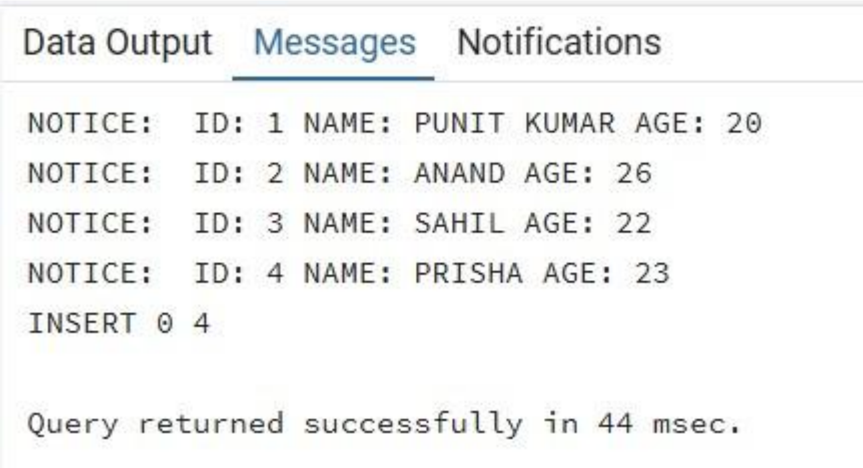
3. Code:

```sql
-- MEDIUM
CREATE TABLE TBL_STUDENT
(
 UID SERIAL PRIMARY KEY,
 NAME VARCHAR(20),
 AGE INT
);

INSERT INTO TBL_STUDENT(NAME, AGE)
VALUES
 ('PUNIT KUMAR', 20),
 ('ANAND', 26),
 ('SAHIL', 22),
   ('PRISHA', 23);
```

```
CREATE OR REPLACE FUNCTION FN_TRG_STUDENT()
RETURNS TRIGGER
LANGUAGE plpgsql
$$
BEGIN
 IF TG_OP = 'INSERT' THEN
        RAISE NOTICE 'ID: % NAME: % AGE: %', NEW.UID,
NEW.NAME, NEW.AGE;
        RETURN NEW;

 ELSIF TG_OP = 'DELETE' THEN
        RAISE NOTICE 'ID: % NAME: % AGE: %', OLD.UID,
OLD.NAME, OLD.AGE;
        RETURN OLD;

 END IF;

 RETURN NULL;
END;
$$;


CREATE OR REPLACE TRIGGER TRG_STUDENT
AFTER INSERT OR DELETE
ON TBL_STUDENT
EXECUTE FUNCTION FN_TG_STUDENT();

----------- HARD -------------------

CREATE OR REPLACE FUNCTION audit_employee_changes()
RETURNS TRIGGER
LANGUAGE plpgsql
AS
$$
BEGIN
    IF TG_OP = 'INSERT' THEN
        INSERT INTO tbl_employee_audit(message)
        VALUES ('Employee name ' || NEW.emp_name || ' has been added at ' || NOW());
        RETURN NEW;

    ELSIF TG_OP = 'DELETE' THEN
        INSERT INTO tbl_employee_audit(message)
        VALUES ('Employee name ' || OLD.emp_name || ' has been deleted at ' || NOW());
        RETURN OLD;
    END IF;

    RETURN NULL;
END;
$$



CREATE TRIGGER trg_employee_audit
AFTER INSERT OR DELETE
ON  tbl_employee FOR
EACH ROW
EXECUTE FUNCTION audit_employee_changes();


--TESTING THE TRIGGER
-- Insert an employee
INSERT INTO tbl_employee(emp_name, emp_salary) VALUES ('Punit', 50000);

-- Delete an employee
DELETE FROM tbl_employee WHERE emp_name = 'Punit';

-- Check audit log
SELECT * FROM tbl_employee_audit;
```

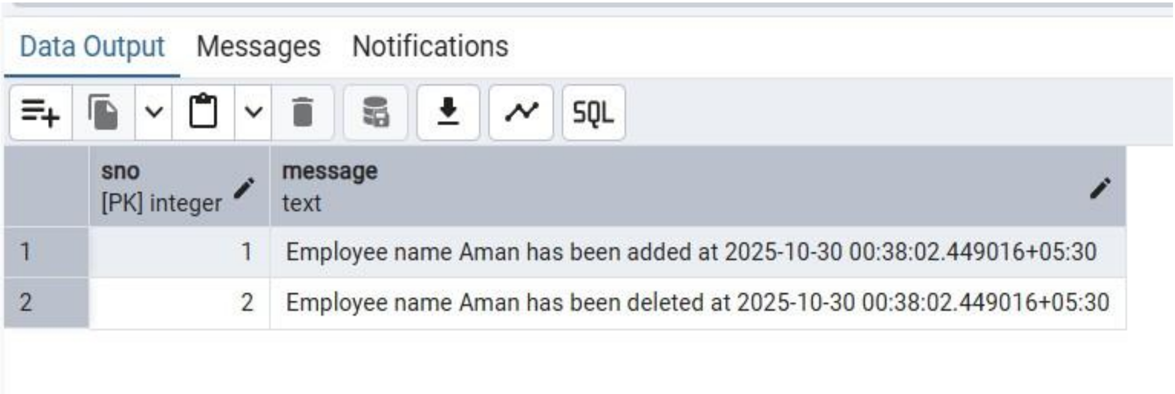
4. Output:

[MEDIUM]



```
NOTICE:  ID: 1 NAME: PUNIT KUMAR AGE: 20
NOTICE:  ID: 2 NAME: ANAND AGE: 26
NOTICE:  ID: 3 NAME: SAHIL AGE: 22
NOTICE:  ID: 4 NAME: PRISHA AGE: 23
INSERT 0 4

Query returned successfully in 44 msec.
```

[HARD]



	sno [PK] integer	message text
1	1	Employee name Aman has been added at 2025-10-30 00:38:02.449016+05:30
2	2	Employee name Aman has been deleted at 2025-10-30 00:38:02.449016+05:30

5. Learning Outcomes:

- Understand the concept of Database triggers – Learn how triggers automatically execute a function in response to database events like INSERT, DELETE etc.
- Implement Trigger Function using PLPGSQL.
- Differentiate between BEFORE and AFTER Triggers.
- Gained hands on experience for real life Trigger Applications.