

# DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

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## Experiment 7

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**Branch:** CSE

**Section/Group:** 23BCS\_KRG-1/A

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**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.

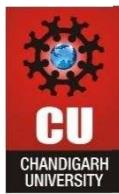
### 2. Tools Used:

pgAdmin4

### 3. Code:

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

INSERT INTO TBL_STUDENT(NAME, AGE)
VALUES
    ('ANKIT KUSHWAHA', 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;

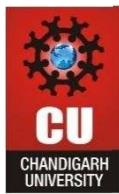
    END IF;

    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)
```



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```
        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;
```



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## 4. Output:

[MEDIUM]

```
Data Output Messages Notifications
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]

Data Output			Messages	Notifications
	sno [PK] integer	message		
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.