Lab 3 Cassandra Library_Info

Perform the following DB operations using Cassandra. a) Create a keyspace by name Library b) Create a column family by name Library-Info with attributes Stud_Id Primary Key, Counter_value of type Counter, Stud_Name, Book-Name, Book-Id, Date_of_issue c) Insert the values into the table in batch d) Display the details of the table created and increase the value of the counter e) Write a query to show that a student with id 112 has taken a book "BDA" 2 times. f) Export the created column to a csv file g) Import a given csv dataset from the local file system into cassandra.

Code:

```
CREATE KEYSPACE Library WITH replication = {'class': 'SimpleStrategy', 'replication_factor': 1};
USE Library;
CREATE TABLE Library_Info (
    Stud_Id text,
    Book_Id text,
    Date_of_Issue timestamp,
    Stud_Name text,
    Book_Name text,
    PRIMARY KEY (Stud_Id, Book_Id, Date_of_Issue)
);
CREATE TABLE Library_Counter (
    Stud_Id text,
    Book_Name text,
    Issue_Count counter,
    PRIMARY KEY (Stud_Id, Book_Name)
);
BEGIN BATCH
    INSERT INTO Library_Info (Stud_Id, Book_Id, Date_of_Issue, Stud_Name, Book_Name)
VALUES ('101', 'B001', '2023-01-15 10:00:00+0000', 'Alice', 'Data Structures');
    INSERT INTO Library_Info (Stud_Id, Book_Id, Date_of_Issue, Stud_Name, Book_Name)
VALUES ('102', 'B002', '2023-01-16 11:30:00+0000', 'Bob', 'Algorithms');
    INSERT INTO Library_Info (Stud_Id, Book_Id, Date_of_Issue, Stud_Name, Book_Name)
VALUES ('112', 'B003', '2023-02-01 09:00:00+0000', 'Charlie', 'BDA');
    INSERT INTO Library_Info (Stud_Id, Book_Id, Date_of_Issue, Stud_Name, Book_Name)
VALUES ('101', 'B004', '2023-02-05 14:15:00+0000', 'Alice', 'Database Systems');
    INSERT INTO Library_Info (Stud_Id, Book_Id, Date_of_Issue, Stud_Name, Book_Name)
VALUES ('112', 'B003', '2023-03-10 16:45:00+0000', 'Charlie', 'BDA');
    INSERT INTO Library_Info (Stud_Id, Book_Id, Date_of_Issue, Stud_Name, Book_Name)
VALUES ('103', 'B005', '2023-03-12 10:00:00+0000', 'David', 'Operating Systems');
APPLY BATCH;
DESCRIBE TABLE Library_Info;
```

```sql
DESCRIBE TABLE Library_Counter;
SELECT * FROM Library_Info;
UPDATE Library_Counter SET Issue_Count = Issue_Count + 1 WHERE Stud_Id = '112' AND
Book_Name = 'BDA';
UPDATE Library_Counter SET Issue_Count = Issue_Count + 1 WHERE Stud_Id = '112' AND
Book_Name = 'BDA';
UPDATE Library_Counter SET Issue_Count = Issue_Count + 1 WHERE Stud_Id = '101' AND
Book_Name = 'Data Structures';
UPDATE Library_Counter SET Issue_Count = Issue_Count + 1 WHERE Stud_Id = '102' AND
Book_Name = 'Algorithms';
SELECT * FROM Library_Counter;
SELECT Stud_Id, Book_Name, Issue_Count FROM Library_Counter WHERE Stud_Id = '112'
AND Book_Name = 'BDA';
-- COPY Library_Info TO 'path/to/your/library_info.csv' WITH HEADER = TRUE;
-- COPY Library_Counter TO 'path/to/your/library_counter.csv' WITH HEADER = TRUE;
-- COPY Library_Info FROM 'path/to/your/library_info_import.csv' WITH HEADER = TRUE;
-- COPY Library_Counter FROM 'path/to/your/library_counter_import.csv' WITH HEADER =
TRUE;
```

Output screenshots:

```
            ... values(112,'RadheKrishna',14,'BDA','2025-02-12');
            ... APPLY BATCH;
cqlsh:library> BEGIN BATCH
            ... insert into library_info(stud_id,stud_name,book_id,book_name,date_of_issue)
            ... values(114,'LakshmiNarayana',18,'AI','2025-05-05');
            ... APPLY BATCH;
cqlsh:library> select * from library_info;

 stud_id | date_of_issue                   | book_id | book_name | stud_name
---------+---------------------------------+---------+-----------+-----------------
     114 | 2025-05-05 00:00:00.000000+0000 |      18 |        AI | LakshmiNarayana
     110 | 2025-01-01 00:00:00.000000+0000 |      10 |        ML |         SiyaRam
     112 | 2025-02-02 00:00:00.000000+0000 |      14 |       BDA |    RadheKrishna
     112 | 2025-02-12 00:00:00.000000+0000 |      14 |       BDA |    RadheKrishna

(4 rows)
cqlsh:library> UPDATE library_counter SET counter_value=counter_value+1 WHERE stud_id=110 AND book_name='ML';
cqlsh:library> UPDATE library_counter SET counter_value=counter_value+1 WHERE stud_id=114 AND book_name='AI';
cqlsh:library> UPDATE library_counter SET counter_value=counter_value+1 WHERE stud_id=112 AND book_name='BDA';
cqlsh:library> UPDATE library_counter SET counter_value=counter_value+1 WHERE stud_id=112 AND book_name='BDA';
cqlsh:library> select * from library_counter;

 stud_id | book_name | counter_value
---------+-----------+---------------
     114 |        AI |             1
     110 |        ML |             1
     112 |       BDA |             2

(3 rows)
cqlsh:library> copy library_info(stud_id,stud_name,book_id,book_name,date_of_issue) to 'C:\Desktop\library_info.csv';
Using 7 child processes

Starting copy of library.library_info with columns [stud_id, stud_name, book_id, book_name, date_of_issue].
```

```
NAMES
31127788da73   cassandra:latest   "docker-entrypoint.s…"   15 hours ago   Up 2 hours   7000-7001/tcp, 7199/tcp, 9160/tcp, 0.0.0.0:90
2->9042/tcp   my-cassandra-node
PS C:\Users\HP> docker cp "C:\Users\HP\Documents\library_info.csv" my-cassandra-node:/tmp/RKLibrary.csv
Successfully copied 2.05kB to my-cassandra-node:/tmp/RKLibrary.csv
PS C:\Users\HP> docker exec -it my-cassandra-node cqlsh
Connected to Test Cluster at 127.0.0.1:9042
[cqlsh 6.2.0 | Cassandra 5.0.4 | CQL spec 3.4.7 | Native protocol v5]
Use HELP for help.
cqlsh> use library;
cqlsh:library> select * from library_info;

 stud_id | date_of_issue | book_id | book_name | stud_name
---------+---------------+---------+-----------+-----------

(0 rows)
cqlsh:library> COPY library_info FROM '/tmp/RKLibrary.csv';
Using 7 child processes

Starting copy of library.library_info with columns [stud_id, date_of_issue, book_id, book_name, stud_name].
Processed: 4 rows; Rate:       6 rows/s; Avg. rate:       9 rows/s
4 rows imported from 1 files in 0.436 seconds (0 skipped).
cqlsh:library> select * from library_info;

 stud_id | date_of_issue                   | book_id | book_name | stud_name
---------+---------------------------------+---------+-----------+-----------------
     114 | 2025-05-05 00:00:00.000000+0000 |      18 |        AI | LakshmiNarayana
     110 | 2025-01-01 00:00:00.000000+0000 |      10 |        ML |         SiyaRam
     112 | 2025-02-02 00:00:00.000000+0000 |      14 |       BDA |    RadheKrishna
     112 | 2025-02-12 00:00:00.000000+0000 |      14 |       BDA |    RadheKrishna

(4 rows)
cqlsh:library>
```