

Complete working of the database application :

ddl.sql

```
drop database if exists vehicleshowroom;
create database vehicleshowroom;
\c vehicleshowroom;

create table administration
(
    adminname varchar(15),
    adminid varchar(10),
    passwd varchar(7),
    username varchar(7),
    status varchar(20),
    contactno varchar(10),
    lastlogin TIMESTAMP DEFAULT CURRENT_TIMESTAMP,
    primary key (adminid)
);

create table dealer
(
    dealerID varchar(10),
    username varchar(10),
    lastlogin TIMESTAMP DEFAULT CURRENT_TIMESTAMP,
    passwd varchar(20),
    name varchar(20),
    image varchar(10),
    companyname varchar(30),
    contactno varchar(10),
    adminid varchar(10),
    address varchar(50),
    primary key(dealerID),
    foreign key (adminid) references administration on delete set null
);

alter table dealer drop column lastlogin;

create table vehicle
(
    vehicletype varchar(10),
    vehicleID varchar(20),
    vehiclename varchar(30),
    stats varchar(15),
    dealerID varchar(10),
    vehiclecost int,
    vehiclename varchar(20),
    description varchar(20),
    primary key(vehicleID),
```

```

        unique (vehicleID),
        foreign key (dealerID) references dealer on update cascade
    );

alter table vehicle add check (vehiclecost>0);

create table img
(
    defaultimage varchar(15),
    vehicleID varchar(20),
    imageID varchar(20),
    imageName varchar(30),
    imagePath varchar(50),
    primary key (imageID),
    unique (imageID),
    foreign key (vehicleID) references vehicle on update cascade
);

create table showroom
(
    showroomID int,
    dealerID varchar(10),
    showroomName varchar(15),
    imageID varchar(10),
    contactno int,
    address varchar(50),
    primary key (showroomID),
    unique (showroomID),
    foreign key (dealerID) references dealer on update cascade,
    foreign key (imageID) references img on delete set null
);

create table customer
(
    custid varchar(10),
    lname varchar(25),
    fname varchar(25) NOT NULL,
    contactno varchar(10),
    emailid varchar(30),
    passwrld varchar(20),
    address varchar(50),
    gender varchar(10),
    createdate date,
    stats varchar(30) check (stats in ('item_finalising',
'item_shortlisted','paid')),
    primary key (custid)
);

```

```
create table sales
(
    salesid varchar(10),
    vehicleID varchar(10),
    custid varchar(10),
    showroomid varchar(10),
    cost decimal(10,2) check (cost>0),
    ord_date date,
    delv_date date default null,
    description varchar(30),
    stats varchar(20) check (stats in ('packaged', 'shipped', 'delivered')),
    primary key (salesid),
    foreign key (vehicleID) references vehicle on update cascade,
    foreign key (custid) references customer on delete set null
);
```

```
C:\Program Files\PostgreSQL\13\bin>psql -U postgres -f C:\Users\gruhe\Desktop\DBMS-Assignment-3\ddl.sql
Password for user postgres:
DROP DATABASE
CREATE DATABASE
You are now connected to database "vehicleshoweroom" as user "postgres".
CREATE TABLE
CREATE TABLE
ALTER TABLE
CREATE TABLE
ALTER TABLE
CREATE TABLE
CREATE TABLE
CREATE TABLE
CREATE TABLE
```

dml.sql

```
\c vehicleshowroom;

insert into administration values('Mike','Mg_100','mik','MG100','In
office',1001);
insert into administration values('Tyler','Sp_200','tyl','SP200','In
inspection',2001);
insert into administration values('Stifler','Sp_201','sti','SP201','In
inspection',2002);
insert into administration values('Rahul','fin_101','rah','FIN101','Out of
office', 9696);
insert into administration values('Raj','fin_102','raj','FIN102','In a
Meeting', 9695);
insert into administration values('Zara','sc_103','zar','SC103','Out of
office',9694);
insert into administration values('Anya','sc_104','any','SC104','Company
Volunteering', 9693);
insert into administration values('Anjali','sc_105','anj','SC105','Out of
office',9692);

insert into dealer values ('ta_501','ta501','cad','Priya','image1.jpg',
'Ford Motors', 5656,'fin_101','Boravalli');
insert into dealer values ('ta_502','ta502','tad','Alexander',
'image2.jpg','Walt Motors', 5655,'fin_102','Boravalli');
insert into dealer values ('ta_503','ta503','sad','Sravya','image3.jpg',
'Disney Motors', 5654,'sc_103','Jigani');
insert into dealer values ('ta_504','ta504','mad','Madhav','image4.jpg',
'Ferarri Motors', 5653,'sc_104','Electronic City');
insert into dealer values ('ta_505','ta505','gad','Jessica','image5.jpg',
'Hersheys Motors', 5652,'sc_105','Rajajinagar');

insert into vehicle values('car','v101','EcoBoost','In Stock','ta_501',
2084843,'Mustang','Premuim Fastback');
insert into vehicle values('bike','v102','Bullet 350','In Stock',
'ta_502',143843,'Royal Enfield','Supreme');
insert into vehicle values('bike','v103','Interceptor 650','Out of
Stock','ta_503', 156843,'Royal Enfield','Supreme');
insert into vehicle values('car','v104','dezir lvi','In Stock','ta_504',
573843,'swift','variant');
insert into vehicle values('car','v105','dezir lxi','Out of Stock',
'ta_505', 653843,'swift','variant');

insert into img values('vehicle_logo','v101','image1','Mustang
EcoBoost','C:\\downloads\\image1.jpg');
insert into img values('vehicle_logo','v101','image2','Royal Enfield Bullet
350','C:\\downloads\\image2.jpg');
```

```
insert into img values('vehicle_logo', 'v101', 'image3', 'Royal Enfield
Interceptor 650', 'C:\\downloads\\image3.jpg');
insert into img values('vehicle_logo', 'v101', 'image4', 'swift dezir
lvi', 'C:\\downloads\\image4.jpg');
insert into img values('vehicle_logo', 'v101', 'image5', 'swift dezir
lxi', 'C:\\downloads\\image5.jpg');

insert into showroom values(2121, 'ta_501', 'sr_401', 'image1', '1211',
'Boravalli');
insert into showroom values(2122, 'ta_502', 'sr_402', 'image2', '1212',
'Boravalli');
insert into showroom values(2123, 'ta_503', 'sr_403', 'image3', '1213',
'Jigani');
insert into showroom values(2124, 'ta_504', 'sr_404', 'image4', '1214',
'Electronic City');
insert into showroom values(2125, 'ta_505', 'sr_405', 'image5', '1215',
'Rajajinagar');

insert into customer values('c201', 'Bhatta', 'Alia', 4545,
'alia@gmail.com', 'a101', 'Bhtutan', 'female', '2020-06-17', 'paid');
insert into customer values('c202', 'Bhatta', 'Abhishek', 4544,
'abhi@gmail.com', 'a102', 'Navi Mumbai', 'male', '2020-04-20', 'paid');
insert into customer values('c203', 'Reddy', 'Keshav', 4543, 'k@gmail.com',
'a103', 'Vidya Nagar', 'female', '2021-03-17', 'paid');
insert into customer values('c204', 'satyamurthy', 'Arjun', 4542,
'arjun@gmail.com', 'a104', 'Electronic City', 'male', '2019-06-17', 'paid');
insert into customer values('c205', 'Mittal', 'Sneha', 4541,
'sneha@gmail.com', 'a105', 'Koromangala', 'female', '2020-01-17', 'paid');

insert into sales values('sl101', 'v101', 'c201', 'sr401', 208443.89, '2020-
06-18', '2020-07-17', 'delivered');
insert into sales values('sl102', 'v102', 'c202', 'sr402', 143843.89, '2020-
04-21', '2020-03-17', 'shipped');
insert into sales values('sl103', 'v103', 'c203', 'sr403', 156843.89, '2020-
03-18', '2021-04-17', 'delivered');
insert into sales values('sl104', 'v104', 'c204', 'sr404', 576843.89, '2019-
06-18', '2019-07-17', 'shipped');
insert into sales values('sl105', 'v105', 'c205', 'sr405', 953843.89, '2020-
01-18', '2020-02-17', 'delivered');
```

```

Select Command Prompt - psql -U postgres
You are now connected to database "vehicleshowroom" as user "postgres".
vehicleshowroom=#
vehicleshowroom=# insert into administration values('Mike','Mg_100','mik','MG100','In office',1001);
INSERT 0 1
vehicleshowroom=# insert into administration values('Tyler','Sp_200','tyl','SP200','In inspection',2001);
INSERT 0 1
vehicleshowroom=# insert into administration values('Stifler','Sp_201','sti','SP201','In inspection',2002);
INSERT 0 1
vehicleshowroom=# insert into administration values('Rahul','fin_101','rah','FIN101','Out of office',9696);
INSERT 0 1
vehicleshowroom=# insert into administration values('Raj','fin_102','raj','FIN102','In a Meeting',9695);
INSERT 0 1
vehicleshowroom=# insert into administration values('Zara','sc_103','zar','SC103','Out of office',9694);
INSERT 0 1
vehicleshowroom=# insert into administration values('Anyu','sc_104','any','SC104','Company Volunteering',9693);
INSERT 0 1
vehicleshowroom=# insert into administration values('Anjali','sc_105','anj','SC105','Out of office',9692);
INSERT 0 1
vehicleshowroom=#
vehicleshowroom=# insert into dealer values ('ta_501','ta501','cad','Priya','image1.jpg','Ford Motors',5656,'fin_101','Boravalli');
INSERT 0 1
vehicleshowroom=# insert into dealer values ('ta_502','ta502','tad','Alexander','image2.jpg','Walt Motors',5655,'fin_102','Boravalli');
INSERT 0 1
vehicleshowroom=# insert into dealer values ('ta_503','ta503','sad','Sravya','image3.jpg','Disney Motors',5654,'sc_103','Jigani');
INSERT 0 1
vehicleshowroom=# insert into dealer values ('ta_504','ta504','mad','Madhav','image4.jpg','Ferarri Motors',5653,'sc_104','Electronic City');
INSERT 0 1
vehicleshowroom=# insert into dealer values ('ta_505','ta505','gad','Jessica','image5.jpg','Hersheys Motors',5652,'sc_105','Rajajinagar');
INSERT 0 1
vehicleshowroom=# insert into vehicle values('car','v101','EcoBoost','In Stock','ta_501',2084843,'Mustang','Premuim Fastback');
INSERT 0 1
vehicleshowroom=# insert into vehicle values('bike','v102','Bullet 350','In Stock','ta_502',143843,'Royal Enfield','Supreme');
INSERT 0 1
vehicleshowroom=# insert into vehicle values('bike','v103','Interceptor 650','Out of Stock','ta_503',156843,'Royal Enfield','Supreme');
INSERT 0 1
vehicleshowroom=# insert into vehicle values('car','v104','dezir lvi','In Stock','ta_504',573843,'swift','variant');
INSERT 0 1
vehicleshowroom=# insert into vehicle values('car','v105','dezir lxi','Out of Stock','ta_505',653843,'swift','variant');
INSERT 0 1
vehicleshowroom=#
vehicleshowroom=# insert into img values('vehicle_logo','v101','image1','Mustang EcoBoost','C:\\downloads\\image1.jpg');
INSERT 0 1
vehicleshowroom=# insert into img values('vehicle_logo','v101','image2','Royal Enfield Bullet 350','C:\\downloads\\image2.jpg');
INSERT 0 1
vehicleshowroom=# insert into img values('vehicle_logo','v101','image3','Royal Enfield Interceptor 650','C:\\downloads\\image3.jpg');
INSERT 0 1
vehicleshowroom=# insert into img values('vehicle_logo','v101','image4','swift dezir lvi','C:\\downloads\\image4.jpg');
INSERT 0 1
vehicleshowroom=# insert into img values('vehicle_logo','v101','image5','swift dezir lxi','C:\\downloads\\image5.jpg');
INSERT 0 1
Select Command Prompt - psql -U postgres
vehicleshowroom=# insert into img values('vehicle_logo','v101','image5','swift dezir lxi','C:\\downloads\\image5.jpg');
INSERT 0 1
vehicleshowroom=#
vehicleshowroom=# insert into showroom values(2121,'ta_501','sr_401','image1','1211','Boravalli');
INSERT 0 1
vehicleshowroom=# insert into showroom values(2122,'ta_502','sr_402','image2','1212','Boravalli');
INSERT 0 1
vehicleshowroom=# insert into showroom values(2123,'ta_503','sr_403','image3','1213','Jigani');
INSERT 0 1
vehicleshowroom=# insert into showroom values(2124,'ta_504','sr_404','image4','1214','Electronic City');
INSERT 0 1
vehicleshowroom=# insert into showroom values(2125,'ta_505','sr_405','image5','1215','Rajajinagar');
INSERT 0 1
vehicleshowroom=#
vehicleshowroom=# insert into customer values('c201','Bhatta','Alia',4545,'alia@gmail.com','a101','Bhtutan','female','2020-06-17','paid');
INSERT 0 1
vehicleshowroom=# insert into customer values('c202','Bhatta','Abhishek',4544,'abhi@gmail.com','a102','Navi Mumbai','male','2020-04-20','paid');
INSERT 0 1
vehicleshowroom=# insert into customer values('c203','Reddy','Keshav',4543,'k@gmail.com','a103','Vidya Nagar','female','2021-03-17','paid');
INSERT 0 1
vehicleshowroom=# insert into customer values('c204','satyamurthy','Arjun',4542,'arjun@gmail.com','a104','Electronic City','male','2019-06-17','paid');
INSERT 0 1
vehicleshowroom=# insert into customer values('c205','Mittal','Sneha',4541,'sneha@gmail.com','a105','Koromangala','female','2020-01-17','paid');
INSERT 0 1
vehicleshowroom=#
vehicleshowroom=# insert into sales values('s1101','v101','c201','sr401',208443.89,'2020-06-18','2020-07-17','delivered');
INSERT 0 1
vehicleshowroom=# insert into sales values('s1102','v102','c202','sr402',143843.89,'2020-04-21','2020-03-17','shipped');
INSERT 0 1
vehicleshowroom=# insert into sales values('s1103','v103','c203','sr403',156843.89,'2020-03-18','2021-04-17','delivered');
INSERT 0 1
vehicleshowroom=# insert into sales values('s1104','v104','c204','sr404',576843.89,'2019-06-18','2019-07-17','shipped');
INSERT 0 1
vehicleshowroom=# insert into sales values('s1105','v105','c205','sr405',953843.89,'2020-01-18','2020-02-17','delivered');
INSERT 0 1

```

Create users with different access privileges for different parts of database :

```
vehicleshowroom=# \du
```

Role name	Attributes	Member of
postgres	Superuser, Create role, Create DB, Replication, Bypass RLS	{}

```
create user mike with password 'mik';
create user tyler with password 'tyl';
create user stifler with password 'sti';
```

In the below screenshot, user mike has been given SUPERUSER power as he is the manager.

In case of any issues there has to be a database master to take control of it.

```
vehicleshowroom=# \c postgres
You are now connected to database "postgres" as user "postgres".
postgres=# \du
```

Role name	Attributes	Member of
mike		{}
postgres	Superuser, Create role, Create DB, Replication, Bypass RLS	{}

```
postgres=# ALTER USER mike WITH SUPERUSER;
ALTER ROLE
postgres=# \du
```

Role name	Attributes	Member of
mike	Superuser	{}
postgres	Superuser, Create role, Create DB, Replication, Bypass RLS	{}

```
postgres=# \c vehicleshowroom;
You are now connected to database "vehicleshowroom" as user "postgres".
vehicleshowroom=# create user tyler with password 'tyl';
CREATE ROLE
```



```

vehicleshowroom=# create user stifler with password 'sti';
CREATE ROLE
vehicleshowroom=# grant all privileges on table administration,customer,dealer,img,sales,showroom,vehicle to mike;
GRANT
vehicleshowroom=# grant all privileges on table dealer,sales,vehicle,img to tyler;
GRANT
vehicleshowroom=# grant all privileges on table dealer,sales,vehicle,img to stifler;
GRANT
vehicleshowroom=# \du

```

Role name		List of roles Attributes	Member of
mike		Superuser	{}
postgres		Superuser, Create role, Create DB, Replication, Bypass RLS	{}
stifler			{}
tyler			{}

```

vehicleshowroom=# create user Rahul with password 'rah';
CREATE ROLE
vehicleshowroom=# create user Raj with password 'raj';
CREATE ROLE
vehicleshowroom=# create user Zara with password 'zar';
CREATE ROLE
vehicleshowroom=# create user Anya with password 'any';
CREATE ROLE
vehicleshowroom=# create user Anjali with password 'anj';
CREATE ROLE
vehicleshowroom=# grant all privileges on table customer,sales to Rahul,Raj,Zara,Anya,Anjali;
GRANT
vehicleshowroom=#

```

```

vehicleshowroom=# create user Priya with password 'pri';
CREATE ROLE
vehicleshowroom=# create user Alexander with password 'ale';
CREATE ROLE
vehicleshowroom=# create user Sravya with password 'sra';
CREATE ROLE
vehicleshowroom=# create user Madhav with password 'mad';
CREATE ROLE
vehicleshowroom=# create user Jessica with password 'jes';
CREATE ROLE
vehicleshowroom=# grant all privileges on table sales to Priya,Alexander,Sravya,Madhav,Jessica;
GRANT
vehicleshowroom=#

```

PES20

Verifying Access :

```
vehicleshoweroom=# \c vehicleshoweroom mike
Password for user mike:
You are now connected to database "vehicleshoweroom" as user "mike".
vehicleshoweroom=# select * from customer;
custid | lname | fname | contactno | emailid | passwrd | address | gender | createdat | stats
-----+-----+-----+-----+-----+-----+-----+-----+-----+-----
c201 | Bhatta | Alia | 4545 | alia@gmail.com | a101 | Bhtutan | female | 2020-06-17 | paid
c202 | Bhatta | Abhishek | 4544 | abhi@gmail.com | a102 | Navi Mumbai | male | 2020-04-20 | paid
c203 | Reddy | Keshav | 4543 | k@gmail.com | a103 | Vidya Nagar | female | 2021-03-17 | paid
c204 | satyamurthy | Arjun | 4542 | arjun@gmail.com | a104 | Electronic City | male | 2019-06-17 | paid
c205 | Mittal | Sneha | 4541 | sneha@gmail.com | a105 | Koromangala | female | 2020-01-17 | paid
(5 rows)

vehicleshoweroom=# \c vehicleshoweroom tyler
Password for user tyler:
You are now connected to database "vehicleshoweroom" as user "tyler".
vehicleshoweroom=> select * from customer;
ERROR: permission denied for table customer
vehicleshoweroom=> select * from sales;
salesid | vehicleid | custid | showroomid | cost | ord_date | delv_date | description | stats
-----+-----+-----+-----+-----+-----+-----+-----+-----
s1101 | v101 | c201 | sr401 | 208443.89 | 2020-06-18 | 2020-07-17 | delivered | 
s1102 | v102 | c202 | sr402 | 143843.89 | 2020-04-21 | 2020-03-17 | shipped | 
s1103 | v103 | c203 | sr403 | 156843.89 | 2020-03-18 | 2021-04-17 | delivered | 
s1104 | v104 | c204 | sr404 | 576843.89 | 2019-06-18 | 2019-07-17 | shipped | 
s1105 | v105 | c205 | sr405 | 953843.89 | 2020-01-18 | 2020-02-17 | delivered | 
(5 rows)

vehicleshoweroom=> \c vehicleshoweroom rahul
Password for user rahul:
You are now connected to database "vehicleshoweroom" as user "rahul".
vehicleshoweroom=> select * from vehicle;
ERROR: permission denied for table vehicle
vehicleshoweroom=> select * from customer;
custid | lname | fname | contactno | emailid | passwrd | address | gender | createdat | stats
-----+-----+-----+-----+-----+-----+-----+-----+-----+-----
c201 | Bhatta | Alia | 4545 | alia@gmail.com | a101 | Bhtutan | female | 2020-06-17 | paid
c202 | Bhatta | Abhishek | 4544 | abhi@gmail.com | a102 | Navi Mumbai | male | 2020-04-20 | paid
c203 | Reddy | Keshav | 4543 | k@gmail.com | a103 | Vidya Nagar | female | 2021-03-17 | paid
c204 | satyamurthy | Arjun | 4542 | arjun@gmail.com | a104 | Electronic City | male | 2019-06-17 | paid
c205 | Mittal | Sneha | 4541 | sneha@gmail.com | a105 | Koromangala | female | 2020-01-17 | paid
(5 rows)

vehicleshoweroom=> \c vehicleshoweroom priya
Password for user priya:
You are now connected to database "vehicleshoweroom" as user "priya".
vehicleshoweroom=> select * from customer;
ERROR: permission denied for table customer
vehicleshoweroom=> select * from sales;
salesid | vehicleid | custid | showroomid | cost | ord_date | delv_date | description | stats
-----+-----+-----+-----+-----+-----+-----+-----+-----
s1101 | v101 | c201 | sr401 | 208443.89 | 2020-06-18 | 2020-07-17 | delivered | 
s1102 | v102 | c202 | sr402 | 143843.89 | 2020-04-21 | 2020-03-17 | shipped | 
s1103 | v103 | c203 | sr403 | 156843.89 | 2020-03-18 | 2021-04-17 | delivered | 
s1104 | v104 | c204 | sr404 | 576843.89 | 2019-06-18 | 2019-07-17 | shipped | 
s1105 | v105 | c205 | sr405 | 953843.89 | 2020-01-18 | 2020-02-17 | delivered | 
(5 rows)

vehicleshoweroom=>
```

Simple Queries :

1. Count the number of cars ordered in 2020

```
SELECT * FROM sales WHERE (ord_date BETWEEN '2020-01-01' AND '2020-12-31');
```

2. Select the cars delivered in 2021

```
SELECT * FROM sales WHERE (delv_date BETWEEN '2021-01-01' AND '2021-12-31');
```

3. List the distinct number of cars on sale

```
Select count(distinct vehicleID) from vehicle;
```

4. List vehicles which cost over 30k and are sold in 2020 and are sold by showroom having showrrom id sr401

```
SELECT * FROM sales WHERE (cost>30000 AND delv_date BETWEEN '2020-01-01' AND '2020-12-31' AND showroomid='sr401');
```

5. List bikes

```
SELECT vehiclename,vehiclemodel FROM VEHICLE WHERE vehicletype='bike';
```

6. List most expensive bike and car

```
SELECT vehicletype,MAX(vehiclecost) FROM vehicle GROUP BY vehicletype;
```

```
vehicleshowroom=# SELECT * FROM sales WHERE (ord_date BETWEEN '2020-01-01' AND '2020-12-31');
salesid | vehicleid | custid | showroomid | cost | ord_date | delv_date | description | stats
-----+-----+-----+-----+-----+-----+-----+-----+-----
s1101   | v101     | c201   | sr401      | 208443.89 | 2020-06-18 | 2020-07-17 | delivered   |
s1102   | v102     | c202   | sr402      | 143843.89 | 2020-04-21 | 2020-03-17 | shipped      |
s1103   | v103     | c203   | sr403      | 156843.89 | 2020-03-18 | 2021-04-17 | delivered   |
s1105   | v105     | c205   | sr405      | 953843.89 | 2020-01-18 | 2020-02-17 | delivered   |
(4 rows)

vehicleshowroom=# SELECT * FROM sales WHERE (delv_date BETWEEN '2021-01-01' AND '2021-12-31');
salesid | vehicleid | custid | showroomid | cost | ord_date | delv_date | description | stats
-----+-----+-----+-----+-----+-----+-----+-----+-----
s1103   | v103     | c203   | sr403      | 156843.89 | 2020-03-18 | 2021-04-17 | delivered   |
(1 row)

vehicleshowroom=# Select count(distinct vehicleID) from vehicle;
count
-----
5
(1 row)

vehicleshowroom=# SELECT * FROM sales WHERE (cost>30000 AND delv_date BETWEEN '2020-01-01' AND '2020-12-31' AND showroomid='sr401');
salesid | vehicleid | custid | showroomid | cost | ord_date | delv_date | description | stats
-----+-----+-----+-----+-----+-----+-----+-----+-----
s1101   | v101     | c201   | sr401      | 208443.89 | 2020-06-18 | 2020-07-17 | delivered   |
(1 row)

vehicleshowroom=# SELECT vehiclename,vehiclemodel FROM VEHICLE WHERE vehicletype='bike';
vehiclename | vehiclemodel
-----+-----
Royal Enfield | Bullet 350
Royal Enfield | Interceptor 650
(2 rows)

vehicleshowroom=# SELECT vehicletype,MAX(vehiclecost) FROM vehicle GROUP BY vehicletype;
vehicletype | max
-----+-----
car          | 2084843
bike         | 156843
(2 rows)
```

Complex Queries :

1. Count the number of customers having more than 2 vehicles

SELECT C.fname,C.lname from customer C where(select count(*) from sales S where C.custid=S.custid)>=2;

2. List of dealers who have sold cars worth more than 500000

with list as (select dealerid from vehicle where vehiclecost>500000) select D.name,D.companyname from dealer D,list l where l.dealerid=D.dealerid;

3. List of customers who have bought bikes

with list as (select * from vehicle where vehicletype='bike') select C.fname,C.lname,l.vehiclename,l.vehiclemodel from customer C,list l,sales S where C.custid=S.custid AND l.vehicleid=S.vehicleid;

```
vehicleshowroom=# SELECT C.fname,C.lname from customer C where(select count(*) from sales S where C.custid=S.custid)>=2;
fname | lname
-----+-----
(0 rows)

vehicleshowroom=# insert into sales values('sl106', 'v101', 'c201', 'sr402', 456456.45, '2021-01-01', '2021-01-10', 'delivered');
INSERT 0 1
vehicleshowroom=# SELECT C.fname,C.lname from customer C where(select count(*) from sales S where C.custid=S.custid)>=2;
fname | lname
-----+-----
Alia  | Bhatta
(1 row)

vehicleshowroom=# with list as (select dealerid from vehicle where vehiclecost>500000) select D.name,D.companyname from dealer D,list l where l.dealerid=D.dealerid;
name  | companyname
-----+-----
Priya | Ford Motors
Madhav| Ferrari Motors
Jessica| Hersheys Motors
(3 rows)

vehicleshowroom=# with list as (select * from vehicle where vehicletype='bike') select C.fname,C.lname,l.vehiclename,l.vehiclemodel from customer C,list l,sales S where C.custid=S.custid AND l.vehicleid=S.vehicleid;
fname | lname | vehiclename | vehiclemodel
-----+-----+-----+-----
Abhishek | Bhatta | Royal Enfield | Bullet 350
Keshav | Reddy | Royal Enfield | Interceptor 650
(2 rows)

vehicleshowroom=#
```

4. Select the type of vehicle that have highest number of sales.

select vehicletype, count(vehicletype) from vehicle as v inner join sales as s on v.vehicleid=s.vehicleid group by vehicletype;

```
vehicleshowroom=# select vehicletype, count(vehicletype)
vehicleshowroom=# from vehicle as v inner join sales as s
vehicleshowroom=# on v.vehicleid=s.vehicleid
vehicleshowroom=# group by vehicletype;
vehicletype | count
-----+-----
car         | 4
bike        | 2
(2 rows)

vehicleshowroom=#
```

5. Select showrooms where the sales of vehicle v104 are the most

select s.showroomid, count(v.vehicleid) from vehicle as v inner join sales as s on
v.vehicleid=s.vehicleid and v.vehicleid='v104' group by s.showroomid order by count
desc limit 3;

```
vehicleshower=# select s.showroomid, count(v.vehicleid)
vehicleshower=# from vehicle as v inner join sales as s
vehicleshower=# on v.vehicleid=s.vehicleid and v.vehicleid='v104'
vehicleshower=# group by s.showroomid
vehicleshower=# order by count desc
vehicleshower=# limit 3;
 showroomid | count
-----+-----
 sr401      |      1
 sr404      |      1
(2 rows)

vehicleshower=#
```

6. Select customers who have purchased most vehicles from a particular showroom

select c.custid, count(s.salesid) from customer as c cross join sales as s where
c.custid=s.custid group by c.custid order by count desc limit 2;

```
vehicleshower=# select c.custid, count(s.salesid) from customer as c
vehicleshower=# cross join sales as s
vehicleshower=# where c.custid=s.custid
vehicleshower=# group by c.custid
vehicleshower=# order by count
vehicleshower=# desc
vehicleshower=# limit 2;
 custid | count
-----+-----
 c201   |      2
 c203   |      1
(2 rows)

vehicleshower=#
```