```
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>
\rightarrow
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
\rightarrow
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}
```

```
3) add hoobies design, drawing for custid=12
```

 $\rightarrow$ 

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;

4) remove hoobies design for custid=12

 $\rightarrow$ 

```
cqlsh:iacsd0923> update customer1 set hobbies=hobbies-['designing'] where cid=12;
cqlsh:iacsd0923> select * from customer1;
 cid | cname
               email
                                              hobbies
                                                                         | mobile | purchaseveh
                  ('vikram@gmail.com', None)
 13
        Vikram
                                                            ['swimming']
                                                                           {4444}
                                                                                     {'butter': 2}
                   ('amrut@gmail.com', None)
                                                            ['swimming']
         Amrut
                                                                                      'cheese': 1}
  11
                                                                           {3333}
                    ('anuj@gmail.com', None)
  15
          Anui
                                                                 ['GYM']
                                                                           {2222}
                                                                                      {'bread': 5}
                 ('kalpesh@gmail.com', None)
                                                                           {5555}
                                                                                     {'C.Milk': 4}
  14
       Kalpesh
                                                            ['Painting']
                  ('ganesh@gmail.com', None) | ['Painting', 'drawing'] | {6666}
                                                                                       {'Milk': 3}
  12
        Ganesh
(5 rows)
```

5)update name of customer with id 11



```
qlsh:iacsd0923> update customer1 set cname='Amrut Amble Patil' where cid=11;
cqlsh:iacsd0923> select * from customer1;
cid | cname
                             email
                                                                  hobbies
                                                                                                 | mobile | purchaseveh
                               ('vikram@gmail.com', None)
  ('amrut@gmail.com', None)
    ('anuj@gmail.com', None)
('kalpesh@gmail.com', None)
  13
                    Vikram |
                                                                                 ['swimming']
                                                                                                   {4444}
                                                                                                              {'butter': 2}
                                                                                 ['swimming']
                                                                                                              {'cheese': 1}
       Amrut Amble Patil
                                                                                                   {3333}
  11
                                                                                       ['GYM']
                                                                                                               {'bread': 5}
                       Anui
  15
                                                                                                   {2222}
                                                                                 ['Painting'
                                                                                                              {'C.Milk': 4}
  14
                   Kalpesh
                                                                                                   {5555}
                               ('ganesh@gmail.com', None) | ['Painting', 'drawing']
                                                                                                                {'Milk': 3}
  12
                     Ganesh
                                                                                                 | {6666}
(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
                                                                   hobbies
                                                                                                   | mobile | purchaseveh
                              email
                                ('vikram@gmail.com', None)
  ('patil@gmail.com', None)
   ('anuj@gmail.com', None)
('kalpesh@gmail.com', None)
                                                                                                                  'butter': 2}
  13
                     Vikram
                                                                                   ['swimming']
                                                                                                     {4444}
                                                                                   ['swimming']
['GYM']
                                                                                                                 {'cheese': 1}
  11
        Amrut Amble Patil
                                                                                                     {3333}
                                                                                                                 {'bread': 5}
  15
                        Anuj
                                                                                                     {2222}
                                                                                                                 {'C.Milk': 4}
  14
                    Kalpesh
                                                                                   ['Painting'
                                                                                                     {5555}
  12
                     Ganesh
                                 ('ganesh@gmail.com', None) | ['Painting', 'drawing']
                                                                                                     {6666}
                                                                                                                   {'Milk': 3}
(5 rows)
```

7) add and delete one of the purchase vehicle

 $\rightarrow$ 

```
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
                                                                                             ['swimming'] | {4444} | {'AUDI': 75, 'BMW': 80, 'butter': 2} 

['swimming'] | {3333} | {'cheese': 1} 

['GYM'] | {2222} | {'bread': 5} 

['Painting'] | {5555} | {'C.Milk': 4}
                                     ('vikram@gmail.com', None) |
('patil@gmail.com', None) |
  13
                       Vikram
         Amrut Amble Patil
  11
                                        ('anuj@gmail.com', None)
  15 |
                          Anuj
                                    ('kalpesh@gmail.com', None) | ['Painting'] | {5555}
('ganesh@gmail.com', None) | ['Painting', 'drawing'] | {6666}
  14
                       Kalpesh
  12
                        Ganesh
                                                                                                                                                                 {'Milk': 3}
 (5 rows)
```

```
:qlsh:iacsd0923> update customer1 set purchaseveh=purchaseveh-{'BMW'} where cid=13;
cqlsh:iacsd0923> select * from customer1;
 cid | cname
                                   email
                                                                                    hobbies
                                                                                                                            | mobile | purchaseveh
                        Vikram ('vikram@gmail.com', None) | ['swimming'] | {4444} |
le Patil ('patil@gmail.com', None) | ['swimming'] | {3333} |
Anuj ('anuj@gmail.com', None) | ['GYM'] | {2222} |
Kalpesh ('kalpesh@gmail.com', None) | ['Painting'] | {5555} |
Ganesh ('ganesh@gmail.com', None) | ['Painting', 'drawing'] | {6666} |
                         Vikram | ('vikram@gmail.com', None) |
  13
                                                                                                                                             {'AUDI': 75, 'butter': 2}
         Amrut Amble Patil
                                                                                                                                                               {'cheese': 1}
                                                                                                                                                                 {'bread': 5}
  15
                                                                                                                                                                {'C.Milk': 4}
  14
  12
                                                                                                                                                                   {'Milk': 3}
(5 rows)
```

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

 $\rightarrow$ 

```
cqlsh:iacsd0923> update customer1 set hobbies=hobbies+['reading','gym'] where cid=14;
cqlsh:iacsd0923> select * from customer1;
                                                                                                              | mobile | purchaseveh
cid | cname
                              email
                                                                    hobbies
                                                                                             ['swimming'] |
                                                                                                                            {'AUDI': 75, 'butter': 2}
                     Vikram |
                                  ('vikram@gmail.com', None)
                                                                                                                {4444} |
                     e Patil | ('patil@gmail.com', None) | ['swimming'] | {3333} |
Anuj | ('anuj@gmail.com', None) | ['Swimming'] | {2222} |
Kalpesh | ('kalpesh@gmail.com', None) | ['Painting', 'reading', 'gym'] | {5555} |
Ganesh | ('ganesh@gmail.com', None) | ['Painting', 'drawing'] | {6666} |
                                                                                                                                           {'cheese': 1}
       Amrut Amble Patil |
  11
                                                                                                                                            {'bread': 5}
                                                                                                                                           {'C.Milk': 4}
                    Kalpesh
  14
                                                                                                                                             {'Milk': 3}
  12
(5 rows)
cqlsh:iacsd0923> update customer1 set hobbies=hobbies-['gym'] where cid=14;
cqlsh:iacsd0923> select * from customer1;
cid | cname
                              email
                                                                    hobbies
                                                                                                     | mobile | purchaseveh
 ['swimming']
                     Vikram | ('vikram@gmail.com', None) |
                                                                                                     | {4444} | {'AUDI': 75, 'butter': 2}
 13
                     e Patil | ('patil@gmail.com', None) | ['swimming'] | {3333} |
Anuj | ('anuj@gmail.com', None) | ['GYM'] | {2222} |
Kalpesh | ('kalpesh@gmail.com', None) | ['Painting', 'reading'] | {5555} |
Ganesh | ('ganesh@gmail.com', None) | ['Painting', 'drawing'] | {6666} |
        Amrut Amble Patil |
                                                                                                                                  {'cheese': 1}
  11
                                                                                                                                   {'bread': 5}
  15
                                                                                                                                  {'C.Milk': 4}
                    Kalpesh
  14
                                                                                                                                    {'Milk': 3}
  12
(5 rows)
```

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

->

```
qlsh:iacsd0923> update customer1 set purchaseveh= purchaseveh+{'Activa':10} where cid=14;
cqlsh:iacsd0923> select * from customer1;
cid | cname
                         email
                                                         hobbies
                                                                                    | mobile | purchaseveh
                            ('vikram@gmail.com', None)
                 Vikram
                                                                                                 {'AUDI': 75, 'butter': 2}
 13
                                                                      ['swimming']
                                                                                      {4444}
                                                                      ['swimming'
                                                                                                              {'cheese': 1}
 11
      Amrut Amble Patil
                             ('patil@gmail.com', None)
                                                                                      {3333}
                              ('anuj@gmail.com', None)
                                                                           ['GYM']
                                                                                      {2222}
                                                                                                               {'bread': 5}
 15
                    Anui
                                                                                                               'C.Milk': 4}
                           ('kalpesh@gmail.com', None)
                                                                        'reading']
                                                                                               {'Activa': 10,
 14
                 Kalpesh
                                                          ['Painting',
                                                                                      {5555}
                                                        ['Painting', 'drawing']
                                                                                                                {'Milk': 3}
 12
                 Ganesh
                            ('ganesh@gmail.com', None)
                                                                                      {6666}
(5 rows)
cqlsh:iacsd0923> update customer1 set purchaseveh['Activa']=100 where cid=14;
cqlsh:iacsd0923> select * from customer1;
                         email
                                                                                    | mobile | purchaseveh
cid | cname
                                                        | hobbies
                                                                      ['swimming']
 13
                 Vikram
                            ('vikram@gmail.com', None)
                                                                                      {4444}
                                                                                                  {'AUDI': 75, 'butter': 2}
                             ('patil@gmail.com', None)
                                                                      ['swimming']
                                                                                      {3333}
                                                                                                               {'cheese': 1}
      Amrut Amble Patil
                               ('anuj@gmail.com', None)
                                                                                                                {'bread': 5}
 15
                    Anui
                                                                           ['GYM'
                                                                                      {2222}
                           ('kalpesh@gmail.com', None)
                                                                        'reading'
                                                                                                                'C.Milk': 4}
                                                          ['Painting',
                                                                                      {5555}
                                                                                               {'Activa': 100,
 14
                 Kalpesh
                                                          ['Painting', 'drawing']
                            ('ganesh@gmail.com', None)
                                                                                                                 {'Milk': 3}
 12
                  Ganesh
                                                                                      {6666}
(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



```
qlsh: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
                             ('shivam@gmail.com', None)
 16
                   Shivam
                                                                        ['Painting']
                                                                                        {1515}
                                                                                                                  {'C.Milk': 4}
                                                                                                     {'AUDI': 75, 'butter': 2}
{'cheese': 1}
                                                                        ['swimming
 13
                  Vikram
                                                                                        {4444}
                             ('vikram@gmail.com', None)
                                                                        ['swimming']
       Amrut Amble Patil
                                                                                        {3333}
                            ('kalpesh@gmail.com', None)
    ('nanu@gmail.com', None)
                                                                                        {5555}
 14
                                                                          'reading']
                                                                                                  {'Activa': 100,
                                                                                                                   'C.Milk': 4}
                 Kalpesh
                                                            ['Painting'
                                                                        , 'reading
['Painting
                                                                                                                  {'C.Milk': 4}
 17
                  Ajinkya
                                                                                        {1999}
 12
                               ('waman@gmail.com', None) |
                                                            ['Painting', 'drawing']
                                                                                                                    {'Milk': 3}
                   Ganesh
                                                                                        {6666}
(6 rows)
```

```
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']
                                                                                                               {'C.Milk': 4}
                                                                                      {1515}
                                                                                                   {'AUDI': 75,
                  Vikram
                             ('vikram@gmail.com', None)
                                                                        'swimming'
                                                                                      {4444}
                                                                                                                'butter':
 11
      Amrut Amble Patil
                                                   null
                                                                        'swimming
                                                                                      {3333}
                                                                                                               { 'cheese'
 19
                                                                        'Painting'
                                                                                      {2999}
                                                                                                                { 'choko': 4}
                            ('praveer@gmail.com', None)
                 praveer
 18
                            ('prajwal@gmail.com', None)
                 prajwal
                                                                      ['Painting']
                                                                                      {2999}
                                                                                                                 'choko': 4}
                            ('kalpesh@gmail.com', None)
                 Kalpesh
                                                           ['Painting', 'reading']
                                                                                      {5555}
                                                                                               {'Activa': 100,
                                                                                                                 'C.Milk': 4}
                                                           ['Painting', 'drawing']
                                                                                                                 {'Milk': 3}
                  Ganesh
                                                   nu11
                                                                                      {6666}
(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
                                                                         project
                                                            ename
                                                                                                   sal
  13
           {depno: 13, dname: 'amrut', dloc: null}
                                                                patil
                                                                         Γ'Α'
                                                                                 'B'
                                                                                       יכי
                                                                                             'D']
                                                                                                       8
         {depno: 11, dname: 'vikram', dloc: null}
{depno: 15, dname: 'anuj', dloc: null}
                                                                         ['A'
                                                                                 'B'
                                                                                             'D']
  11
                                                             biradar
                                                                                       יטי
                                                                                                       8
                                                                         ['A',
                                                                                'B'
  15
                                                              thavre
                                                                                       יכי
                                                                                             'D']
                                                                                                       8
         {depno: 14, dname: 'ganesh', dloc: null}
                                                                         ['A',
  14
                                                                                'B'
                                                                                             'D']
                                                                                                       7
                                                               waman
        {depno: 12, dname: 'kalpesh', dloc: null} |
                                                                         ['A',
                                                                                 'B',
                                                                                       'C'
                                                                                                       9
  12
                                                               patil
                                                                                             ['d'
(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
             {depno: 13, dname: 'amrut', dloc: null}
  13
                                                                                     ['A'
                                                                                             'B'
                                                                                                    יטי
                                                                                                           'D']
                                                                                                                       8
                                                                         patil
           {depno: 13, dname: dmrde, dloc: null}
{depno: 15, dname: 'anuj', dloc: null}
{depno: 14, dname: 'ganesh', dloc: null}
                                                                                     ['A'
                                                                                             'B'
                                                                                                    יכי
   11
                                                                       biradar
                                                                                                           l'd'
                                                                                                                       8
                                                                                    ['A',
                                                                                             'B'
                                                                                                    'C'
                                                                                                           'D']
                                                                                                                       8
   15
                                                                        thavre
                                                                                    ['A',
                                                                                                           'D']
                                                                                             'B'
                                                                                                    'C'
                                                                                                                       7
   14
                                                                         waman
                                                                                    ['A',
                                                                                             'B',
                                                                                                                       9
   12
         {depno: 12, dname: 'kalpesh', dloc: null}
                                                                         patil
(5 rows)
```