```
queries=# select * from students;
ERROR:  relation "students" does not exist
LINE 1: select * from students;
                      ^
```

1. Create students table and dept table

```
queries=# create table students(student_id int primary key,student_name varchar(30), gender varchar(30), deptno int);
CREATE TABLE
queries=# select * from students;
 student_id | student_name | gender | deptno
------------+--------------+--------+--------
(0 rows)


queries=# create table dept(deptno int primary key, location varchar(30), department varchar(30));
CREATE TABLE
queries=# select * from dept;
 deptno | location | department
--------+----------+------------
(0 rows)
```

2. Insert data

```
queries=# insert into dept values(10,'ECE'),(20,'CSE'),(30,'MECH'),(40,'CIVIL'),(50,'EEE');
INSERT 0 5
queries=#
```

```
queries=# insert into students values(1001,'Tony','male',10),(1002,'Robert','male',20),(1003,'James','male',30);
INSERT 0 3
queries=# select * from students;
 student_id | student_name | gender | deptno
------------+--------------+--------+--------
       1001 | Tony         | male   |     10
       1002 | Robert       | male   |     20
       1003 | James        | male   |     30
(3 rows)
```

3. Alter/ update table

```
queries=# alter table students add reporting_mgr int;
ALTER TABLE
queries=# select * from students;
 student_id | student_name | gender | deptno | reporting_mgr
------------+--------------+--------+--------+---------------
(0 rows)
```

```
queries=# alter table students add constraint deptno_fk foreign key (deptno) references dept(deptno);
ALTER TABLE
queries=#
```

```
queries=# alter table students drop column reporting_mgr;
ALTER TABLE
queries=# select * from students;
 student_id | student_name | gender | deptno
------------+--------------+--------+--------
(0 rows)
```

4.Retrive

```
queries=# select * from students;
 student_id | student_name | gender | deptno
------------+--------------+--------+--------
       1001 | Tony         | male   |     20
       1002 | Robert       | male   |     40
       1003 | James        | male   |     30
       1004 | Tom          | male   |     30
       1005 | Jack         | male   |     10
       1006 | Lucy         | female |     20
(6 rows)
```

5 delete / drop table

```
queries=# create table emp (emp_id int primary key, name varchar(30));
CREATE TABLE
queries=#
queries=# drop table emp;
DROP TABLE
queries=# select * from emp;
ERROR:  relation "emp" does not exist
LINE 1: select * from emp;
                      ^
```

6. aggregate function

No of students in each dept;

```
queries=# select deptno, count(*) from students group by deptno;
 deptno | count
--------+-------
     40 |     1
     30 |     2
     10 |     1
     20 |     2
(4 rows)
```

Max deptno

```
queries=# select max(deptno) from students;
 max
-----
  40
(1 row)
```

Sub query-

student details in same dept as Tom

```
queries=# select * from students where deptno=(select deptno from students where student_name ='Tom');
 student_id | student_name | gender | deptno
------------+--------------+--------+--------
       1003 | James        | male   |     30
       1004 | Tom          | male   |     30
       1007 | Virat        | male   |     30
(3 rows)
```

CSE department student details

```
queries=# select * from students where deptno=(select deptno from dept where department='CSE');
 student_id | student_name | gender | deptno
------------+--------------+--------+--------
       1001 | Tony         | male   |     20
       1006 | Lucy         | female |     20
(2 rows)
```

Joins

1. Inner Join

```
queries=# select * from students inner join dept on students.deptno=dept.deptno;
 student_id | student_name | gender | deptno | deptno | department
------------+--------------+--------+--------+--------+------------
       1001 | Tony         | male   |     20 |     20 | CSE
       1002 | Robert       | male   |     40 |     40 | CIVIL
       1003 | James        | male   |     30 |     30 | MECH
       1004 | Tom          | male   |     30 |     30 | MECH
       1005 | Jack         | male   |     10 |     10 | ECE
       1006 | Lucy         | female |     20 |     20 | CSE
       1007 | Virat        | male   |     30 |     30 | MECH
(7 rows)
```

```
queries=# select * from students,dept where students.deptno=dept.deptno;
 student_id | student_name | gender | deptno | deptno | department
------------+--------------+--------+--------+--------+------------
       1001 | Tony         | male   |     20 |     20 | CSE
       1002 | Robert       | male   |     40 |     40 | CIVIL
       1003 | James        | male   |     30 |     30 | MECH
       1004 | Tom          | male   |     30 |     30 | MECH
       1005 | Jack         | male   |     10 |     10 | ECE
       1006 | Lucy         | female |     20 |     20 | CSE
       1007 | Virat        | male   |     30 |     30 | MECH
(7 rows)
```

2. Outer
   Full join

```
queries=# select dept.deptno,dept.department,dept2.deptno,dept2.department from dept
full join dept2 on dept.department=dept2.department;
 deptno | department | deptno | department
--------+------------+--------+------------
     10 | ECE        |     10 | ECE
     20 | CSE        |        |
     30 | MECH       |     30 | MECH
     40 | CIVIL      |        |
     50 | EEE        |        |
        |            |     70 | N/A
        |            |     60 | IS
(7 rows)
```

   Left join

```
queries=# select dept.deptno,dept.department,dept2.deptno,dept2.department from dept
left join dept2 on dept.deptno=dept2.deptno;
 deptno | department | deptno | department
--------+------------+--------+------------
     10 | ECE        |     10 | ECE
     20 | CSE        |        |
     30 | MECH       |     30 | MECH
     40 | CIVIL      |        |
     50 | EEE        |        |
(5 rows)
```

   Right join

```
queries=# select dept.deptno,dept.department,dept2.deptno,dept2.department from dept
right join dept2 on dept.deptno=dept2.deptno;
 deptno | department | deptno | department
--------+------------+--------+------------
     10 | ECE        |     10 | ECE
     30 | MECH       |     30 | MECH
        |            |     70 | N/A
        |            |     60 | IS
(4 rows)
```

3. Union

```
queries=# select deptno from students union select deptno from dept;
 deptno
--------
     10
     50
     30
     40
     20
(5 rows)
```

4. Intersect

```
queries=# select deptno from students intersect select deptno from dept;
 deptno
--------
     40
     30
     10
     20
(4 rows)


queries=# select deptno from dept intersect select deptno from dept2;
 deptno
--------
     10
     30
(2 rows)
```

5. Natural join

```
queries=# select * from students natural join dept;
 deptno | student_id | student_name | gender | department
--------+------------+--------------+--------+------------
     20 |       1001 | Tony         | male   | CSE
     40 |       1002 | Robert       | male   | CIVIL
     30 |       1003 | James        | male   | MECH
     30 |       1004 | Tom          | male   | MECH
     10 |       1005 | Jack         | male   | ECE
     20 |       1006 | Lucy         | female | CSE
     30 |       1007 | Virat        | male   | MECH
(7 rows)
```