LAB 5B

1-Write sql query that returns the model and production year of all red cars

```
select model,prodution_year from car where color = 'red';
+--------+----------------+
| model  | prodution_year |
+--------+----------------+
| IMPALA |           2010 |
| GOLF   |           1980 |
+--------+----------------+
2 rows in set (0.000 sec)
```

B-Write a relational algebra expression that does part?

π **model,productionYear** σ **color=red** (CAR)

2-Write sql query that returns the AVAERAGE weight of car models per brand?

```
select brand, avg(weight) as avg_weight from model group by brand;
+------------+------------+
| brand      | avg_weight |
+------------+------------+
| gm         |  3000.0000 |
| porsche    |  1350.0000 |
| US         | 10000.0000 |
| volkswagen |  2500.0000 |
+------------+------------+
4 rows in set (0.001 sec)
```

b-Relational algebra expression

π brand, AVG(weight) γ brand,avg(weight) (BRAND* AVG(WEIGHT)

3- write sql query that returns name person who own green cars produced by folkswagen

Write algebra?

```
select owner from owns where car=(select license from car where
color='green' and model=(select distinct mid from model where
brand='porche'));
Empty set (0.001 sec)
```

π name, σ car=car.license, car.color='green ^ model=model.mId^ model.brand='proche'(OWNS* CAR* MODEL)

4-— write an sql queries that create a new relation driverlicense that records information about drivers license of persons this relation should have attributes Person, license Nr, state , issueDate ,

status. A driver license is uniquely identified by the combination of license Nr and state. Attribute Person is a foreign key to the relation Person. Note that the license Nr is a alphanumeric value that is precisely 11 character long. Attribute status is a single character attribute that either takes the following two values.: A (active) or S (supended). Attribute state is a 2 character state code(e.g IL> Illinois)

```
create table driver_license2 (Person  varchar(20) REFERENCES
person_car,license_Nr varchar(11),state varchar(20), issueDate
varchar(20), status  varchar(2));
Query OK, 0 rows affected (0.245 sec)

MariaDB [npudb1]> select * from driver_license2 ;
Empty set (0.001 sec)
```

5— write sql query that returns the license plate number (attribute license) and color of car owned by persons who are less than 18 years old .

```
elect license, color from car where license in (select car from owns
where owner in (select name from person_lab where age<18));
Empty set (0.001 sec)
```

6—**write sql query that returns the se per state (persons state)**

```
 select p.state, count(p.state) from person_lab p inner join owns o on
p.name=o.owner group by p.state;
+-------+----------------+
| state | count(p.state) |
+-------+----------------+
| CA    |              1 |
| IL    |              2 |
+-------+----------------+
```

7—**write an sql query that returns states without any porsche cars. That is a state should be returned if no person in that state own s car without brand porsche.**

```
select state from person_lab where name not in (select owner from owns
where car not in (select license from car where model='PORSCHE 510'));
+-------+
| state |
+-------+
| NY    |
+-------+
```

8- write an sql query that insert a new car model into the database with mId(model ID),brand US, and wright 10000.

```
insert into model values('US 101','US',10000);
Query OK, 1 row affected (0.046 sec)

MariaDB [npudb1]> select * from model;
+-------------+------------+--------+
| mid         | brand      | weight |
+-------------+------------+--------+
| porsche 510 | porsche    |   1300 |
| porsche 310 | porsche    |   1400 |
| impala      | gm         |   3000 |
| golf        | volkswagen |   2500 |
| US 101      | US         |  10000 |
+-------------+------------+--------+
```

9-write an sql statement that updates brand of all car models to GM if their current brand is Volkswagan and their weight is less than 2000

```
update model set brand='GM' where brand='volkswagen' and weight <
2000;
Query OK, 0 rows affected (0.000 sec)
Rows matched: 0  Changed: 0  Warnings: 0

MariaDB [npudb1]> select * from model;
+-------------+------------+--------+
| mid         | brand      | weight |
+-------------+------------+--------+
| porsche 510 | porsche    |   1300 |in
| porsche 310 | porsche    |   1400 |
| impala      | gm         |   3000 |
| golf        | volkswagen |   2500 |
+-------------+------------+--------+
4 rows in set (0.000 sec)
```