VISVESVARAYA TECHNOLOGICAL UNIVERSITY

"JnanaSangama", Belgaum -590014, Karnataka.

LAB REPORT
on

BIG DATA ANALYTICS
(20CS6PEBDA)

Submitted by

HEMANG SINGH (1BM19CS061)

in partial fulfillment for the award of the degree of
BACHELOR OF ENGINEERING
in
COMPUTER SCIENCE AND ENGINEERING

B.M.S. COLLEGE OF ENGINEERING
(Autonomous Institution under VTU)
BENGALURU-560019
Apr-2022 to July-2022

B. M. S. College of Engineering,

Bull Temple Road, Bangalore 560019

(Affiliated To Visvesvaraya Technological University, Belgaum)

Department of Computer Science and Engineering

CERTIFICATE

This is to certify that the Lab work entitled "**BIG DATA ANALYTICS**" was carried out by **HEMANG SINGH (1BM19CS061),** who is bona fide student of **B. M. S. College of Engineering.** It is in partial fulfillment for the award of **Bachelor of Engineering in Computer Science and Engineering** of the Visvesvaraya Technological University, Belgaum during the year 2022. The Lab report has been approved as it satisfies the academic requirements in respect of the course **BIG DATA ANALYTICS (20CS6PEBDA)** work prescribed for the said degree.

Name of the Lab-In charge
Designation
Department of CSE
BMSCE, Bengaluru

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Assistant Professor
Department of CSE
BMSCE, Bengaluru

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Index Sheet

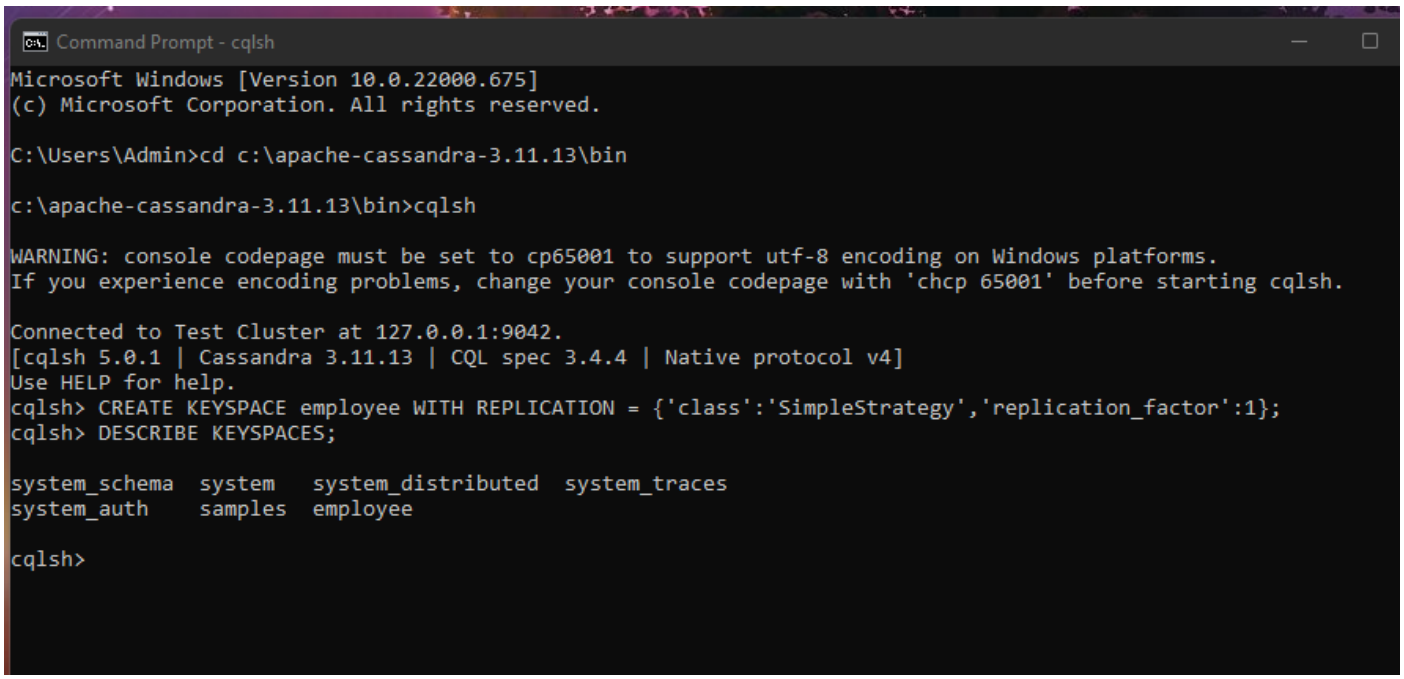
Course Outcome

CO1	Apply the concept of NoSQL, Hadoop or Spark for a given task
CO2	Analyze the Big Data and obtain insight using data analytics mechanisms.
CO3	Design and implement Big data applications by applying NoSQL, Hadoop or Spark

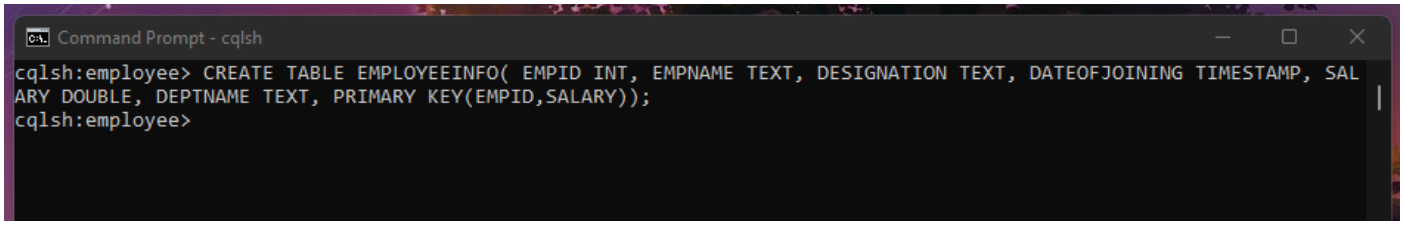
Cassandra Lab Program 1: -

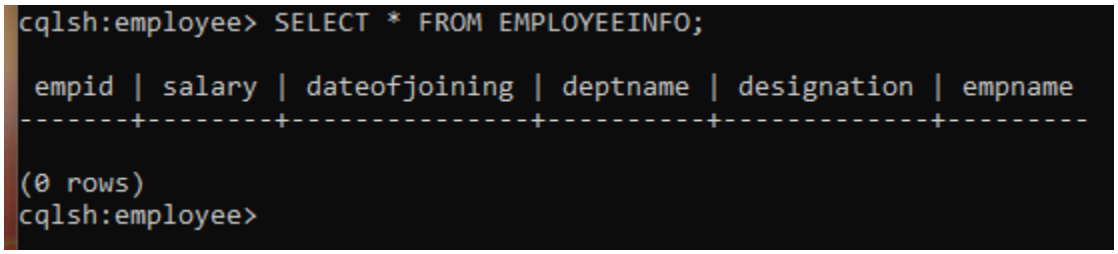
Perform the following DB operations using Cassandra.

1. Create a key space by name Employee



2. Create a column family by name Employee-Info with attributes Emp_Id Primary Key, Emp_Name, Designation, Date_of_Joining, Salary, Dept_Name





3. Insert the values into the table in batch

```
Command Prompt - cqlsh
cqlsh:employee> BEGIN BATCH
           ... INSERT INTO EMPLOYEEINFO (EMPID, EMPNAME, DESIGNATION, DATEOFJOINING, SALARY, DEPTNAME)
           ... VALUES(1,'LOKESH','ASSISTANT MANAGER', '2005-04-6', 50000, 'MARKETING')
           ... INSERT INTO EMPLOYEEINFO (EMPID, EMPNAME, DESIGNATION, DATEOFJOINING, SALARY, DEPTNAME)
           ... VALUES(2,'DHEERAJ','ASSISTANT MANAGER', '2013-11-10', 30000, 'LOGISTICS')
           ... INSERT INTO EMPLOYEEINFO (EMPID, EMPNAME, DESIGNATION, DATEOFJOINING, SALARY, DEPTNAME)
           ... VALUES(3,'CHIRAG','ASSISTANT MANAGER', '2011-07-1', 115000, 'SALES')
           ... INSERT INTO EMPLOYEEINFO (EMPID, EMPNAME, DESIGNATION, DATEOFJOINING, SALARY, DEPTNAME)
           ... VALUES(4,'DHANUSH','ASSISTANT MANAGER', '2010-04-26', 75000, 'MARKETING')
           ...  INSERT INTO EMPLOYEEINFO (EMPID, EMPNAME, DESIGNATION, DATEOFJOINING, SALARY, DEPTNAME)
           ... VALUES(5,'ESHA','ASSISTANT MANAGER', '2010-04-26', 85000, 'TECHNICAL')
           ... INSERT INTO EMPLOYEEINFO (EMPID, EMPNAME, DESIGNATION, DATEOFJOINING, SALARY, DEPTNAME)
           ... VALUES(6,'FARHAN','MANAGER', '2010-04-26', 95000, 'TECHNICAL')
           ... INSERT INTO EMPLOYEEINFO (EMPID, EMPNAME, DESIGNATION, DATEOFJOINING, SALARY, DEPTNAME)
           ... VALUES(7,'JIMMY','MANAGER', '2010-04-26', 95000, 'PR')
           ... INSERT INTO EMPLOYEEINFO (EMPID, EMPNAME, DESIGNATION, DATEOFJOINING, SALARY, DEPTNAME)
           ... VALUES(121,'HARRY','REGIONAL MANAGER', '2010-04-26', 99000, 'MANAGEMENT')
           ... APPLY BATCH;
```

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

 empid | salary   | dateofjoining                   | deptname   | designation       | empname
-------+----------+---------------------------------+------------+-------------------+---------
     5 |    85000 | 2010-04-25 18:30:00.000000+0000 |  TECHNICAL | ASSISTANT MANAGER |    ESHA
     1 |    50000 | 2005-04-05 18:30:00.000000+0000 |  MARKETING | ASSISTANT MANAGER |  LOKESH
     2 |    30000 | 2013-11-09 18:30:00.000000+0000 |  LOGISTICS | ASSISTANT MANAGER | DHEERAJ
     4 |    75000 | 2010-04-25 18:30:00.000000+0000 |  MARKETING | ASSISTANT MANAGER | DHANUSH
   121 |    99000 | 2010-04-25 18:30:00.000000+0000 | MANAGEMENT |  REGIONAL MANAGER |   HARRY
     7 |    95000 | 2010-04-25 18:30:00.000000+0000 |         PR |           MANAGER |   JIMMY
     6 |    95000 | 2010-04-25 18:30:00.000000+0000 |  TECHNICAL |           MANAGER |  FARHAN
     3 | 1.15e+05 | 2011-06-30 18:30:00.000000+0000 |      SALES | ASSISTANT MANAGER |  CHIRAG

(8 rows)
cqlsh:employee>
```

4. Update Employee name and Department of Emp-Id 121

```
cqlsh:employee> UPDATE EMPLOYEEINFO SET EMPNAME='HARRY', DEPTNAME='MANAGEMENT' WHERE EMPID=121 AND SALARY=99000;
cqlsh:employee>  SELECT * FROM EMPLOYEEINFO;

 empid | salary   | dateofjoining                   | deptname   | designation       | empname
-------+----------+---------------------------------+------------+-------------------+---------
     5 |    85000 | 2010-04-25 18:30:00.000000+0000 |  TECHNICAL | ASSISTANT MANAGER |    ESHA
     1 |    50000 | 2005-04-05 18:30:00.000000+0000 |  MARKETING | ASSISTANT MANAGER |  LOKESH
     2 |    30000 | 2013-11-09 18:30:00.000000+0000 |  LOGISTICS | ASSISTANT MANAGER | DHEERAJ
     4 |    75000 | 2010-04-25 18:30:00.000000+0000 |  MARKETING | ASSISTANT MANAGER | DHANUSH
   121 |    99000 | 2010-04-25 18:30:00.000000+0000 | MANAGEMENT |  REGIONAL MANAGER |   HARRY
     7 |    95000 | 2010-04-25 18:30:00.000000+0000 |         PR |           MANAGER |   JIMMY
     6 |    95000 | 2010-04-25 18:30:00.000000+0000 |  TECHNICAL |           MANAGER |  FARHAN
     3 | 1.15e+05 | 2011-06-30 18:30:00.000000+0000 |      SALES | ASSISTANT MANAGER |  CHIRAG

(8 rows)
cqlsh:employee>
```

5. Sort the details of Employee records based on salary (Note:- cql>PAGING OFF)

```
cqlsh:employee> select * from EMPLOYEEINFO where empid IN(1,2,3,4,5,6,7) ORDER BY salary DESC allow filtering;

 empid | salary   | dateofjoining                   | deptname   | designation       | empname
-------+----------+---------------------------------+------------+-------------------+---------
     3 | 1.15e+05 | 2011-06-30 18:30:00.000000+0000 |      SALES | ASSISTANT MANAGER |  CHIRAG
     6 |    95000 | 2010-04-25 18:30:00.000000+0000 | TECHNICAL |           MANAGER |  FARHAN
     7 |    95000 | 2010-04-25 18:30:00.000000+0000 |         PR |           MANAGER |   JIMMY
     5 |    85000 | 2010-04-25 18:30:00.000000+0000 | TECHNICAL | ASSISTANT MANAGER |    ESHA
     4 |    75000 | 2010-04-25 18:30:00.000000+0000 | MARKETING | ASSISTANT MANAGER | DHANUSH
     1 |    50000 | 2005-04-05 18:30:00.000000+0000 | MARKETING | ASSISTANT MANAGER |  LOKESH
     2 |    30000 | 2013-11-09 18:30:00.000000+0000 | LOGISTICS | ASSISTANT MANAGER | DHEERAJ

(7 rows)
cqlsh:employee>
```

6. Alter the schema of the table Employee_Info to add a column Projects which stores a set of Projects done by the corresponding Employee.

```
(7 rows)
cqlsh:employee> ALTER TABLE EMPLOYEEINFO ADD PROJECTS LIST<TEXT>;
cqlsh:employee> SELECT * FROM EMPLOYEEINFO;

 empid | salary   | dateofjoining                   | deptname    | designation       | empname | projects
-------+----------+---------------------------------+-------------+-------------------+---------+----------
     5 |    85000 | 2010-04-25 18:30:00.000000+0000 |  TECHNICAL | ASSISTANT MANAGER |    ESHA |     null
     1 |    50000 | 2005-04-05 18:30:00.000000+0000 |  MARKETING | ASSISTANT MANAGER |  LOKESH |     null
     2 |    30000 | 2013-11-09 18:30:00.000000+0000 |  LOGISTICS | ASSISTANT MANAGER | DHEERAJ |     null
     4 |    75000 | 2010-04-25 18:30:00.000000+0000 |  MARKETING | ASSISTANT MANAGER | DHANUSH |     null
   121 |    99000 | 2010-04-25 18:30:00.000000+0000 | MANAGEMENT |  REGIONAL MANAGER |   HARRY |     null
     7 |    95000 | 2010-04-25 18:30:00.000000+0000 |          PR |           MANAGER |   JIMMY |     null
     6 |    95000 | 2010-04-25 18:30:00.000000+0000 |  TECHNICAL |           MANAGER |  FARHAN |     null
     3 | 1.15e+05 | 2011-06-30 18:30:00.000000+0000 |       SALES | ASSISTANT MANAGER |  CHIRAG |     null

(8 rows)
cqlsh:employee>
```

7. Update the altered table to add project names.

```
Command Prompt - cqlsh
cqlsh:employee> UPDATE EMPLOYEEINFO SET PROJECTS=['FACEBOOK','SNAPCHAT'] WHERE EMPID=1 AND SALARY=50000;
cqlsh:employee> UPDATE EMPLOYEEINFO SET PROJECTS=['FACEBOOK','SNAPCHAT'] WHERE EMPID=7 AND SALARY=95000;
cqlsh:employee>  UPDATE EMPLOYEEINFO SET PROJECTS=['PINTEREST','INSTAGRAM'] WHERE EMPID=121 AND SALARY=99000;
cqlsh:employee> UPDATE EMPLOYEEINFO SET PROJECTS=['PINTEREST','INSTAGRAM'] WHERE EMPID=4 AND SALARY=75000;
cqlsh:employee> UPDATE EMPLOYEEINFO SET PROJECTS=['YOUTUBE','SPOTIFY'] WHERE EMPID=2 AND SALARY=30000;
cqlsh:employee> UPDATE EMPLOYEEINFO SET PROJECTS=['YOUTUBE','SPOTIFY'] WHERE EMPID=3 AND SALARY=115000;
cqlsh:employee> UPDATE EMPLOYEEINFO SET PROJECTS=['YOUTUBE','SPOTIFY'] WHERE EMPID=6 AND SALARY=95000;
cqlsh:employee> UPDATE EMPLOYEEINFO SET PROJECTS=['YOUTUBE','SPOTIFY'] WHERE EMPID=5 AND SALARY=85000;
cqlsh:employee> SELECT * FROM EMPLOYEEINFO;

 empid | salary   | dateofjoining                   | deptname   | designation       | empname | projects
-------+----------+---------------------------------+------------+-------------------+---------+----------------------------
     5 |    85000 | 2010-04-25 18:30:00.000000+0000 |  TECHNICAL | ASSISTANT MANAGER |    ESHA |     ['YOUTUBE', 'SPOTIFY']
     1 |    50000 | 2005-04-05 18:30:00.000000+0000 |  MARKETING | ASSISTANT MANAGER |  LOKESH |   ['FACEBOOK', 'SNAPCHAT']
     2 |    30000 | 2013-11-09 18:30:00.000000+0000 |  LOGISTICS | ASSISTANT MANAGER | DHEERAJ |     ['YOUTUBE', 'SPOTIFY']
     4 |    75000 | 2010-04-25 18:30:00.000000+0000 |  MARKETING | ASSISTANT MANAGER | DHANUSH | ['PINTEREST', 'INSTAGRAM']
   121 |    99000 | 2010-04-25 18:30:00.000000+0000 | MANAGEMENT |  REGIONAL MANAGER |   HARRY | ['PINTEREST', 'INSTAGRAM']
     7 |    95000 | 2010-04-25 18:30:00.000000+0000 |         PR |           MANAGER |   JIMMY |   ['FACEBOOK', 'SNAPCHAT']
     6 |    95000 | 2010-04-25 18:30:00.000000+0000 |  TECHNICAL |           MANAGER |  FARHAN |     ['YOUTUBE', 'SPOTIFY']
     3 | 1.15e+05 | 2011-06-30 18:30:00.000000+0000 |      SALES | ASSISTANT MANAGER |  CHIRAG |     ['YOUTUBE', 'SPOTIFY']

(8 rows)
cqlsh:employee>
```

8. Create a TTL of 15 seconds to display the values of Employees.

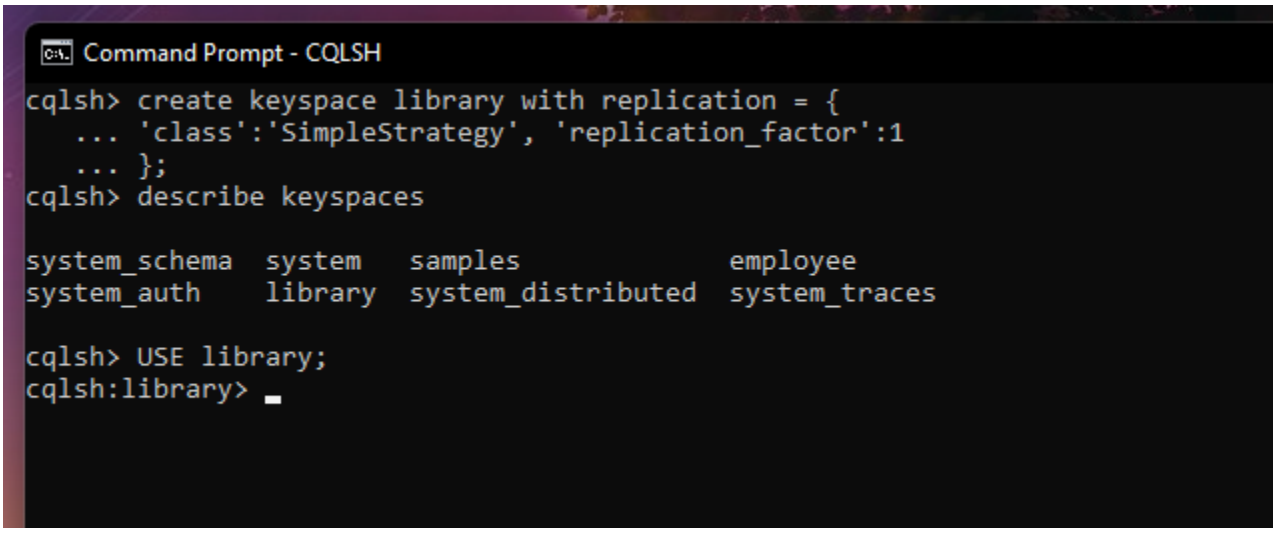
//BEFORE 15 seconds

```
Command Prompt - cqlsh
cqlsh:employee> update EMPLOYEEINFO USING TTL 15  SET EMPNAME='LOKESH' where empid=1 AND salary=50000;
cqlsh:employee> SELECT * FROM EMPLOYEEINFO;

 empid | salary   | dateofjoining                   | deptname   | designation       | empname | projects
-------+----------+---------------------------------+------------+-------------------+---------+----------------------------
     5 |    85000 | 2010-04-25 18:30:00.000000+0000 |  TECHNICAL | ASSISTANT MANAGER |    ESHA |     ['YOUTUBE', 'SPOTIFY']
     1 |    50000 | 2005-04-05 18:30:00.000000+0000 |  MARKETING | ASSISTANT MANAGER |  LOKESH |   ['FACEBOOK', 'SNAPCHAT']
     2 |    30000 | 2013-11-09 18:30:00.000000+0000 |  LOGISTICS | ASSISTANT MANAGER | DHEERAJ |     ['YOUTUBE', 'SPOTIFY']
     4 |    75000 | 2010-04-25 18:30:00.000000+0000 |  MARKETING | ASSISTANT MANAGER | DHANUSH | ['PINTEREST', 'INSTAGRAM']
   121 |    99000 | 2010-04-25 18:30:00.000000+0000 | MANAGEMENT |  REGIONAL MANAGER |   HARRY | ['PINTEREST', 'INSTAGRAM']
     7 |    95000 | 2010-04-25 18:30:00.000000+0000 |         PR |           MANAGER |   JIMMY |   ['FACEBOOK', 'SNAPCHAT']
     6 |    95000 | 2010-04-25 18:30:00.000000+0000 |  TECHNICAL |           MANAGER |  FARHAN |     ['YOUTUBE', 'SPOTIFY']
     3 | 1.15e+05 | 2011-06-30 18:30:00.000000+0000 |      SALES | ASSISTANT MANAGER |  CHIRAG |     ['YOUTUBE', 'SPOTIFY']

(8 rows)
cqlsh:employee>
```

Cassandra Lab Program 2: -

Perform the following DB operations using Cassandra.

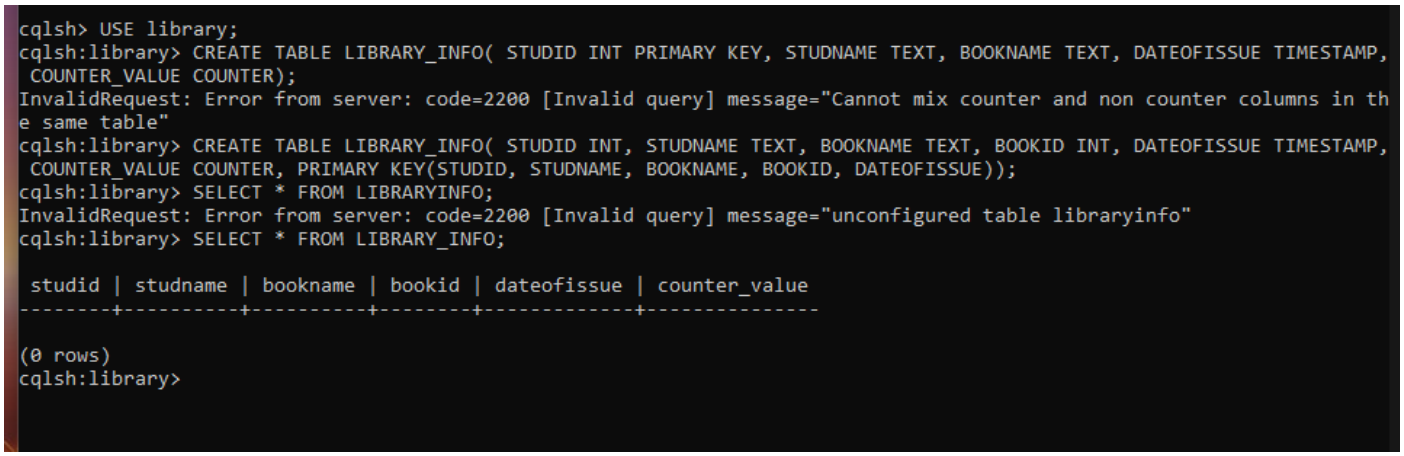
1.Create a key space by name Library



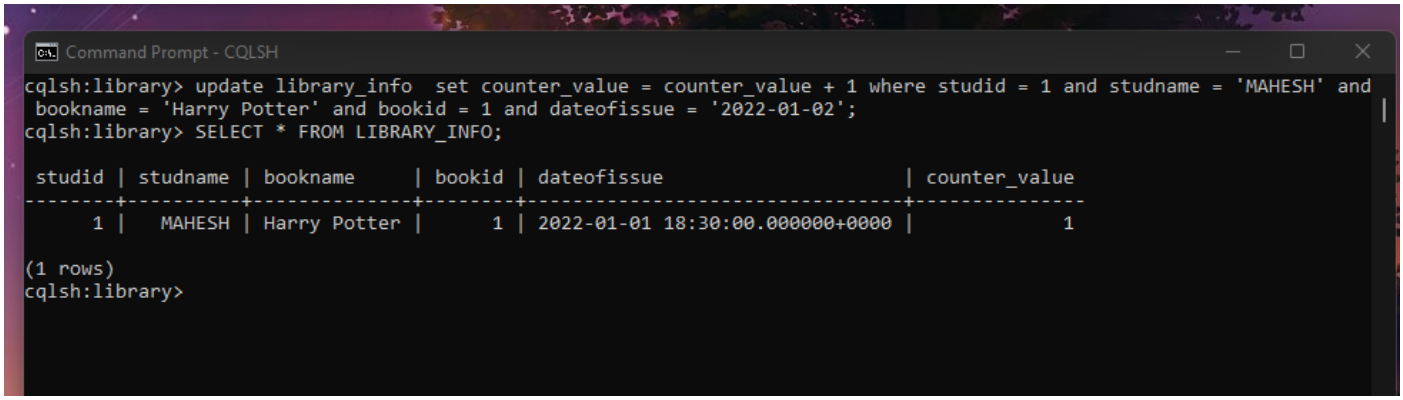
2. Create a column family by name Library-Info with attributes Stud_Id Primary Key,

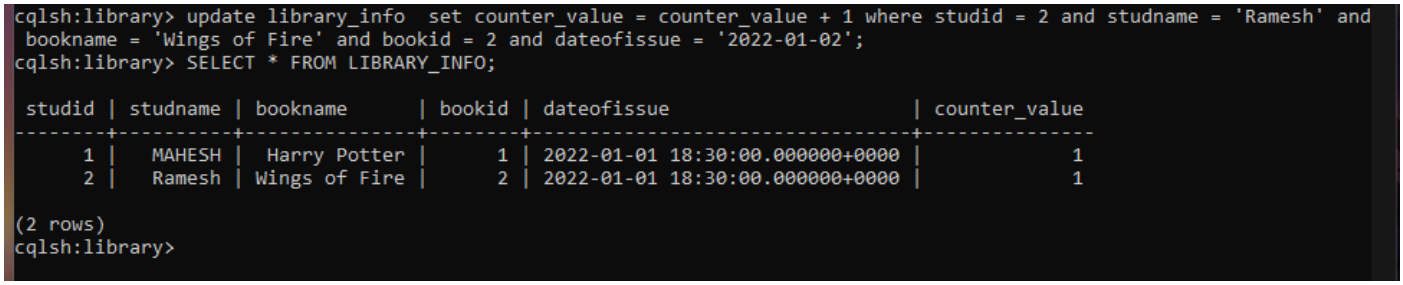
Counter_value of type Counter,

Stud_Name, Book-Name, Book-Id, Date_of_issue

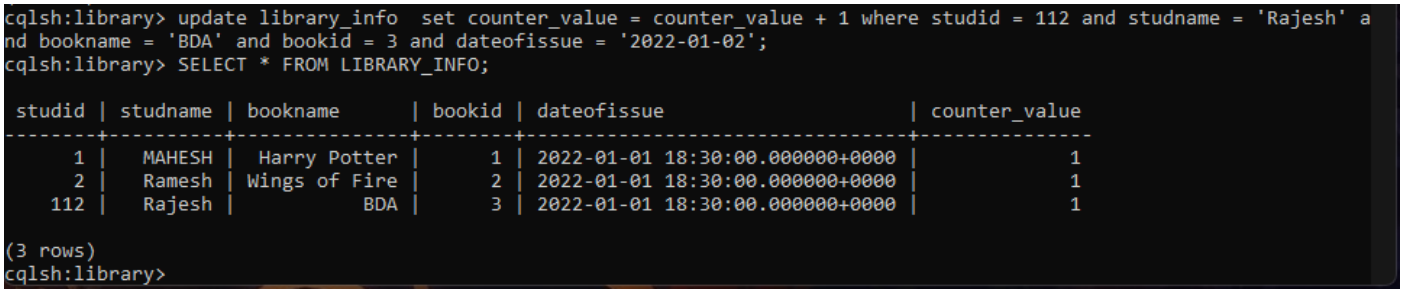


3.Insert the values into the table in batch





4. Display the details of the table created and increase the value of the counter



```
(3 rows)
cqlsh:library> update library_info  set counter_value = counter_value + 1 where studid = 112 and studname = 'Rajesh' a
nd bookname = 'BDA' and bookid = 3 and dateofissue = '2022-01-02';
cqlsh:library> SELECT * FROM LIBRARY_INFO;

 studid | studname | bookname      | bookid | dateofissue                     | counter_value
--------+----------+---------------+--------+---------------------------------+---------------
      1 |   MAHESH |  Harry Potter |      1 | 2022-01-01 18:30:00.000000+0000 |             1
      2 |   Ramesh | Wings of Fire |      2 | 2022-01-01 18:30:00.000000+0000 |             1
    112 |   Rajesh |           BDA |      3 | 2022-01-01 18:30:00.000000+0000 |             2

(3 rows)
cqlsh:library>
```

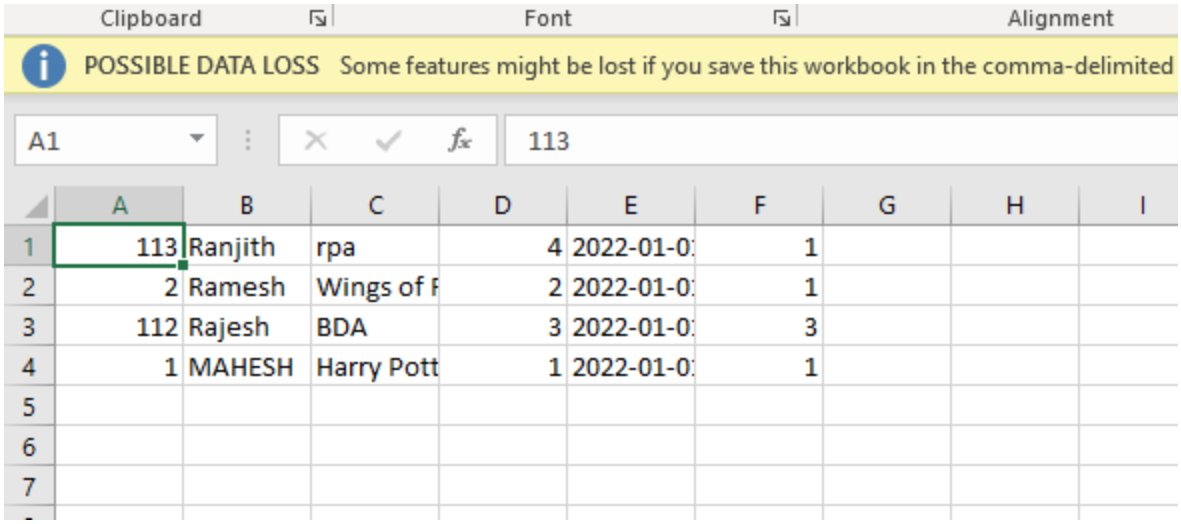
```
 studid | studname | bookname      | bookid | dateofissue                     | counter_value
--------+----------+---------------+--------+---------------------------------+---------------
    113 |  Ranjith |           rpa |      4 | 2022-01-01 18:30:00.000000+0000 |             1
      1 |   MAHESH |  Harry Potter |      1 | 2022-01-01 18:30:00.000000+0000 |             1
      2 |   Ramesh | Wings of Fire |      2 | 2022-01-01 18:30:00.000000+0000 |             1
    112 |   Rajesh |           BDA |      3 | 2022-01-01 18:30:00.000000+0000 |             3

(4 rows)
```

5. Write a query to show that a student with id 112 has taken a book “BDA” 3 times.

```
Command Prompt - CQLSH
cqlsh:library> select * from library_info where studid = 112;

 studid | studname | bookname | bookid | dateofissue                     | counter_value
--------+----------+----------+--------+---------------------------------+---------------
    112 |   Rajesh |      BDA |      3 | 2022-01-01 18:30:00.000000+0000 |             3

(1 rows)
cqlsh:library>
```

6. Export the created column to a csv file

```
cqlsh:library> copy library_info (studid, studname, bookname, bookid, dateofissue, counter_value) to 'C:\Users\Admin\O
neDrive\Desktop\BDA Lab\data.csv';
Using 7 child processes

Starting copy of library.library_info with columns [studid, studname, bookname, bookid, dateofissue, counter_value].
Processed: 4 rows; Rate:       2 rows/s; Avg. rate:       1 rows/s
4 rows exported to 1 files in 3.004 seconds.
cqlsh:library>
```



	A	B	C	D	E	F	G	H	I
1	113	Ranjith	rpa	4	2022-01-0	1			
2	2	Ramesh	Wings of F	2	2022-01-0	1			
3	112	Rajesh	BDA	3	2022-01-0	3			
4	1	MAHESH	Harry Pott	1	2022-01-0	1			
5									
6									
7									

7. Import a given csv dataset from local file system into Cassandra column family

```
cqlsh:library> copy library_info (studid, studname, bookname, bookid, dateofissue, counter_value) from 'C:\Users\Admin\OneDrive\Desktop\BDA Lab\data.csv';
Using 7 child processes

Starting copy of library.library_info with columns [studid, studname, bookname, bookid, dateofissue, counter_value].
Process ImportProcess-10:     2 rows/s; Avg. rate:       2 rows/s
TPraceback (most recent call last):
rocess ImportProcess-8:
P Process ImportProcess-11:
TTraceback (most recent call last):
rocess ImportProcess-9:
 P File "C:\Python27\lib\multiprocessing\process.py", line 267, in _bootstrap
 File "C:\Python27\lib\multiprocessing\process.py", line 267, in _bootstrap
Traceback (most recent call last):
Praceback (most recent call last):
 P File "C:\Python27\lib\multiprocessing\process.py", line 267, in _bootstrap
    self.run()
rocess ImportProcess-12:
  rocess ImportProcess-14:
rocess ImportProcess-13:
  T File "c:\apache-cassandra-3.11.13\bin\..\pylib\cqlshlib\copyutil.py", line 2339, in run
    self.run()
TTraceback (most recent call last):
 File "C:\Python27\lib\multiprocessing\process.py", line 267, in _bootstrap
raceback (most recent call last):
    self.run()
raceback (most recent call last):
        self.run()
 File "C:\Python27\lib\multiprocessing\process.py", line 267, in _bootstrap
 File "c:\apache-cassandra-3.11.13\bin\..\pylib\cqlshlib\copyutil.py", line 2339, in run
 File "C:\Python27\lib\multiprocessing\process.py", line 267, in _bootstrap
     self.close()
     self.run()
 File "c:\apache-cassandra-3.11.13\bin\..\pylib\cqlshlib\copyutil.py", line 2339, in run
     self.run()
 File "c:\apache-cassandra-3.11.13\bin\..\pylib\cqlshlib\copyutil.py", line 2343, in close
   File "c:\apache-cassandra-3.11.13\bin\..\pylib\cqlshlib\copyutil.py", line 2339, in run
   self.close()
  File "C:\Python27\lib\multiprocessing\process.py", line 267, in _bootstrap
 File "c:\apache-cassandra-3.11.13\bin\..\pylib\cqlshlib\copyutil.py", line 2339, in run
   File "c:\apache-cassandra-3.11.13\bin\..\pylib\cqlshlib\copyutil.py", line 2339, in run
    self._session.cluster.shutdown()
     self.run()
   self.close()
   File "c:\apache-cassandra-3.11.13\bin\..\lib\cassandra-driver-internal-only-3.11.0-bb96859b.zip\cassandra-driver-3.11.0-bb96859b\cassandra\cluster.py", line 1259, in shutdown
   File "c:\apache-cassandra-3.11.13\bin\..\pylib\cqlshlib\copyutil.py", line 2343, in close
 File "c:\apache-cassandra-3.11.13\bin\..\pylib\cqlshlib\copyutil.py", line 2339, in run
   self.close()
   self.close()
   self.close()
 File "c:\apache-cassandra-3.11.13\bin\..\pylib\cqlshlib\copyutil.py", line 2343, in close
```

```
 File "c:\apache-cassandra-3.11.13\bin\..\lib\cassandra-driver-internal-only-3.11.0-bb96859b.zip\cassandra-driver-3.11.0-bb96859b\cassandra\io\asyncorereactor.py", line 373, in close
 File "c:\apache-cassandra-3.11.13\bin\..\lib\cassandra-driver-internal-only-3.11.0-bb96859b.zip\cassandra-driver-3.11.0-bb96859b\cassandra\io\asyncorereactor.py", line 335, in create_timer
       File "c:\apache-cassandra-3.11.13\bin\..\lib\cassandra-driver-internal-only-3.11.0-bb96859b.zip\cassandra-driver-3.11.0-bb96859b\cassandra\io\asyncorereactor.py", line 373, in close
   self._connection.close()
 File "c:\apache-cassandra-3.11.13\bin\..\lib\cassandra-driver-internal-only-3.11.0-bb96859b.zip\cassandra-driver-3.11.0-bb96859b\cassandra\io\asyncorereactor.py", line 335, in create_timer
   self._connection.close()
    AsyncoreConnection.create_timer(0, partial(asyncore.dispatcher.close, self))
   File "c:\apache-cassandra-3.11.13\bin\..\lib\cassandra-driver-internal-only-3.11.0-bb96859b.zip\cassandra-driver-3.11.0-bb96859b\cassandra\io\asyncorereactor.py", line 373, in close
    cls._loop.add_timer(timer)
 File "c:\apache-cassandra-3.11.13\bin\..\lib\cassandra-driver-internal-only-3.11.0-bb96859b.zip\cassandra-driver-3.11.0-bb96859b\cassandra\io\asyncorereactor.py", line 373, in close
   cls._loop.add_timer(timer)
   AsyncoreConnection.create_timer(0, partial(asyncore.dispatcher.close, self))
AA     AsyncoreConnection.create_timer(0, partial(asyncore.dispatcher.close, self))
  ttributeError: 'NoneType' object has no attribute 'add_timer'
  File "c:\apache-cassandra-3.11.13\bin\..\lib\cassandra-driver-internal-only-3.11.0-bb96859b.zip\cassandra-driver-3.11.0-bb96859b\cassandra\io\asyncorereactor.py", line 335, in create_timer
ttributeError: 'NoneType' object has no attribute 'add_timer'
 File "c:\apache-cassandra-3.11.13\bin\..\lib\cassandra-driver-internal-only-3.11.0-bb96859b.zip\cassandra-driver-3.11.0-bb96859b\cassandra\io\asyncorereactor.py", line 335, in create_timer
 File "c:\apache-cassandra-3.11.13\bin\..\lib\cassandra-driver-internal-only-3.11.0-bb96859b.zip\cassandra-driver-3.11.0-bb96859b\cassandra\io\asyncorereactor.py", line 335, in create_timer
   AsyncoreConnection.create_timer(0, partial(asyncore.dispatcher.close, self))
       cls._loop.add_timer(timer)
   cls._loop.add_timer(timer)
A File "c:\apache-cassandra-3.11.13\bin\..\lib\cassandra-driver-internal-only-3.11.0-bb96859b.zip\cassandra-driver-3.11.0-bb96859b\cassandra\io\asyncorereactor.py", line 335, in create_timer
ttributeError: 'NoneType' object has no attribute 'add_timer'
 A   cls._loop.add_timer(timer)
   cls._loop.add_timer(timer)
ttributeError: 'NoneType' object has no attribute 'add_timer'
AAttributeError: 'NoneType' object has no attribute 'add_timer'
ttributeError: 'NoneType' object has no attribute 'add_timer'
Processed: 4 rows; Rate:       1 rows/s; Avg. rate:       2 rows/s
4 rows imported from 1 files in 2.356 seconds (0 skipped).
cqlsh:library>
```

MongoDB Lab Program 1 (CRUD Demonstration): -

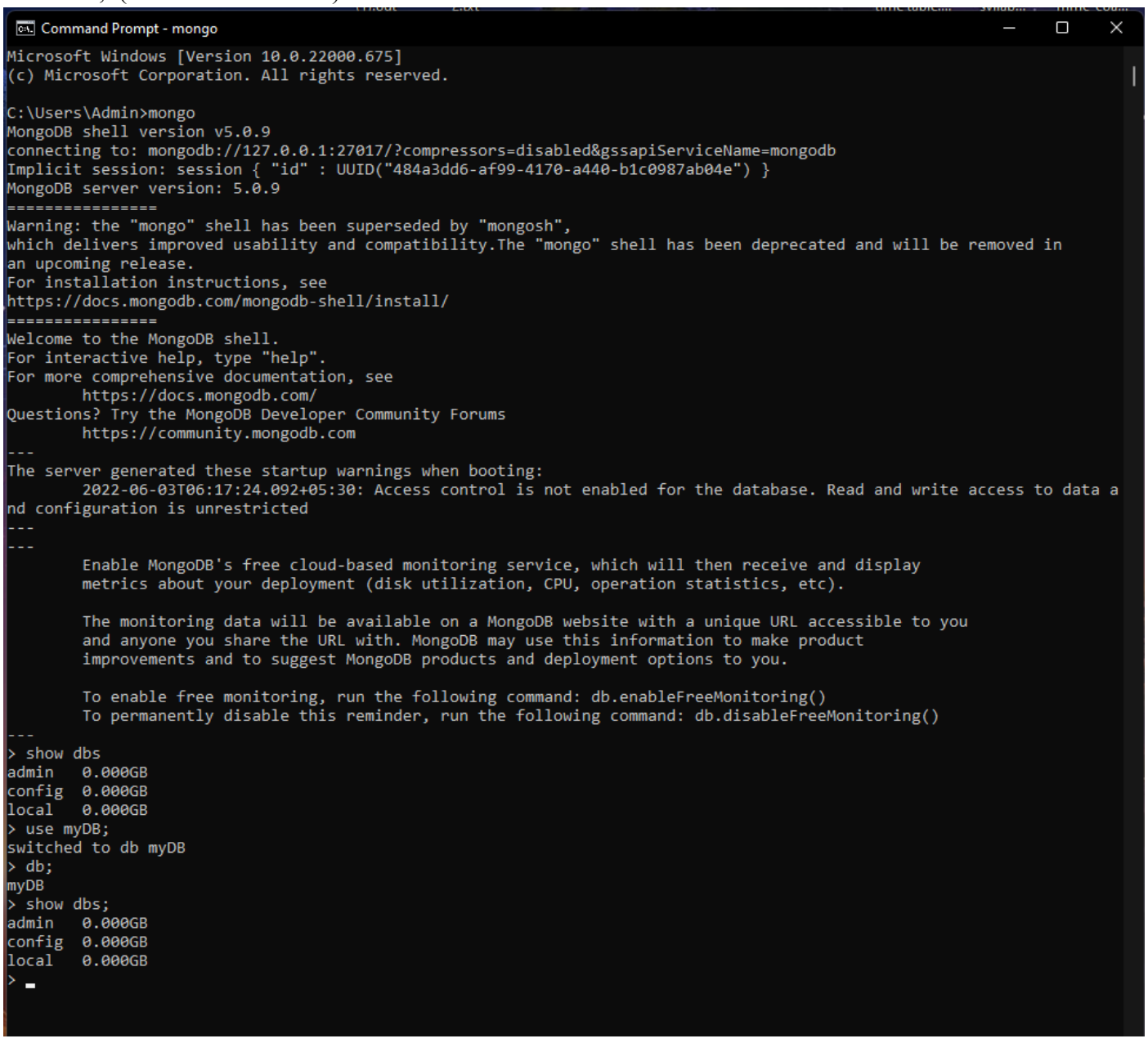
Execute the queries and upload a document with output.

I. CREATE DATABASE IN MONGODB.

use myDB;

db; (Confirm the existence of your database)

show dbs; (To list all databases)



II.CRUD (CREATE, READ, UPDATE, DELETE) OPERATIONS

1. To create a collection by the name “Student”. Let us take a look at the collection list

prior to the creation of the new collection “Student”.

db.createCollection(“Student”); => sql equivalent CREATE TABLE STUDENT(…);

2. To drop a collection by the name “Student”.

db.Student.drop();

3. Create a collection by the name “Students” and store the following data in it.

db.Student.insert({_id:1,StudName:"MichelleJacintha",Grade:"VII",Hobbies:"InternetS

urfing"});

4. Insert the document for “AryanDavid” in to the Students collection only if it does not

already exist in the collection. However, if it is already present in the collection, then

update the document with new values. (Update his Hobbies from “Skating” to “Chess”.

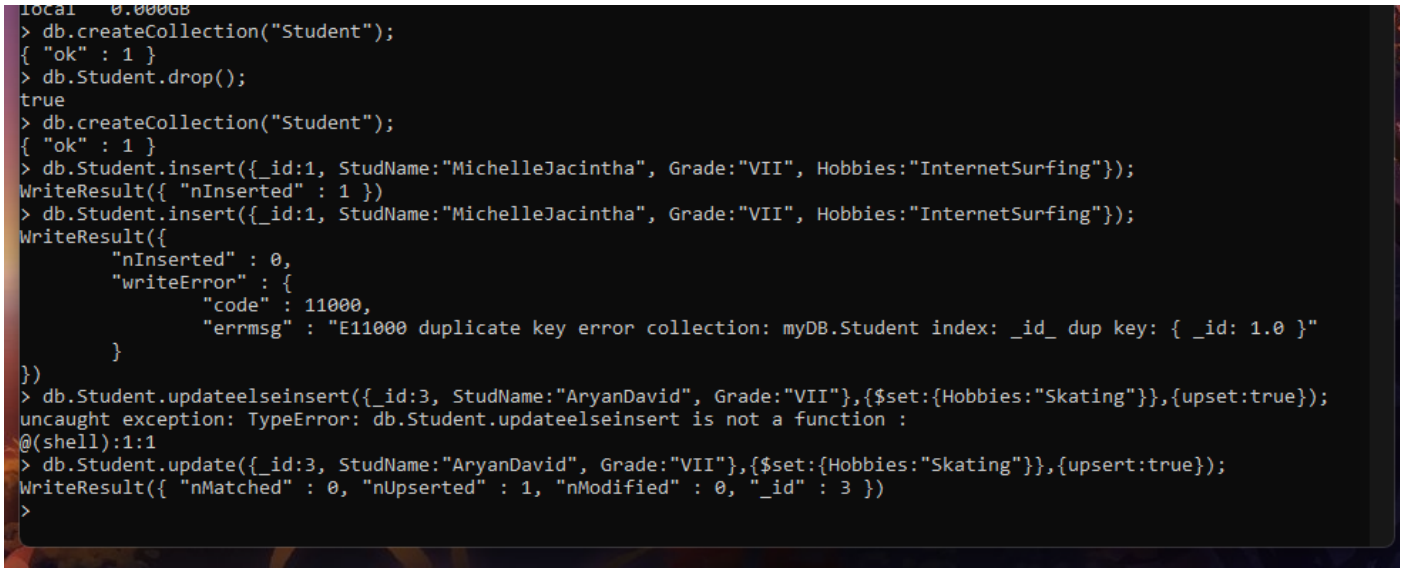
) Use “Update else insert” (if there is an existing document, it will attempt to update it,

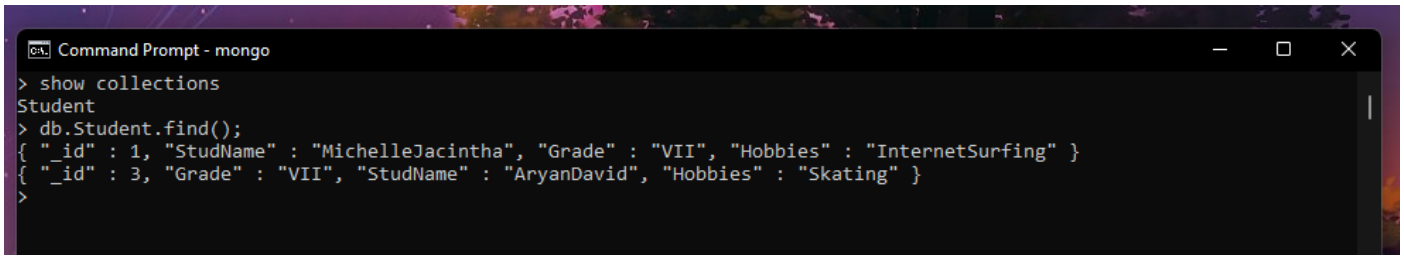
if there is no existing document then it will insert it).

db.Student.update({_id:3,StudName:"AryanDavid",Grade:"VII"},{$set:{Hobbies:&quo

t;Skatin

g"}},{upsert:true});



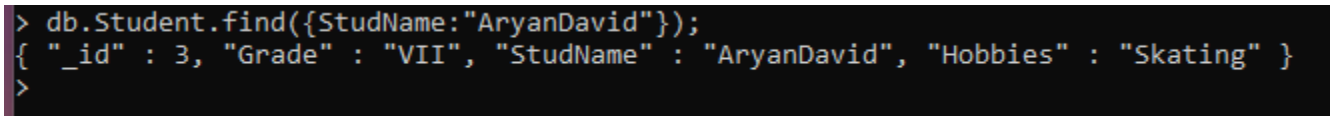


5. FIND METHOD

A. To search for documents from the “Students” collection based on certain search criteria.

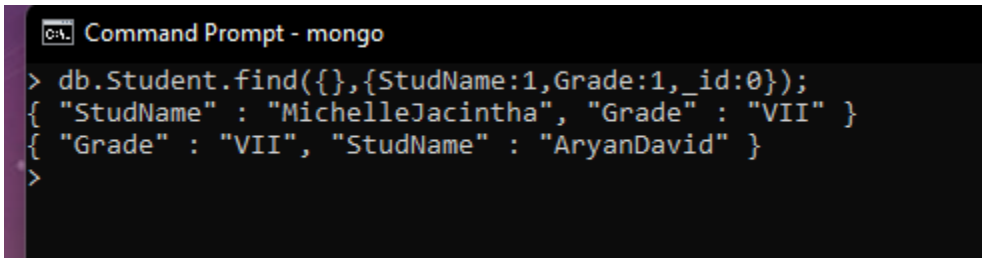
db.Student.find({StudName:"Aryan David"});

({cond..},{columns.. column:1, columnname:0})



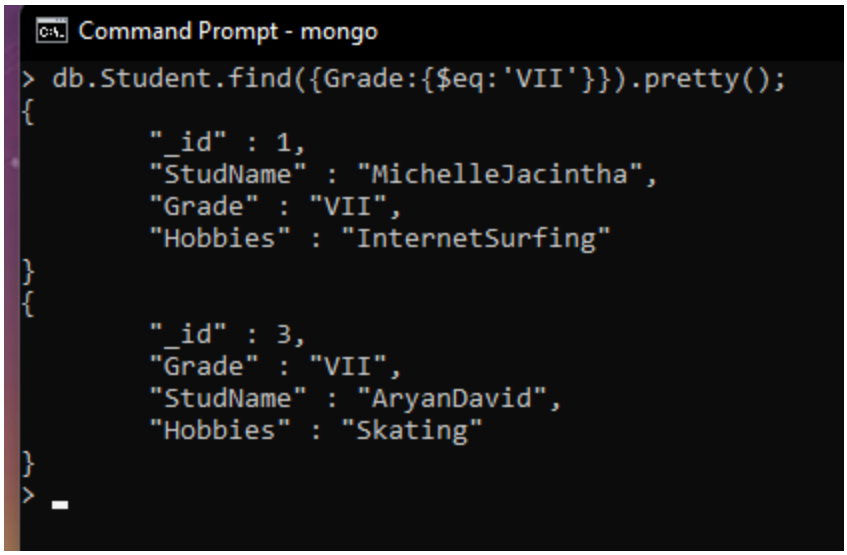
B. To display only the StudName and Grade from all the documents of the Students collection. The identifier_id should be suppressed and NOT displayed.

db.Student.find({},{StudName:1,Grade:1,_id:0});



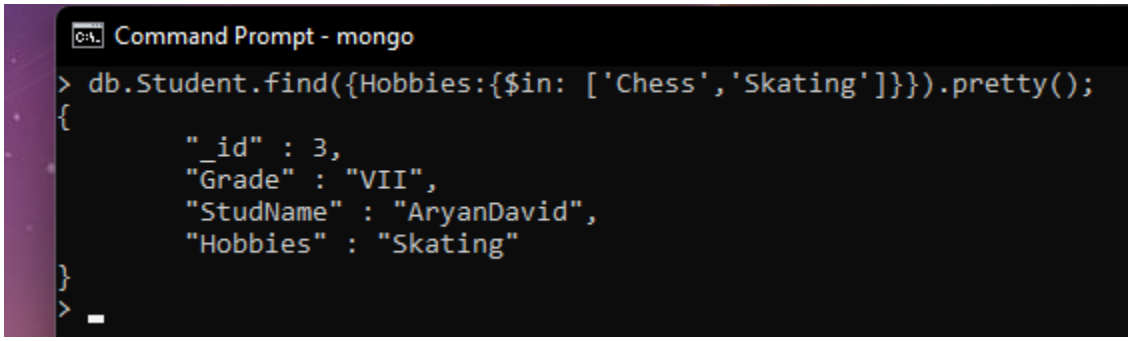
C. To find those documents where the Grade is set to ‘VII’

db.Student.find({Grade:{$eq:'VII'}}).pretty();



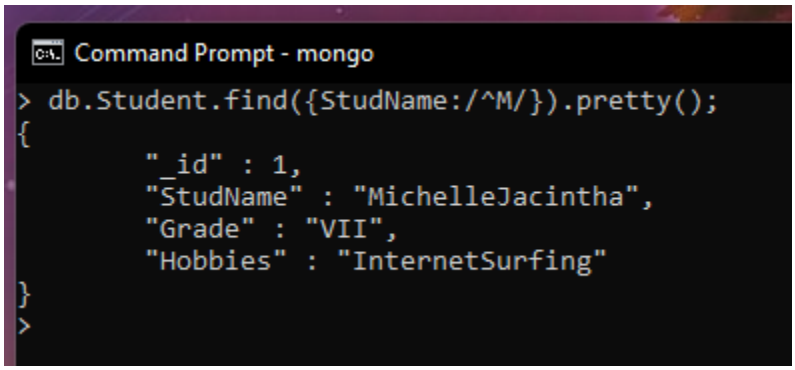
D. To find those documents from the Students collection where the Hobbies is set to either ‘Chess’ or is set to ‘Skating’.

db.Student.find({Hobbies :{ $in: ['Chess','Skating']}}).pretty ();



E. To find documents from the Students collection where the StudName begins with “M”.

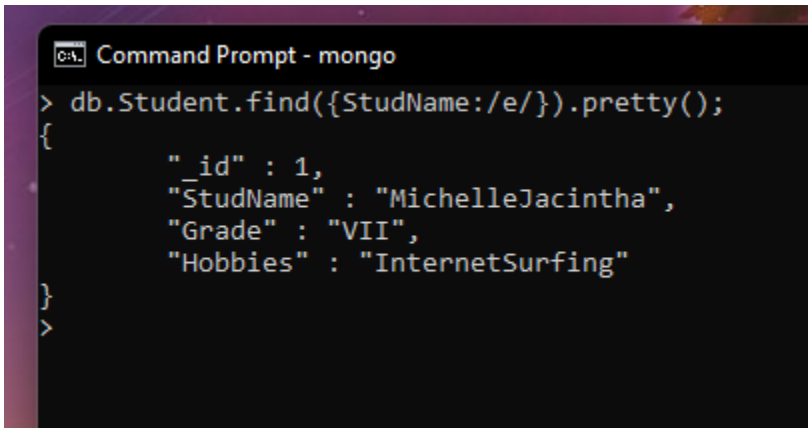
db.Student.find({StudName:/^M/}).pretty();



F. To find documents from the Students collection where the StudNamehas an “e” in any

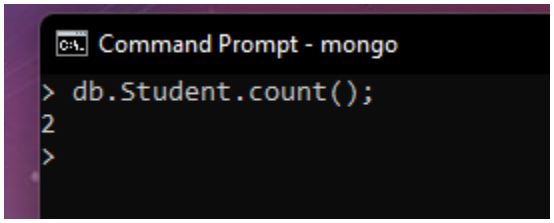
position.

db.Student.find({StudName:/e/}).pretty();



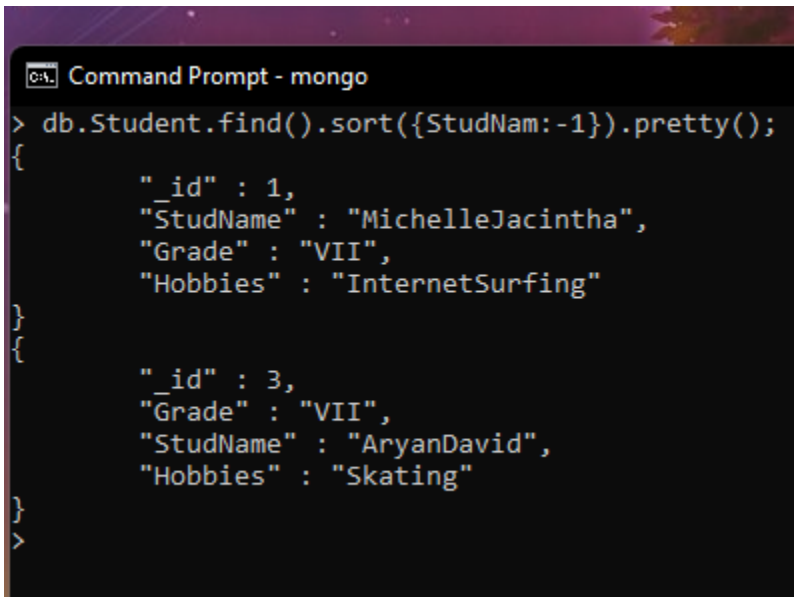
G. To find the number of documents in the Students collection.

db.Student.count();



H. To sort the documents from the Students collection in the descending order of StudName.

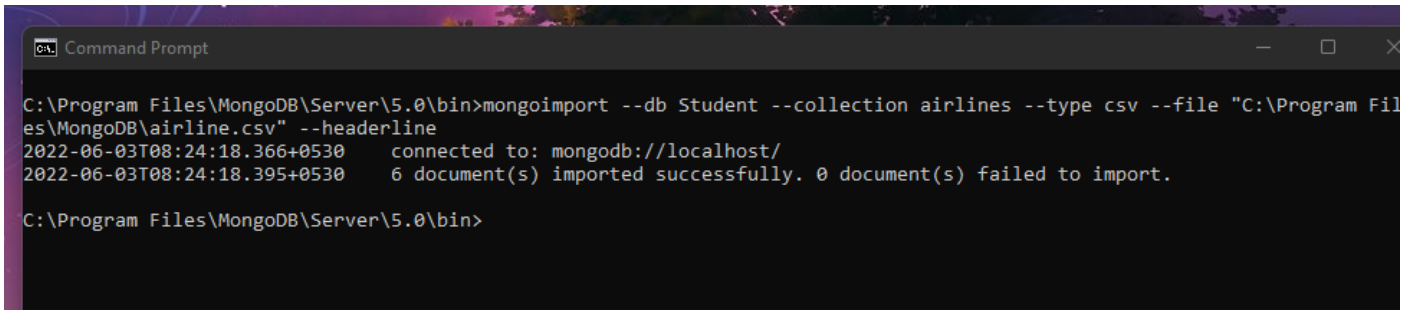
db.Student.find().sort({StudName:-1}).pretty();



III. Import data from a CSV file

Given a CSV file “sample.txt” in the D:drive, import the file into the MongoDB collection, “SampleJSON”. The collection is in the database “test”.

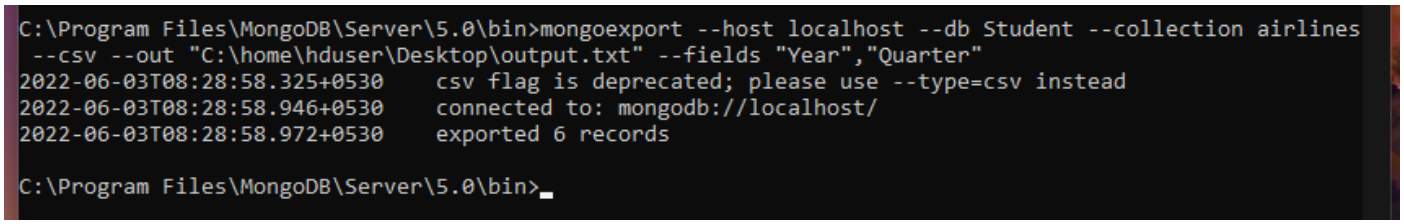
mongoimport --db Student --collection airlines --type csv –headerline --file /home/hduser/Desktop/airline.csv



IV. Export data to a CSV file

This command used at the command prompt exports MongoDB JSON documents from “Customers” collection in the “test” database into a CSV file “Output.txt” in the D:drive.

mongoexport --host localhost --db Student --collection airlines --csv --out /home/hduser/Desktop/output.txt –fields “Year”,”Quarter”



V. Save Method :

Save() method will insert a new document, if the document with the _id does not exist. If it exists it will replace the exisiting document.

db.Students.save({StudName:”Vamsi”, Grade:”VI”})

```
> db.Students.save({StudName:"Vamsi",Grade:"VII"})
WriteResult({ "nInserted" : 1 })
>
```

VI. Add a new field to existing Document:

db.Students.update({_id:4},{$set:{Location:”Network”}})

```
> db.Students.update({_id:4},{$set:{Location:"Network"}})
WriteResult({ "nMatched" : 0, "nUpserted" : 0, "nModified" : 0 })
>
```

VII. Remove the field in an existing Document

db.Students.update({_id:4},{$unset:{Location:”Network”}})

```
Command Prompt - mongo
> db.Students.update({_id:4},{$unset:{Location:"Network"}})
WriteResult({ "nMatched" : 0, "nUpserted" : 0, "nModified" : 0 })
>
```

VIII. Finding Document based on search criteria suppressing few fields

db.Student.find({_id:1},{StudName:1,Grade:1,_id:0});

To find those documents where the Grade is not set to ‘VII’

db.Student.find({Grade:{$ne:'VII'}}).pretty();

To find documents from the Students collection where the StudName ends with s.

db.Student.find({StudName:/s$/}).pretty();

```
> db.Student.find({_id:1},{StudName:1,Grade:1,_id:0});
>
```

```
> db.Student.find({Grade:{$ne:'VII'}}).pretty();
> db.Student.find({StudName:/s$/}).pretty();
>
```

IX. to set a particular field value to NULL

```
> db.Students.update({_id:3},{$set:{Location:null}})
WriteResult({ "nMatched" : 0, "nUpserted" : 0, "nModified" : 0 })
>
```

X Count the number of documents in Student Collections

```
> db.Student.count()
0
>
```

XI. Count the number of documents in Student Collections with grade :VII

db.Students.count({Grade:”VII”})

retrieve first 3 documents

db.Students.find({Grade:”VII”}).limit(3).pretty();

Sort the document in Ascending order

db.Students.find().sort({StudName:1}).pretty();

Note:

for desending order : db.Students.find().sort({StudName:-1}).pretty();

to Skip the 1 st two documents from the Students Collections

db.Students.find().skip(2).pretty()

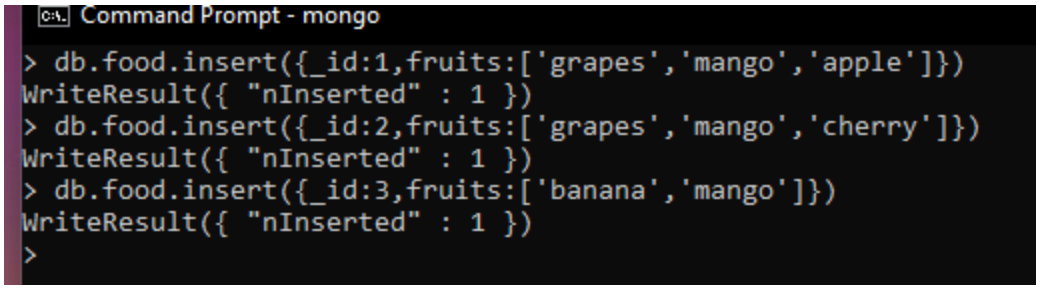
```
> db.Students.find().sort({StudName:1}).pretty();
{
        "_id" : ObjectId("629979944de3211e43081306"),
        "StudName" : "Vamsi",
        "Grade" : "VII"
}
>
```

XII. Create a collection by name “food” and add to each document add a “fruits” array

db.food.insert({ _id:1, fruits:['grapes','mango','apple'] })

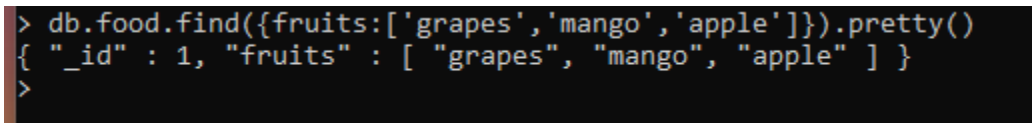
db.food.insert({ _id:2, fruits:['grapes','mango','cherry'] })

db.food.insert({ _id:3, fruits:['banana','mango'] })



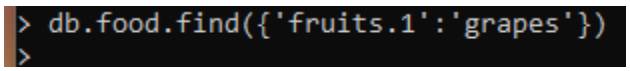
To find those documents from the “food” collection which has the “fruits array” constitute of “grapes”, “mango” and “apple”.

db.food.find ({fruits: ['grapes','mango','apple'] }). pretty().



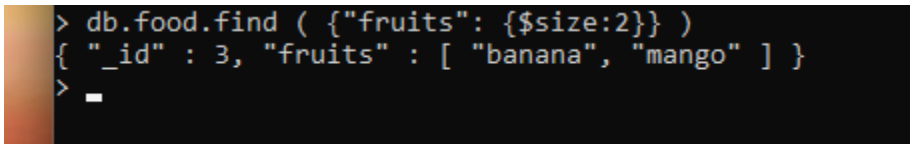
To find in “fruits” array having “mango” in the first index position.

db.food.find ({'fruits.1':'grapes'})



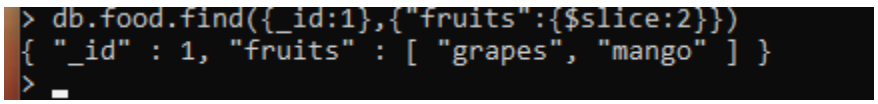
To find those documents from the “food” collection where the size of the array is two.

db.food.find ({“fruits”: {$size:2}})



To find the document with a particular id and display the first two elements from the array “fruits”

db.food.find({_id:1},{“fruits”:{$slice:2}})



To find all the documets from the food collection which have elements mango and grapes in the array “fruits”

db.food.find({fruits:{$all:[“mango”,”grapes”]}})

```
> db.food.find({fruits:{$all:["mango","grapes"]}})
{ "_id" : 1, "fruits" : [ "grapes", "mango", "apple" ] }
{ "_id" : 2, "fruits" : [ "grapes", "mango", "cherry" ] }
>
```

update on Array:

using particular id replace the element present in the 1 st index position of the fruits array with apple

db.food.update({_id:3},{$set:{'fruits.1':'apple'}})

insert new key value pairs in the fruits array

db.food.update({_id:2},{$push:{price:{grapes:80,mango:200,cherry:100}}})

```
> db.food.update({_id:3},{$set:{'fruits.1':'apple'}})
WriteResult({ "nMatched" : 1, "nUpserted" : 0, "nModified" : 1 })
> db.food.update({_id:2},{$push:{price:{grapes:80,mango:200,cherry:100}}})
WriteResult({ "nMatched" : 1, "nUpserted" : 0, "nModified" : 1 })
>
```

Note: perform query operations using - pop, addToSet, pullAll and pull

XII. Aggregate Function :

Create a collection Customers with fields custID, AcctBal, AcctType.

Now group on “custID” and compute the sum of “AccBal”.

db.Customers.aggregate ({$group : { _id : “$custID”,TotAccBal : {$sum:”$AccBal”} } });

match on AcctType:”S” then group on “CustID” and compute the sum of “AccBal”.

db.Customers.aggregate ({$match:{AcctType:”S”}},{$group : { _id : “$custID”,TotAccBal : {$sum:”$AccBal”} } });

match on AcctType:”S” then group on “CustID” and compute the sum of “AccBal” and total balance greater than 1200.

db.Customers.aggregate ({$match:{AcctType:”S”}},{$group : { _id : “$custID”,TotAccBal : {$sum:”$AccBal”} } }, {$match:{TotAccBal:{$gt:1200}}});

```
WriteResult({ "nMatched" : 1, "nUpserted" : 0, "nModified" : 1 })
> db.Customers.aggregate ( {$group : { _id : "$custID",TotAccBal : {$sum:"$AccBal"} } } );
> db.Customers.aggregate ( {$match:{AcctType:”S”}},{$group : { _id : “$custID”,TotAccBal :
... {$sum:”$AccBal”} } } );
uncaught exception: SyntaxError: illegal character :
@(shell):1:43
> db.Customers.aggregate ( {$match:{AcctType:"S"}},{$group : { _id :"$custID",TotAccBal :{$sum:"$AccBal
"} } } );
> db.Customers.aggregate ( {$match:{AcctType:"S"}},{$group : { _id : "$custID",TotAccBal :{$sum:"$AccBa
l"} } }, {$match:{TotAccBal:{$gt:1200}}});
>
```

MongoDB Lab Program 2 (CRUD Demonstration): -

1) Using MongoDB

i) Create a database for Students and Create a Student Collection (_id,Name, USN, Semester, Dept_Name, CGPA, Hobbies(Set)).

ii) Insert required documents to the collection.

iii) First Filter on “Dept_Name:CSE” and then group it on “Semester” and

compute the Average CPGA for that semester and flter those documents where the “Avg_CPGA” is greater than 7.5.

iv) Command used to export MongoDB JSON documents from “Student” Collection into the “Students” database into a CSV fle “Output.txt”.

```
> db.createCollection("Student");
{ "ok" : 1 }
```

```
> db.Student.insert({_id:1,name:"ananya",USN:"1BM19CS095",Sem:6,Dept_Name:"CSE",CGPA:"8.1",Hobbies:"Badminton"});
WriteResult({ "nInserted" : 1 })
> db.Student.insert({_id:2,name:"bharath",USN:"1BM19CS002",Sem:6,Dept_Name:"CSE",CGPA:"8.3",Hobbies:"Swimming"});
WriteResult({ "nInserted" : 1 })
> db.Student.insert({_id:3,name:"chandana",USN:"1BM19CS006",Sem:6,Dept_Name:"CSE",CGPA:"7.1",Hobbies:"Cycling"});
WriteResult({ "nInserted" : 1 })
> db.Student.insert({_id:4,name:"hrithik",USN:"1BM19CS010",Sem:6,Dept_Name:"CSE",CGPA:"8.6",Hobbies:"Reading"});
WriteResult({ "nInserted" : 1 })
> db.Student.insert({_id:5,name:"kanika",USN:"1BM19CS090",Sem:6,Dept_Name:"CSE",CGPA:"9.2",Hobbies:"Cycling"});
WriteResult({ "nInserted" : 1 })
```

```
> db.Student.update({_id:1},{$set:{CGPA:9.0}})
WriteResult({ "nMatched" : 1, "nUpserted" : 0, "nModified" : 1 })
> db.Student.update({_id:2},{$set:{CGPA:9.1}})
WriteResult({ "nMatched" : 1, "nUpserted" : 0, "nModified" : 1 })
> db.Student.update({_id:3},{$set:{CGPA:8.1}})
WriteResult({ "nMatched" : 1, "nUpserted" : 0, "nModified" : 1 })
> db.Student.update({_id:4},{$set:{CGPA:6.5}})
WriteResult({ "nMatched" : 1, "nUpserted" : 0, "nModified" : 1 })
> db.Student.update({_id:5},{$set:{CGPA:8.6}})
WriteResult({ "nMatched" : 1, "nUpserted" : 0, "nModified" : 1 })
> db.students.aggregate({$match:{Dept_Name:"CSE"}},{$group:{_id:"$Sem",AvgCGPA:{$avg:"$CGPA"}}},{$match:{AvgCGPA:{$gt:7.5}}});
> db.Student.aggregate({$match:{Dept_Name:"CSE"}},{$group:{_id:"$Sem",AvgCGPA:{$avg:"$CGPA"}}},{$match:{AvgCGPA:{$gt:7.5}}});
{ "_id" : 6, "AvgCGPA" : 8.26 }
```

```
bmsce@bmsce-Precision-T1700:~$ mongoexport --host localhost --db nayana_db --collection Student --csv --out /home/bmsce/Desktop/output.txt
--fields "_id","Name","USN","Sem","Dept_Name","CGPA","Hobbies"
2022-04-20T15:13:53.933+0530    csv flag is deprecated; please use --type=csv instead
2022-04-20T15:13:53.935+0530    connected to: localhost
2022-04-20T15:13:53.935+0530    exported 5 records
```

```
_id,Name,USN,Sem,Dept_Name,CGPA,Hobbies
1,,1BM19CS095,6,CSE,9,Badminton
2,,1BM19CS002,6,CSE,9.1,Swimming
3,,1BM19CS006,6,CSE,8.1,Cycling
4,,1BM19CS010,6,CSE,6.5,Reading
5,,1BM19CS090,6,CSE,8.6,Cycling
```

2)Create a mongodb collection Bank. Demonstrate the following by choosing felds of your choice.

1. Insert three documents
2. Use Arrays(Use Pull and Pop operation)
3. Use Index
4. Use Cursors
5. Updation

```
> db.createCollection("Bank");
{ "ok" : 1 }
> db.insert({CustID:1, Name:"Trivikram Hegde", Type:"Savings", Contact:["9945678231", "080-22364587"]});
uncaught exception: TypeError: db.insert is not a function :
@(shell):1:1
> db.Bank.insert({CustID:1, Name:"Trivikram Hegde", Type:"Savings", Contact:["9945678231", "080-22364587"]});
WriteResult({ "nInserted" : 1 })
> db.Bank.insert({CustID:2, Name:"Vishvesh Bhat", Type:"Savings", Contact:["6325985615", "080-23651452"]});
WriteResult({ "nInserted" : 1 })
> db.Bank.insert({CustID:3, Name:"Vaishak Bhat", Type:"Savings", Contact:["8971456321", "080-33529458"]});
WriteResult({ "nInserted" : 1 })
> db.Bank.insert({CustID:4, Name:"Pramod P Parande", Type:"Current", Contact:["9745236589", "080-56324587"]});
WriteResult({ "nInserted" : 1 })
> db.Bank.insert({CustID:4, Name:"Shreyas R S", Type:"Current", Contact:["9445678321","044-65611729", "080-25639856"]});
WriteResult({ "nInserted" : 1 })
> db.Bank.find({});
{ "_id" : ObjectId("625d77809329139694f188a2"), "CustID" : 1, "Name" : "Trivikram Hegde", "Type" : "Savings", "Contact" : [ "9945678231", "080
-22364587" ] }
{ "_id" : ObjectId("625d77bd9329139694f188a3"), "CustID" : 2, "Name" : "Vishvesh Bhat", "Type" : "Savings", "Contact" : [ "6325985615", "080-2
3651452" ] }
{ "_id" : ObjectId("625d77e69329139694f188a4"), "CustID" : 3, "Name" : "Vaishak Bhat", "Type" : "Savings", "Contact" : [ "8971456321", "080-33
529458" ] }
{ "_id" : ObjectId("625d78229329139694f188a5"), "CustID" : 4, "Name" : "Pramod P Parande", "Type" : "Current", "Contact" : [ "9745236589", "08
0-56324587" ] }
{ "_id" : ObjectId("625d78659329139694f188a6"), "CustID" : 4, "Name" : "Shreyas R S", "Type" : "Current", "Contact" : [ "9445678321", "044-656
11729", "080-25639856" ] }
> db.Bank.updateMany({CustID:1},{$pop:{Contact:1}} );
{ "acknowledged" : true, "matchedCount" : 1, "modifiedCount" : 1 }
> db.Bank.find({});
{ "_id" : ObjectId("625d77809329139694f188a2"), "CustID" : 1, "Name" : "Trivikram Hegde", "Type" : "Savings", "Contact" : [ "9945678231" ] }
{ "_id" : ObjectId("625d77bd9329139694f188a3"), "CustID" : 2, "Name" : "Vishvesh Bhat", "Type" : "Savings", "Contact" : [ "6325985615", "080-2
3651452" ] }
{ "_id" : ObjectId("625d77e69329139694f188a4"), "CustID" : 3, "Name" : "Vaishak Bhat", "Type" : "Savings", "Contact" : [ "8971456321", "080-33
529458" ] }
{ "_id" : ObjectId("625d78229329139694f188a5"), "CustID" : 4, "Name" : "Pramod P Parande", "Type" : "Current", "Contact" : [ "9745236589", "08
0-56324587" ] }
{ "_id" : ObjectId("625d78659329139694f188a6"), "CustID" : 4, "Name" : "Shreyas R S", "Type" : "Current", "Contact" : [ "9445678321", "044-656
11729", "080-25639856" ] }
```

```
{ "_id" : ObjectId("625d78659329139694f188a6"), "CustID" : 4, "Name" : "Shreyas R S", "Type" : "Current", "Contact" : [ "9445678321", "044-656
11729", "080-25639856" ] }
> db.Bank.updateMany({},{$pull:{Contact:"080-25639856"}} );
{ "acknowledged" : true, "matchedCount" : 5, "modifiedCount" : 1 }
> db.Bank.find({});
{ "_id" : ObjectId("625d77809329139694f188a2"), "CustID" : 1, "Name" : "Trivikram Hegde", "Type" : "Savings", "Contact" : [ "9945678231" ] }
{ "_id" : ObjectId("625d77bd9329139694f188a3"), "CustID" : 2, "Name" : "Vishvesh Bhat", "Type" : "Savings", "Contact" : [ "6325985615", "080-2
3651452" ] }
{ "_id" : ObjectId("625d77e69329139694f188a4"), "CustID" : 3, "Name" : "Vaishak Bhat", "Type" : "Savings", "Contact" : [ "8971456321", "080-33
529458" ] }
{ "_id" : ObjectId("625d78229329139694f188a5"), "CustID" : 4, "Name" : "Pramod P Parande", "Type" : "Current", "Contact" : [ "9745236589", "08
0-56324587" ] }
{ "_id" : ObjectId("625d78659329139694f188a6"), "CustID" : 4, "Name" : "Shreyas R S", "Type" : "Current", "Contact" : [ "9445678321", "044-656
11729" ] }
> db.Bank.createIndex({Name:1, Type:1},{name:});
uncaught exception: SyntaxError: expected expression, got '}' :
@(shell):1:43
> db.Bank.createIndex({Name:1, Type:1},{name:"Find current account holders"});
{
        "createdCollectionAutomatically" : false,
        "numIndexesBefore" : 1,
        "numIndexesAfter" : 2,
        "ok" : 1
}
> db.Bank.find({});
{ "_id" : ObjectId("625d77809329139694f188a2"), "CustID" : 1, "Name" : "Trivikram Hegde", "Type" : "Savings", "Contact" : [ "9945678231" ] }
{ "_id" : ObjectId("625d77bd9329139694f188a3"), "CustID" : 2, "Name" : "Vishvesh Bhat", "Type" : "Savings", "Contact" : [ "6325985615", "080-2
3651452" ] }
{ "_id" : ObjectId("625d77e69329139694f188a4"), "CustID" : 3, "Name" : "Vaishak Bhat", "Type" : "Savings", "Contact" : [ "8971456321", "080-33
529458" ] }
{ "_id" : ObjectId("625d78229329139694f188a5"), "CustID" : 4, "Name" : "Pramod P Parande", "Type" : "Current", "Contact" : [ "9745236589", "08
0-56324587" ] }
{ "_id" : ObjectId("625d78659329139694f188a6"), "CustID" : 4, "Name" : "Shreyas R S", "Type" : "Current", "Contact" : [ "9445678321", "044-656
11729" ] }
> db.Bank.getIndexes()
[
        {
                "v" : 2,
```

```
@(shell):1:20
> db.Bank.update({_id:625d78659329139694f188a6}, {$set: {CustID:5}},{upsert:true});
uncaught exception: SyntaxError: identifier starts immediately after numeric literal :
@(shell):1:20
> db.Bank.update({_id:"625d78659329139694f188a6"}, {$set: {CustID:5}},{upsert:true});
WriteResult({
        "nMatched" : 0,
        "nUpserted" : 1,
        "nModified" : 0,
        "_id" : "625d78659329139694f188a6"
})
> db.Bank.find({});
{ "_id" : ObjectId("625d77809329139694f188a2"), "CustID" : 1, "Name" : "Trivikram Hegde", "Type" : "Savings", "Contact" : [ "9945678231" ] }
{ "_id" : ObjectId("625d77bd9329139694f188a3"), "CustID" : 2, "Name" : "Vishvesh Bhat", "Type" : "Savings", "Contact" : [ "6325985615", "080-2
3651452" ] }
{ "_id" : ObjectId("625d77e69329139694f188a4"), "CustID" : 3, "Name" : "Vaishak Bhat", "Type" : "Savings", "Contact" : [ "8971456321", "080-33
529458" ] }
{ "_id" : ObjectId("625d78229329139694f188a5"), "CustID" : 4, "Name" : "Pramod P Parande", "Type" : "Current", "Contact" : [ "9745236589", "08
0-56324587" ] }
{ "_id" : ObjectId("625d78659329139694f188a6"), "CustID" : 4, "Name" : "Shreyas R S", "Type" : "Current", "Contact" : [ "9445678321", "044-656
11729" ] }
{ "_id" : "625d78659329139694f188a6", "CustID" : 5 }
> db.Bank.update({_id:"625d78659329139694f188a6", CustID:5}, {$set: {Name:"Sumantha K S", Type:"Savings", Contact:["9856321478","011-65897458"
]}},{upsert:true});
WriteResult({ "nMatched" : 1, "nUpserted" : 0, "nModified" : 1 })
> db.Bank.find({});
{ "_id" : ObjectId("625d77809329139694f188a2"), "CustID" : 1, "Name" : "Trivikram Hegde", "Type" : "Savings", "Contact" : [ "9945678231" ] }
{ "_id" : ObjectId("625d77bd9329139694f188a3"), "CustID" : 2, "Name" : "Vishvesh Bhat", "Type" : "Savings", "Contact" : [ "6325985615", "080-2
3651452" ] }
{ "_id" : ObjectId("625d77e69329139694f188a4"), "CustID" : 3, "Name" : "Vaishak Bhat", "Type" : "Savings", "Contact" : [ "8971456321", "080-33
529458" ] }
{ "_id" : ObjectId("625d78229329139694f188a5"), "CustID" : 4, "Name" : "Pramod P Parande", "Type" : "Current", "Contact" : [ "9745236589", "08
0-56324587" ] }
{ "_id" : ObjectId("625d78659329139694f188a6"), "CustID" : 4, "Name" : "Shreyas R S", "Type" : "Current", "Contact" : [ "9445678321", "044-656
11729" ] }
{ "_id" : "625d78659329139694f188a6", "CustID" : 5, "Contact" : [ "9856321478", "011-65897458" ], "Name" : "Sumantha K S", "Type" : "Savings"
}
>
```

1) Using MongoDB,

i) Create a database for Faculty and Create a Faculty Collection(Faculty_id, Name, Designation ,Department, Age, Salary, Specialization(Set)).

ii) Insert required documents to the collection.

iii) First Filter on “Dept_Name:MECH” and then group it on “Designation” and

compute the Average Salary for that Designation and flter those documents where the “Avg_Sal” is greater than 650000. iv) Demonstrate usage of import and export commands

Write MongoDB queries for the following:

1)To display only the product name from all the documents of the product collection.

2)To display only the Product ID, ExpiryDate as well as the quantity from the document of the product collection where the _id column is 1.

3)To fnd those documents where the price is not set to 15000.

4)To fnd those documents from the Product collection where the quantity is set to 9 and the product name is set to ‘monitor’.

5)To fnd documents from the Product collection where the Product name ends in ‘d’.

```
}
> db.createCollection("faculty");
{ "ok" : 1 }
> db.faculty.insert({_id:1,name:"Dr. Balaraman Ravindran",designation:"Professor",department:"CSE",age:45,salary:100000,specialization:['pytho
n','mysql','sklearn', 'tensorflow']});
WriteResult({ "nInserted" : 1 })
> db.faculty.insert({_id:2,name:"Dr. Mahadev Ghorki",designation:"Assistant Professor",department:"CSE",age:35,salary:80000,specialization:['p
ython','numpy','sklearn', 'tensorflow', 'java']});
WriteResult({ "nInserted" : 1 })
> db.faculty.insert({_id:3,name:"Dr. Praveen Borade",designation:"Associate Professor",department:"ME",age:40,salary:75000,specialization:['au
tocad', 'aerodynamics', 'thermal physics']});
WriteResult({ "nInserted" : 1 })
> db.faculty.insert({_id:4,name:"Dr. Madhav Nayak",designation:"Assistant Professor",department:"ME",age:37,salary:95000,specialization:['auto
cad', 'flight-dynamics', 'Finite Element Analysis']});
WriteResult({ "nInserted" : 1 })
> db.faculty.aggregate ( {$match:{department:"ME"}}, {$group : {_id : "$designation", AverageSal :{$avg:"$salary"} } },  {$match:{AverageSal:{
$gt:50000}}});
{ "_id" : "Associate Professor", "AverageSal" : 75000 }
{ "_id" : "Assistant Professor", "AverageSal" : 95000 }
> db.createCollection("product");
{ "ok" : 1 }
> db.product.insert({pid:1,pname:"keyboard",mdate:2001,price:1800,quantity:2});
WriteResult({ "nInserted" : 1 })
> db.product.insert({pid:2,pname:"mouse",mdate:2005,price:1500,quantity:5});
WriteResult({ "nInserted" : 1 })
> db.product.insert({pid:3,pname:"monitor",mdate:2015,price:10000,quantity:9});
WriteResult({ "nInserted" : 1 })
> db.product.insert({pid:4,pname:"motherboard",mdate:2021,price:15000,quantity:4});
WriteResult({ "nInserted" : 1 })
> db.product.find({},{pname:1,_id:0})
{ "pname" : "keyboard" }
{ "pname" : "mouse" }
{ "pname" : "monitor" }
{ "pname" : "motherboard" }
> db.product.find({pid:1},{pid:1,_id:0,mdate:1,quantity:1});
{ "pid" : 1, "mdate" : 2001, "quantity" : 2 }
>  db.product.find({price:{$ne:15000}},{pname:1,_id:0});
{ "pname" : "keyboard" }
```

3)Create a mongodb collection Hospital. Demonstrate the following by choosing felds of
choice.

1. Insert three documents
2. Use Arrays(Use Pull and Pop operation)
3. Use Index
4. Use Cursors
5. Updation

```
{ "pname" : "motherboard" }
> db.product.find({pid:1},{pid:1,_id:0,mdate:1,quantity:1});
{ "pid" : 1, "mdate" : 2001, "quantity" : 2 }
>  db.product.find({price:{$ne:15000}},{pname:1,_id:0});
{ "pname" : "keyboard" }
{ "pname" : "mouse" }
{ "pname" : "monitor" }
> db.product.find({$and:[{quantity:{$eq:9}},{pname:{$eq:"monitor"}}]},{pname:1,_id:0})
{ "pname" : "monitor" }
> db.product.find({pname:/d$/},{pname:1,quantity:1,_id:0})
{ "pname" : "keyboard", "quantity" : 2 }
{ "pname" : "motherboard", "quantity" : 4 }
> db.createCollection("hospital");
{ "ok" : 1 }
> db.hospital.insert({_id:1, Name: "Anshuman Agarwal", age:23, diseases:["fever", "diarrhoea", "wheezing", "gastritis"]});
WriteResult({ "nInserted" : 1 })
> db.hospital.insert({_id:2, Name: "Pinky Chaubey", age:35, diseases:["fever","nausea", "food infection", "indigestion", "kidney stones"]});
WriteResult({ "nInserted" : 1 })
> db.hospital.insert({_id:3, Name: "Amresh Chowpati", age:63, diseases:["hyperglycemia", "diabetes mellitus", "food poisoning", "cold"]});
WriteResult({ "nInserted" : 1 })
> db.hospital.updateMany({},{$pull:{diseases:"fever"}});
{ "acknowledged" : true, "matchedCount" : 3, "modifiedCount" : 2 }
> db.hospital.updateOne({_id:1},{$pop:{diseases:-1}});
{ "acknowledged" : true, "matchedCount" : 1, "modifiedCount" : 1 }
> db.hospital.find({"diseases.2":"nausea"});
> db.hospital.find({"diseases.1":"nausea"});
> d.hospital.find({});
uncaught exception: ReferenceError: d is not defined :
@(shell):1:1
> db.hospital.find({});
{ "_id" : 1, "Name" : "Anshuman Agarwal", "age" : 23, "diseases" : [ "wheezing", "gastritis" ] }
{ "_id" : 2, "Name" : "Pinky Chaubey", "age" : 35, "diseases" : [ "nausea", "food infection", "indigestion", "kidney stones" ] }
{ "_id" : 3, "Name" : "Amresh Chowpati", "age" : 63, "diseases" : [ "hyperglycemia", "diabetes mellitus", "food poisoning", "cold" ] }
> db.hospital.find({"diseases.0":"nausea"});
{ "_id" : 2, "Name" : "Pinky Chaubey", "age" : 35, "diseases" : [ "nausea", "food infection", "indigestion", "kidney stones" ] }
> db.hospital.update({_id:3},{$set:{'diseases.1':'sarscov'}});
WriteResult({ "nMatched" : 1, "nUpserted" : 0, "nModified" : 1 })
>
```