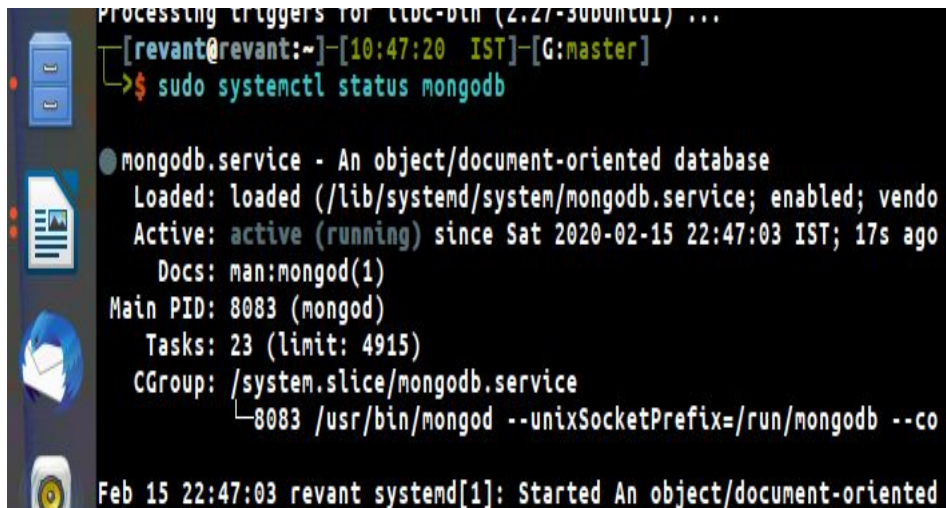


1. Install latest version of MongoDB from apt-get repository

```
sudo apt update
```

```
sudo apt install -y mongodb
```

```
sudo systemctl status mongodb
```

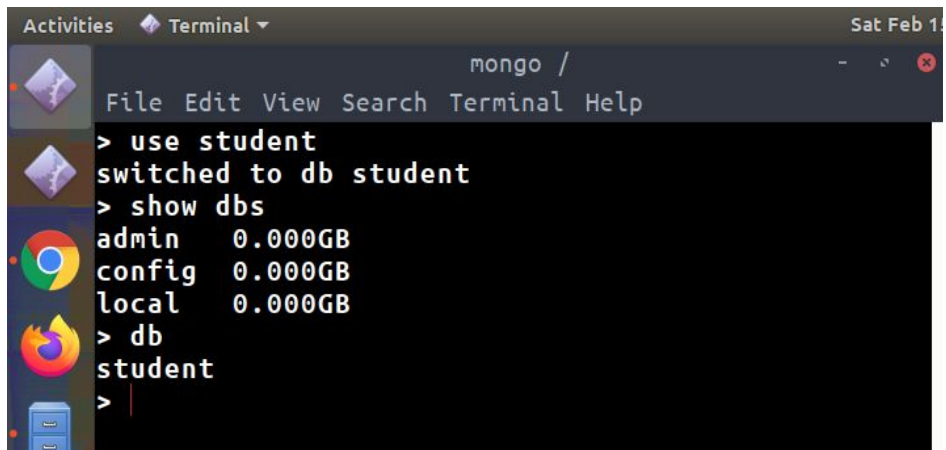
A terminal window showing the output of the command 'sudo systemctl status mongodb'. The output indicates that the 'mongodb.service' is an object/document-oriented database, loaded from '/lib/systemd/system/mongodb.service', and is currently active (running) since Saturday, February 15, 2020, at 22:47:03 IST. It shows 23 tasks (limit 4915) and is part of the 'system.slice/mongodb.service' CGroup. The main PID is 8083 (mongod). The command 'sudo systemctl status mongodb' is shown at the prompt. The terminal also shows a message from systemd[1] stating 'Started An object/document-oriented database'.

```
Processing triggers for libc-bin (2.27-3ubuntu1) ...
[revant@revant:~]-[10:47:20 IST]-[G:master]
->$ sudo systemctl status mongodb

● mongodb.service - An object/document-oriented database
   Loaded: loaded (/lib/systemd/system/mongodb.service; enabled; vendor preset: enabled)
   Active: active (running) since Sat 2020-02-15 22:47:03 IST; 17s ago
     Docs: man:mongod(1)
    Main PID: 8083 (mongod)
      Tasks: 23 (limit: 4915)
    CGroup: /system.slice/mongodb.service
            └─8083 /usr/bin/mongod --unixSocketPrefix=/run/mongodb --co

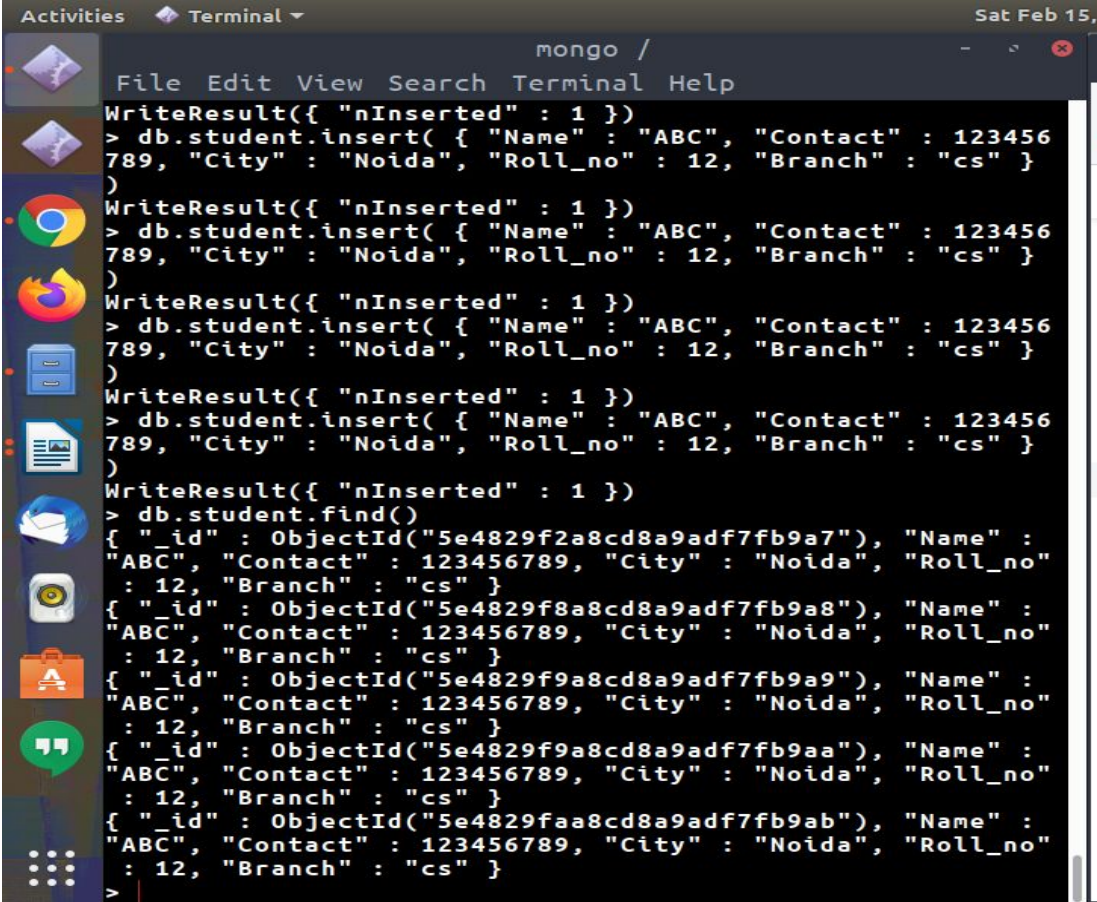
Feb 15 22:47:03 revant systemd[1]: Started An object/document-oriented
```

2. Create a database student

A terminal window showing the MongoDB shell interface. The prompt is 'mongo /'. The user enters the command 'use student', which results in 'switched to db student'. Then, the user enters 'show dbs', which shows a list of databases: 'admin' (0.000GB), 'config' (0.000GB), and 'local' (0.000GB). Finally, the user enters 'db', which shows 'student'. The terminal also shows a message from systemd[1] stating 'Started An object/document-oriented database'.

```
Activities Terminal Sat Feb 15 22:47:03 IST
mongo /
File Edit View Search Terminal Help
> use student
switched to db student
> show dbs
admin    0.000GB
config  0.000GB
local   0.000GB
> db
student
>
```

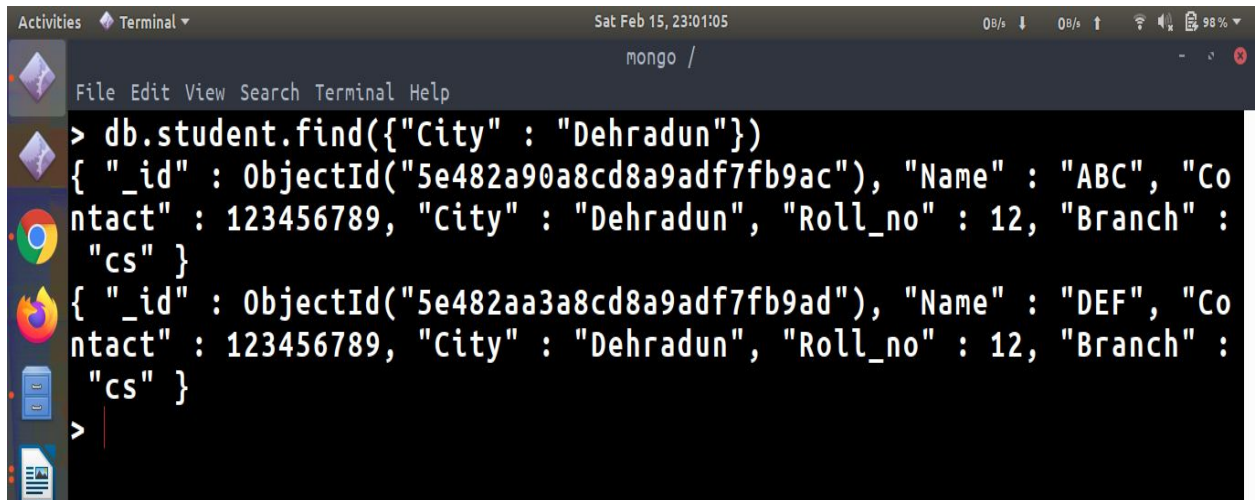
3. Insert operation : 5 students data (Name, Contact, City, Roll No, Branch)



The screenshot shows a terminal window titled 'Terminal' with a menu bar (File, Edit, View, Search, Terminal, Help) and a status bar (Sat Feb 15, 2020, 10:00 AM). The terminal is running the 'mongo' shell. The following commands and their outputs are shown:

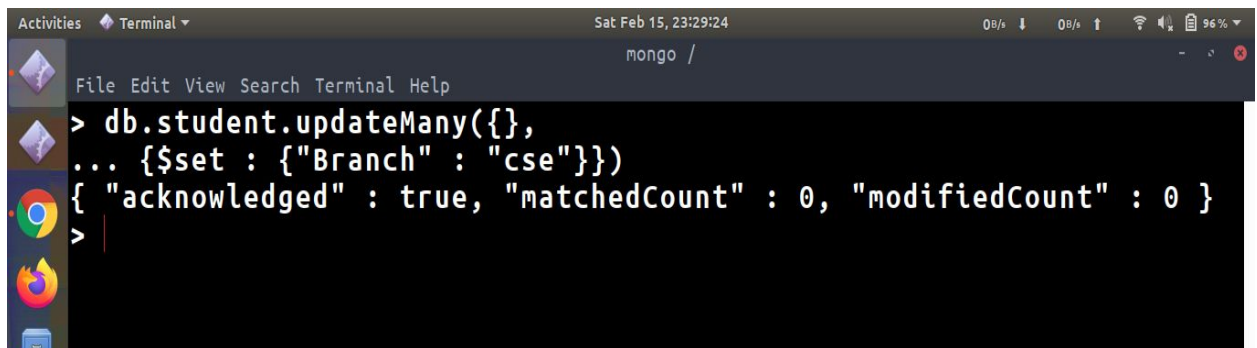
```
WriteResult({ "nInserted" : 1 })
> db.student.insert( { "Name" : "ABC", "Contact" : 123456789, "City" : "Noida", "Roll_no" : 12, "Branch" : "cs" } )
WriteResult({ "nInserted" : 1 })
> db.student.insert( { "Name" : "ABC", "Contact" : 123456789, "City" : "Noida", "Roll_no" : 12, "Branch" : "cs" } )
WriteResult({ "nInserted" : 1 })
> db.student.insert( { "Name" : "ABC", "Contact" : 123456789, "City" : "Noida", "Roll_no" : 12, "Branch" : "cs" } )
WriteResult({ "nInserted" : 1 })
> db.student.insert( { "Name" : "ABC", "Contact" : 123456789, "City" : "Noida", "Roll_no" : 12, "Branch" : "cs" } )
WriteResult({ "nInserted" : 1 })
> db.student.find()
{ "_id" : ObjectId("5e4829f2a8cd8a9adf7fb9a7"), "Name" : "ABC", "Contact" : 123456789, "City" : "Noida", "Roll_no" : 12, "Branch" : "cs" }
{ "_id" : ObjectId("5e4829f8a8cd8a9adf7fb9a8"), "Name" : "ABC", "Contact" : 123456789, "City" : "Noida", "Roll_no" : 12, "Branch" : "cs" }
{ "_id" : ObjectId("5e4829f9a8cd8a9adf7fb9a9"), "Name" : "ABC", "Contact" : 123456789, "City" : "Noida", "Roll_no" : 12, "Branch" : "cs" }
{ "_id" : ObjectId("5e4829f9a8cd8a9adf7fb9aa"), "Name" : "ABC", "Contact" : 123456789, "City" : "Noida", "Roll_no" : 12, "Branch" : "cs" }
{ "_id" : ObjectId("5e4829faa8cd8a9adf7fb9ab"), "Name" : "ABC", "Contact" : 123456789, "City" : "Noida", "Roll_no" : 12, "Branch" : "cs" }
```

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

A terminal window titled 'Terminal' with a menu bar (File, Edit, View, Search, Terminal, Help) and a status bar (Sat Feb 15, 23:01:05, 0B/s, 0B/s, 98%). The prompt is 'mongo /'. The command executed is 'db.student.find({"City" : "Dehradun"})'. The output shows two JSON documents. The first document has '_id' as '5e482a90a8cd8a9adf7fb9ac', 'Name' as 'ABC', 'Contact' as '123456789', 'City' as 'Dehradun', 'Roll_no' as '12', and 'Branch' as 'cs'. The second document has '_id' as '5e482aa3a8cd8a9adf7fb9ad', 'Name' as 'DEF', 'Contact' as '123456789', 'City' as 'Dehradun', 'Roll_no' as '12', and 'Branch' as 'cs'.

```
> db.student.find({"City" : "Dehradun"})
{ "_id" : ObjectId("5e482a90a8cd8a9adf7fb9ac"), "Name" : "ABC", "Contact" : 123456789, "City" : "Dehradun", "Roll_no" : 12, "Branch" : "cs" }
{ "_id" : ObjectId("5e482aa3a8cd8a9adf7fb9ad"), "Name" : "DEF", "Contact" : 123456789, "City" : "Dehradun", "Roll_no" : 12, "Branch" : "cs" }
>
```

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

A terminal window titled 'Terminal' with a menu bar (File, Edit, View, Search, Terminal, Help) and a status bar (Sat Feb 15, 23:29:24, 0B/s, 0B/s, 96%). The prompt is 'mongo /'. The command executed is 'db.student.updateMany({}, {\$set : {"Branch" : "cse"}})'. The output shows a status object: '{ "acknowledged" : true, "matchedCount" : 0, "modifiedCount" : 0 }'.

```
> db.student.updateMany({},
... {$set : {"Branch" : "cse"}})
{ "acknowledged" : true, "matchedCount" : 0, "modifiedCount" : 0 }
>
```

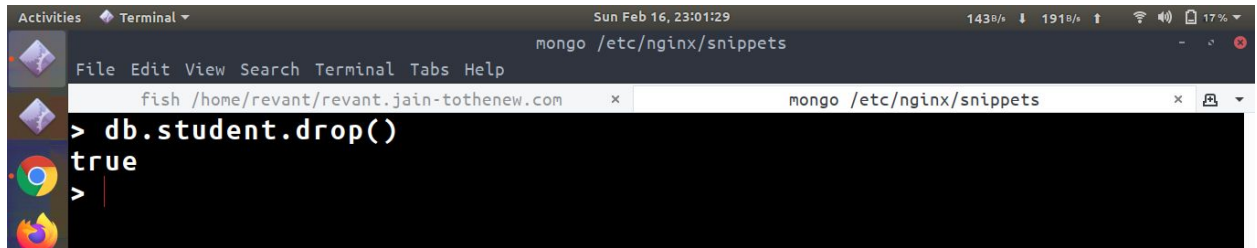
5. Take dump of the database

```
Activities Terminal Mon Feb 17, 10:38:21 11.7KB/s 798B/s 18%
fish /home/revant/student_dump/student
File Edit View Search Terminal Help
> exit
bye
[revant@revant:~]-[10:37:17 IST]-[G:master]
->$
[revant@revant:~]-[10:37:21 IST]-[G:master]
->$ mongodump --db student -o ~/student_dump
2020-02-17T10:37:55.218+0530 writing student.student to
2020-02-17T10:37:55.220+0530 done dumping student.student (2 documents)
[revant@revant:~]-[10:37:55 IST]-[G:master]
->$ cd ~
[revant@revant:~]-[10:38:01 IST]-[G:master]
->$ ls -l student_dump/
total 4
drwxr-xr-x 2 revant revant 4096 Feb 17 10:37 student/
[revant@revant:~]-[10:38:07 IST]-[G:master]
->$ cd student_dump/student/
[revant@revant:~/s/student]-[10:38:13 IST]-[G:master]
->$ ls
student.bson student.metadata.json
[revant@revant:~/s/student]-[10:38:19 IST]-[G:master]
->$
```

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

```
Activities Terminal Sun Feb 16, 23:00:44 0B/s 0B/s 17%
mongo /etc/nginx/snippets
File Edit View Search Terminal Tabs Help
fish /home/revant/revant.jain-tothenew.com x mongo /etc/nginx/snippets x
ntact" : 123456789, "City" : "Noida", "Roll_no" : 12, "Branch" : "C
SE" }
{ "_id" : ObjectId("5e4829f9a8cd8a9adf7fb9aa"), "Name" : "ABC", "Co
ntact" : 123456789, "City" : "Noida", "Roll_no" : 12, "Branch" : "C
SE" }
{ "_id" : ObjectId("5e4829faa8cd8a9adf7fb9ab"), "Name" : "ABC", "Co
ntact" : 123456789, "City" : "Noida", "Roll_no" : 12, "Branch" : "C
SE" }
{ "_id" : ObjectId("5e482a90a8cd8a9adf7fb9ac"), "Name" : "ABC", "Co
ntact" : 123456789, "City" : "Dehradun", "Roll_no" : 12, "Branch" :
"CSE" }
{ "_id" : ObjectId("5e482aa3a8cd8a9adf7fb9ad"), "Name" : "DEF", "Co
ntact" : 123456789, "City" : "Dehradun", "Roll_no" : 12, "Branch" :
"CSE" }
> db.student.remove(
... { "Roll_no" : 12 }
... )
WriteResult({ "nRemoved" : 7 })
>
```

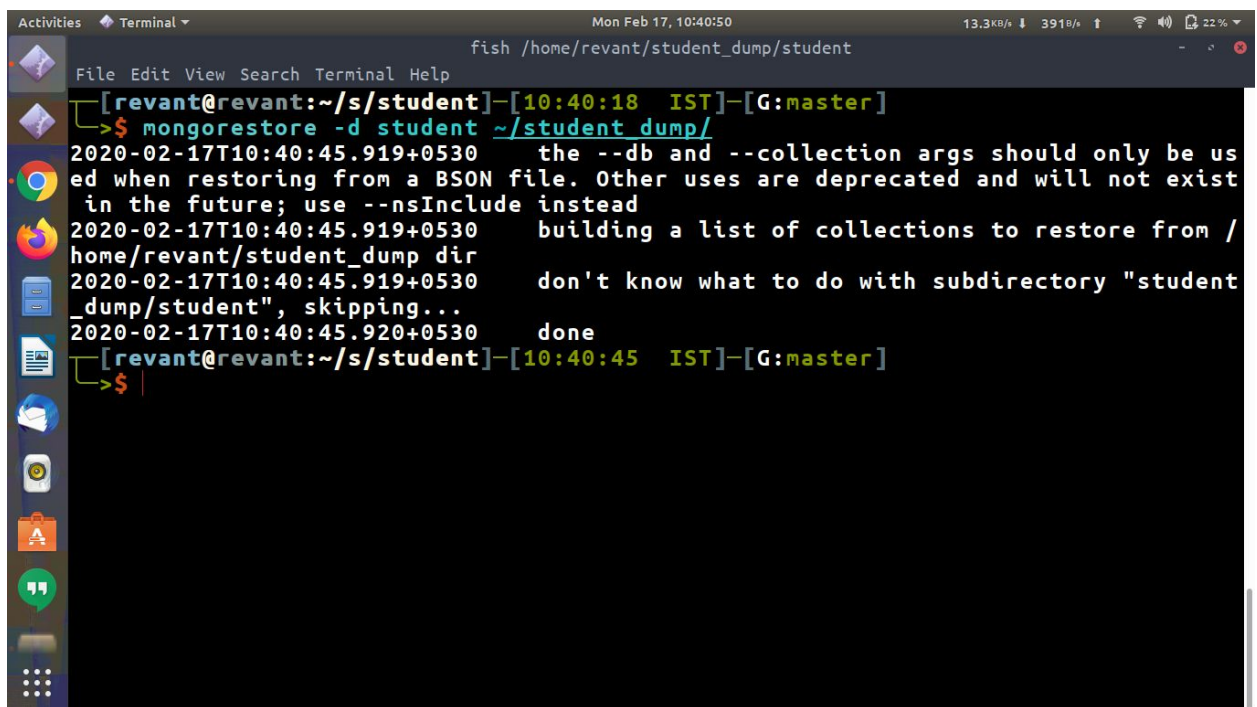

7. Drop the database



A terminal window titled 'Terminal' with a menu bar (File, Edit, View, Search, Terminal, Tabs, Help). The terminal shows a MongoDB shell prompt with the command `db.student.drop()` and the output `true`. The window title bar indicates the date and time as 'Sun Feb 16, 23:01:29' and shows system status icons on the right.

```
File Edit View Search Terminal Tabs Help
fish /home/revant/revant.jain-tothenew.com x mongo /etc/nginx/snippets
> db.student.drop()
true
>
```

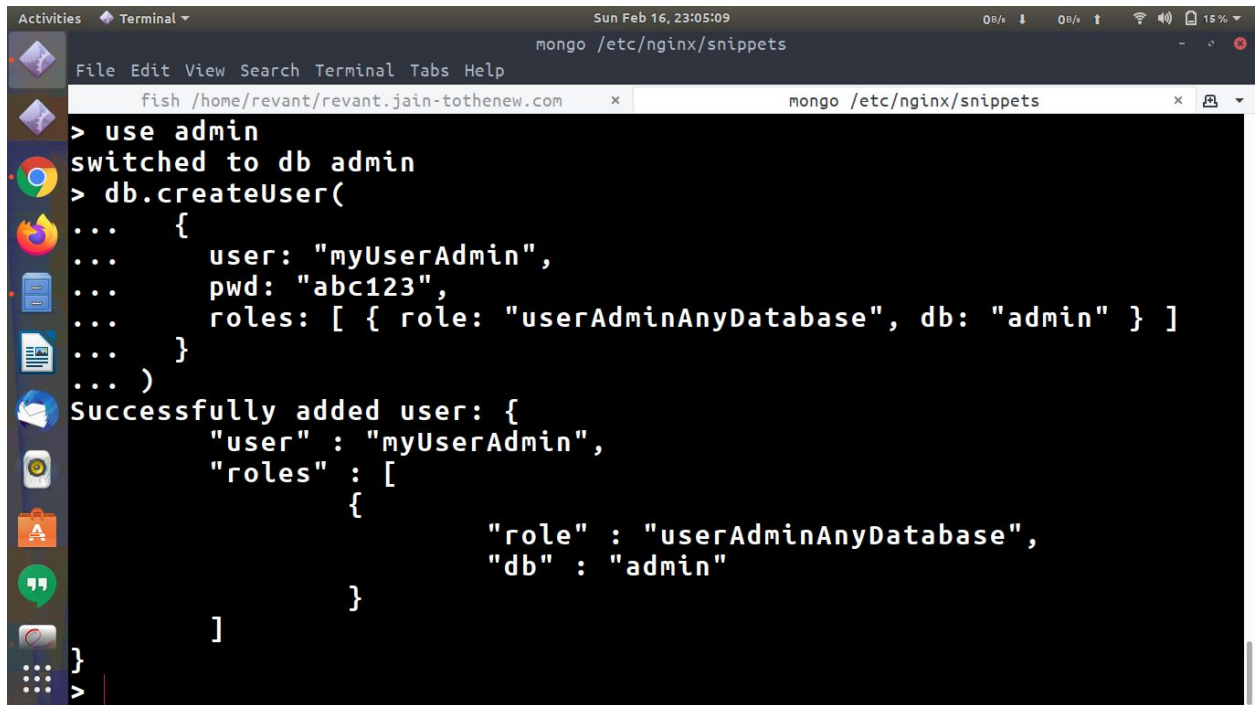
8. Restore the database again to have the full data



A terminal window titled 'Terminal' with a menu bar (File, Edit, View, Search, Terminal, Help). The terminal shows a shell prompt with the command `mongorestore -d student ~/student_dump/`. The output shows a warning about deprecated flags, followed by progress messages: 'building a list of collections to restore from /home/revant/student_dump dir', 'don't know what to do with subdirectory "student_dump/student", skipping...', and 'done'. The window title bar indicates the date and time as 'Mon Feb 17, 10:40:50' and shows system status icons on the right.

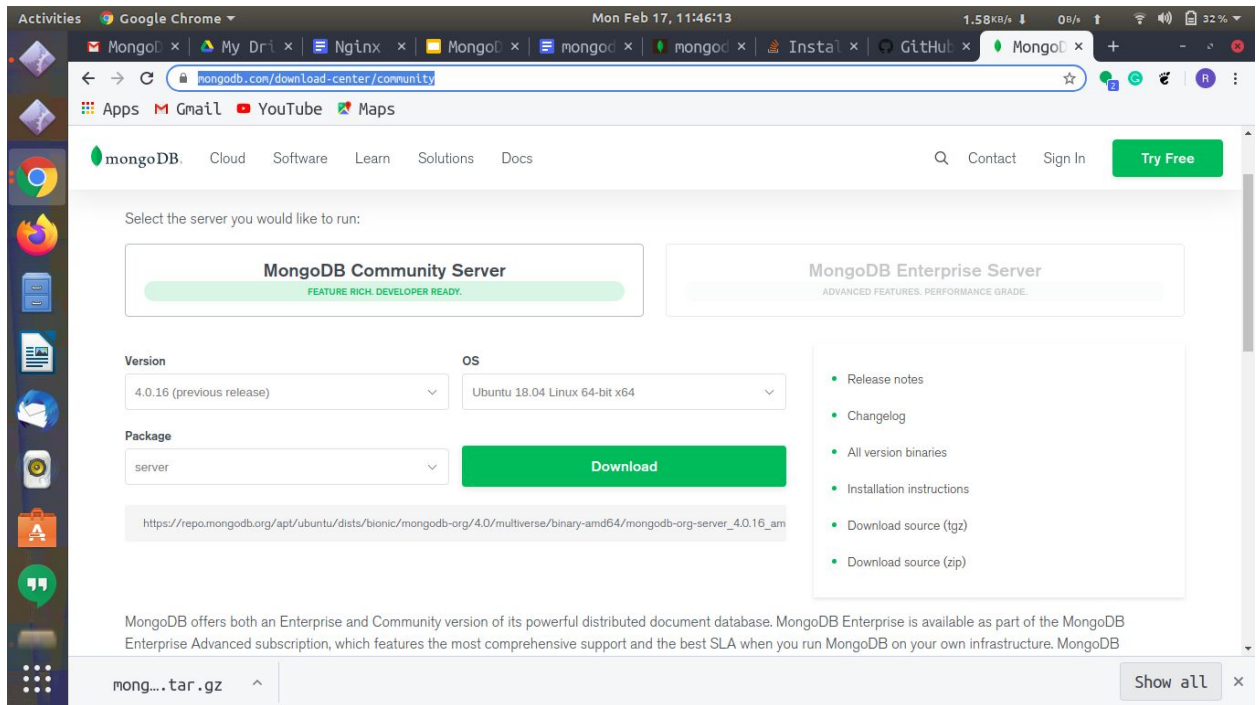
```
File Edit View Search Terminal Help
fish /home/revant/student_dump/student
[revant@revant:~/s/student]-[10:40:18 IST]-[G:master]
>$ mongorestore -d student ~/student_dump/
2020-02-17T10:40:45.919+0530 the --db and --collection args should only be used
when restoring from a BSON file. Other uses are deprecated and will not exist
in the future; use --nsInclude instead
2020-02-17T10:40:45.919+0530 building a list of collections to restore from /
home/revant/student_dump dir
2020-02-17T10:40:45.919+0530 don't know what to do with subdirectory "student
_dump/student", skipping...
2020-02-17T10:40:45.920+0530 done
[revant@revant:~/s/student]-[10:40:45 IST]-[G:master]
>$
```

9. Enable authentication on the Mongo

A terminal window with a dark background and light text. The window title bar shows 'Terminal' and 'Sun Feb 16, 23:05:09'. The terminal content shows a sequence of MongoDB commands and their output. The commands are: 'use admin', 'switched to db admin', 'db.createUser({', '...', 'user: "myUserAdmin",', '...', 'pwd: "abc123",', '...', 'roles: [{ role: "userAdminAnyDatabase", db: "admin" }]', '...', '}', '...', ')'. The output is 'Successfully added user: {', ' "user" : "myUserAdmin",', ' "roles" : [', ' {', ' "role" : "userAdminAnyDatabase",', ' "db" : "admin"', ' }', ']', '}', '>'. The terminal has a sidebar with application icons on the left and a top bar with file editing options and tabs.

```
> use admin
switched to db admin
> db.createUser(
...   {
...     user: "myUserAdmin",
...     pwd: "abc123",
...     roles: [ { role: "userAdminAnyDatabase", db: "admin" } ]
...   }
... )
Successfully added user: {
  "user" : "myUserAdmin",
  "roles" : [
    {
      "role" : "userAdminAnyDatabase",
      "db" : "admin"
    }
  ]
}
>
```

10. Install another version of MongoDB from source (Version 2.6.3) and run it on port 27009



Mkdir -p ~/data/db

Cp ~/downloads/mongo3.6.3/bin .

Cd bin

mongo.

```
File Edit View Search Terminal Help
>$ cd bin/
[revant@revant:~/d/d/bin]-[12:01:52 IST]-[G:master]
>$ ls
bsondump*      mongod*      mongofiles*  mongorestore* mongotop*
install_compass* mongodump*  mongoimport* mongos*
mongo*         mongoexport* mongoreplay* mongostat*
[revant@revant:~/d/d/bin]-[12:01:53 IST]-[G:master]
>$ mongo
MongoDB shell version v3.6.3
connecting to: mongod://127.0.0.1:27017
MongoDB server version: 3.6.3
Server has startup warnings:
2020-02-17T10:27:18.683+0530 I STORAGE [initandlisten]
2020-02-17T10:27:18.683+0530 I STORAGE [initandlisten] ** WARNING: Using the XFS
filesystem is strongly recommended with the WiredTiger storage engine
2020-02-17T10:27:18.683+0530 I STORAGE [initandlisten] ** See http://d
ochub.mongodb.org/core/prodnotes-filesystem
2020-02-17T10:27:19.320+0530 I CONTROL [initandlisten]
2020-02-17T10:27:19.320+0530 I CONTROL [initandlisten] ** WARNING: Access contr
ol is not enabled for the database.
2020-02-17T10:27:19.320+0530 I CONTROL [initandlisten] ** Read and writ
te access to data and configuration is unrestricted.
2020-02-17T10:27:19.320+0530 I CONTROL [initandlisten]
>
```

```
Activities Terminal Mon Feb 17, 12:07:01 3.88KB/s 0B/s 39%
File Edit View Search Terminal Help
[revant@revant:~/d/d/bin]-[12:04:50 IST]-[G:master]
>$ mongod --dbpath ~/data/db/ --port 27009
2020-02-17T12:06:44.534+0530 I CONTROL [initandlisten] MongoDB starting : pid=1
9080 port=27009 dbpath=/home/revant/data/db/ 64-bit host=revant
2020-02-17T12:06:44.534+0530 I CONTROL [initandlisten] db version v3.6.3
2020-02-17T12:06:44.534+0530 I CONTROL [initandlisten] git version: 9586e557d54
ef70f9ca4b43c26892cd55257e1a5
2020-02-17T12:06:44.534+0530 I CONTROL [initandlisten] OpenSSL version: OpenSSL
1.1.1 11 Sep 2018
2020-02-17T12:06:44.534+0530 I CONTROL [initandlisten] allocator: tcmalloc
2020-02-17T12:06:44.534+0530 I CONTROL [initandlisten] modules: none
2020-02-17T12:06:44.534+0530 I CONTROL [initandlisten] build environment:
2020-02-17T12:06:44.534+0530 I CONTROL [initandlisten] distarch: x86_64
2020-02-17T12:06:44.534+0530 I CONTROL [initandlisten] target_arch: x86_64
2020-02-17T12:06:44.534+0530 I CONTROL [initandlisten] options: {net: { port:
27009 }, storage: { dbPath: "/home/revant/data/db/" } }
2020-02-17T12:06:44.534+0530 I STORAGE [initandlisten]
2020-02-17T12:06:44.534+0530 I STORAGE [initandlisten] ** WARNING: Using the XFS
filesystem is strongly recommended with the WiredTiger storage engine
2020-02-17T12:06:44.534+0530 I STORAGE [initandlisten] ** See http://d
ochub.mongodb.org/core/prodnotes-filesystem
2020-02-17T12:06:44.534+0530 I STORAGE [initandlisten] wiredtiger_open config:
create,cache_size=7365M,session_max=20000,eviction=(threads_min=4,threads_max=4)
,config_base=false,statistics=(fast),log=(enabled=true,archive=true,path=journal
```

11. Create init service of Mongo installed later*


```
Activities Terminal Mon Feb 17, 12:24:24 4.26KB/s 2.44KB/s 67%
fish /home/revant/data/db/bin
File Edit View Search Terminal Help
[revant@revant:~/d/d/bin]-[12:22:48 IST]-[G:master]
>$ ls
bsondump* mongod* mongofiles* mongorestore* mongotop*
install_compass* mongodump* mongoimport* mongos*
mongo* mongoexport* mongoreplay* mongostat*
[revant@revant:~/d/d/bin]-[12:22:49 IST]-[G:master]
>$ cp mongod /etc/init.d/
cp: cannot create regular file '/etc/init.d/mongod': Permission denied
[revant@revant:~/d/d/bin]-[12:23:19 IST]-[G:master]
>$ sudo cp mongod /etc/init.d/
[sudo] password for revant:
[revant@revant:~/d/d/bin]-[12:23:25 IST]-[G:master]
>$ chmod +x /etc/init.d/mongod
chmod: changing permissions of '/etc/init.d/mongod': Operation not permitted
[revant@revant:~/d/d/bin]-[12:23:42 IST]-[G:master]
>$ sudo chmod +x /etc/init.d/mongod
[revant@revant:~/d/d/bin]-[12:23:46 IST]-[G:master]
>$ update-rc.d /etc/init.d/mongod defaults
update-rc.d: error: unable to read /etc/init.d//etc/init.d/mongod
[revant@revant:~/d/d/bin]-[12:24:11 IST]-[G:master]
>$ update-rc.d mongod defaults
[revant@revant:~/d/d/bin]-[12:24:22 IST]-[G:master]
>$
```