PostgreSQL

DDL

Create Database:

create database student_data

```
crud_data=# create database student_data
crud_data-# ;
```

Creating a Table:

```
CREATE TABLE students_details (
        student_id SERIAL PRIMARY KEY,
        name VARCHAR(50),
        email VARCHAR(50),
);
```

```
CREATE TABLE
```

Altering a Table (Adding a Column):

ALTER TABLE students_details ADD COLUMN ph_number VARCHAR(100);

```
student_data=# ALTER TABLE students_details ADD COLUMN ph_number VARCHAR(100);
ALTER TABLE
student_data=#
```

Dropping a Table:

DROP TABLE students;

```
CREATE TABLE
student_data=# DROP TABLE students;
DROP TABLE
student_data=#
```

Creating an Index:

CREATE INDEX index_name ON students_details (name);

```
student_data=# CREATE INDEX index_name ON students_details (name);
CREATE INDEX
student_data=#
```

Creating a Primary Key Constraint:

ALTER TABLE students_details ADD CONSTRAINT primaryKey_id PRIMARY KEY
(student_id);

```
student_data=# ALTER TABLE students_details ADD CONSTRAINT primaryKey_id PRIMARY KEY (student_id);
ERROR:  multiple primary keys for table "students_details" are not allowed
student_data=#
```

Creating a Foreign Key Constraint:

ALTER TABLE entrollment ADD CONSTRAINT fk_student_id FOREIGN KEY (student_id)
REFERENCES students_details (student_id);

```
student_data=# CREATE TABLE entrollment (student_id SERIAL, cource  VARCHAR(50));
CREATE TABLE
student_data=# ALTER TABLE entrollment ADD CONSTRAINT fk_student_id FOREIGN KEY (student_id) REFERENCE
ALTER TABLE
student_data=#
```

TRUNCATE

TRUNCATE table students_details, entrollment;

```
student_data=# TRUNCATE table students_detail, entrollment;
TRUNCATE TABLE
student_data=#
```

RENAME

ALTER TABLE students_details RENAME to students_detail;

```
student_data=# ALTER TABLE students_details RENAME to students_detail;
ALTER TABLE
student_data=#
```

DML

INSERT

INSERT INTO students_detail VALUES ('1', 'Gokul','gokul@gmail.com','9855455677');

```
student_data=# INSERT INTO students_detail VALUES ('1', 'Gokul','gokul@gmail.com','9855455677');
INSERT 0 1
student_data=#
```

SELECT

SELECT * FROM students_detail;

```
student_data=# SELECT * FROM students_detail;
 student_id | name  |      email       | ph_number
------------+-------+------------------+------------
          1 | Gokul | gokul@gmail.com  | 9855455677
(1 row)

student_data=#
```

SELECT name FROM students_detail;

```
student_data=# SELECT name FROM students_detail;
 name
-------
 Gokul
(1 row)

student_data=#
```

UPDATE

UPDATE students_detail SET email= 'gokulrajalp@gmail.com' WHERE student_id='1';

```
student_data=# UPDATE students_detail SET email = 'gokulrajalp@gmail.com' WHERE student_id='1';
UPDATE 1
student_data=#
```

DELETE

DELETE FROM students_detail WHERE student_id='1';

```
student_data=# DELETE FROM students_detail WHERE student_id='1';
DELETE 1
student_data=#
```

SELECT

SELECT * FROM students_detail;

```
student_data=# SELECT * FROM students_detail;
 student_id | name  |      email       | ph_number
------------+-------+------------------+------------
          1 | Gokul | gokul@gmail.com  | 9855455677
(1 row)

student_data=#
```

SELECT name FROM students_detail;

```
student_data=# SELECT name FROM students_detail;
 name
-------
 Gokul
(1 row)

student_data=#
```

Functions

CREATE OR REPLACE FUNCTION add_numbers(a INTEGER, b INTEGER)
RETURNS INTEGER AS $$
BEGIN
  RETURN a + b;
END;
$$ LANGUAGE plpgsql;

```
student_data=# CREATE OR REPLACE FUNCTION add_numbers(a INTEGER, b INTEGER)
student_data-# RETURNS INTEGER AS $$
student_data$# BEGIN
student_data$# RETURN a + b;
student_data$# END;
student_data$# $$ LANGUAGE plpgsql;
CREATE FUNCTION
student_data=#
```

SELECT add_numbers(5, 3);

```
CREATE FUNCTION
student_data=# SELECT add_numbers(5, 3);
 add_numbers
-------------
           8
(1 row)

student_data=#
```

DISTINCT

SELECT DISTINCT name FROM students_detail;

```
student_data=# SELECT DISTINCT name FROM students_detail;
    name
-------------
 Gokul
 Gokulraja
 Gokulrajalp
(3 rows)

student_data=#
```

GROUP BY

SELECT name, COUNT(*) as name FROM students_detail GROUP BY name;

```
student_data=# SELECT name, COUNT(*) as name FROM students_detail GROUP BY name;
    name      | name
-------------+------
 Gokul        |    2
 Gokulraja    |    1
 Gokulrajalp  |    1
(3 rows)

student_data=#
```

ORDER BY

SELECT * FROM students_detail ORDER BY name DESC;

```
student_data=# SELECT * FROM students_detail ORDER BY name DESC;
 student_id |    name     |         email          | ph_number
------------+-------------+------------------------+------------
          4 | Gokulrajalp | gokulrajalp@gmail.com  | 9456455477
          3 | Gokulraja   | gokulr@gmail.com       | 9455455477
          2 | Gokul       | gokul@gmail.com        | 9855455477
          5 | Gokul       | gokull@gmail.com       | 9865455477
(4 rows)

student_data=#
```

Indexes

CREATE INDEX index_name ON students_details (name);

```
student_data=# CREATE INDEX index_name ON students_details (name);
CREATE INDEX
student_data=#
```

Sub queries (With)

WITH name AS (SELECT name, email FROM students_detail WHERE name = 'Gokul')
SELECT * FROM name;

```
student_data=# WITH name AS (SELECT name, email FROM students_detail WHERE name = 'Gokul')
SELECT * FROM name;
 name  |       email
-------+------------------
 Gokul | gokul@gmail.com
 Gokul | gokull@gmail.com
(2 rows)

student_data=#
```

JOIN

Inner Join

SELECT asset_details.asset_id, asset_category.category_name, asset_details.model, asset_details.value FROM asset_details INNER JOIN asset_category ON asset_details.asset_category_id = asset_category.category_id;

```
crud_data=# select * from asset_details
crud_data-# ;
 asset_id | asset_category_id | model  |  value
----------+-------------------+--------+---------
        1 |                 1 | Model1 | 1200.00
        2 |                 2 | Model2 |  800.00
        3 |                 1 | Model3 | 1500.00
        4 |                 3 | Model4 | 1000.00
(4 rows)

crud_data=#
```

```
crud_data=# select * from asset_category;
 category_id | category_name
-------------+---------------
           1 | Laptop
           2 | Desktop
           3 | Mobile
(3 rows)

crud_data=#
```

```
crud_data=# SELECT asset_details.asset_id, asset_category.category_name, asset_details.model, asset_details.value
FROM asset_details
INNER JOIN asset_category ON asset_details.asset_category_id = asset_category.category_id;
 asset_id | category_name | model  |  value
----------+---------------+--------+---------
        1 | Laptop        | Model1 | 1200.00
        2 | Desktop       | Model2 |  800.00
        3 | Laptop        | Model3 | 1500.00
        4 | Mobile        | Model4 | 1000.00
(4 rows)

crud_data=#
```

Full Join

SELECT asset_details.asset_id, asset_category.category_name, asset_details.model, asset_details.value FROM asset_details FULL JOIN asset_category ON asset_details.asset_category_id = asset_category.category_id;

```
crud_data=# SELECT asset_details.asset_id, asset_category.category_name, asset_details.model, asset_details.value FROM asset_details FULL JOIN
asset_category ON asset_details.asset_category_id = asset_category.category_id;
 asset_id | category_name | model  |  value
----------+---------------+--------+---------
        1 | Laptop        | Model1 | 1200.00
        2 | Desktop       | Model2 |  800.00
        3 | Laptop        | Model3 | 1500.00
        4 | Mobile        | Model4 | 1000.00
        9 |               | Model7 | 2000.00
       10 | Desktop       | Model8 | 1200.00
       11 |               | Model6 | 2000.00
       12 | Desktop       | Model5 | 1200.00
       13 |               | Model6 | 2450.00
       14 |               | Model5 | 1560.00
          | WiFi          |        |
(11 rows)

crud_data=#
```

RIGHT JOIN

SELECT asset_details.asset_id, asset_category.category_name, asset_details.model, asset_details.value FROM asset_details RIGHT JOIN asset_category ON asset_details.asset_category_id = asset_category.category_id;

```
crud_data=# SELECT asset_details.asset_id, asset_category.category_name, asset_details.model, asset_details.value FROM asset_details RIGHT JOI
N asset_category ON asset_details.asset_category_id = asset_category.category_id;
 asset_id | category_name | model  |  value
----------+---------------+--------+---------
        1 | Laptop        | Model1 | 1200.00
        2 | Desktop       | Model2 |  800.00
        3 | Laptop        | Model3 | 1500.00
        4 | Mobile        | Model4 | 1000.00
       10 | Desktop       | Model8 | 1200.00
       12 | Desktop       | Model5 | 1200.00
          | WiFi          |        |
(7 rows)

crud_data=#
```

LEFT JOIN

SELECT asset_details.asset_id, asset_category.category_name, asset_details.model, asset_details.value FROM asset_details LEFT JOIN asset_category ON asset_details.asset_category_id = asset_category.category_id;

```
crud_data=# SELECT asset_details.asset_id, asset_category.category_name, asset_details.model, asset_details.value FROM asset_details LEFT JOIN
 asset_category ON asset_details.asset_category_id = asset_category.category_id;
 asset_id | category_name | model  |  value
----------+---------------+--------+---------
        1 | Laptop        | Model1 | 1200.00
        2 | Desktop       | Model2 |  800.00
        3 | Laptop        | Model3 | 1500.00
        4 | Mobile        | Model4 | 1000.00
        9 |               | Model7 | 2000.00
       10 | Desktop       | Model8 | 1200.00
       11 |               | Model6 | 2000.00
       12 | Desktop       | Model5 | 1200.00
       13 |               | Model6 | 2450.00
       14 |               | Model5 | 1560.00
(10 rows)

crud_data=#
```

JOIN AND GROUP BY

SELECT asset_category.category_name, COUNT(asset_details.asset_id) FROM asset_category FULL JOIN asset_details ON asset_category.category_id = asset_details.asset_category_id GROUP BY asset_category.category_id

```
crud_data=# SELECT asset_category.category_name, COUNT(asset_details.asset_id) FROM asset_category FULL JOIN asset_details ON asset_category.c
ategory_id = asset_details.asset_category_id GROUP BY asset_category.category_id
crud_data-# ;
 category_name | count
---------------+-------
               |     4
 WiFi          |     0
 Desktop       |     3
 Mobile        |     1
 Laptop        |     2
(5 rows)

crud_data=#
```

```
crud_data=# SELECT asset_category.category_name, COUNT(asset_details.asset_id) FROM asset_category INNER JOIN asset_details ON asset_category.
category_id = asset_details.asset_category_id GROUP BY asset_category.category_id;
 category_name | count
---------------+-------
 Desktop       |     3
 Laptop        |     2
 Mobile        |     1
(3 rows)

crud_data=# SELECT asset_category.category_name, COUNT(asset_details.asset_id) FROM asset_category RIGHT JOIN asset_details ON asset_category.
category_id = asset_details.asset_category_id GROUP BY asset_category.category_id;
 category_name | count
---------------+-------
               |     4
 Desktop       |     3
 Laptop        |     2
 Mobile        |     1
(4 rows)

crud_data=# SELECT asset_category.category_name, COUNT(asset_details.asset_id) FROM asset_category LEFT JOIN asset_details ON asset_category.c
ategory_id = asset_details.asset_category_id GROUP BY asset_category.category_id;
 category_name | count
---------------+-------
 WiFi          |     0
 Desktop       |     3
 Mobile        |     1
 Laptop        |     2
(4 rows)

crud_data=#
```