WORKSHEET 8

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Semester: 5th **Date of Performance: 27/10/25**

Subject Name: ADBMS **Subject Code: 23CSP-333**

1. **AIM:**
   Design a robust PostgreSQL transaction system for the students table where multiple student records are inserted in a single transaction.
   If any insert fails due to invalid data, only that insert should be rolled back while preserving the previous successful inserts using savepoints.
   The system should provide clear messages for both successful and failed insertions, ensuring data integrity and controlled error handling.

2. **Tools Used :** PostGres

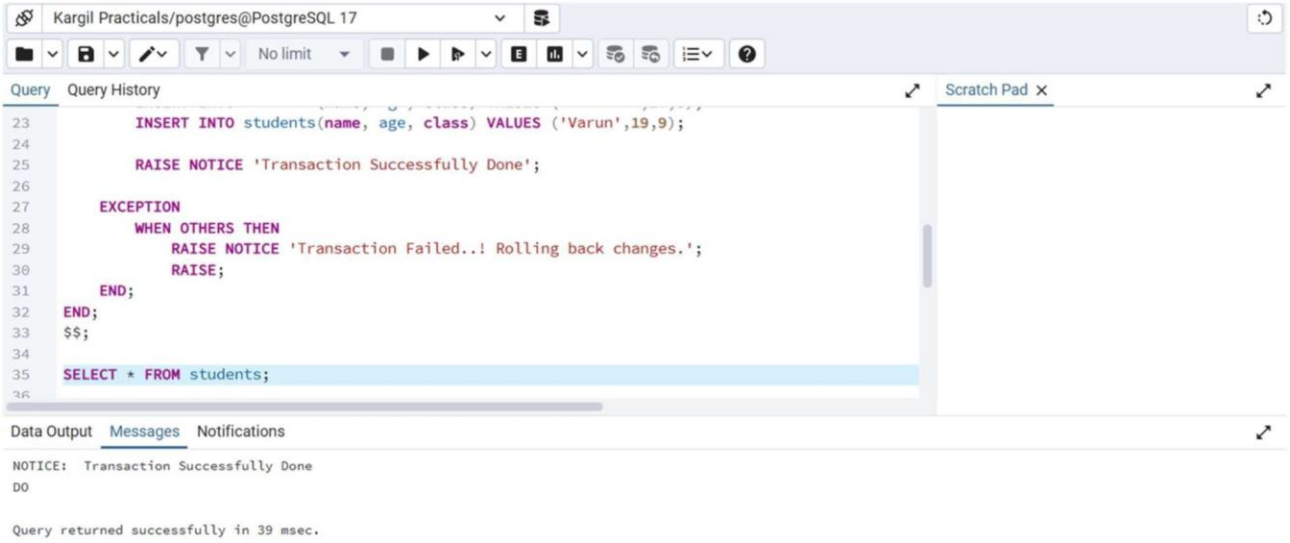
Solutions:

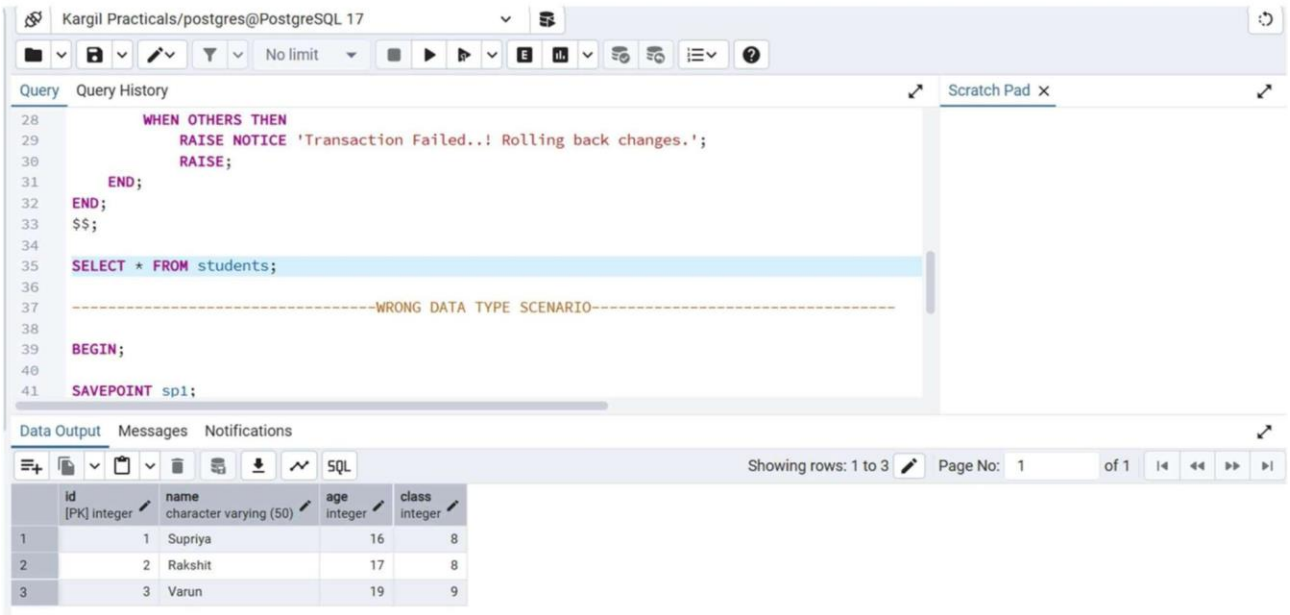
Q1)

```
DROP TABLE IF EXISTS students;

CREATE TABLE students ( id
   SERIAL  PRIMARY  KEY,
   name VARCHAR(50),
   age INT,
   class INT
);

DO
$$       BE
GIN
   BEGIN
      INSERT INTO students(name, age, class) VALUES ('Supriya',16,8);
      INSERT INTO students(name, age, class) VALUES ('Rakshit',17,8);
```

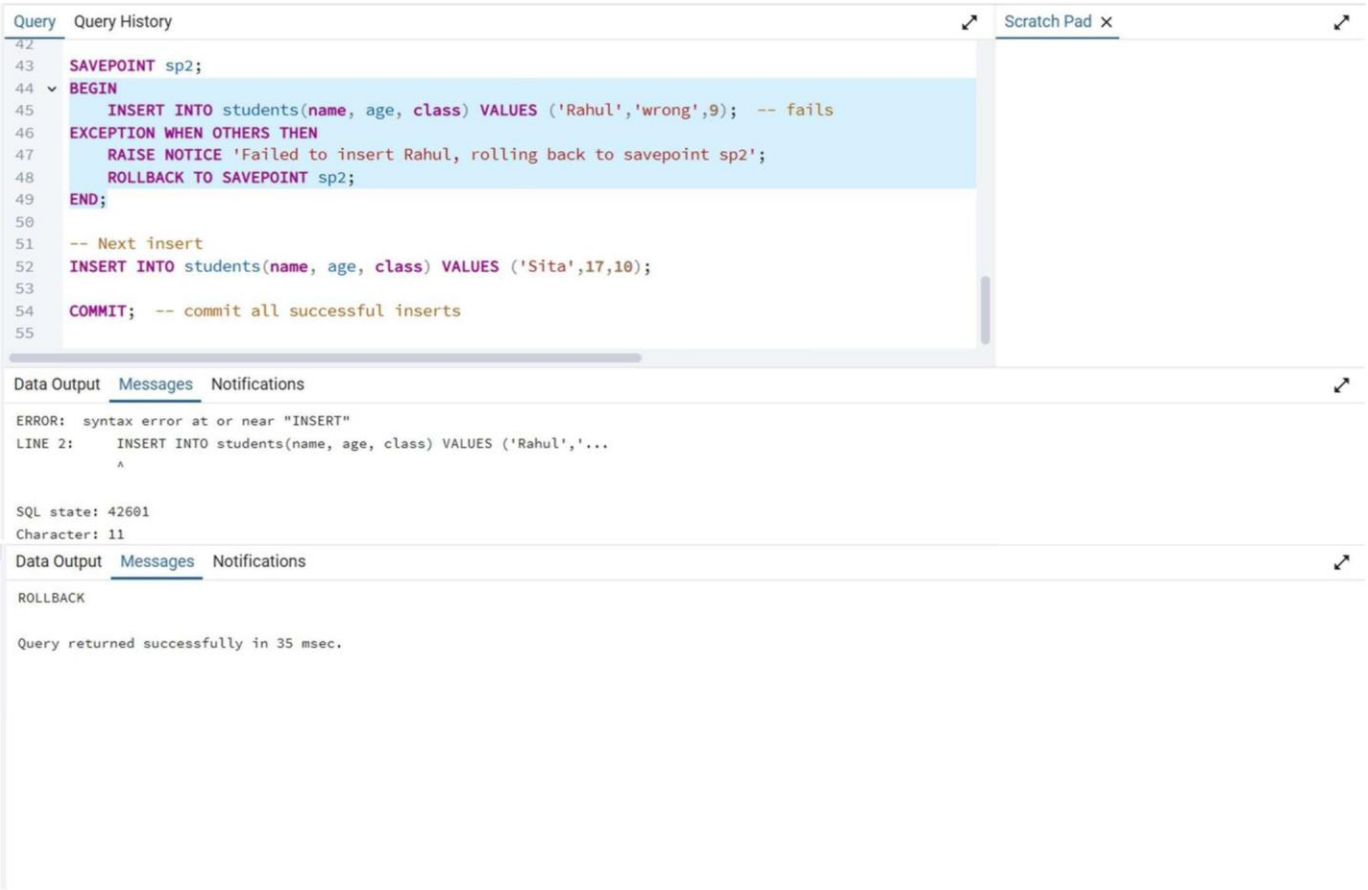
```
        INSERT INTO students(name, age, class) VALUES ('Varun',19,9);

        RAISE NOTICE 'Transaction Successfully Done';

    EXCEPTION
        WHEN OTHERS THEN
            RAISE NOTICE 'Transaction Failed..! Rolling back changes.';
            RAISE;
    END;
END;
$$;

SELECT * FROM students;

_____WRONG DATA TYPE SCENARIO_____
BEGIN; -- start transaction

SAVEPOINT sp1;
INSERT INTO students(name, age, class) VALUES ('Aarav',16,8);

SAVEPOINT sp2;
BEGIN
    INSERT INTO students(name, age, class) VALUES ('Rahul','wrong',9); -- fails
EXCEPTION WHEN OTHERS THEN
    RAISE NOTICE 'Failed to insert Rahul, rolling back to savepoint sp2';
    ROLLBACK TO SAVEPOINT sp2; END;

-- Next insert
INSERT INTO students(name, age, class) VALUES ('Sita',17,10);

COMMIT; -- commit all successful inserts
```

3. Output:





	id [PK] integer	name character varying (50)	age integer	class integer
1	1	Supriya	16	8
2	2	Rakshit	17	8
3	3	Varun	19	9



4. Learning Outcomes:

- Understand the concept of PostgreSQL transactions and how to start, commit, and rollback.
- Learn how to use **SAVEPOINT** to handle partial rollbacks within a transaction.
- Practice controlled error handling for individual insert failures without affecting other successful operations.
- Gain experience in maintaining **data integrity** while performing multiple inserts.
- Learn to generate informative **NOTICES** to monitor transaction progress and errors.