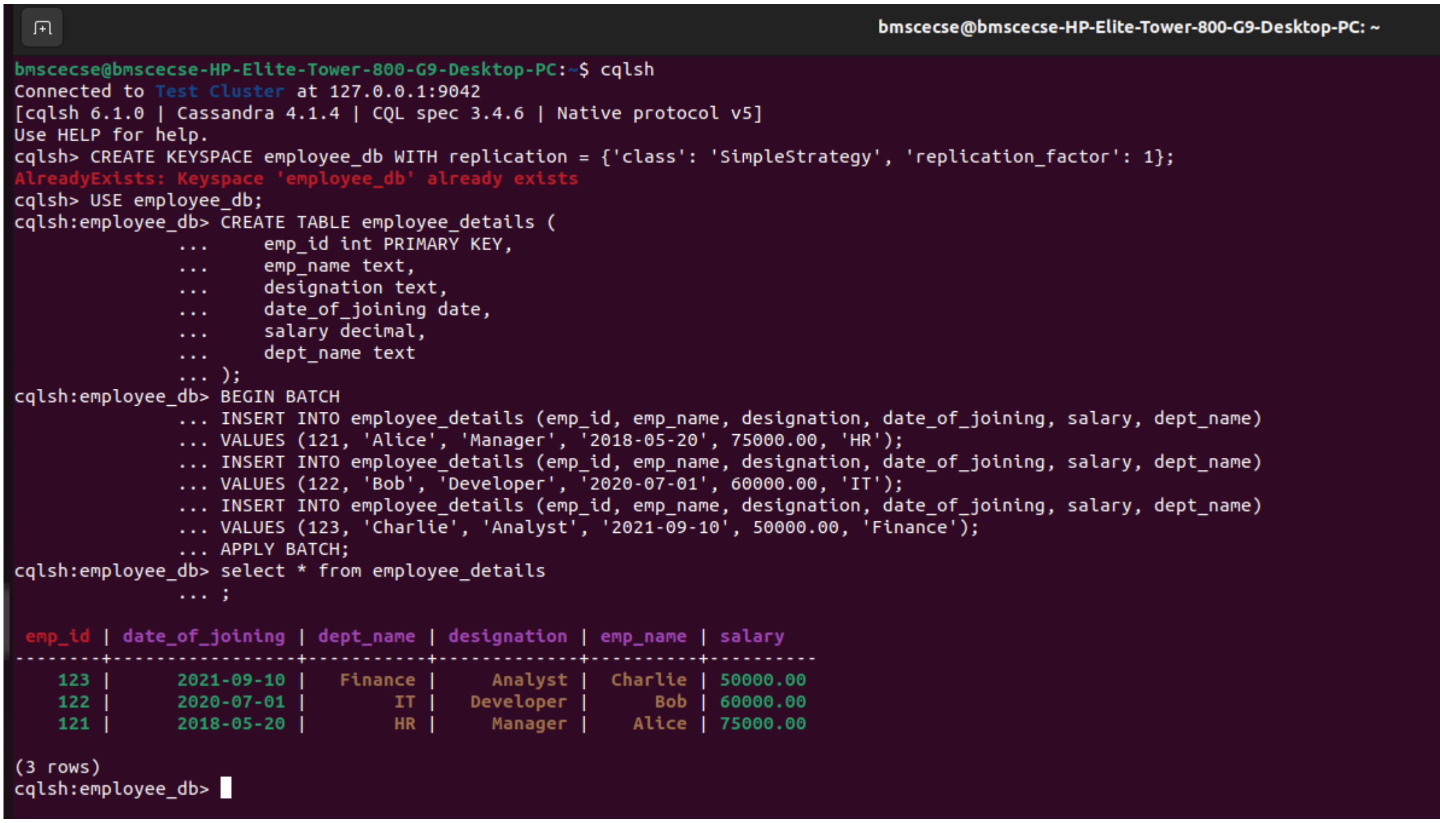
1BM22CS066_Lab-5_BDA_cassandra

Part 1: Employee Database (Table name changed to `employee_details`)

#Create Keyspace

#Create Table `employee_details`

`#Insert Values in Batch`



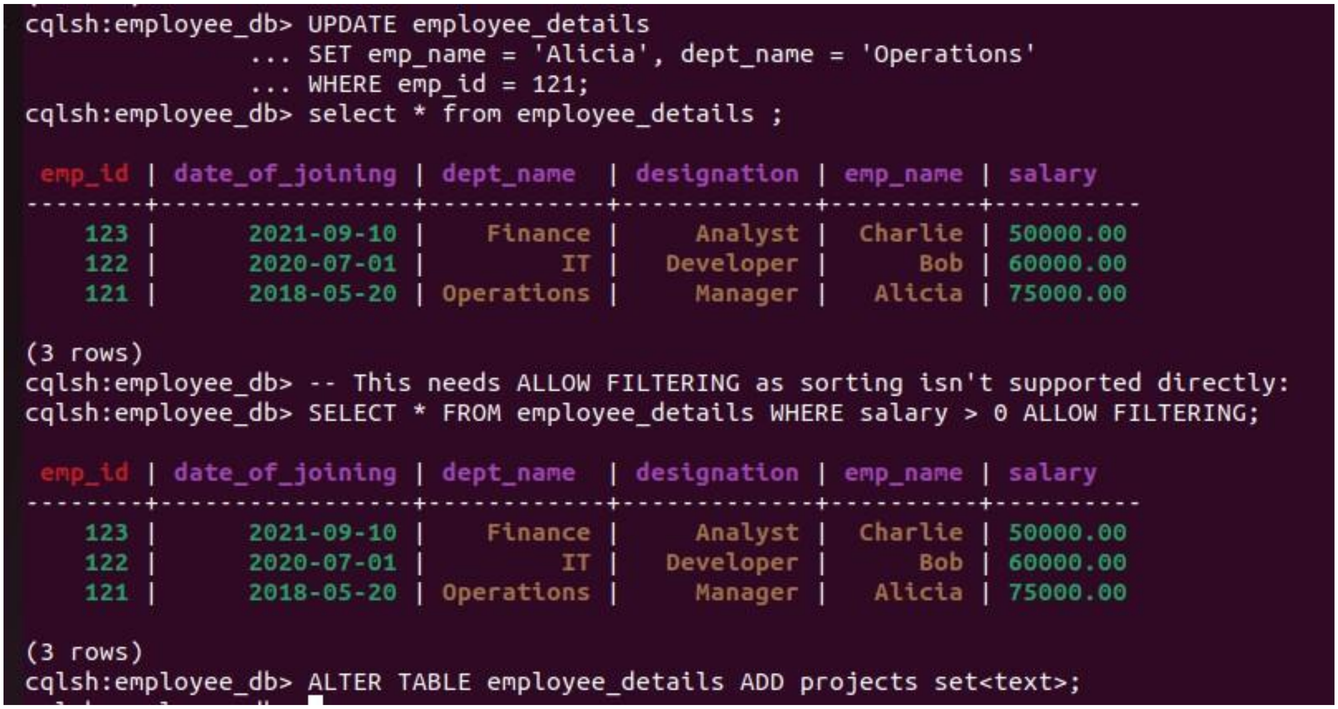
```
bmscecse@bmscecse-HP-Elite-Tower-800-G9-Desktop-PC:~$ cqlsh
Connected to Test Cluster at 127.0.0.1:9042
[cqlsh 6.1.0 | Cassandra 4.1.4 | CQL spec 3.4.6 | Native protocol v5]
Use HELP for help.
cqlsh> CREATE KEYSPACE employee_db WITH replication = {'class': 'SimpleStrategy', 'replication_factor': 1};
AlreadyExists: Keyspace 'employee_db' already exists
cqlsh> USE employee_db;
cqlsh:employee_db> CREATE TABLE employee_details (
               ...     emp_id int PRIMARY KEY,
               ...     emp_name text,
               ...     designation text,
               ...     date_of_joining date,
               ...     salary decimal,
               ...     dept_name text
               ... );
cqlsh:employee_db> BEGIN BATCH
               ... INSERT INTO employee_details (emp_id, emp_name, designation, date_of_joining, salary, dept_name)
               ... VALUES (121, 'Alice', 'Manager', '2018-05-20', 75000.00, 'HR');
               ... INSERT INTO employee_details (emp_id, emp_name, designation, date_of_joining, salary, dept_name)
               ... VALUES (122, 'Bob', 'Developer', '2020-07-01', 60000.00, 'IT');
               ... INSERT INTO employee_details (emp_id, emp_name, designation, date_of_joining, salary, dept_name)
               ... VALUES (123, 'Charlie', 'Analyst', '2021-09-10', 50000.00, 'Finance');
               ... APPLY BATCH;
cqlsh:employee_db> select * from employee_details
               ... ;

 emp_id | date_of_joining | dept_name | designation | emp_name | salary
--------+-----------------+-----------+-------------+----------+----------
    123 |      2021-09-10 |   Finance |     Analyst |  Charlie | 50000.00
    122 |      2020-07-01 |        IT |   Developer |      Bob | 60000.00
    121 |      2018-05-20 |        HR |     Manager |    Alice | 75000.00

(3 rows)
cqlsh:employee_db> 
```

#Update emp_name and dept_name of emp_id 121

#Sort Employees by Salary

#Alter Table to Add projects Column

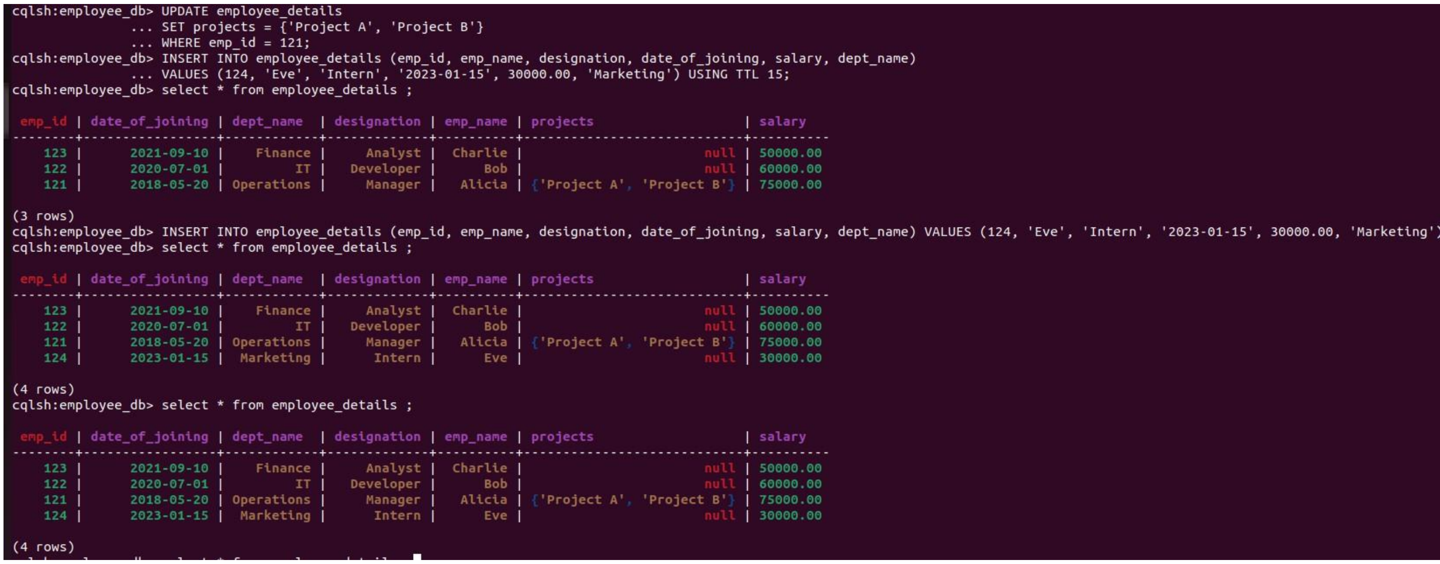
#Update Projects for Employee



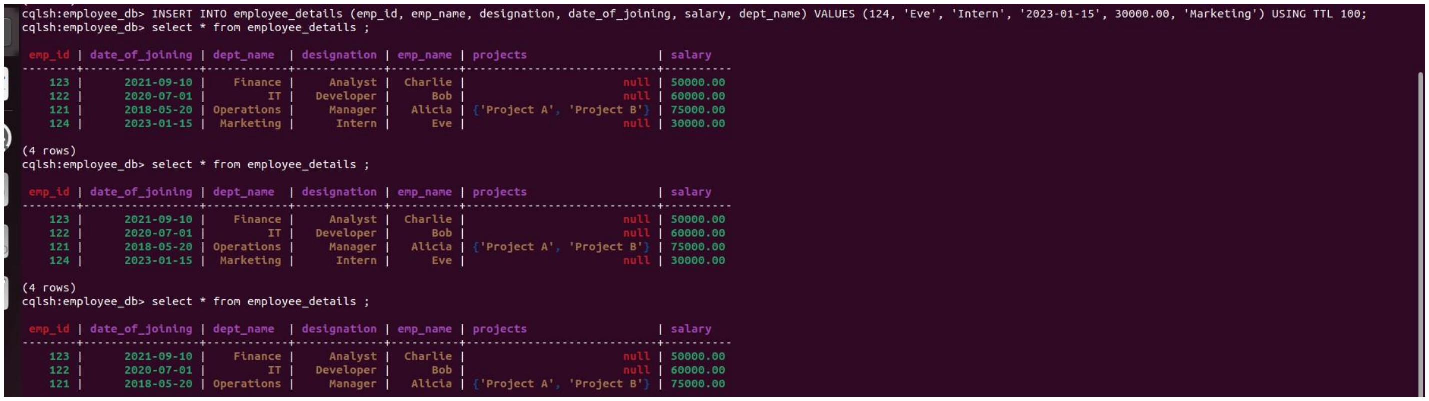
```
cqlsh:employee_db> UPDATE employee_details
               ... SET emp_name = 'Alicia', dept_name = 'Operations'
               ... WHERE emp_id = 121;
cqlsh:employee_db> select * from employee_details ;

 emp_id | date_of_joining | dept_name  | designation | emp_name | salary
--------+-----------------+------------+-------------+----------+----------
    123 |      2021-09-10 |    Finance |     Analyst |  Charlie | 50000.00
    122 |      2020-07-01 |         IT |   Developer |      Bob | 60000.00
    121 |      2018-05-20 | Operations |     Manager |   Alicia | 75000.00

(3 rows)
cqlsh:employee_db> -- This needs ALLOW FILTERING as sorting isn't supported directly:
cqlsh:employee_db> SELECT * FROM employee_details WHERE salary > 0 ALLOW FILTERING;

 emp_id | date_of_joining | dept_name  | designation | emp_name | salary
--------+-----------------+------------+-------------+----------+----------
    123 |      2021-09-10 |    Finance |     Analyst |  Charlie | 50000.00
    122 |      2020-07-01 |         IT |   Developer |      Bob | 60000.00
    121 |      2018-05-20 | Operations |     Manager |   Alicia | 75000.00

(3 rows)
cqlsh:employee_db> ALTER TABLE employee_details ADD projects set<text>;
```

#Update Projects for Employee

#Insert with TTL of 15 Seconds



```
cqlsh:employee_db> UPDATE employee_details
               ... SET projects = {'Project A', 'Project B'}
               ... WHERE emp_id = 121;
cqlsh:employee_db> INSERT INTO employee_details (emp_id, emp_name, designation, date_of_joining, salary, dept_name)
               ... VALUES (124, 'Eve', 'Intern', '2023-01-15', 30000.00, 'Marketing') USING TTL 15;
cqlsh:employee_db> select * from employee_details ;

 emp_id | date_of_joining | dept_name  | designation | emp_name | projects                     | salary
--------+-----------------+------------+-------------+----------+------------------------------+----------
    123 |      2021-09-10 |    Finance |     Analyst |  Charlie |                         null | 50000.00
    122 |      2020-07-01 |         IT |   Developer |      Bob |                         null | 60000.00
    121 |      2018-05-20 | Operations |     Manager |   Alicia | {'Project A', 'Project B'} | 75000.00

(3 rows)
cqlsh:employee_db> INSERT INTO employee_details (emp_id, emp_name, designation, date_of_joining, salary, dept_name) VALUES (124, 'Eve', 'Intern', '2023-01-15', 30000.00, 'Marketing')
cqlsh:employee_db> select * from employee_details ;

 emp_id | date_of_joining | dept_name  | designation | emp_name | projects                     | salary
--------+-----------------+------------+-------------+----------+------------------------------+----------
    123 |      2021-09-10 |    Finance |     Analyst |  Charlie |                         null | 50000.00
    122 |      2020-07-01 |         IT |   Developer |      Bob |                         null | 60000.00
    121 |      2018-05-20 | Operations |     Manager |   Alicia | {'Project A', 'Project B'} | 75000.00
    124 |      2023-01-15 |  Marketing |      Intern |      Eve |                         null | 30000.00

(4 rows)
cqlsh:employee_db> select * from employee_details ;

 emp_id | date_of_joining | dept_name  | designation | emp_name | projects                     | salary
--------+-----------------+------------+-------------+----------+------------------------------+----------
    123 |      2021-09-10 |    Finance |     Analyst |  Charlie |                         null | 50000.00
    122 |      2020-07-01 |         IT |   Developer |      Bob |                         null | 60000.00
    121 |      2018-05-20 | Operations |     Manager |   Alicia | {'Project A', 'Project B'} | 75000.00
    124 |      2023-01-15 |  Marketing |      Intern |      Eve |                         null | 30000.00

(4 rows)
```



```
cqlsh:employee_db> INSERT INTO employee_details (emp_id, emp_name, designation, date_of_joining, salary, dept_name) VALUES (124, 'Eve', 'Intern', '2023-01-15', 30000.00, 'Marketing') USING TTL 100;
cqlsh:employee_db> select * from employee_details ;

 emp_id | date_of_joining | dept_name  | designation | emp_name | projects                     | salary
--------+-----------------+------------+-------------+----------+------------------------------+----------
    123 |      2021-09-10 |    Finance |     Analyst |  Charlie |                         null | 50000.00
    122 |      2020-07-01 |         IT |   Developer |      Bob |                         null | 60000.00
    121 |      2018-05-20 | Operations |     Manager |   Alicia | {'Project A', 'Project B'} | 75000.00
    124 |      2023-01-15 |  Marketing |      Intern |      Eve |                         null | 30000.00

(4 rows)
cqlsh:employee_db> select * from employee_details ;

 emp_id | date_of_joining | dept_name  | designation | emp_name | projects                     | salary
--------+-----------------+------------+-------------+----------+------------------------------+----------
    123 |      2021-09-10 |    Finance |     Analyst |  Charlie |                         null | 50000.00
    122 |      2020-07-01 |         IT |   Developer |      Bob |                         null | 60000.00
    121 |      2018-05-20 | Operations |     Manager |   Alicia | {'Project A', 'Project B'} | 75000.00
    124 |      2023-01-15 |  Marketing |      Intern |      Eve |                         null | 30000.00

(4 rows)
cqlsh:employee_db> select * from employee_details ;

 emp_id | date_of_joining | dept_name  | designation | emp_name | projects                     | salary
--------+-----------------+------------+-------------+----------+------------------------------+----------
    123 |      2021-09-10 |    Finance |     Analyst |  Charlie |                         null | 50000.00
    122 |      2020-07-01 |         IT |   Developer |      Bob |                         null | 60000.00
    121 |      2018-05-20 | Operations |     Manager |   Alicia | {'Project A', 'Project B'} | 75000.00
```

Part 2: Library Database (New Table Names)

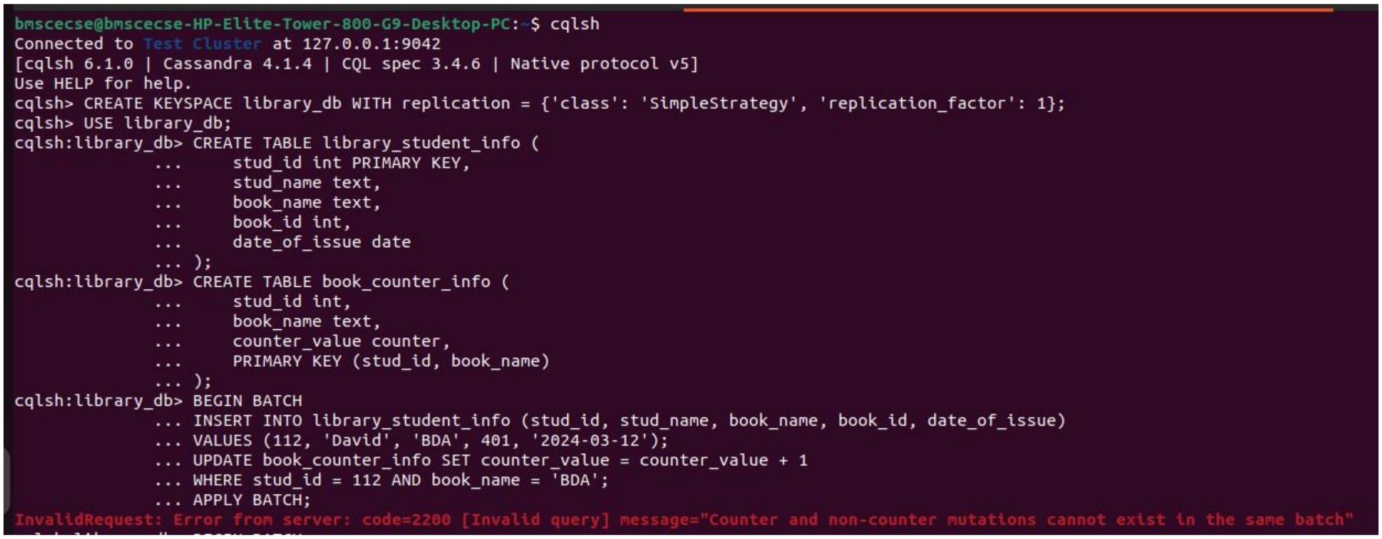
Create Keyspace

Create Tables

A. Table: library_student_info

B. Table: book_counter_info

3Insert Data in Batch



```
bmscecse@bmscecse-HP-Elite-Tower-800-G9-Desktop-PC:~$ cqlsh
Connected to Test Cluster at 127.0.0.1:9042
[cqlsh 6.1.0 | Cassandra 4.1.4 | CQL spec 3.4.6 | Native protocol v5]
Use HELP for help.
cqlsh> CREATE KEYSPACE library_db WITH replication = {'class': 'SimpleStrategy', 'replication_factor': 1};
cqlsh> USE library_db;
cqlsh:library_db> CREATE TABLE library_student_info (
              ...     stud_id int PRIMARY KEY,
              ...     stud_name text,
              ...     book_name text,
              ...     book_id int,
              ...     date_of_issue date
              ... );
cqlsh:library_db> CREATE TABLE book_counter_info (
              ...     stud_id int,
              ...     book_name text,
              ...     counter_value counter,
              ...     PRIMARY KEY (stud_id, book_name)
              ... );
cqlsh:library_db> BEGIN BATCH
              ... INSERT INTO library_student_info (stud_id, stud_name, book_name, book_id, date_of_issue)
              ... VALUES (112, 'David', 'BDA', 401, '2024-03-12');
              ... UPDATE book_counter_info SET counter_value = counter_value + 1
              ... WHERE stud_id = 112 AND book_name = 'BDA';
              ... APPLY BATCH;
InvalidRequest: Error from server: code=2200 [Invalid query] message="Counter and non-counter mutations cannot exist in the same batch"
```

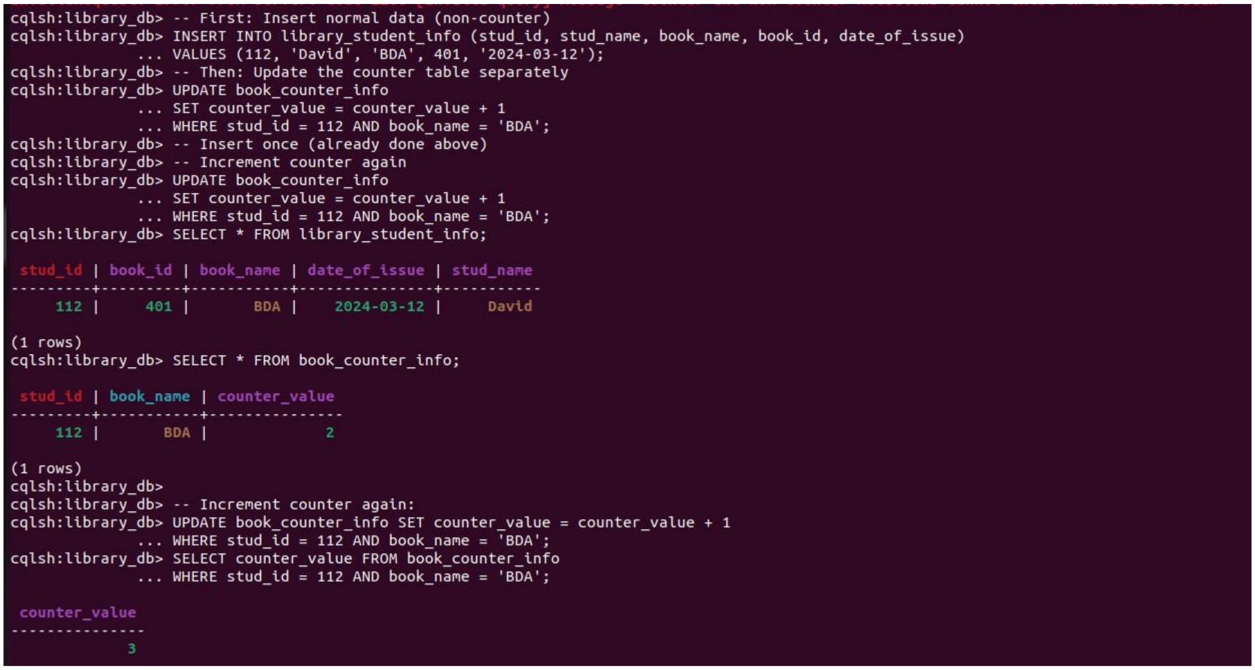
(No Mixing Counters in Batch):

You can repeat the `UPDATE` if you want to increment the counter multiple times.

To Simulate Borrowing Book “BDA” 2 Times by Student 112

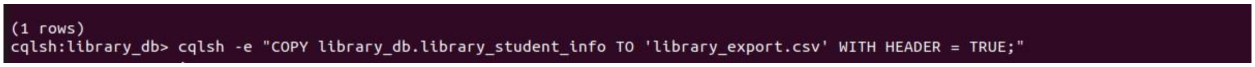
Display Table & Increase Counter

Query: Student 112 took “BDA” 2 times

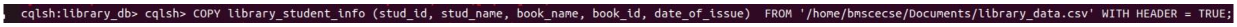


```
cqlsh:library_db> -- First: Insert normal data (non-counter)
cqlsh:library_db> INSERT INTO library_student_info (stud_id, stud_name, book_name, book_id, date_of_issue)
              ... VALUES (112, 'David', 'BDA', 401, '2024-03-12');
cqlsh:library_db> -- Then: Update the counter table separately
cqlsh:library_db> UPDATE book_counter_info
              ... SET counter_value = counter_value + 1
              ... WHERE stud_id = 112 AND book_name = 'BDA';
cqlsh:library_db> -- Insert once (already done above)
cqlsh:library_db> -- Increment counter again
cqlsh:library_db> UPDATE book_counter_info
              ... SET counter_value = counter_value + 1
              ... WHERE stud_id = 112 AND book_name = 'BDA';
cqlsh:library_db> SELECT * FROM library_student_info;

 stud_id | book_id | book_name | date_of_issue | stud_name
---------+---------+-----------+---------------+-----------
     112 |     401 |       BDA |    2024-03-12 |     David

(1 rows)
cqlsh:library_db> SELECT * FROM book_counter_info;

 stud_id | book_name | counter_value
---------+-----------+---------------
     112 |       BDA |             2

(1 rows)
cqlsh:library_db>
cqlsh:library_db> -- Increment counter again:
cqlsh:library_db> UPDATE book_counter_info SET counter_value = counter_value + 1
              ... WHERE stud_id = 112 AND book_name = 'BDA';
cqlsh:library_db> SELECT counter_value FROM book_counter_info
              ... WHERE stud_id = 112 AND book_name = 'BDA';

 counter_value
---------------
             3
```

Export Table to CSV



```
(1 rows)
cqlsh:library_db> cqlsh -e "COPY library_db.library_student_info TO 'library_export.csv' WITH HEADER = TRUE;"
```



```
cqlsh:library_db> cqlsh> COPY library_student_info (stud_id, stud_name, book_name, book_id, date_of_issue)  FROM '/home/bmscecse/Documents/library_data.csv' WITH HEADER = TRUE;
```