		Hope Foundation's	
		Finolex Academy of Management and Technology, Ratnagiri Information Technology Department	
Subject name: Cloud Service Design Lab			Subject Code: ITL603
Class	TE IT	Semester – VI (CBCGS)	Academic year: 2018-19
Name of Student	Kazi Jawwad A Rahim		QUIZ Score :
Roll No	27	Assignment/Experiment No.	03
Title: MongoDB NoSQL database CRUD Operations			

1. Course objectives applicable COB4. Understand cloud implementation, programming and mobile cloud computing COB3. Understand different cloud computing services
2. Course outcomes applicable: CO3 –To use and define different cloud computing services. CO6 –To memorize cloud computing, memorize different cloud services and cloud deployment models.
3. Learning Objectives: <ol style="list-style-type: none"> 1. Create Connection String for MongoDB 2. Perform CRUD Operations on MongoDB
4. Practical applications of the assignment/experiment: MongoDB is a leading Document Database used in Unstructured Data Processing
5. Prerequisites: <ol style="list-style-type: none"> 1. Knowledge of NoSQL Database 2. Internet Access 3. MongoDB Server Setup, 4. In case on online deployment, MongoDB access on www.mlab.com
6. Hardware Requirements: <ol style="list-style-type: none"> 1. Internet Access with Browser 2. PC to install MongoDB
7. Software Requirements: Browser like Chrome, Internet Explorer Edge, MongoDB Server Setup
8. Quiz Questions (if any): (Online Exam will be taken separately batchwise, attach the certificate/ Marks obtained) <ol style="list-style-type: none"> 1. What is Service Bus? 2. Which version of Visual Studio is used? 3. What is an Access Key?

9. Experiment/Assignment Evaluation:			
Sr. No.	Parameters	Marks obtained	Out of
1	Technical Understanding (Assessment may be done based on Q & A <u>or</u> any other relevant method.) Teacher should mention the other method used -		6
2	Neatness/presentation		2
3	Punctuality		2
Date of performance (DOP)		Total marks obtained	10
Date of checking (DOC)		Signature of teacher	

11. Implementation steps–

Executing NoSql Commands on MongoDB shell

```
tar -zxvf mongodb-linux-x86_64-3.4.7.tgz mkdir -p mongodb
```

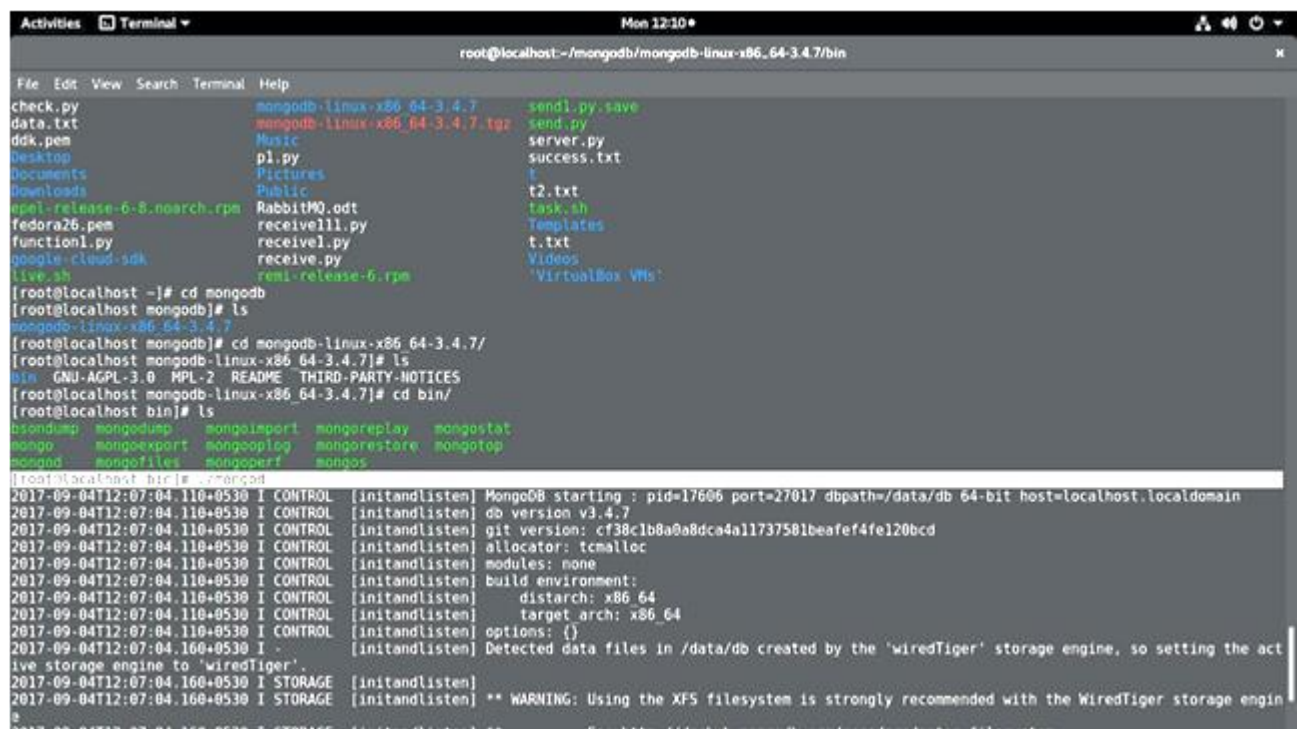
```
cp -R -n mongodb-linux-x86_64-3.4.7/  
mongodb export  
PATH=/home/students/bin:$PATH mkdir -p  
/data/db
```

```
chmod 777 /data/db
```

nevigatte to bin directory cd /..

./mongod

This will start a server and will wait for client request



```
Activities Terminal Mon 12:10  
root@localhost:~/mongodb/mongodb-linux-x86_64-3.4.7/bin  
File Edit View Search Terminal Help  
check.py mongodb-linux-x86_64-3.4.7 sendl.py.save  
data.txt mongodb-linux-x86_64-3.4.7.tgz send.py  
ddk.pem Music server.py  
Desktop pl.py success.txt  
Documents Pictures t  
Downloads Public t2.txt  
epel-release-6-8.noarch.rpm RabbitMQ.odt task.sh  
fedora26.pem receive11.py Templates  
function1.py receive1.py t.txt  
google-cloud-sdk receive.py Videos  
live.sh remi-release-6.rpm 'VirtualBox VMs'  
[root@localhost ~]# cd mongodb  
[root@localhost mongodb]# ls  
mongodb-linux-x86_64-3.4.7  
[root@localhost mongodb]# cd mongodb-linux-x86_64-3.4.7/  
[root@localhost mongodb-linux-x86_64-3.4.7]# ls  
bin GNU-AGPL-3.0 MPL-2 README THIRD-PARTY-NOTICES  
[root@localhost mongodb-linux-x86_64-3.4.7]# cd bin/  
[root@localhost bin]# ls  
bsondump mongodump mongoimport mongoreplay mongostat  
mongo mongoexport mongoplog mongorestore mongotop  
mongoos mongoosfiles mongoosperf mongoos  
[root@localhost bin]# ./mongod  
2017-09-04T12:07:04.110+0530 I CONTROL [initandlisten] MongoDB starting : pid=17606 port=27017 dbpath=/data/db 64-bit host=localhost.localdomain  
2017-09-04T12:07:04.110+0530 I CONTROL [initandlisten] db version v3.4.7  
2017-09-04T12:07:04.110+0530 I CONTROL [initandlisten] git version: cf38c1b8a0a8dca4all737501beafef4fe120bcd  
2017-09-04T12:07:04.110+0530 I CONTROL [initandlisten] allocator: tcmalloc  
2017-09-04T12:07:04.110+0530 I CONTROL [initandlisten] modules: none  
2017-09-04T12:07:04.110+0530 I CONTROL [initandlisten] build environment:  
2017-09-04T12:07:04.110+0530 I CONTROL [initandlisten] distarch: x86_64  
2017-09-04T12:07:04.110+0530 I CONTROL [initandlisten] target arch: x86_64  
2017-09-04T12:07:04.110+0530 I CONTROL [initandlisten] options: {}  
2017-09-04T12:07:04.160+0530 I - [initandlisten] Detected data files in /data/db created by the 'wiredTiger' storage engine, so setting the act  
ive storage engine to 'wiredTiger'.  
2017-09-04T12:07:04.160+0530 I STORAGE [initandlisten] ** WARNING: Using the XFS filesystem is strongly recommended with the WiredTiger storage engin  
e  
2017-09-04T12:07:04.160+0530 I STORAGE [initandlisten] ** For http://docs.mongodb.org/manual/reference/faq-filesystems/
```

OPEN ONE MORE TERMINAL ,NAVIGATE TO EXTRACTED MONGODB FOLDER cd mongo ..

cd bin

./mongo

It would start mongo shell where you can run nosql commands.. as follows

```
Activities Terminal Mon 12:11
root@localhost:~/mongodb/mongodb-linux-x86_64-3.4.7/bin

File Edit View Search Terminal Help
[root@localhost bin]# pwd
/root/mongodb/mongodb-linux-x86_64-3.4.7/bin
[root@localhost bin]# ./mongo
MongoDB shell version v3.4.7
connecting to: mongodb://127.0.0.1:27017
MongoDB server version: 3.4.7
Server has startup warnings:
2017-09-04T12:07:04.160+0530 I STORAGE [initandlisten]
2017-09-04T12:07:04.160+0530 I STORAGE [initandlisten] ** WARNING: Using the XFS filesystem is strongly recommended with the WiredTiger storage engine
2017-09-04T12:07:04.160+0530 I STORAGE [initandlisten] ** See http://dochub.mongodb.org/core/prodnotes-filesystem
2017-09-04T12:07:05.303+0530 I CONTROL [initandlisten]
2017-09-04T12:07:05.303+0530 I CONTROL [initandlisten] ** WARNING: Access control is not enabled for the database.
2017-09-04T12:07:05.303+0530 I CONTROL [initandlisten] ** Read and write access to data and configuration is unrestricted.
2017-09-04T12:07:05.303+0530 I CONTROL [initandlisten] ** WARNING: You are running this process as the root user, which is not recommended.
2017-09-04T12:07:05.303+0530 I CONTROL [initandlisten]
>
```

Now run CRUD operations on shell

To see the list of databases in the system:

```
>show dbs
```

To select a database:

```
> use movies switched
```

to db movies

```
> db.comedy.insert({name:"Sairat",
```

```
year:2016}) WriteResult({ "nInserted" : 1 })
```

```
> db.comedy.insert({name:'The School of Rock',
```

```
year:2003}) WriteResult({ "nInserted" : 1 })
```

```
> db.comedy.find()
```

```
{ "_id" : ObjectId("59acf61f5726b577df63e869"), "name" : "Sairat", "year" : 2016 }
{ "_id" : ObjectId("59acf6395726b577df63e86a"), "name" : "The School of Rock", "year" : 2003 }
```

```
> db.comedy.find().limit(1)
```

```
{ "_id" : ObjectId("59acf61f5726b577df63e869"), "name" : "Sairat", "year" : 2016 }
}
```

```
> db.comedy.findOne()
```

```
{
  "_id" : ObjectId("59acf61f5726b577df63e869"),
  "name" : "Sairat",
  "year" : 2016
}
```

```
> db.comedy.find({year:{ $gt:1994 }})
```

```
{ "_id" : ObjectId("59acf61f5726b577df63e869"), "name" : "Sairat", "year" : 2016 }
}
```

```
{ "_id" : ObjectId("59acf6395726b577df63e86a"), "name" : "The School of Rock", "year" : 2003 }
```

```
> db.comedy.find({year:{ '$gt':1994 }}, {name:true})
```

```
{ "_id" : ObjectId("59acf61f5726b577df63e869"), "name" : "Sairat" }
```

```
{ "_id" : ObjectId("59acf6395726b577df63e86a"), "name" : "The School of Rock" }
```

```
> db.comedy.insert({name:"Bill & Ted's Excellent Adventure",
```

```
year:1989}) WriteResult({ "nInserted" : 1 })
```

Now Update a document

```
> db.comedy.update({name:"Bill & Ted's Excellent Adventure"}, {'$set':
{director:'Stephen Herek', cast:['Keanu Reeves', 'Alex Winter']}})
WriteResult({ "nMatched" : 1, "nUpserted" : 0, "nModified" : 1 })
> db.comedy.find()

{ "_id" : ObjectId("59acf61f5726b577df63e869"), "name" : "Sairat", "year" : 2016
}

{ "_id" : ObjectId("59acf6395726b577df63e86a"), "name" : "The School of Rock",
"year" : 2003 }

{ "_id" : ObjectId("59acf6ba5726b577df63e86b"), "name" : "Bill & Ted's Excellent
Adventure", "year" : 1989, "director" : "Stephen Herek", "cast" : [
"Keanu Reeves", "Alex Winter" ] }
```

Now remove a document

```
db.comedy.remove({name:'Sairat'})

WriteResult({ "nRemoved" : 1 })
> db.comedy.find()
{ "_id" : ObjectId("59acf6395726b577df63e86a"), "name" : "The School of Rock",
"year" : 2003 }
{ "_id" : ObjectId("59acf6ba5726b577df63e86b"), "name" : "Bill & Ted's Excellent
Adventure", "year" : 1989, "director" : "Stephen Herek", "cast" : [
"Keanu Reeves", "Alex Winter" ] }

> db.comedy.count()
2
Now drop a collection
> db.comedy.drop(

) true

> show dbs

admin  0.000GB

local  0.000GB
```

12. Results:

Results are mentioned in the scripts run in Section 11 above.

13. Learning Outcomes Achieved

1. MondoDB as NoSQL database is discussed
2. Students Downloaded and Installed MongoDB Server, Students Configured MongoDB Database
3. SQL Queries for CRUD Operations were tested on the databases
4. CAP theorem and BASE properties of NoSQL database are discussed in connection with MongoDB for Big Data analytics

14. Conclusion:

1. **Applications of the studied technique in industry**
 - a. MongoDB is one of the commonly used document store
 - b. BASE properties are of relevance in view of Big Data Analytics
2. **Engineering Relevance**
 - a. Distributed databases for storage of large volumes of data
 - b. NoSQL for Distributed Databases
3. **Skills Developed**
 - a. Configuration of MongoDB
 - b. CRUD commands on MongoDB

References :

- [1] <http://nosql-database.org/> "NoSQL DEFINITION: Next Generation Databases mostly addressing some of the points: being non-relational, distributed, open-source and horizontally scalable"
- [2] Leavitt, Neal (2010). "Will NoSQL Databases Live Up to Their Promise?" (PDF). IEEE Computer.
- [3] Mohan, C. (2013). History Repeats Itself: Sensible and NonsensSQL Aspects of the NoSQL Hoopla. Proc. 16th Int'l Conf. on Extending Database Technology.
- [4] "NOSQL meetup Tickets, Thu, Jun 11, 2009 at 10:00 AM". Eventbrite.com. Retrieved 2017-03-06.
- [5] "Amazon Goes Back to the Future With 'NoSQL' Database". WIRED. 2012-01-19. Retrieved 2017-03-06.
- [6] "RDBMS dominate the database market, but NoSQL systems are catching up". DB-Engines.com. 21 Nov 2013. Retrieved 24 Nov 2013.
- [7] "NoSQL (Not Only SQL)". NoSQL database, also called Not Only SQL
- [8] Fowler, Martin. "NoSQL Definition". many advocates of NoSQL say that it does not mean a "no" to SQL, rather it means Not Only SQL

Viva Questions

4. What is NoSQL?
5. What is a Document Database?
6. Give Examples of other Document Databases?