



# DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

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## Experiment 7

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**Branch:** CSE  
**Semester:** 5  
**Subject Name:** Advanced Database  
and Management System

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### 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:

```
-- 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);
```



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```
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
```



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```
        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;
```

[MEDIUM]

[HARD]

- 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.