DEPARTMENTOF
COMPUTERSCIENCE&ENGINEERING
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WORKSHEET 8

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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:

HARD

```
select * from student;
begin transaction;
DO $$      begin
           insert into student values('Aadi', 444, 'WEBD'),
                                                          ('Mahesh', 545, 'CYBE'),
                                                          ('Rohan', 090, 'CYBE');

           raise notice 'Insertion successful';

    exception
           when others then
                  raise notice 'Unhandled Exception : SQLSTATE % --- %', SQLSTATE,
SQLERRM;

                  raise;
    end;
$$
```

```
select * from student;

commit;



begin transaction;
DO $$	begin
		insert into student values('Sambhav', 404, 'WEBD'),
									('Mahesh', 545, 'CYBE'),	--Wrong insertion
									('Mahendra', 190, 'CYBE');

		raise notice 'Insertion successful';

	exception
		when others then
			raise notice 'Unhandled Exception : SQLSTATE % --- %', SQLSTATE, SQLERRM;

			raise;
	end;
$$

rollback;

select * from student;

commit;
```

3. Output:

```
NOTICE:  Insertion successful
DO

Query returned successfully in 65 msec.
```

```
NOTICE:  Unhandled Exception : SQLSTATE 23505 --- duplicate key value violates unique constraint "student_pkey"

ERROR:  duplicate key value violates unique constraint "student_pkey"
Key (uid)=(545) already exists.

SQL state: 23505
Detail: Key (uid)=(545) already exists.
Context: SQL statement "insert into student values('Sambhav', 404, 'WEBD'),
                                                   ('Mahesh', 545, 'CYBE'),    --Wrong insertion
                                                   ('Mahendra', 190, 'CYBE')"
PL/pgSQL function inline_code_block line 3 at SQL statement
```

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.