WORKSHEET 8

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Branch: B.E CSE-H (AIML) **Section: 23-AIT_KRG _G2**

Semester: 5th **Date of Performance: 27-10-2025**

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

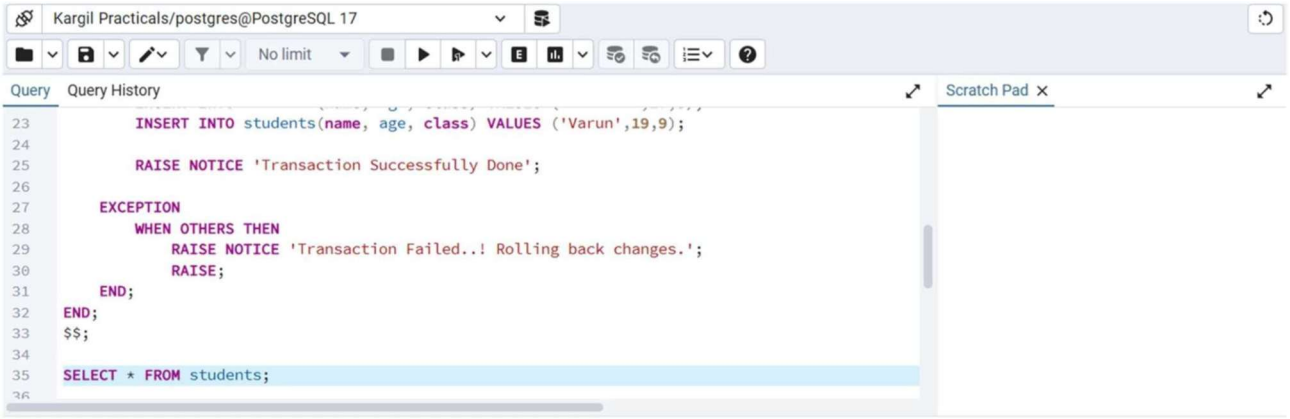
Solutions:

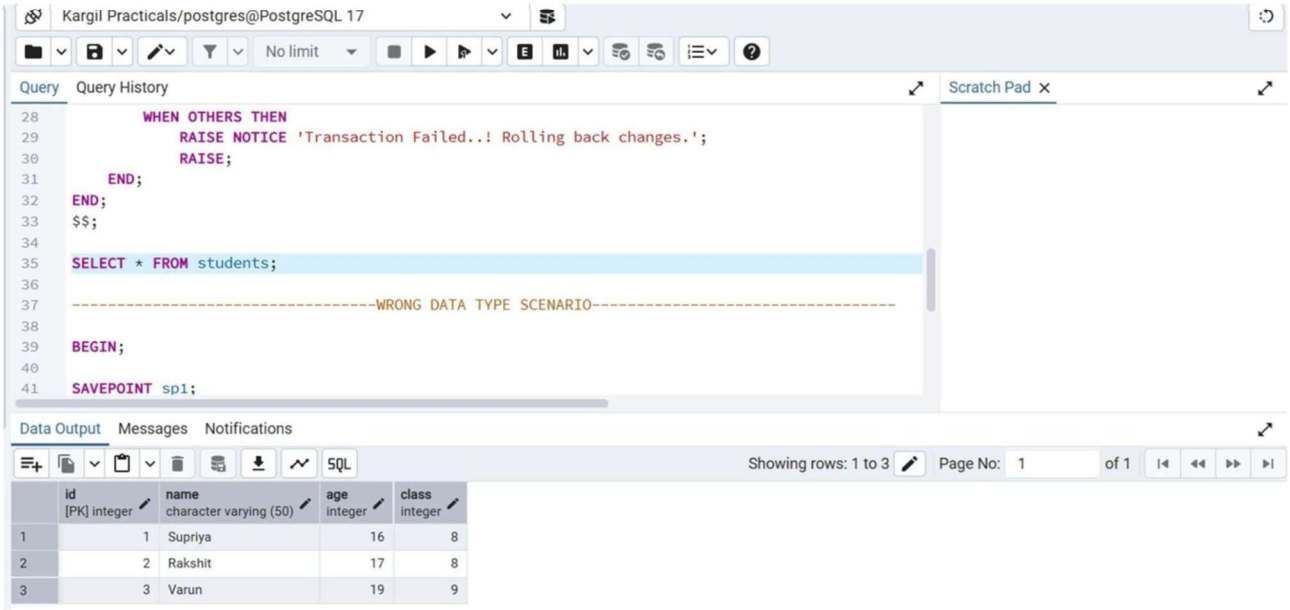
Q1)

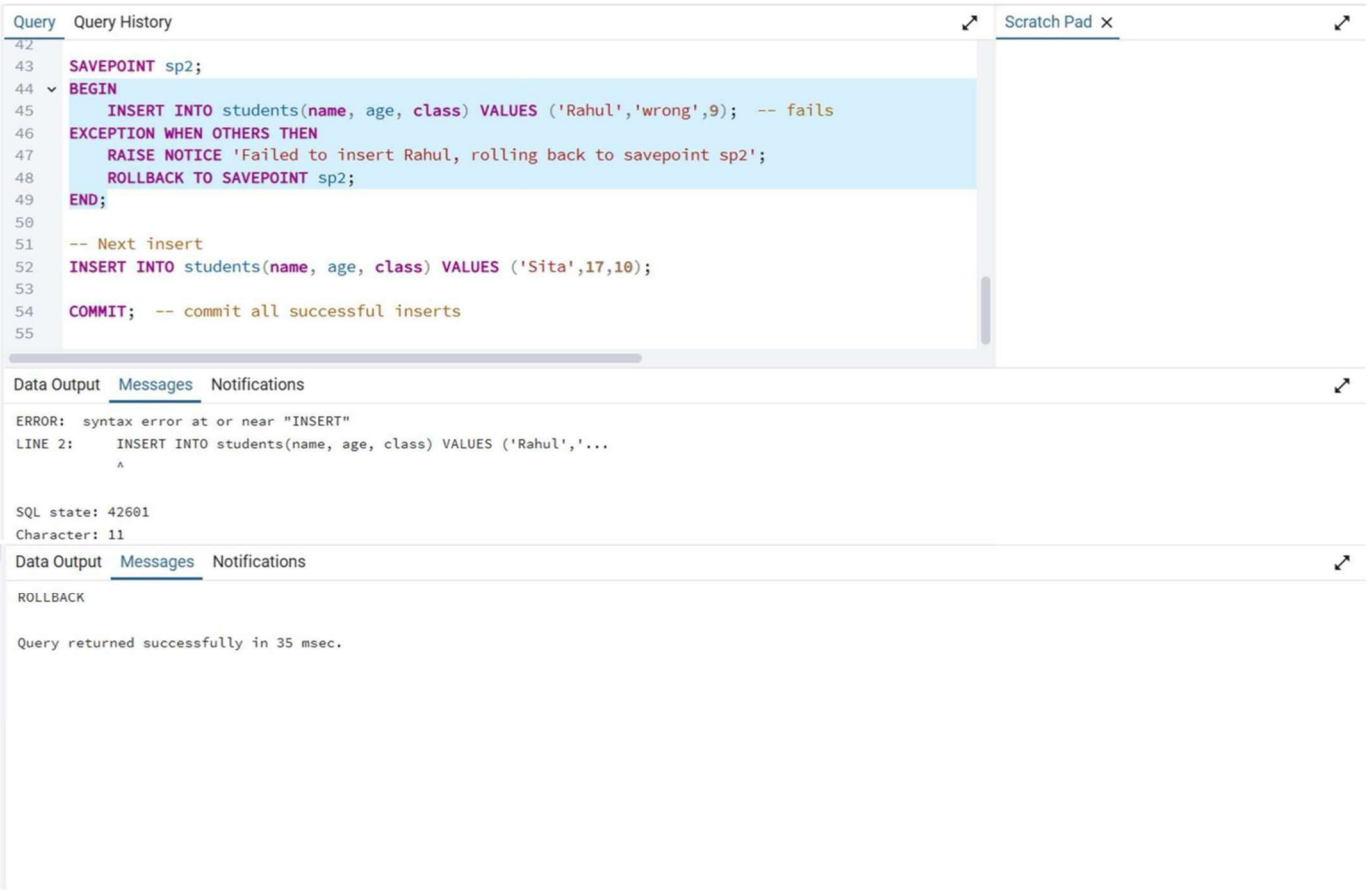
```
DROP TABLE IF EXISTS students;

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:


Kargil Practicals/postgres@PostgreSQL 17
No limit
Query
Query History
Scratch Pad
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;
Data Output
Messages
Notifications
NOTICE: Transaction Successfully Done
DO
Query returned successfully in 39 msec.


Kargil Practicals/postgres@PostgreSQL 17
No limit
Query
Query History
Scratch Pad
WHEN OTHERS THEN
RAISE NOTICE 'Transaction Failed..! Rolling back changes.';
RAISE;
END;
END;
$$;
SELECT * FROM students;
----------WRONG DATA TYPE SCENARIO----------
BEGIN;
SAVEPOINT sp1;
Data Output
Messages
Notifications
SQL
Showing rows: 1 to 3
Page No: 1
of 1
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



3. 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.