**-- create the database**

create database bus\_transport\_system;

-- \c bus\_transport\_system;

**-- create the route table**

CREATE TABLE route ( route\_no INT PRIMARY KEY, source CHAR(20), destination CHAR(20), no\_of\_stations INT );

**-- create the bus table**

create table bus (bus\_no int primary key, capacity int not null depot\_name varchar(20),route\_no int references route(route\_no));

**-- create the driver table**

CREATE TABLE driver ( driver\_no INT PRIMARY KEY, driver\_name CHAR(20), license\_no INT UNIQUE, address CHAR(20), d\_age INT, salary FLOAT );

**-- create the bus\_driver table to represent the many-to-many relationship between bus and driver**

CREATE TABLE bus\_driver ( bno INT, dno INT, dated DATE, shift VARCHAR(10), FOREIGN KEY (bno) REFERENCES bus(bus\_no), FOREIGN KEY (dno) REFERENCES driver(driver\_no) );

**-- insert sample data into the route table**

INSERT INTO route (route\_no, source, destination, no\_of\_stations) VALUES (1, 'a', 'b', 5), (2, 'c', 'd', 7), (3, 'a', 'd', 10), (4, 'e', 'f', 6), (5, 'b', 'c', 8);

**-- insert sample data into the bus table**

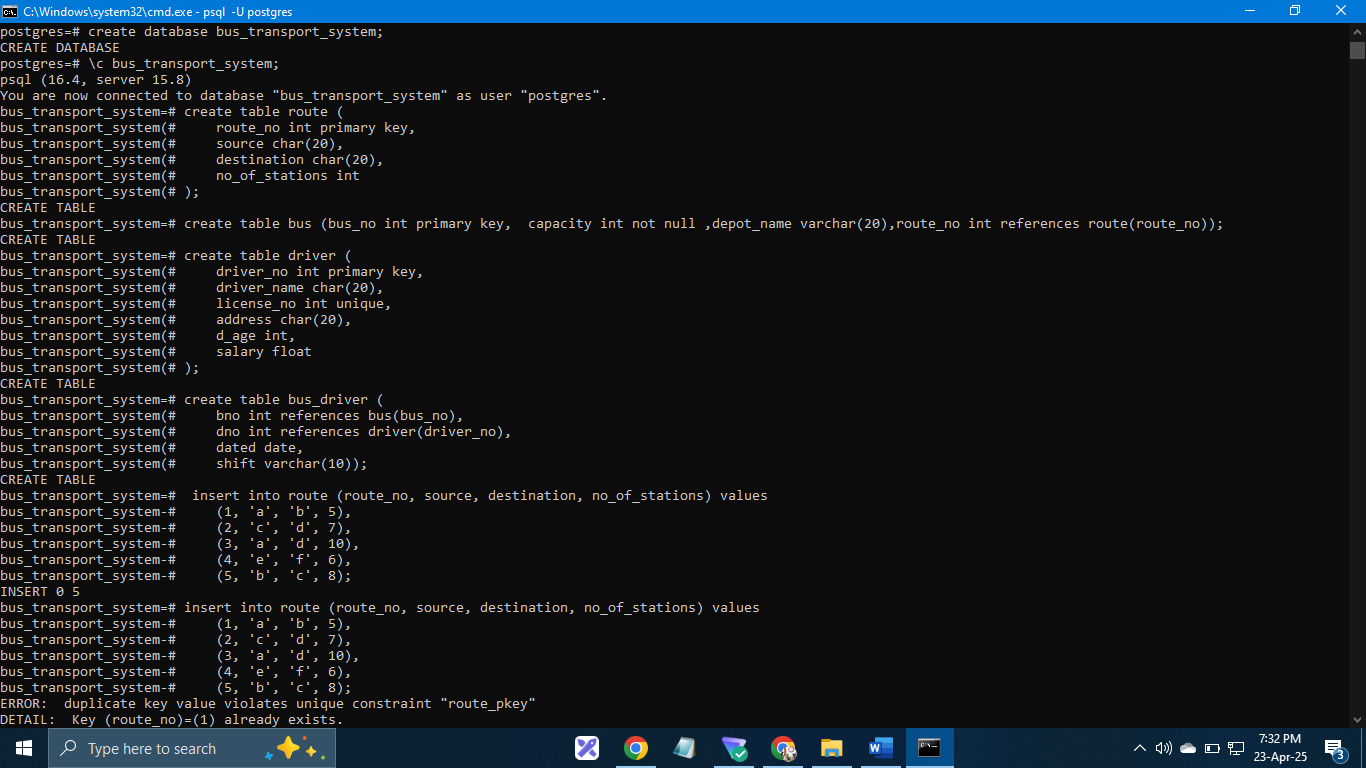
INSERT INTO bus (bus\_no, capacity, depot\_name, route\_no) VALUES (101, 50, 'central depot', 1), (102, 45, 'east depot', 2), (103, 60, 'central depot', 1), (104, 55, 'west depot', 3), (105, 50, 'south depot', 4);

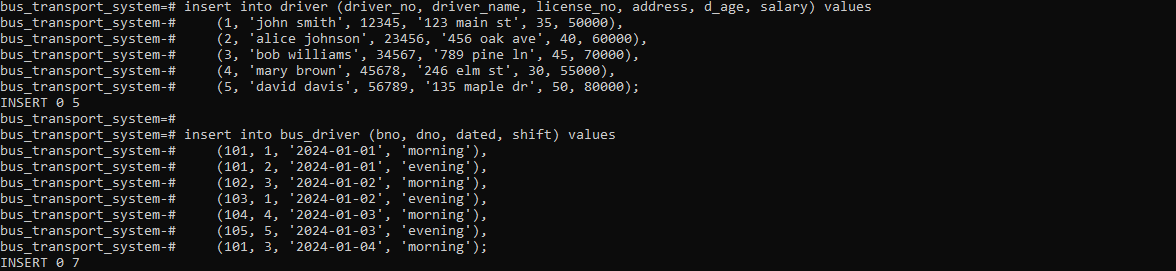
**-- insert sample data into the driver table**

INSERT INTO driver (driver\_no, driver\_name, license\_no, address, d\_age, salary) VALUES (1, 'john smith', 12345, '123 main st', 35, 50000), (2, 'alice johnson', 23456, '456 oak ave', 40, 60000), (3, 'bob williams', 34567, '789 pine ln', 45, 70000), (4, 'mary brown', 45678, '246 elm st', 30, 55000), (5, 'david davis', 56789, '135 maple dr', 50, 80000);

**-- insert sample data into the bus\_driver table**

INSERT INTO bus\_driver (bno, dno, dated, shift) VALUES (101, 1, '2024-01-01', 'morning'), (101, 2, '2024-01-01', 'evening'), (102, 3, '2024-01-02', 'morning'), (103, 1, '2024-01-02', 'evening'), (104, 4, '2024-01-03', 'morning'), (105, 5, '2024-01-03', 'evening'), (101, 3, '2024-01-04', 'morning');

**Output:** 

****

**Questions :**

**-- a) pl/pgsql function to find the name of the driver having the maximum salary**

create or replace function get\_max\_salary\_driver()

returns text as $$

declare

max\_salary\_driver\_name text;

begin

select driver\_name into max\_salary\_driver\_name

from driver

where salary = (select max(salary) from driver);

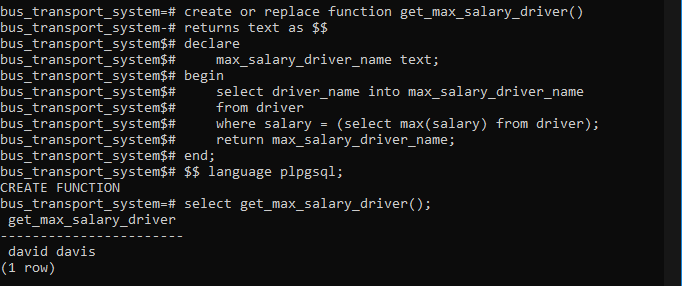
return max\_salary\_driver\_name;

end;

$$ language plpgsql;

-- example usage:

**-- select get\_max\_salary\_driver();**



**-- b) pl/pgsql function to accept bus\_no and date and print its allotted driver name**

create or replace function get\_driver\_name\_for\_bus\_and\_date(p\_bus\_no int, p\_date date)

returns text as $$

declare

    driver\_names text ;

begin

    select d.driver\_name into driver\_names

    from driver d

    join bus\_driver bd on d.driver\_no = bd.dno

    where bd.bno = p\_bus\_no and bd.dated = p\_date;

    if driver\_names = '' then

        return 'no drivers found for the given bus and date.';

    else

        return driver\_names;

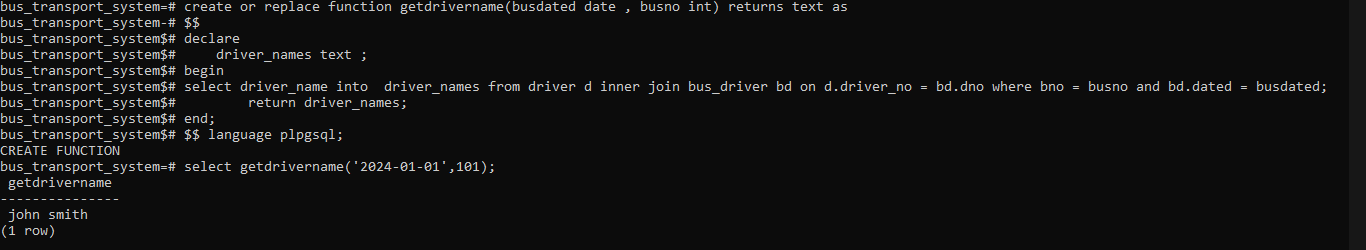
    end if;

end;

$$ language plpgsql;

-- example usage:

**-- select get\_driver\_name\_for\_bus\_and\_date(101, '2024-01-01');**



**-- c) pl/pgsql function to change the destination for a given source**

create or replace function replace\_dest(routeno int,s text,d text ,cd text) returns text as

$$

begin

update route set destination = cd where route\_no = routeno and source=s and destination=d ;

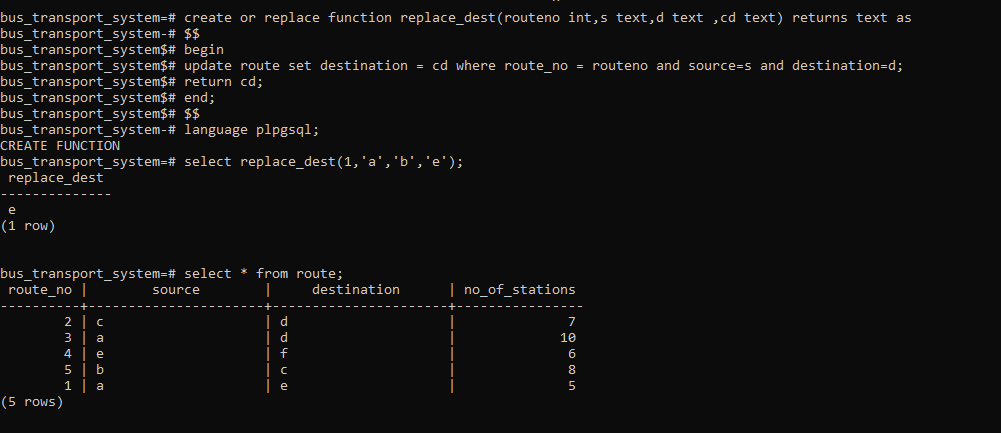
return cd;

end;

$$

language plpgsql;

select replace\_dest(1,'a','b','e');

select \* from route;

**-- d) pl/pgsql function to accept driver number and remove his details from the database**

create or replace function deletedriver(dn int) returns int as

$$

begin

delete from bus\_driver where dno = dn;

delete from driver where driver\_no = dn;

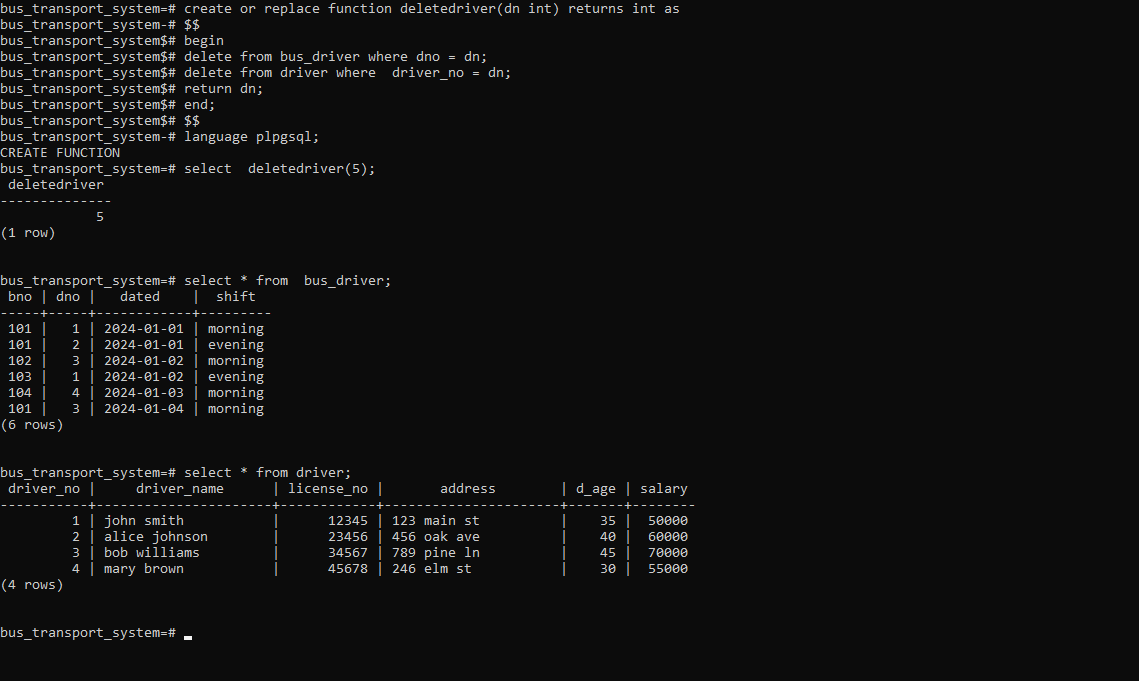
return dn;

end;

$$

language plpgsql;

`select deletedriver(5);



b.

**-- create the database**

create database business\_trip\_db;

-- \c business\_trip\_db;

**-- create the dept table**

create table dept (

    deptno varchar(10) primary key,

    dept\_name char(20)

);

**-- create the salesman table**

create table salesman (

    sno integer primary key,

    s\_name char(30),

    start\_year integer,

    deptno varchar(10) references dept(deptno)

);

**-- create the trip table**

create table trip (

    tno integer primary key,

    from\_city char(20),

    to\_city char(20),

    departure\_date date,

    return\_date date,

    sno integer references salesman(sno)

);

**-- create the expense table**

create table expense (

    eid integer primary key,

    amount money,

    tno integer references trip(tno)

);

**-- insert data into dept**

insert into dept (deptno, dept\_name) values

('D1', 'Home appliances'),

('D2', 'Electronics'),

('D3', 'Clothing');

**-- insert data into salesman**

insert into salesman (sno, s\_name, start\_year, deptno) values

(101, 'Alice Smith', 2020, 'D1'),

(102, 'Bob Johnson', 2022, 'D1'),

(103, 'Charlie Brown', 2021, 'D2'),

(104, 'Diana Miller', 2023, 'D3'),

(105, 'Ethan Davis', 2019, 'D2');

**-- insert data into trip**

insert into trip (tno, from\_city, to\_city, departure\_date, return\_date, sno) values

(201, 'Pune', 'Mumbai', '2024-01-15', '2024-01-20', 101),

(202, 'Mumbai', 'Delhi', '2024-02-10', '2024-02-18', 102),

(203, 'Pune', 'Mumbai', '2024-03-01', '2024-03-05', 103),

(204, 'Delhi', 'Bangalore', '2024-04-12', '2024-04-20', 104),

(205, 'Mumbai', 'Pune', '2024-05-01', '2024-05-05', 101);

**-- insert data into expense**

insert into expense (eid, amount, tno) values

(301, 500.00, 201),

(302, 1200.00, 202),

(303, 750.00, 203),

(304, 1500.00, 204),

(305, 600.00, 205);

**-- 1) function to display names of salesmen from ‘Home appliances’ department**

create or replace function get\_home\_appliances\_salesmen()

returns table (salesman\_name char(30)) as $$

begin

    return query

    select s\_name

    from salesman

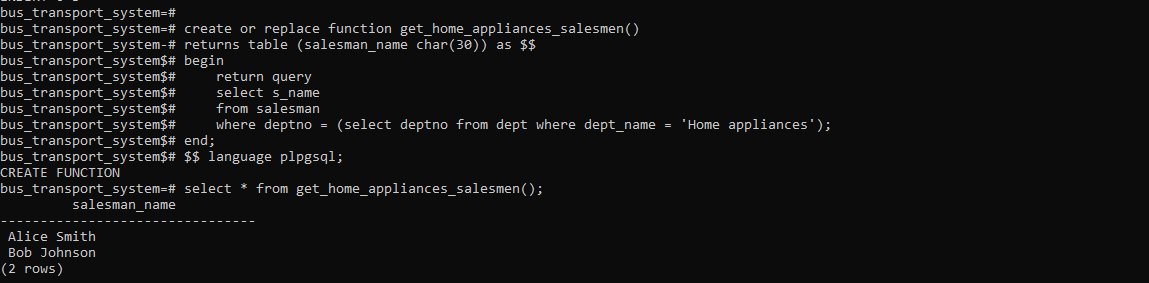
    where deptno = (select deptno from dept where dept\_name = 'Home appliances');

end;

$$ language plpgsql;

-- to call the function:

select \* from get\_home\_appliances\_salesmen();



**-- 2) function to find a business trip having maximum expenses**

create or replace function getmaxtrip() returns text as

$$

declare fc text;

tc text;

begin

select from\_city , to\_city into fc,tc from trip natural join expense where amount = (select max(amount) from expense);

return fc || '' || tc;

end;

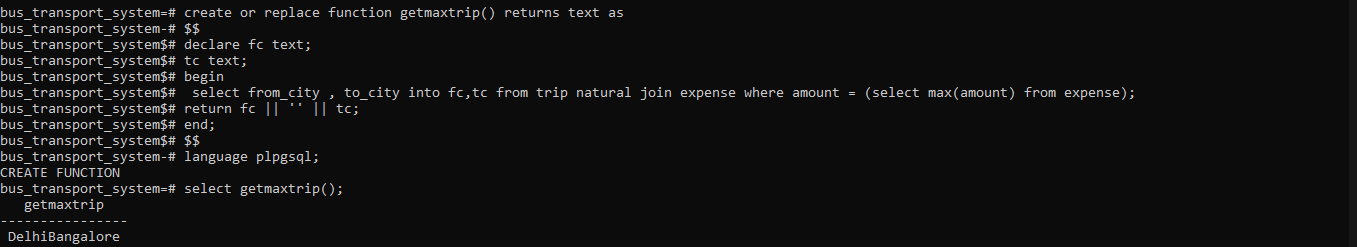
$$

language plpgsql;

select getmaxtrip();

getmaxtrip

----------------

DelhiBangalore

**-- 3) function to count the total number of business trips from ‘Pune’ to ‘Mumbai’**

create or replace function count\_trips\_from\_pune\_to\_mumbai()

returns integer as $$

declare

    trip\_count integer;

begin

    select count(\*) into trip\_count

    from trip

    where from\_city = 'Pune' and to\_city = 'Mumbai';

    return trip\_count;

end;

$$ language plpgsql;

-- to call the function:

select count\_trips\_from\_pune\_to\_mumbai();

