

Assessment 1 – MongoDB and MYSQL

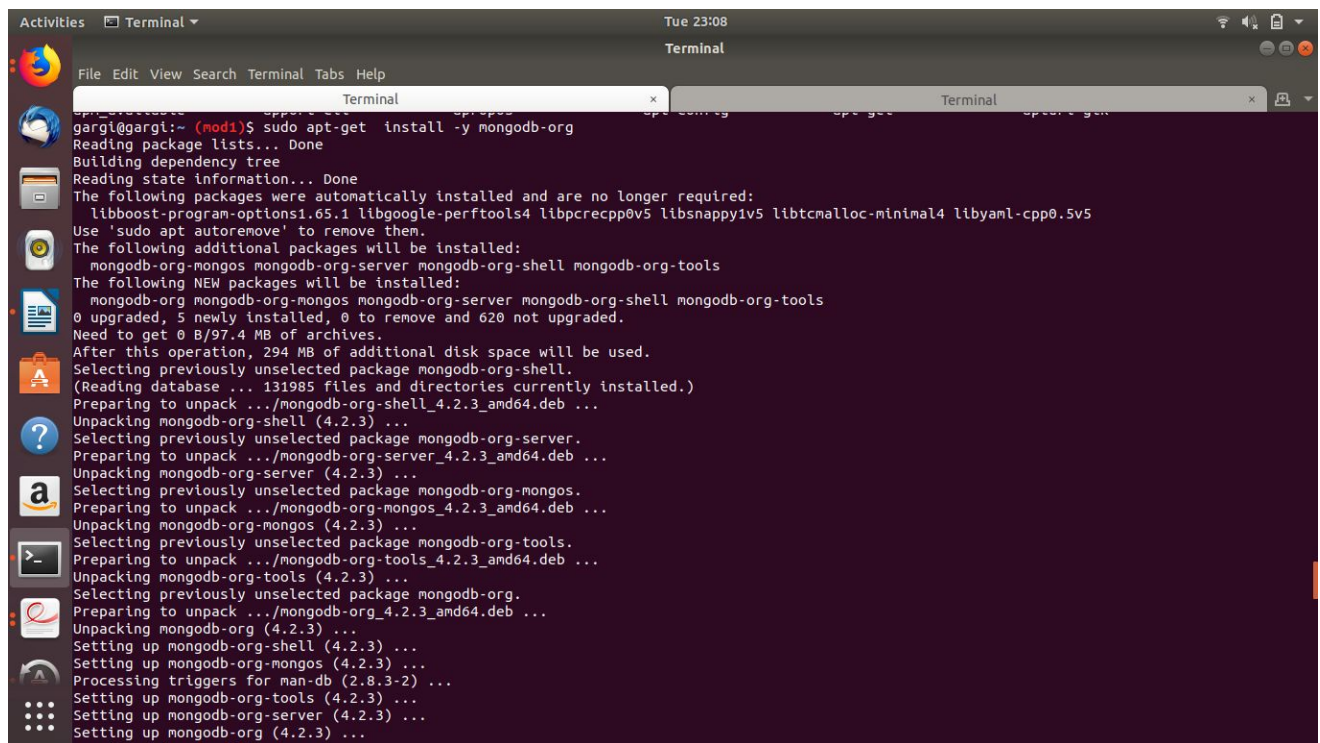
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Mentor Name : Mr. Ravi Kumar

College Name : UPES

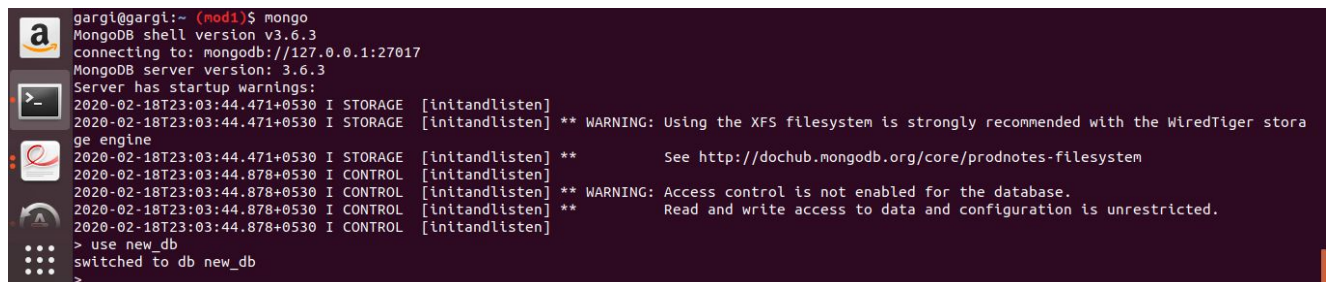
MONGODB

1. Install latest version of MongoDB from apt-get repository



```
gargi@gargi:~ (mod1)$ sudo apt-get install -y mongodb-org
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following packages were automatically installed and are no longer required:
  libboost-program-options1.65.1 libgoogle-perftools4 libpcrecpp0v5 libsnappy1v5 libtcmalloc-minimal4 libyaml-cpp0.5v5
Use 'sudo apt autoremove' to remove them.
The following additional packages will be installed:
  mongodb-org-mongos mongodb-org-server mongodb-org-shell mongodb-org-tools
The following NEW packages will be installed:
  mongodb-org mongodb-org-mongos mongodb-org-server mongodb-org-shell mongodb-org-tools
0 upgraded, 5 newly installed, 0 to remove and 620 not upgraded.
Need to get 0 B/97.4 MB of archives.
After this operation, 294 MB of additional disk space will be used.
Selecting previously unselected package mongodb-org-shell.
(Reading database ... 131985 files and directories currently installed.)
Preparing to unpack .../mongodb-org-shell_4.2.3_amd64.deb ...
Unpacking mongodb-org-shell (4.2.3) ...
Selecting previously unselected package mongodb-org-server.
Preparing to unpack .../mongodb-org-server_4.2.3_amd64.deb ...
Unpacking mongodb-org-server (4.2.3) ...
Selecting previously unselected package mongodb-org-mongos.
Preparing to unpack .../mongodb-org-mongos_4.2.3_amd64.deb ...
Unpacking mongodb-org-mongos (4.2.3) ...
Selecting previously unselected package mongodb-org-tools.
Preparing to unpack .../mongodb-org-tools_4.2.3_amd64.deb ...
Unpacking mongodb-org-tools (4.2.3) ...
Selecting previously unselected package mongodb-org.
Preparing to unpack .../mongodb-org_4.2.3_amd64.deb ...
Unpacking mongodb-org (4.2.3) ...
Setting up mongodb-org-shell (4.2.3) ...
Setting up mongodb-org-mongos (4.2.3) ...
Processing triggers for man-db (2.8.3-2) ...
Setting up mongodb-org-tools (4.2.3) ...
Setting up mongodb-org-server (4.2.3) ...
Setting up mongodb-org (4.2.3) ...
```

2. Create a database student



```
gargi@gargi:~ (mod1)$ mongo
MongoDB shell version v3.6.3
connecting to: mongodb://127.0.0.1:27017
MongoDB server version: 3.6.3
Server has startup warnings:
2020-02-18T23:03:44.471+0530 I STORAGE [initandlisten]
2020-02-18T23:03:44.471+0530 I STORAGE [initandlisten] ** WARNING: Using the XFS filesystem is strongly recommended with the WiredTiger storage engine
2020-02-18T23:03:44.471+0530 I STORAGE [initandlisten] ** See http://dochub.mongodb.org/core/prodnotes-filesystem
2020-02-18T23:03:44.878+0530 I CONTROL [initandlisten] ** WARNING: Access control is not enabled for the database.
2020-02-18T23:03:44.878+0530 I CONTROL [initandlisten] ** Read and write access to data and configuration is unrestricted.
> use new_db
switched to db new_db
>
```

3. Insert operation : 5 students data (Name, Contact, City, Roll No, Branch)

```
Activities Terminal Tue 23:26
Terminal
File Edit View Search Terminal Help
> db.student.insert({name: 'Gargi', Contact : '9719797046', City:'Udaipur', RollNo: '68', Branch: 'Computer Science'})
WriteResult({ "nInserted" : 1 })
> db.student.insert({name: 'Arun', Contact : '9767908888', City:'Agra', RollNo: '41', Branch: 'Computer Science'})
WriteResult({ "nInserted" : 1 })
> db.student.insert({name: 'Eva', Contact : '9767906777', City:'Delhi', RollNo: '66', Branch: 'Computer Science'})
WriteResult({ "nInserted" : 1 })
> db.student.insert({name: 'Navin', Contact : '9767777555', City:'Chennai', RollNo: '78', Branch: 'IT INFRA'})
WriteResult({ "nInserted" : 1 })
> db.student.insert({name: 'Chhavi', Contact : '9767777535', City:'Jaipur', RollNo: '79', Branch: 'E-Commerce'})
WriteResult({ "nInserted" : 1 })
> db.student.find().pretty();
{
  "_id" : ObjectId("5e4c2437edd648ed8a40912"),
  "name" : "Gargi",
  "Contact" : "9719797046",
  "City" : "Udaipur",
  "RollNo" : "68",
  "Branch" : "Computer Science"
}
{
  "_id" : ObjectId("5e4c248a7edd648ed8a40913"),
  "name" : "Arun",
  "Contact" : "9767908888",
  "City" : "Agra",
  "RollNo" : "41",
  "Branch" : "Computer Science"
}
{
  "_id" : ObjectId("5e4c24a37edd648ed8a40914"),
  "name" : "Eva",
  "Contact" : "9767906777",
  "City" : "Delhi",
  "RollNo" : "66",
  "Branch" : "Computer Science"
}
{
  "_id" : ObjectId("5e4c24cc7edd648ed8a40915"),
  "name" : "Navin",
  "Contact" : "9767777555",
  "City" : "Chennai",
  "RollNo" : "78",
  "Branch" : "IT INFRA"
}
{
  "_id" : ObjectId("5e4c24fc7edd648ed8a40916"),
  "name" : "Chhavi",
  "Contact" : "9767777535",
  "City" : "Jaipur",
  "RollNo" : "79",
  "Branch" : "E-Commerce"
}
```

```
Activities Terminal Tue 23:26
Terminal
File Edit View Search Terminal Help
"Contact" : "9719797046",
"City" : "Udaipur",
"RollNo" : "68",
"Branch" : "Computer Science"
}
{
  "_id" : ObjectId("5e4c248a7edd648ed8a40913"),
  "name" : "Arun",
  "Contact" : "9767908888",
  "City" : "Agra",
  "RollNo" : "41",
  "Branch" : "Computer Science"
}
{
  "_id" : ObjectId("5e4c24a37edd648ed8a40914"),
  "name" : "Eva",
  "Contact" : "9767906777",
  "City" : "Delhi",
  "RollNo" : "66",
  "Branch" : "Computer Science"
}
{
  "_id" : ObjectId("5e4c24cc7edd648ed8a40915"),
  "name" : "Navin",
  "Contact" : "9767777555",
  "City" : "Chennai",
  "RollNo" : "78",
  "Branch" : "IT INFRA"
}
{
  "_id" : ObjectId("5e4c24fc7edd648ed8a40916"),
  "name" : "Chhavi",
  "Contact" : "9767777535",
  "City" : "Jaipur",
  "RollNo" : "79",
  "Branch" : "E-Commerce"
}
>
```

4.Read operation : All the students belong to a particular city

```
Activities Terminal Tue 23:35
Terminal
File Edit View Search Terminal Help
{
  "Branch" : "Computer Science"
}
{
  "_id" : ObjectId("5e4c248a7edd648ed8a40913"),
  "name" : "Arun",
  "Contact" : "9767908888",
  "City" : "Agra",
  "RollNo" : "41",
  "Branch" : "Computer Science"
}
{
  "_id" : ObjectId("5e4c24a37edd648ed8a40914"),
  "name" : "Eva",
  "Contact" : "9767906777",
  "City" : "Delhi",
  "RollNo" : "66",
  "Branch" : "Computer Science"
}
{
  "_id" : ObjectId("5e4c24cc7edd648ed8a40915"),
  "name" : "Navin",
  "Contact" : "9767777555",
  "City" : "Chennai",
  "RollNo" : "78",
  "Branch" : "IT INFRA"
}
{
  "_id" : ObjectId("5e4c24fc7edd648ed8a40916"),
  "name" : "Chhavi",
  "Contact" : "9767777535",
  "City" : "Jaipur",
  "RollNo" : "79",
  "Branch" : "E-Commerce"
}
}
> db.student.find({City:'Udaipur'})
{ "_id" : ObjectId("5e4c24377edd648ed8a40912"), "name" : "Gargi", "Contact" : "9719797046", "City" : "Udaipur", "RollNo" : "68", "Branch" : "Computer Science" }
>
```

5.Update operation : Update the branch of all the students to CSE

```
Activities Terminal Tue 23:41
Terminal
File Edit View Search Terminal Help
> db.student.updateMany({}, { $set: { Branch: 'Computer Science' } })
{ "acknowledged" : true, "matchedCount" : 5, "modifiedCount" : 2 }
> db.student.find().pretty();
{
  "_id" : ObjectId("5e4c24377edd648ed8a40912"),
  "name" : "Gargi",
  "Contact" : "9719797046",
  "City" : "Udaipur",
  "RollNo" : "68",
  "Branch" : "Computer Science"
}
{
  "_id" : ObjectId("5e4c248a7edd648ed8a40913"),
  "name" : "Arun",
  "Contact" : "9767908888",
  "City" : "Agra",
  "RollNo" : "41",
  "Branch" : "Computer Science"
}
{
  "_id" : ObjectId("5e4c24a37edd648ed8a40914"),
  "name" : "Eva",
  "Contact" : "9767906777",
  "City" : "Delhi",
  "RollNo" : "66",
  "Branch" : "Computer Science"
}
{
  "_id" : ObjectId("5e4c24cc7edd648ed8a40915"),
  "name" : "Navin",
  "Contact" : "9767777555",
  "City" : "Chennai",
  "RollNo" : "78",
  "Branch" : "Computer Science"
}
{
  "_id" : ObjectId("5e4c24fc7edd648ed8a40916"),
  "name" : "Chhavi",
  "Contact" : "9767777535",
  "City" : "Jaipur",
  "RollNo" : "79",
  "Branch" : "E-Commerce"
}
```

6.Take dump of the database

```
2020-02-18T23:49:12.905+0530 E QUERY [thread1] SyntaxError: Missing , before statement @ (shell):1:12
> exit
bye
gargi@gargi:~ (mod1)$ sudo mongodump --db new_db --out /home/gargi/Documents/mongobackup/'date +%m-%d-%y'
sudo: mongodump: command not found
gargi@gargi:~ (mod1)$ sudo mongodump --db new_db --out /home/gargi/Documents/mongobackup/'date +%m-%d-%y'
2020-02-18T23:54:32.847+0530 writing new_db.student to
2020-02-18T23:54:32.850+0530 done dumping new_db.student (5 documents)
gargi@gargi:~ (mod1)$
```

7.Delete operation : Delete the record of last 2 students according to the roll number

```
> for(i=0;i<2;i++) { db.student.findAndModify({query:{}, sort: {"RollNo" : -1}, remove:true}) }
{
  "_id" : ObjectId("5e4c34eb51637e5a0bdfd90e"),
  "name" : "Navin",
  "Contact" : "9767777555",
  "City" : "Chennai",
  "RollNo" : "78",
  "Branch" : "IT INFRA"
}
> db.student.find().pretty();
{
  "_id" : ObjectId("5e4c34c351637e5a0bdfd90b"),
  "name" : "Gargi",
  "Contact" : "9719797046",
  "City" : "Udaipur",
  "RollNo" : "68",
  "Branch" : "Computer Science"
}
{
  "_id" : ObjectId("5e4c34ce51637e5a0bdfd90c"),
  "name" : "Arun",
  "Contact" : "9767908888",
  "City" : "Agra",
  "RollNo" : "41",
  "Branch" : "Computer Science"
}
{
  "_id" : ObjectId("5e4c34de51637e5a0bdfd90d"),
  "name" : "Eva",
  "Contact" : "9767906777",
  "City" : "Delhi",
  "RollNo" : "66",
  "Branch" : "Computer Science"
}
>
```

8.Drop the database

```
> db.dropDatabase();
{ "dropped" : "new_db", "ok" : 1 }
> showdbs
2020-02-19T00:40:48.619+0530 E QUERY [thread1] ReferenceError: showdbs is not defined :
@(shell):1:1
> show dbs
admin 0.000GB
config 0.000GB
local 0.000GB
>
```

9.Restore the database again to have the full data


```
Activities Terminal Wed 00:48
Terminal
File Edit View Search Terminal Help
gargi@gargi:~ (mod1)$ mongorestore --db new_db /home/gargi/Documents/mongobackup/02-18-20/new_db/
2020-02-19T00:47:15.836+0530 the --db and --collection args should only be used when restoring from a BSON file. Other uses are deprecated
and will not exist in the future; use --nsInclude instead
2020-02-19T00:47:15.836+0530 building a list of collections to restore from /home/gargi/Documents/mongobackup/02-18-20/new_db dir
2020-02-19T00:47:15.836+0530 reading metadata for new_db.student from /home/gargi/Documents/mongobackup/02-18-20/new_db/student.metadata.js
on
2020-02-19T00:47:15.856+0530 restoring new_db.student from /home/gargi/Documents/mongobackup/02-18-20/new_db/student.bson
2020-02-19T00:47:15.861+0530 no indexes to restore
2020-02-19T00:47:15.861+0530 finished restoring new_db.student (5 documents)
2020-02-19T00:47:15.861+0530 done
gargi@gargi:~ (mod1)$ mongo
MongoDB shell version v3.6.3
connecting to: mongodb://127.0.0.1:27017
MongoDB server version: 3.6.3
Server has startup warnings:
2020-02-18T23:03:44.471+0530 I STORAGE [initandlisten]
2020-02-18T23:03:44.471+0530 I STORAGE [initandlisten] ** WARNING: Using the XFS filesystem is strongly recommended with the WiredTiger storage engine
See http://dochub.mongodb.org/core/prodnotes-filesystem
2020-02-18T23:03:44.471+0530 I STORAGE [initandlisten]
2020-02-18T23:03:44.471+0530 I CONTROL [initandlisten]
2020-02-18T23:03:44.471+0530 I CONTROL [initandlisten] ** WARNING: Access control is not enabled for the database.
Read and write access to data and configuration is unrestricted.
2020-02-18T23:03:44.471+0530 I CONTROL [initandlisten]
> show dbs
admin 0.000GB
config 0.000GB
local 0.000GB
new_db 0.000GB
> use new_db
switched to db new_db
> db.student.find().pretty()
{
  "_id" : ObjectId("5e4c24377edd648ed8a40912"),
  "name" : "Gargi",
  "Contact" : "9719797046",
  "City" : "Udaipur",
  "RollNo" : "68",
  "Branch" : "Computer Science"
}
```

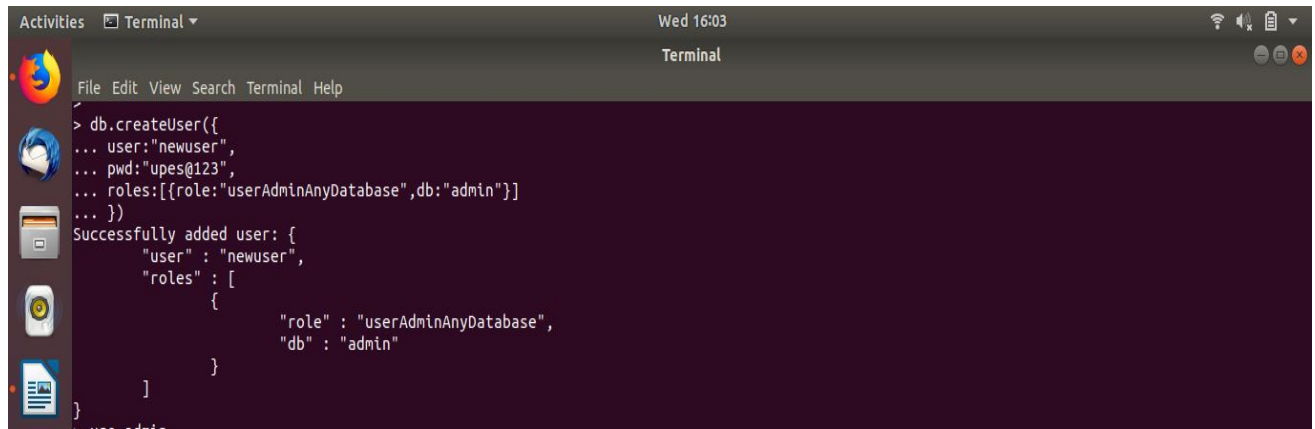
10.Enable authentication on the Mongo

Create Authentication:

```
db.createUser({
... user:"newuser",
... pwd:"upes@123",
... roles:[{role:"userAdminAnyDatabase",db:"admin"}]
... })
```

Successfully added user: {

```
  "user" : "newuser",
  "roles" : [
    {
      "role" : "userAdminAnyDatabase",
      "db" : "admin"
    }
  ]
}
```

A terminal window titled 'Terminal' with a menu bar (File, Edit, View, Search, Terminal, Help) and a sidebar with application icons. The terminal shows a MongoDB command to create a user named 'newuser' with password 'upes@123' and role 'userAdminAnyDatabase' on the 'admin' database. The output shows the user was successfully added with the specified roles.

```
Activities Terminal Wed 16:03
Terminal
File Edit View Search Terminal Help
> db.createUser({
... user:"newuser",
... pwd:"upes@123",
... roles:[{role:"userAdminAnyDatabase",db:"admin"}]
... })
Successfully added user: {
  "user" : "newuser",
  "roles" : [
    {
      "role" : "userAdminAnyDatabase",
      "db" : "admin"
    }
  ]
}
```

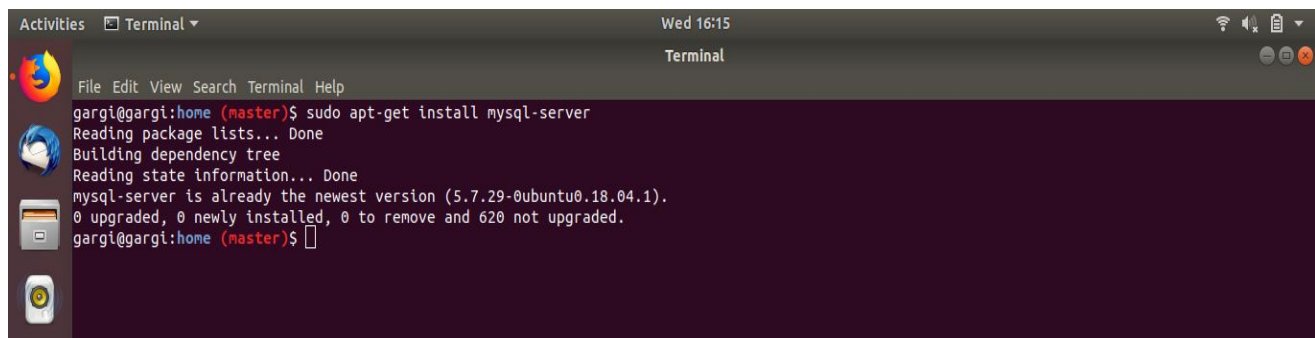
Check Authentication:

A terminal window showing the steps to authenticate as the 'admin' user in the 'admin' database. The command 'use admin' switches the context to the 'admin' database. Then, 'db.auth("newuser", "upes@123")' is executed, returning '1' to indicate successful authentication.

```
0
> use admin
switched to db admin
> db.auth("newuser", "upes@123")
1
> []
```

MYSQL

1. Install latest version of MySQL from apt-get repository

A terminal window showing the installation of MySQL server using 'apt-get'. The command 'sudo apt-get install mysql-server' is executed. The output shows that the package lists are read, the dependency tree is built, and state information is read. It then states that 'mysql-server' is already the newest version (5.7.29-0ubuntu0.18.04.1) and that no packages need to be upgraded, removed, or installed.

```
Activities Terminal Wed 16:15
Terminal
File Edit View Search Terminal Help
gargi@gargi:home (master)$ sudo apt-get install mysql-server
Reading package lists... Done
Building dependency tree
Reading state information... Done
mysql-server is already the newest version (5.7.29-0ubuntu0.18.04.1).
0 upgraded, 0 newly installed, 0 to remove and 620 not upgraded.
gargi@gargi:home (master)$
```

2. Create a database student

```
mysql> show databases
-> ;
+-----+
| Database |
+-----+
| information_schema |
| WEBSITE |
| mydb |
| mysql |
| performance_schema |
| sys |
+-----+
6 rows in set (0.00 sec)

mysql> create database student;
Query OK, 1 row affected (0.00 sec)

mysql>
```

3. Insert operation : 5 students data (Name, Contact, City, Roll No, Branch)

```
mysql> use student;
Database changed
mysql> create table stu_details(rollno int(5) primary key,
-> name varchar(255) not null,
-> city varchar(255),
-> branch varchar(20),
-> contact int(10));
Query OK, 0 rows affected (0.02 sec)

mysql> desc stu_details;
+-----+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| rollno | int(5) | NO | PRI | NULL | |
| name | varchar(255) | NO | | NULL | |
| city | varchar(255) | YES | | NULL | |
| branch | varchar(20) | YES | | NULL | |
| contact | int(10) | YES | | NULL | |
+-----+-----+-----+-----+-----+
5 rows in set (0.01 sec)

mysql> insert into stu_details values(1,"Gargi","Udaipur","cse",9719046),(2,"Chhavi","NewDelhi","Ho
ing",9057284),(3,"Arun","Agra","finance",7060963),(4,"Janhvi","gurgaon","Big data",7040917),(5,"Kri
warka","Hadoop",807070);
Query OK, 5 rows affected (0.00 sec)
Records: 5 Duplicates: 0 Warnings: 0
```

4. Read operation : All the students belong to a particular city

```
mysql> select * from stu_details where city="Udaipur";
+-----+-----+-----+-----+
| rollno | name  | city   | branch | contact |
+-----+-----+-----+-----+
| 1      | Gargi | Udaipur | cse    | 9719046 |
+-----+-----+-----+-----+
1 row in set (0.00 sec)

mysql>
```

5. Update operation : Update the branch of all the students to CSE

```
mysql> select * from stu_details where city="Udaipur";
+-----+-----+-----+-----+
| rollno | name  | city   | branch | contact |
+-----+-----+-----+-----+
| 1      | Gargi | Udaipur | cse    | 9719046 |
+-----+-----+-----+-----+
1 row in set (0.00 sec)

mysql> update stu_details set branch="CSE";
Query OK, 5 rows affected (0.04 sec)
Rows matched: 5  Changed: 5  Warnings: 0

mysql> select * from stu_details;
+-----+-----+-----+-----+
| rollno | name  | city   | branch | contact |
+-----+-----+-----+-----+
| 1      | Gargi | Udaipur | CSE    | 9719046 |
| 2      | Chhavi | NewDelhi | CSE    | 9057284 |
| 3      | Arun   | Agra    | CSE    | 7060963 |
| 4      | Janhvi | gurgaon | CSE    | 7040917 |
| 5      | Kritika | Dwarka  | CSE    | 807070  |
+-----+-----+-----+-----+
5 rows in set (0.00 sec)

mysql>
```

6. Take dump of the database

```
gargi@gargi:~$ sudo mysqldump student > /home/gargi/Documents/dump.sql
gargi@gargi:~$
```

7. Delete operation : Delete the record of last 2 students according to the roll number


```
Activities Terminal Wed 16:46
File Edit View Search Terminal Help

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql> delete from stu_details order by rollno desc limit 2;
ERROR 1046 (3D000): No database selected
mysql> use student
Reading table information for completion of table and column names
You can turn off this feature to get a quicker startup with -A

Database changed
mysql> delete from stu_details order by rollno desc limit 2;
Query OK, 2 rows affected (0.03 sec)

mysql> mysql> select * from details;
ERROR 1146 (42S02): Table 'student.stu_detdetails' doesn't exist
mysql> select * from stu_details;
+-----+-----+-----+-----+-----+
| rollno | name  | city   | branch | contact |
+-----+-----+-----+-----+-----+
| 1      | Gargi | Udaipur | CSE    | 9719046 |
| 2      | Chhavi | NewDelhi | CSE    | 9057284 |
| 3      | Arun  | Agra    | CSE    | 7060963 |
+-----+-----+-----+-----+-----+
3 rows in set (0.00 sec)

mysql>
```

8. Drop database

```
mysql> drop database student;
Query OK, 1 row affected (0.05 sec)

mysql>
```

9. Restore the database again to have the full data

```
Activities Terminal Thu 13:31
File Edit View Search Terminal Help
mysql> create database student;
Query OK, 1 row affected (0.00 sec)

mysql> use student;
Database changed
mysql> exit
Bye
gargi@gargi:~$ sudo mysql student < /home/gargi/Documents/dump.sql
gargi@gargi:~$ sudo mysql
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 27
Server version: 5.7.29-0ubuntu0.18.04.1 (Ubuntu)

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Oracle is a registered trademark of Oracle Corporation and/or its
affiliates. Other names may be trademarks of their respective
owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql> use student;
Reading table information for completion of table and column names
You can turn off this feature to get a quicker startup with -A

Database changed
```

```
Activities Terminal Thu 13:30
File Edit View Search Terminal Help
mysql> use student;
Reading table information for completion of table and column names
You can turn off this feature to get a quicker startup with -A

Database changed
mysql> show tables;
+-----+
| Tables_in_student |
+-----+
| stu_details        |
+-----+
1 row in set (0.00 sec)

mysql> select * from stu_details;
+-----+-----+-----+-----+-----+
| rollno | name  | city   | branch | contact |
+-----+-----+-----+-----+-----+
| 1      | Gargi | Udaipur | CSE    | 9719046 |
| 2      | Chhavi | NewDelhi | CSE    | 9057284 |
| 3      | Arun  | Agra   | CSE    | 7060963 |
| 4      | Janhvi | gurgaon | CSE    | 7040917 |
| 5      | Kritika | Dwarka | CSE    | 807070 |
+-----+-----+-----+-----+-----+
5 rows in set (0.00 sec)

mysql>
```

10. Enable authentication on the MySQL

```
mysql> CREATE USER 'gargi'@'localhost' IDENTIFIED BY 'PASS';
ERROR 1819 (HY000): Your password does not satisfy the current policy requirements
mysql> CREATE USER 'gargi'@'localhost' IDENTIFIED BY 'Upes@123';
Query OK, 0 rows affected (0.00 sec)

mysql> grant select on student.* to 'gargi'@'localhost';
Query OK, 0 rows affected (0.01 sec)

mysql>
```

```
Thu 13:45
Terminal
File Edit View Search Terminal Help

mysql>
mysql> CREATE USER 'gargi'@'localhost' IDENTIFIED BY 'PASS';
ERROR 1819 (HY000): Your password does not satisfy the current policy requirements
mysql> CREATE USER 'gargi'@'localhost' IDENTIFIED BY 'Upes@123';
Query OK, 0 rows affected (0.00 sec)

mysql> grant select on student.* to 'gargi'@'localhost';
Query OK, 0 rows affected (0.01 sec)

mysql> exit
Bye
gargi@gargi:~$ mysql -u gargi -p
Enter password:
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 28
Server version: 5.7.29-0ubuntu0.18.04.1 (Ubuntu)

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Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql>
```