



DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

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Experiment 7

Student Name: Sunny Prabhakar

UID: 23BIS70024

Branch: BE CSE-IS

Section/Group: 23AIT_KRG-2/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
    ('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_TRG_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;
```

4. Output:

[MEDIUM]

| Data Output | Messages | Notifications |
|---|----------|---------------|
| <pre>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.</pre> | | |

[HARD]

| Data Output | Messages | Notifications |
|--|---|---------------|
| <div> <div> <div>≡</div> <div>📄</div> <div>▼</div> <div>📋</div> <div>▼</div> <div>🗑️</div> <div>🗄️</div> <div>⬇️</div> <div>📈</div> <div>SQL</div> </div> </div> | | |
| sno | message | |
| [PK] integer | text | |
| 1 | Employee name Aman has been added at 2025-10-30 00:38:02.449016+05:30 | |
| 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.