Experiment 08

Create and manage NoSQL Databases with Cassandra

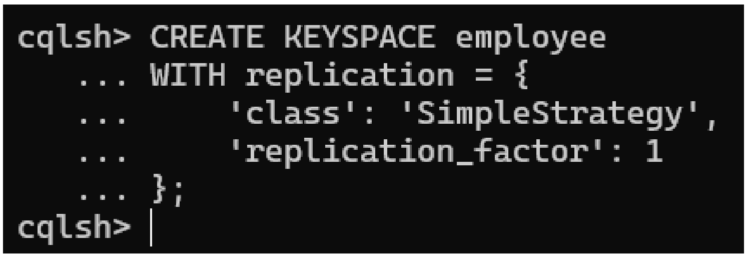
Problem Statements:

1. Create keyspace : employee
2. Create : emp_table (
```
                emp_id int,
                name text,
                city text,
                designation text,
                experience float,
                primary key(emp_id)
        );
```
3. Perform following operations on created table:
    a. Insert rows
    b. Update rows
    c. Update rows with upsert
    d. Retrieve data from table
    e. Alter table add columns ((email set<text>, expertise list<text>, prev_jobs map<text, int>)
    f. Insert new rows
    g. Delete rows and values
4. create table product(
```
                id uuid,
                name text,
                price float,
                quan int,
                primary key(id)
        );
```
5. Perform following operations on created table
    a. Insert rows
    b. Alter table product add (inv_date timestamp, available boolean);
    c. Insert new rows

Answers:

1. Create keyspace : employee

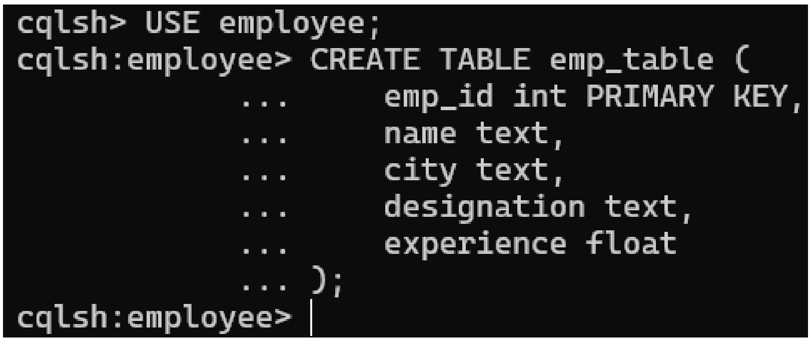
```
CREATE KEYSPACE employee
WITH replication = {
    'class': 'SimpleStrategy',
    'replication_factor': 1
};
```



```
cqlsh> CREATE KEYSPACE employee
   ... WITH replication = {
   ...     'class': 'SimpleStrategy',
   ...     'replication_factor': 1
   ... };
cqlsh>
```

2. Create collection: inventory

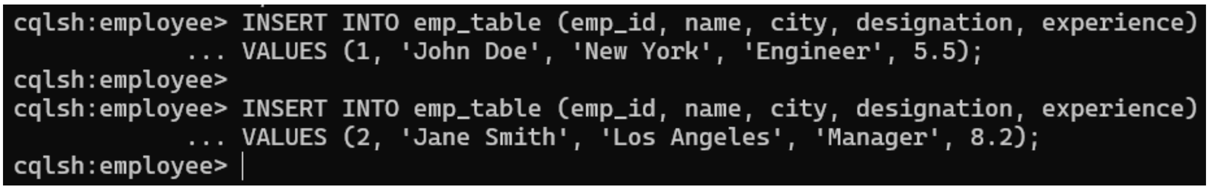
```
USE employee;

CREATE TABLE emp_table (
    emp_id int PRIMARY KEY,
    name text,
    city text,
    designation text,
    experience float
);
```



```
cqlsh> USE employee;
cqlsh:employee> CREATE TABLE emp_table (
            ...     emp_id int PRIMARY KEY,
            ...     name text,
            ...     city text,
            ...     designation text,
            ...     experience float
            ... );
cqlsh:employee>
```

3.a. Insert rows

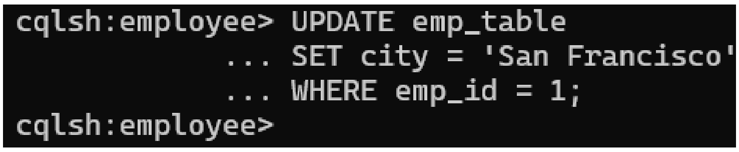
```
INSERT INTO emp_table (emp_id, name, city, designation,
experience)
VALUES (1, 'John Doe', 'New York', 'Engineer', 5.5);

INSERT INTO emp_table (emp_id, name, city, designation,
experience)
VALUES (2, 'Jane Smith', 'Los Angeles', 'Manager', 8.2);
```



```
cqlsh:employee> INSERT INTO emp_table (emp_id, name, city, designation, experience)
            ... VALUES (1, 'John Doe', 'New York', 'Engineer', 5.5);
cqlsh:employee>
cqlsh:employee> INSERT INTO emp_table (emp_id, name, city, designation, experience)
            ... VALUES (2, 'Jane Smith', 'Los Angeles', 'Manager', 8.2);
cqlsh:employee> |
```

3.b. Update rows

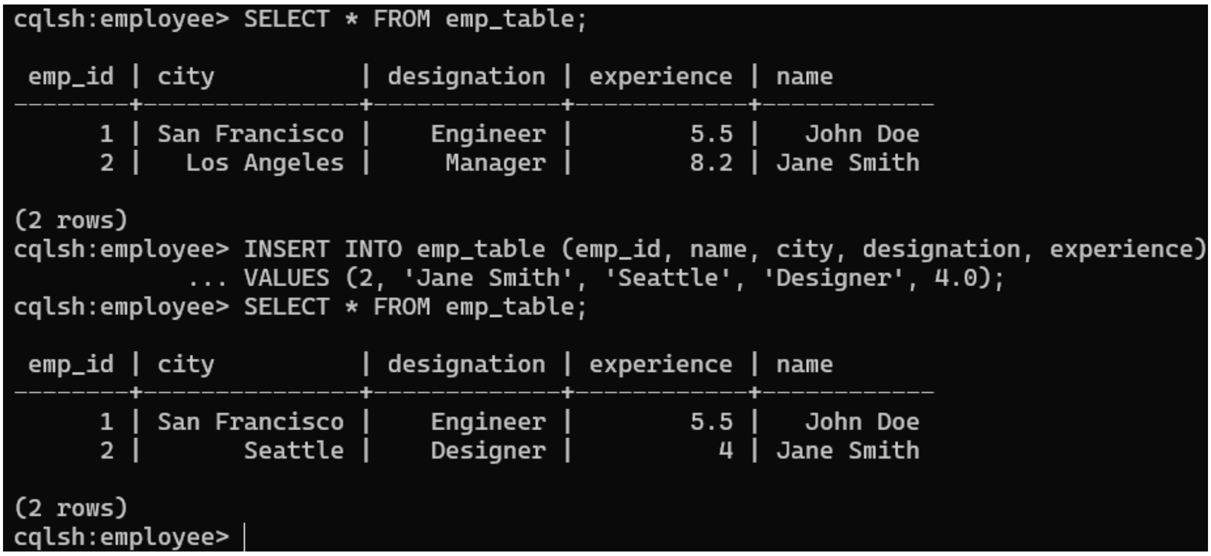
```
UPDATE emp_table
SET city = 'San Francisco'
WHERE emp_id = 1;
```



```
cqlsh:employee> UPDATE emp_table
            ... SET city = 'San Francisco'
            ... WHERE emp_id = 1;
cqlsh:employee>
```

3.c. Update rows with upsert

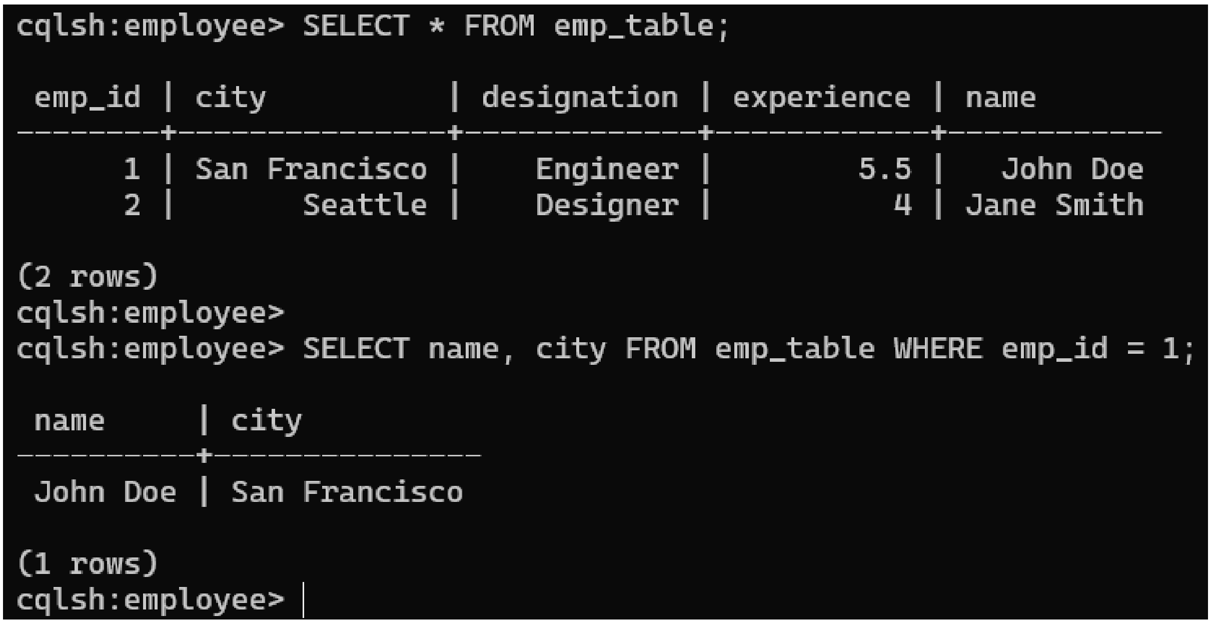
```
INSERT INTO emp_table (emp_id, name, city, designation,
experience)
VALUES (2, 'Jane Smith', 'Seattle', 'Designer', 4.0);
```



```
cqlsh:employee> SELECT * FROM emp_table;

 emp_id | city          | designation | experience | name
--------+---------------+-------------+------------+------------
      1 | San Francisco |    Engineer |        5.5 |   John Doe
      2 |   Los Angeles |     Manager |        8.2 | Jane Smith

(2 rows)
cqlsh:employee> INSERT INTO emp_table (emp_id, name, city, designation, experience)
            ... VALUES (2, 'Jane Smith', 'Seattle', 'Designer', 4.0);
cqlsh:employee> SELECT * FROM emp_table;

 emp_id | city          | designation | experience | name
--------+---------------+-------------+------------+------------
      1 | San Francisco |    Engineer |        5.5 |   John Doe
      2 |       Seattle |    Designer |          4 | Jane Smith

(2 rows)
cqlsh:employee> |
```

3.d. Retrieve data from table

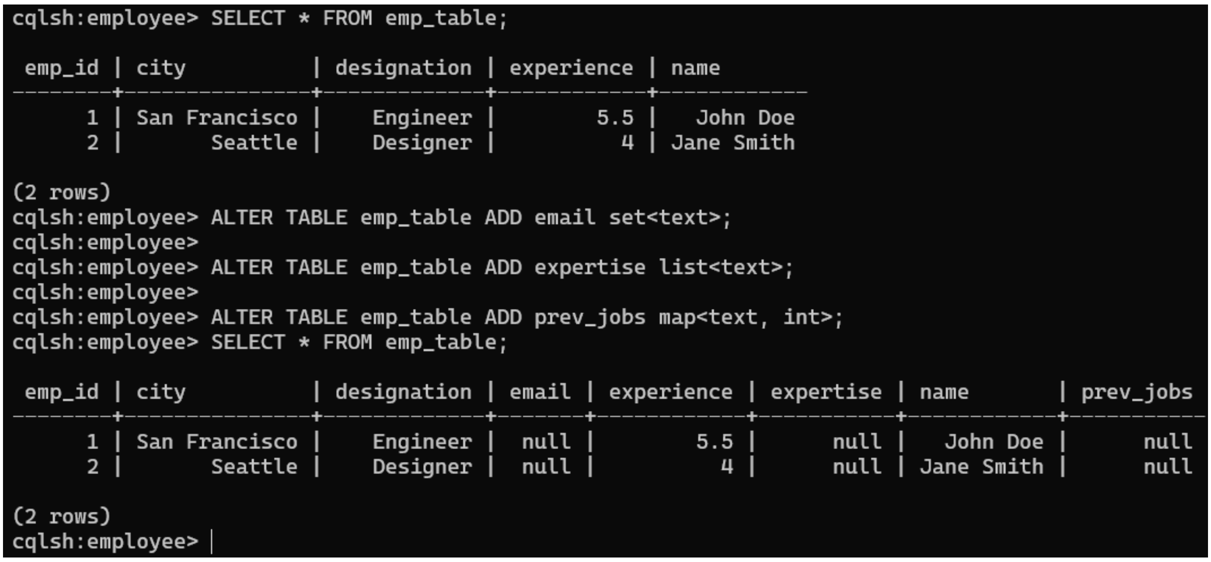
```
SELECT * FROM emp_table;

SELECT name, city FROM emp_table WHERE emp_id = 1;
```



```
cqlsh:employee> SELECT * FROM emp_table;

 emp_id | city          | designation | experience | name
--------+---------------+-------------+------------+------------
      1 | San Francisco |    Engineer |        5.5 |   John Doe
      2 |       Seattle |    Designer |          4 | Jane Smith

(2 rows)
cqlsh:employee>
cqlsh:employee> SELECT name, city FROM emp_table WHERE emp_id = 1;

 name     | city
----------+---------------
 John Doe | San Francisco

(1 rows)
cqlsh:employee>
```

3.e. Alter table add columns ((email set<text>, expertise list<text>, prev_jobs map<text, int>)

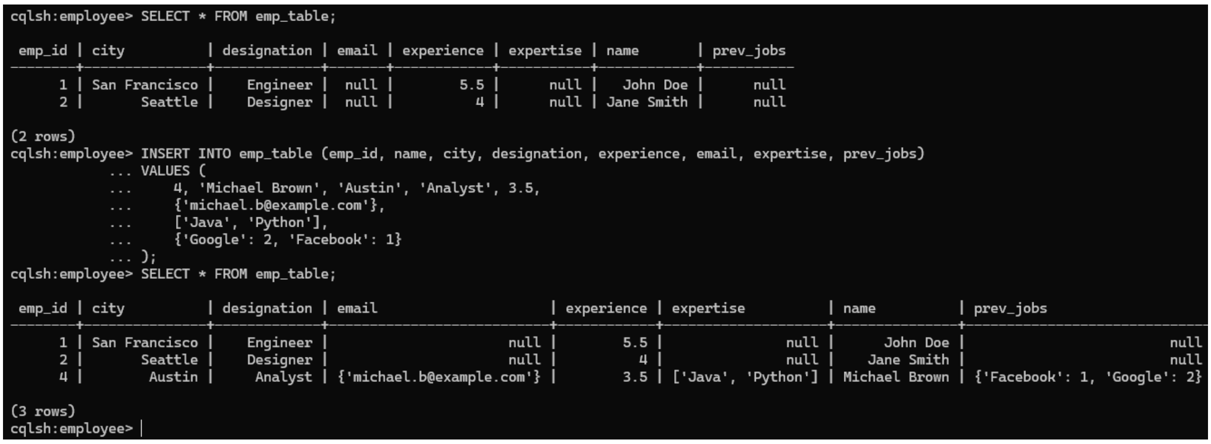
```
ALTER TABLE emp_table ADD email set<text>;
ALTER TABLE emp_table ADD expertise list<text>;
ALTER TABLE emp_table ADD prev_jobs map<text, int>;
```



```
cqlsh:employee> SELECT * FROM emp_table;

 emp_id | city          | designation | experience | name
--------+---------------+-------------+------------+------------
      1 | San Francisco |    Engineer |        5.5 |   John Doe
      2 |       Seattle |    Designer |          4 | Jane Smith

(2 rows)
cqlsh:employee> ALTER TABLE emp_table ADD email set<text>;
cqlsh:employee>
cqlsh:employee> ALTER TABLE emp_table ADD expertise list<text>;
cqlsh:employee>
cqlsh:employee> ALTER TABLE emp_table ADD prev_jobs map<text, int>;
cqlsh:employee> SELECT * FROM emp_table;

 emp_id | city          | designation | email | experience | expertise | name       | prev_jobs
--------+---------------+-------------+-------+------------+-----------+------------+-----------
      1 | San Francisco |    Engineer |  null |        5.5 |      null |   John Doe |      null
      2 |       Seattle |    Designer |  null |          4 |      null | Jane Smith |      null

(2 rows)
cqlsh:employee>
```

3. f. Insert new rows

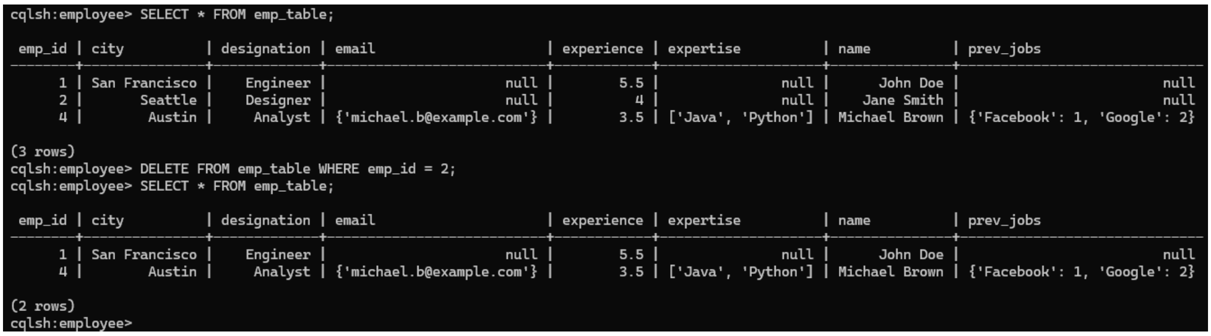
```
INSERT INTO emp_table (emp_id, name, city, designation,
experience, email, expertise, prev_jobs)
VALUES (
    4, 'Michael Brown', 'Austin', 'Analyst', 3.5,
    {'michael.b@example.com'},
    ['Java', 'Python'],
    {'Google': 2, 'Facebook': 1}
);
```



```
cqlsh:employee> SELECT * FROM emp_table;

 emp_id | city          | designation | email | experience | expertise | name       | prev_jobs
--------+---------------+-------------+-------+------------+-----------+------------+-----------
      1 | San Francisco |    Engineer |  null |        5.5 |      null |   John Doe |      null
      2 |       Seattle |    Designer |  null |          4 |      null | Jane Smith |      null

(2 rows)
cqlsh:employee> INSERT INTO emp_table (emp_id, name, city, designation, experience, email, expertise, prev_jobs)
            ... VALUES (
            ...     4, 'Michael Brown', 'Austin', 'Analyst', 3.5,
            ...     {'michael.b@example.com'},
            ...     ['Java', 'Python'],
            ...     {'Google': 2, 'Facebook': 1}
            ... );
cqlsh:employee> SELECT * FROM emp_table;

 emp_id | city          | designation | email                     | experience | expertise          | name          | prev_jobs
--------+---------------+-------------+---------------------------+------------+--------------------+---------------+------------------------------
      1 | San Francisco |    Engineer |                      null |        5.5 |               null |      John Doe |                         null
      2 |       Seattle |    Designer |                      null |          4 |               null |    Jane Smith |                         null
      4 |        Austin |     Analyst | {'michael.b@example.com'} |        3.5 | ['Java', 'Python'] | Michael Brown | {'Facebook': 1, 'Google': 2}

(3 rows)
cqlsh:employee>
```

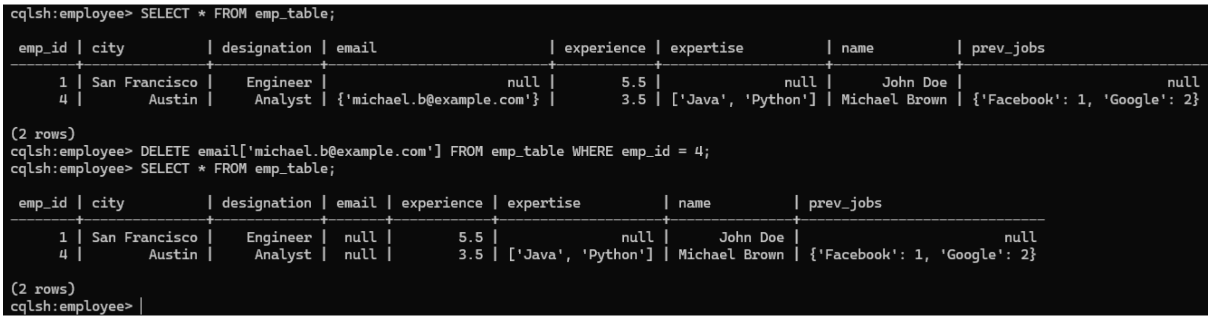
3. g. Delete rows and values

```
    DELETE FROM emp_table WHERE emp_id = 2;
```



```
cqlsh:employee> SELECT * FROM emp_table;

 emp_id | city          | designation | email                     | experience | expertise          | name          | prev_jobs
--------+---------------+-------------+---------------------------+------------+--------------------+---------------+------------------------------
      1 | San Francisco |    Engineer |                      null |        5.5 |               null |      John Doe |                         null
      2 |       Seattle |    Designer |                      null |          4 |               null |    Jane Smith |                         null
      4 |        Austin |     Analyst | {'michael.b@example.com'} |        3.5 | ['Java', 'Python'] | Michael Brown | {'Facebook': 1, 'Google': 2}

(3 rows)
cqlsh:employee> DELETE FROM emp_table WHERE emp_id = 2;
cqlsh:employee> SELECT * FROM emp_table;

 emp_id | city          | designation | email                     | experience | expertise          | name          | prev_jobs
--------+---------------+-------------+---------------------------+------------+--------------------+---------------+------------------------------
      1 | San Francisco |    Engineer |                      null |        5.5 |               null |      John Doe |                         null
      4 |        Austin |     Analyst | {'michael.b@example.com'} |        3.5 | ['Java', 'Python'] | Michael Brown | {'Facebook': 1, 'Google': 2}

(2 rows)
cqlsh:employee>
```

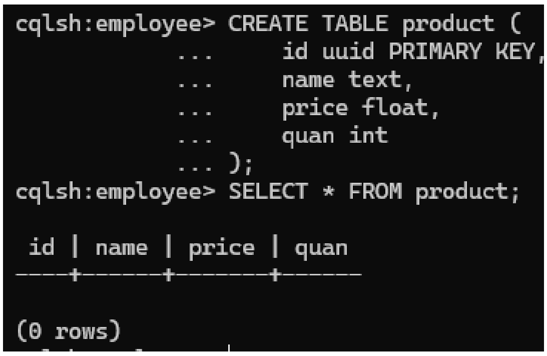
```
    DELETE email['michael.b@example.com']
    FROM emp_table WHERE emp_id = 4;
```



```
cqlsh:employee> SELECT * FROM emp_table;

 emp_id | city          | designation | email                     | experience | expertise          | name          | prev_jobs
--------+---------------+-------------+---------------------------+------------+--------------------+---------------+------------------------------
      1 | San Francisco |    Engineer |                      null |        5.5 |               null |      John Doe |                         null
      4 |        Austin |     Analyst | {'michael.b@example.com'} |        3.5 | ['Java', 'Python'] | Michael Brown | {'Facebook': 1, 'Google': 2}

(2 rows)
cqlsh:employee> DELETE email['michael.b@example.com'] FROM emp_table WHERE emp_id = 4;
cqlsh:employee> SELECT * FROM emp_table;

 emp_id | city          | designation | email | experience | expertise          | name          | prev_jobs
--------+---------------+-------------+-------+------------+--------------------+---------------+------------------------------
      1 | San Francisco |    Engineer |  null |        5.5 |               null |      John Doe |                         null
      4 |        Austin |     Analyst |  null |        3.5 | ['Java', 'Python'] | Michael Brown | {'Facebook': 1, 'Google': 2}

(2 rows)
cqlsh:employee>
```

4. create table

```
    product(
        id uuid,
        name text,
        price float,
        quan int,
```

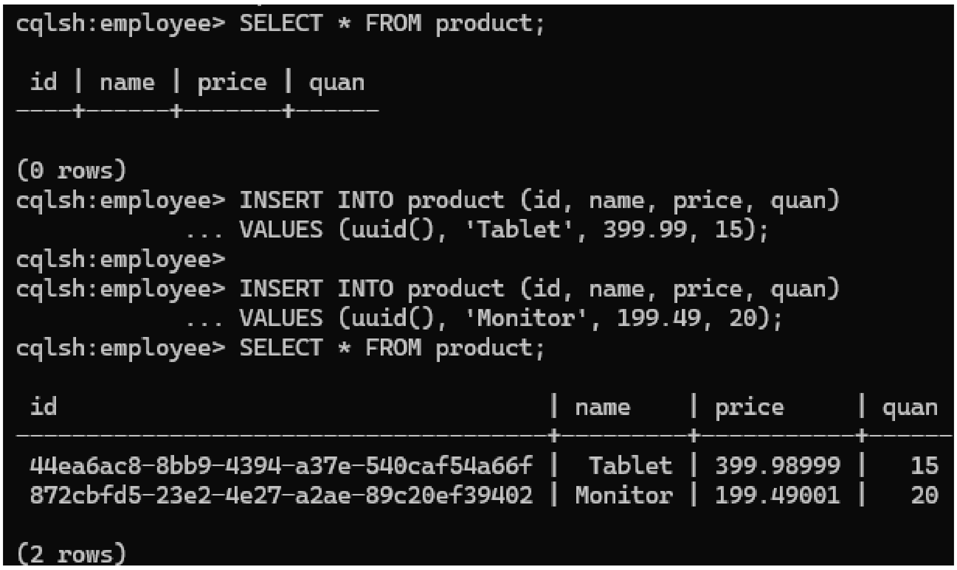


```
cqlsh:employee> CREATE TABLE product (
            ...     id uuid PRIMARY KEY,
            ...     name text,
            ...     price float,
            ...     quan int
            ... );
cqlsh:employee> SELECT * FROM product;

 id | name | price | quan
----+------+-------+------

(0 rows)
```

```
        primary key(id)
    );
```

5. a. Insert rows

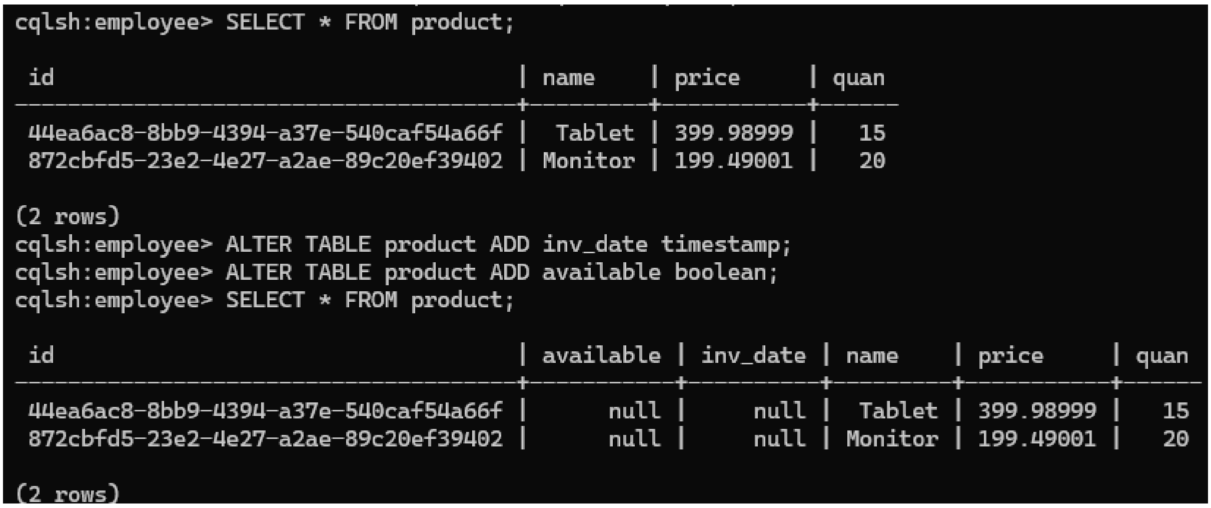
```
    INSERT INTO product (id, name, price, quan)
    VALUES (uuid(), 'Tablet', 399.99, 15);

    INSERT INTO product (id, name, price, quan)
    VALUES (uuid(), 'Monitor', 199.49, 20);
```



```
cqlsh:employee> SELECT * FROM product;

 id | name | price | quan
----+------+-------+------

(0 rows)
cqlsh:employee> INSERT INTO product (id, name, price, quan)
            ... VALUES (uuid(), 'Tablet', 399.99, 15);
cqlsh:employee>
cqlsh:employee> INSERT INTO product (id, name, price, quan)
            ... VALUES (uuid(), 'Monitor', 199.49, 20);
cqlsh:employee> SELECT * FROM product;

 id                                   | name    | price     | quan
--------------------------------------+---------+-----------+------
 44ea6ac8-8bb9-4394-a37e-540caf54a66f |  Tablet | 399.98999 |   15
 872cbfd5-23e2-4e27-a2ae-89c20ef39402 | Monitor | 199.49001 |   20

(2 rows)
```

5. b. Alter table product add (inv_date timestamp, available boolean);

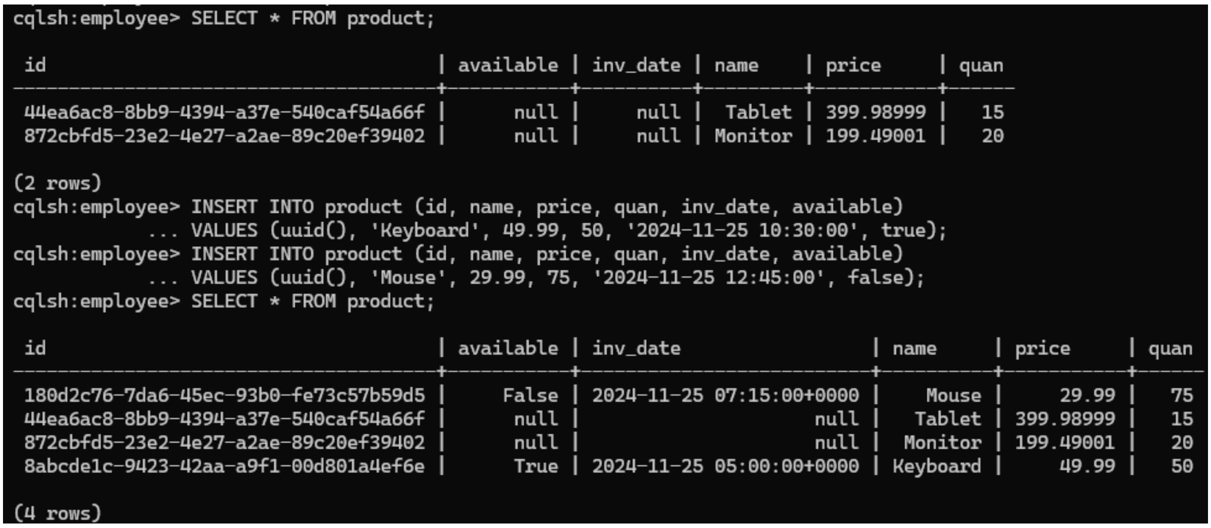
```
ALTER TABLE product ADD inv_date timestamp;
ALTER TABLE product ADD available boolean;
```



```
cqlsh:employee> SELECT * FROM product;

 id                                   | name    | price     | quan
--------------------------------------+---------+-----------+------
 44ea6ac8-8bb9-4394-a37e-540caf54a66f |  Tablet | 399.98999 |   15
 872cbfd5-23e2-4e27-a2ae-89c20ef39402 | Monitor | 199.49001 |   20

(2 rows)
cqlsh:employee> ALTER TABLE product ADD inv_date timestamp;
cqlsh:employee> ALTER TABLE product ADD available boolean;
cqlsh:employee> SELECT * FROM product;

 id                                   | available | inv_date | name    | price     | quan
--------------------------------------+-----------+----------+---------+-----------+------
 44ea6ac8-8bb9-4394-a37e-540caf54a66f |      null |     null |  Tablet | 399.98999 |   15
 872cbfd5-23e2-4e27-a2ae-89c20ef39402 |      null |     null | Monitor | 199.49001 |   20

(2 rows)
```

5. c. Insert new rows

```
INSERT INTO product (id, name, price, quan, inv_date,
available)
VALUES (uuid(), 'Keyboard', 49.99, 50, '2024-11-25
10:30:00', true);

INSERT INTO product (id, name, price, quan, inv_date,
available)
VALUES (uuid(), 'Mouse', 29.99, 75, '2024-11-25
12:45:00', false);
```



```
cqlsh:employee> SELECT * FROM product;

 id                                   | available | inv_date | name    | price     | quan
--------------------------------------+-----------+----------+---------+-----------+------
 44ea6ac8-8bb9-4394-a37e-540caf54a66f |      null |     null |  Tablet | 399.98999 |   15
 872cbfd5-23e2-4e27-a2ae-89c20ef39402 |      null |     null | Monitor | 199.49001 |   20

(2 rows)
cqlsh:employee> INSERT INTO product (id, name, price, quan, inv_date, available)
            ... VALUES (uuid(), 'Keyboard', 49.99, 50, '2024-11-25 10:30:00', true);
cqlsh:employee> INSERT INTO product (id, name, price, quan, inv_date, available)
            ... VALUES (uuid(), 'Mouse', 29.99, 75, '2024-11-25 12:45:00', false);
cqlsh:employee> SELECT * FROM product;

 id                                   | available | inv_date                 | name     | price     | quan
--------------------------------------+-----------+--------------------------+----------+-----------+------
 180d2c76-7da6-45ec-93b0-fe73c57b59d5 |     False | 2024-11-25 07:15:00+0000 |    Mouse |     29.99 |   75
 44ea6ac8-8bb9-4394-a37e-540caf54a66f |      null |                     null |   Tablet | 399.98999 |   15
 872cbfd5-23e2-4e27-a2ae-89c20ef39402 |      null |                     null |  Monitor | 199.49001 |   20
 8abcde1c-9423-42aa-a9f1-00d801a4ef6e |      True | 2024-11-25 05:00:00+0000 | Keyboard |     49.99 |   50

(4 rows)
```