1) create a customer table to store following columns, customer id as primary key

customer id, name, mobile set\<int>,email tuple(text,text),purchaseveh
map\<text,int>,hoobies list\<text>

→

cqlsh:iacsd0923> create table customer1(cid int primary key,cname text,mobile set\<int>,email tuple\<text,text>,

       ... purchaseveh map\<text,int>,hobbies list\<text>);

 cid | cname | email | hobbies | mobile | purchaseveh

-----+-------+-------+---------+--------+-------------

(0 rows)

2) insert 5 records with customer id 11,12,13,14,15

→

insert into customer1(cid,cname,email,hobbies,mobile,purchaseveh)
values(11,'Amrut',('amrut@gmail.com'),['swimming'],{3333},{'cheese':1});

insert into customer1(cid,cname,email,hobbies,mobile,purchaseveh)
values(12,'Ganesh',('ganesh@gmail.com'),['Painting'],{6666},{'Milk':3});

insert into customer1(cid,cname,email,hobbies,mobile,purchaseveh)
values(13,'Vikram',('vikram@gmail.com'),['swimming'],{4444},{'butter':2});

insert into customer1(cid,cname,email,hobbies,mobile,purchaseveh)
values(14,'Kalpesh',('kalpesh@gmail.com'),['Painting'],{5555},{'C.Milk':4});

insert into customer1(cid,cname,email,hobbies,mobile,purchaseveh)
values(15,'Anuj',('anuj@gmail.com'),['GYM'],{2222},{'bread':5});

 cid | cname | email | hobbies | mobile | purchaseveh

-----+---------+----------------------------+--------------+--------+---------------

 13 | Vikram | ('vikram@gmail.com', None) | ['swimming'] | {4444} | {'butter': 2}

 11 | Amrut | ('amrut@gmail.com', None) | ['swimming'] | {3333} | {'cheese': 1}

 15 | Anuj | ('anuj@gmail.com', None) | ['GYM'] | {2222} | {'bread': 5}

 14 | Kalpesh | ('kalpesh@gmail.com', None) | ['Painting'] | {5555} | {'C.Milk': 4}

 12 | Ganesh | ('ganesh@gmail.com', None) | ['Painting'] | {6666} | {'Milk': 3}

(5 rows)

3) add hoobies design, drawing for custid=12

→

cqlsh:iacsd0923> update customer1 set hobbies=hobbies+['designing'] where cid=12;

cqlsh:iacsd0923> select * from customer1;

cid	cname	email	hobbies	mobile	purchaseveh
13	Vikram	('vikram@gmail.com', None)	['swimming']	{4444}	{'butter': 2}
11	Amrut	('amrut@gmail.com', None)	['swimming']	{3333}	{'cheese': 1}
15	Anuj	('anuj@gmail.com', None)	['GYM']	{2222}	{'bread': 5}
14	Kalpesh	('kalpesh@gmail.com', None)	['Painting']	{5555}	{'C.Milk': 4}
12	Ganesh	('ganesh@gmail.com', None)	['Painting', 'designing']	{6666}	{'Milk': 3}

cqlsh:iacsd0923> update customer1 set hobbies=hobbies+['drawing'] where cid=12;

cid	cname	email	hobbies	mobile	purchaseveh
13	Vikram	('vikram@gmail.com', None)	['swimming']	{4444}	{'butter': 2}
11	Amrut	('amrut@gmail.com', None)	['swimming']	{3333}	{'cheese': 1}
15	Anuj	('anuj@gmail.com', None)	['GYM']	{2222}	{'bread': 5}
14	Kalpesh	('kalpesh@gmail.com', None)	['Painting']	{5555}	{'C.Milk': 4}
12	Ganesh	('ganesh@gmail.com', None)	['Painting', 'designing', 'drawing']	{6666}	{'Milk': 3}

(5 rows)

4) remove hoobies design for custid=12

→

```
cqlsh:iacsd0923> update customer1 set hobbies=hobbies-['designing'] where cid=12;
cqlsh:iacsd0923> select * from customer1;

 cid | cname    | email                               | hobbies                        | mobile | purchaseveh
-----+----------+-------------------------------------+--------------------------------+--------+-------------
  13 |   Vikram |   ('vikram@gmail.com', None) |              ['swimming'] | {4444} | {'butter': 2}
  11 |    Amrut |    ('amrut@gmail.com', None) |              ['swimming'] | {3333} | {'cheese': 1}
  15 |     Anuj |     ('anuj@gmail.com', None) |                   ['GYM'] | {2222} |  {'bread': 5}
  14 |  Kalpesh | ('kalpesh@gmail.com', None) |               ['Painting'] | {5555} | {'C.Milk': 4}
  12 |   Ganesh |  ('ganesh@gmail.com', None) | ['Painting', 'drawing'] | {6666} |   {'Milk': 3}

(5 rows)
```

5)update name of customer with id 11

→

```
cqlsh:iacsd0923> update customer1 set cname='Amrut Amble Patil' where cid=11;
cqlsh:iacsd0923> select * from customer1;

 cid | cname             | email                               | hobbies                        | mobile | purchaseveh
-----+-------------------+-------------------------------------+--------------------------------+--------+-------------
  13 |            Vikram |   ('vikram@gmail.com', None) |              ['swimming'] | {4444} | {'butter': 2}
  11 | Amrut Amble Patil |    ('amrut@gmail.com', None) |              ['swimming'] | {3333} | {'cheese': 1}
  15 |              Anuj |     ('anuj@gmail.com', None) |                   ['GYM'] | {2222} |  {'bread': 5}
  14 |           Kalpesh | ('kalpesh@gmail.com', None) |               ['Painting'] | {5555} | {'C.Milk': 4}
  12 |            Ganesh |  ('ganesh@gmail.com', None) | ['Painting', 'drawing'] | {6666} |   {'Milk': 3}

(5 rows)
```

6) modify emails of customer 13

→

```
cqlsh:iacsd0923> update customer1 set email=('patil@gmail.com') where cid=11;
cqlsh:iacsd0923> select * from customer1;

 cid | cname             | email                               | hobbies                        | mobile | purchaseveh
-----+-------------------+-------------------------------------+--------------------------------+--------+-------------
  13 |            Vikram |   ('vikram@gmail.com', None) |              ['swimming'] | {4444} | {'butter': 2}
  11 | Amrut Amble Patil |    ('patil@gmail.com', None) |              ['swimming'] | {3333} | {'cheese': 1}
  15 |              Anuj |     ('anuj@gmail.com', None) |                   ['GYM'] | {2222} |  {'bread': 5}
  14 |           Kalpesh | ('kalpesh@gmail.com', None) |               ['Painting'] | {5555} | {'C.Milk': 4}
  12 |            Ganesh |  ('ganesh@gmail.com', None) | ['Painting', 'drawing'] | {6666} |   {'Milk': 3}

(5 rows)
```

7) add and delete one of the purchase vehicle

→

```
cqlsh:iacsd0923> update customer1 set purchaseveh=purchaseveh+{'BMW':80, 'AUDI':75} where cid=13;
cqlsh:iacsd0923> select * from customer1;

 cid | cname              | email                          | hobbies                 | mobile | purchaseveh
-----+--------------------+--------------------------------+-------------------------+--------+--------------------------------------
  13 |             Vikram | ('vikram@gmail.com', None)     |            ['swimming'] | {4444} | {'AUDI': 75, 'BMW': 80, 'butter': 2}
  11 | Amrut Amble Patil  | ('patil@gmail.com', None)      |            ['swimming'] | {3333} |                       {'cheese': 1}
  15 |               Anuj | ('anuj@gmail.com', None)       |                 ['GYM'] | {2222} |                        {'bread': 5}
  14 |            Kalpesh | ('kalpesh@gmail.com', None)    |             ['Painting'] | {5555} |                       {'C.Milk': 4}
  12 |             Ganesh | ('ganesh@gmail.com', None)     | ['Painting', 'drawing'] | {6666} |                         {'Milk': 3}

(5 rows)
```

```
cqlsh:iacsd0923> update customer1 set purchaseveh=purchaseveh-{'BMW'} where cid=13;
cqlsh:iacsd0923> select * from customer1;

 cid | cname              | email                          | hobbies                 | mobile | purchaseveh
-----+--------------------+--------------------------------+-------------------------+--------+---------------------------
  13 |             Vikram | ('vikram@gmail.com', None)     |            ['swimming'] | {4444} | {'AUDI': 75, 'butter': 2}
  11 | Amrut Amble Patil  | ('patil@gmail.com', None)      |            ['swimming'] | {3333} |            {'cheese': 1}
  15 |               Anuj | ('anuj@gmail.com', None)       |                 ['GYM'] | {2222} |             {'bread': 5}
  14 |            Kalpesh | ('kalpesh@gmail.com', None)    |             ['Painting'] | {5555} |            {'C.Milk': 4}
  12 |             Ganesh | ('ganesh@gmail.com', None)     | ['Painting', 'drawing'] | {6666} |              {'Milk': 3}

(5 rows)
```

8) add and delete one of the hobbies for customer 14

→

```
cqlsh:iacsd0923> update customer1 set hobbies=hobbies+['reading','gym'] where cid=14;
cqlsh:iacsd0923> select * from customer1;

 cid | cname              | email                          | hobbies                           | mobile | purchaseveh
-----+--------------------+--------------------------------+-----------------------------------+--------+---------------------------
  13 |             Vikram | ('vikram@gmail.com', None)     |                      ['swimming'] | {4444} | {'AUDI': 75, 'butter': 2}
  11 | Amrut Amble Patil  | ('patil@gmail.com', None)      |                      ['swimming'] | {3333} |            {'cheese': 1}
  15 |               Anuj | ('anuj@gmail.com', None)       |                           ['GYM'] | {2222} |             {'bread': 5}
  14 |            Kalpesh | ('kalpesh@gmail.com', None)    | ['Painting', 'reading', 'gym']    | {5555} |            {'C.Milk': 4}
  12 |             Ganesh | ('ganesh@gmail.com', None)     |           ['Painting', 'drawing'] | {6666} |              {'Milk': 3}

(5 rows)
cqlsh:iacsd0923> update customer1 set hobbies=hobbies-['gym'] where cid=14;
cqlsh:iacsd0923> select * from customer1;

 cid | cname              | email                          | hobbies                   | mobile | purchaseveh
-----+--------------------+--------------------------------+---------------------------+--------+---------------------------
  13 |             Vikram | ('vikram@gmail.com', None)     |              ['swimming'] | {4444} | {'AUDI': 75, 'butter': 2}
  11 | Amrut Amble Patil  | ('patil@gmail.com', None)      |              ['swimming'] | {3333} |            {'cheese': 1}
  15 |               Anuj | ('anuj@gmail.com', None)       |                   ['GYM'] | {2222} |             {'bread': 5}
  14 |            Kalpesh | ('kalpesh@gmail.com', None)    |   ['Painting', 'reading'] | {5555} |            {'C.Milk': 4}
  12 |             Ganesh | ('ganesh@gmail.com', None)     | ['Painting', 'drawing']   | {6666} |              {'Milk': 3}

(5 rows)
```

9) change the quantity of vehicle activa from customer id 15

->

```
cqlsh:iacsd0923> update customer1 set purchaseveh= purchaseveh+{'Activa':10} where cid=14;
cqlsh:iacsd0923> select * from customer1;

 cid | cname             | email                          | hobbies                      | mobile | purchaseveh
-----+-------------------+--------------------------------+------------------------------+--------+------------------------------------
  13 |            Vikram |  ('vikram@gmail.com', None) |            ['swimming'] | {4444} |       {'AUDI': 75, 'butter': 2}
  11 | Amrut Amble Patil |   ('patil@gmail.com', None) |            ['swimming'] | {3333} |                   {'cheese': 1}
  15 |              Anuj |    ('anuj@gmail.com', None) |                 ['GYM'] | {2222} |                    {'bread': 5}
  14 |           Kalpesh | ('kalpesh@gmail.com', None) | ['Painting', 'reading'] | {5555} | {'Activa': 10, 'C.Milk': 4}
  12 |            Ganesh |  ('ganesh@gmail.com', None) | ['Painting', 'drawing'] | {6666} |                     {'Milk': 3}

(5 rows)
cqlsh:iacsd0923> update customer1 set purchaseveh['Activa']=100 where cid=14;
cqlsh:iacsd0923> select * from customer1;

 cid | cname             | email                          | hobbies                      | mobile | purchaseveh
-----+-------------------+--------------------------------+------------------------------+--------+------------------------------------
  13 |            Vikram |  ('vikram@gmail.com', None) |            ['swimming'] | {4444} |       {'AUDI': 75, 'butter': 2}
  11 | Amrut Amble Patil |   ('patil@gmail.com', None) |            ['swimming'] | {3333} |                   {'cheese': 1}
  15 |              Anuj |    ('anuj@gmail.com', None) |                 ['GYM'] | {2222} |                    {'bread': 5}
  14 |           Kalpesh | ('kalpesh@gmail.com', None) | ['Painting', 'reading'] | {5555} | {'Activa': 100, 'C.Milk': 4}
  12 |            Ganesh |  ('ganesh@gmail.com', None) | ['Painting', 'drawing'] | {6666} |                     {'Milk': 3}

(5 rows)
```

Q2) create a batch to add 2 records in customer table, delete record for customer 13
and delete only email from customer 11
and update emails for customer 12

→

```
cqlsh:iacsd0923> insert into customer1(cid,cname,email,hobbies,mobile,purchaseveh) values(16,'Shivam',('shivam@gmail.com'),['Painti
ng'],{1515},{'C.Milk':4});
cqlsh:iacsd0923> insert into customer1(cid,cname,email,hobbies,mobile,purchaseveh) values(17,'Ajinkya',('nanu@gmail.com'),['Paintin
g'],{1999},{'C.Milk':4});
cqlsh:iacsd0923> delete from customer1 where cid=15;
cqlsh:iacsd0923> delete email from customer1 where cid=11;
cqlsh:iacsd0923> update customer1 set email=email+('waman@gmail.com') where cid=12
           ... ;
InvalidRequest: Error from server: code=2200 [Invalid query] message="Invalid operation (email = email + ('waman@gmail.com')) for n
on counter column email"
cqlsh:iacsd0923> update customer1 set email=('waman@gmail.com') where cid=12;
cqlsh:iacsd0923> select * from customer1;

 cid | cname             | email                          | hobbies                      | mobile | purchaseveh
-----+-------------------+--------------------------------+------------------------------+--------+------------------------------------
  16 |            Shivam |  ('shivam@gmail.com', None) |            ['Painting'] | {1515} |                    {'C.Milk': 4}
  13 |            Vikram |  ('vikram@gmail.com', None) |            ['swimming'] | {4444} |       {'AUDI': 75, 'butter': 2}
  11 | Amrut Amble Patil |                       null |            ['swimming'] | {3333} |                   {'cheese': 1}
  14 |           Kalpesh | ('kalpesh@gmail.com', None) | ['Painting', 'reading'] | {5555} | {'Activa': 100, 'C.Milk': 4}
  17 |           Ajinkya |    ('nanu@gmail.com', None) |            ['Painting'] | {1999} |                    {'C.Milk': 4}
  12 |            Ganesh |   ('waman@gmail.com', None) | ['Painting', 'drawing'] | {6666} |                     {'Milk': 3}

(6 rows)
```

OR

```
cqlsh:iacsd0923> begin batch
          ... insert into customer1(cid,cname,email,hobbies,mobile,purchaseveh) values(18,'prajwal',('prajwal@gmail.com'),['Pain
ting'],{2999},{'choko':4});
          ... insert into customer1(cid,cname,email,hobbies,mobile,purchaseveh) values(19,'praveer',('praveer@gmail.com'),['Pain
ting'],{2999},{'choko':4});
          ... delete from customer1 where cid=17;
          ... delete email from customer1 where cid=12;
          ... update customer1 set email=('ganu@gmail.com') where cid=12;
          ... apply batch;
cqlsh:iacsd0923> select * from customer1;

 cid | cname             | email                              | hobbies                   | mobile | purchaseveh
-----+-------------------+------------------------------------+---------------------------+--------+-----------------------------
  16 |            Shivam | ('shivam@gmail.com', None)         |              ['Painting'] | {1515} |              {'C.Milk': 4}
  13 |            Vikram | ('vikram@gmail.com', None)         |             ['swimming'] | {4444} |       {'AUDI': 75, 'butter': 2}
  11 | Amrut Amble Patil |                              null   |             ['swimming'] | {3333} |              {'cheese': 1}
  19 |            praveer | ('praveer@gmail.com', None)        |              ['Painting'] | {2999} |              {'choko': 4}
  18 |            prajwal | ('prajwal@gmail.com', None)        |              ['Painting'] | {2999} |              {'choko': 4}
  14 |            Kalpesh | ('kalpesh@gmail.com', None)        | ['Painting', 'reading']   | {5555} | {'Activa': 100, 'C.Milk': 4}
  12 |            Ganesh |                              null   | ['Painting', 'drawing']   | {6666} |              {'Milk': 3}

(7 rows)
```

Q3) create type department to store deptno, dname

a.

change the type department to add dloc in it.

create table emp to store eid, ename, sal, projects List<text>, dept department

add 5 records in the table

→

cqlsh:vikram> create type department(depno int,dname text);

cqlsh:vikram> alter type department add dloc text;

cqlsh:vikram> create table emp(eid int primary key,ename text,sal int,project list<text>,dept department);

cqlsh:vikram> select * from emp;

```
 eid | dept | ename | project | sal
-----+------+-------+---------+-----

(0 rows)
```

cqlsh:vikram> insert into
emp(eid,dept,ename,project,sal)values(11,{depno:11,dname:'vikram'},'biradar',['A','B','C','D'],8);

cqlsh:vikram> insert into emp(eid,dept,ename,project,sal) values(12,{depno:12,dname:'kalpesh'},'patil',['A','B','C','D'],9);

cqlsh:vikram> insert into emp(eid,dept,ename,project,sal) values(13,{depno:13,dname:'amrut'},'patil',['A','B','C','D'],8);

cqlsh:vikram> insert into emp(eid,dept,ename,project,sal)
values(14,{depno:14,dname:'ganesh'},'waman',['A','B','C','D'],7);

cqlsh:vikram> insert into emp(eid,dept,ename,project,sal) values(15,{depno:15,dname:'anuj'},'thavre',['A','B','C','D'],8);

cqlsh:vikram> select * from emp;

```
 eid | dept                                     | ename   | project                | sal
-----+------------------------------------------+---------+------------------------+-----
  13 |    {depno: 13, dname: 'amrut', dloc: null} |   patil | ['A', 'B', 'C', 'D'] |   8
  11 |   {depno: 11, dname: 'vikram', dloc: null} | biradar | ['A', 'B', 'C', 'D'] |   8
  15 |     {depno: 15, dname: 'anuj', dloc: null} |  thavre | ['A', 'B', 'C', 'D'] |   8
  14 |   {depno: 14, dname: 'ganesh', dloc: null} |   waman | ['A', 'B', 'C', 'D'] |   7
  12 | {depno: 12, dname: 'kalpesh', dloc: null} |   patil | ['A', 'B', 'C', 'D'] |   9

(5 rows)
```

b. create index on ename column

cqlsh:vikram> create index idxname on emp(ename);

cqlsh:vikram> select * from emp;

```
 eid | dept                                     | ename   | project                | sal
-----+------------------------------------------+---------+------------------------+-----
  13 |    {depno: 13, dname: 'amrut', dloc: null} |   patil | ['A', 'B', 'C', 'D'] |   8
  11 |   {depno: 11, dname: 'vikram', dloc: null} | biradar | ['A', 'B', 'C', 'D'] |   8
  15 |     {depno: 15, dname: 'anuj', dloc: null} |  thavre | ['A', 'B', 'C', 'D'] |   8
  14 |   {depno: 14, dname: 'ganesh', dloc: null} |   waman | ['A', 'B', 'C', 'D'] |   7
  12 | {depno: 12, dname: 'kalpesh', dloc: null} |   patil | ['A', 'B', 'C', 'D'] |   9

(5 rows)
```