22.04.2022

From
Ms. N. Padma Priya, AP/CSE & Ms. A. Priyanka, AP/CSE,
SSM Institute of Engineering and Technology,
Dindigul – Palani Highway,
Dindigul.

To
The Principal,
SSM Institute of Engineering and Technology,
Dindigul – Palani Highway,
Dindigul.

Through
The Head of the Department/CSE,
SSM Institute of Engineering and Technology,
Dindigul – Palani Highway,
Dindigul.

Respected Sir,

Sub: Requisition for conducting Technology Training on MongoDB-reg.

We wish to bring to your kind notice that a Technology Training programme is planned to be conducted for III CSE on "**MongoDB**", by **Mr. Amjat Ibrahim, Infrastructure Architect, IBM, Chennai,** from **25.04.2022** to **06.05.20222** (10 working days: 09.30 a.m. to 03.30 p.m.). In this regard, we seek your permission for the conduct of the training programme.

Thanking you,

Yours truly,

22/4/22

Ms. N. Padma Priya, AP/CSE
Ms. A. Priyanka, AP/CSE

22/4/22

HOD/CSE

PRINCIPAL

SSM INSTITUTE OF ENGINEERING AND TECHNOLOGY

(Approved by AICTE, New Delhi, Affiliated to Anna University, Chennai & Accredited by NAAC)

Dindigul-Palani Highway, Dindigul

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

23.04.2022

CIRCULAR

The Department of CSE has planned to conduct a **Technology Training** for **III year - CSE** students on "**Mongo DB**" from **25.04.2022 to 06.05.2022** (09:00 a.m. to 03:00 p.m.) at CSE lab II. Resource Person **Mr.Amjath Ibrahim, Infrastructre Architect, IBM** is going to handle this training session. All our third year students are expected to attend this training without fail.

Faculty In-charge
(Ms.N.Padmapriya,AP/CSE
Ms.A.Priyanka,AP/CSE)

HoD/CSE
(Dr.V.Shunmughavel)

Principal
(Dr.D.Senthil Kumaran)

04.05.2022

From
Ms. N. Padma Priya, AP/CSE & Ms. A. Priyanka, AP/CSE,
SSM Institute of Engineering and Technology,
Dindigul – Palani Highway,
Dindigul.

To
The Principal,
SSM Institute of Engineering and Technology,
Dindigul – Palani Highway,
Dindigul.

Through
The Head of the Department/CSE,
SSM Institute of Engineering and Technology,
Dindigul – Palani Highway,
Dindigul.

Respected Sir,

Sub: Requisition to provide lunch and refreshment -reg.

We wish to bring to your kind notice that a Technology Training programme is planned to be conducted for III CSE on "**MongoDB**", from **25.04.2022** to **06.05.20222** (10 working days: 09.30 a.m. to 03.30 p.m.).

In this regard we request you to provide lunch and refreshment (FN & AN) for the trainer (1 person) at our college premises (**04.05.2022**to **06.05.2022).** We kindly request you to grant us the same.

Thanking you,

Yours truly,

4/5/22 4/5/22
Ms. N. Padma Priya, AP/CSE
Ms. A. Priyanka, AP/CSE

04/05/22
HOD/CSE

PRINCIPAL

Syllabus

mongodb dba training provides a complete knowledge to handle the mongodb database administration work as independently. Mongodb is a document database which is a top most rated database in NoSQL category. It has been preferred by many customers since it has very good features like good scalability, availability and dynamic schema. The course is designed to get complete architecture knowledge and hands on experience so that candidate can directly work in real time environment.

Course Objective:

This course gives complete knowledge to administrate the mongodb database in real time environment. After taking this course you will become confident to work in real time environment and you can handle the projects and production issues independently.

Who can learn Mongodb administration?

1. Freshers
2. RDBMS DBA's (Oracle, MS-SQL, MySQl, etc)
3. IT Professionals who knows basics of any database and UNIX commands.
4. Anyone who wants to get into IT industry

Job Opportunity:

Very good opportunities are there in market for NoSQL and BigData technologies. In NoSQL especially for Mongodb there are lot of openings coming but in market only limited resources are there. So it's good to start moving on the new emerging technologies on the right time.

Syllabus:

1. Introduction to NoSQL
2. Architecture
3. CRUD Operations
4. Schema Design and Data modeling
5. Indexes
6. Administration commands
7. Replication
8. Scalability
9. Backup and Security
10. Monitoring and Other Tools

Detailed Topic coverage:

1. Introduction to NoSQL

a. Theories to be covered,

- What Is NoSQL?
- Why NoSQL databases are required.
- Types of NoSQL Database
- NoSQL vs SQL Comparison
- ACID & BASE Property
- CAP Theorem
- Benefits of NoSQL databases

- Installation
- Start and Stop the mongodb process

b. Practical Session,

- Setting a linux machine in AWS cloud or VM Player.
- Installating mongodb
- Configuration
- Starting and Stopping the process
- Connecting through mongo shell

2. CRUD Operations

- Create, Read, Update & Remove the documents
- Bulk insert operation

- All the above topics

7. Replication

a. Theories to be covered,

- Introduction to replication
- ReplicaSet
- Automatic Failover
- ReplicaSet members
- Role of Oplog in replication
- Arbiter, Hidden, Priority and Delayed replica node
- Read and Write Concern
- Replicaset nodes health check
- Resyncing a member
- Rollbacks during failover
- Keyfile authentication

b. Practical Session,

- Building a Replicaset using keyfile authentication
- Add/Remove a node to existing Replicaset
- Changing Priority of nodes and making delayed nodes
- Resync a member of Replicaset
- Changing the Oplog size
- Replicaset health checks
- Handling rollbacks
- Checking the read, write concerns

8. Sharding

a. Theories to be covered,

- Concept of Sharding
- Sharding concept
- Shardkey and Chunks
- Choosing shardkey
- Sharding components

b. Practical Session,

- Building a sharded cluster
- Building a sharded replicaset cluster
- Sharding a collection
- Sharding health checks
- Moving chunks manually
- Managing the balancer

9. Backup and Recovery

a. Theories to be covered,

- Introduction to backups
- mongoexport/mongoimport
- mongodump/mongorestore
- Oplog backups
- LVM Backups
- Backups using MMS/Ops Manager

b. Practical Session,

- mongoexport/mongoimport
- mongodump/mongorestore

10. Monitoring and Other Tools

a. Theories to be covered,

- MMS Manager/Cloud Manager
- Ops Manager
- Mongo utility commands
- Mongo developer tools
- Mongodb Atlas

Tax INVOICE					
Date : 06.05.2022			Invoice No: 09/2022		
Amsath Ibrahim S/O KM Sarthar 103 RV Nagar Thottam Dindigul – 624 002			Bill to : College Name : SSM Institute of Engineering and Technology Address : Palani highway,Dindigul Tamil Nadu 624 002 Ph No : 0451- 2448800		
Description	HSN Code	GST Rate	No Of. Pax	Pax Per Cost (INR)	Amount
Technology Training - Mongo DB course			56	2200	**1,23,200**
			Taxable Amount		NA
Total amount					**1,23,200**
Amount in words: One Lakh Twenty Three Thousand Two Hundred only					
			Bank Details: Account Holder Name : AMSATH IBRAHIM S Account Number: 50100034465736 IFSC: HDFC0002406 Branch: ASCENDAS TARAMANI Account Type: SAVING MMID: 924066 S. Amsath		

Forwarded to Principal.

V Shanmuk 04/05/22

HOD/CSE

[Dr. V. SHANMUGAVELU]

YEAR &DEPARTMENT: SUBJECT:

S.No.	FACULTY CHARACTERISTICS	5	4	3	2	1
1	Language					
2	Voice - Audible					
3	Voice - Clarity					
4	Voice - Monotony					
5	Written - Legible					
6	Terminology Introduction					
7	Diagrams					
8	Equations & Flowcharts					
9	Usage of OHP/LCD					
10	Hands-on Abilities					
11	Lab demonstrations					
12	Relevant Videos					
13	Questions & Answers Sessions					
14	Problem Solving Capability					
15	Practical Knowledge					
16	Completion of FIVE units					
17	Depth of Coverage					
18	Conduct of Tutorials					
19	Industrial Products Exposure					
20	Guidance on Projects & Higher Studies					
21	Guidance on Placement & Training					
22	Conduct of Value Added Courses					
23	Unbiased					
24	Cordial & Caring					
25	Mentoring					

SSM INSTITUTE OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

Technology Training on "Mongo DB"

Academic Year : 2021-2022 (Even Semester) Batch:2019-2023 Year: III Semester: VI

Feedback Link - https://forms.gle/nUbX2JMr7b4WyTy56 **Feed Back Report**

Timestamp	Register Number	Student Name	Language	Voice - Audible	Voice - Clarity	Voice - Monotony	Written - Legible	Terminology Intr	Diagrams	Usage of OHP/LCD	Hands-on Abilities	Lab Demonstrations	Question & Answer	Problem Solving Cap	Practical Knowledge	Depth of Coverage	Conduct of Tutorials	Industrial Product	Guidance on Projects	Conduct of Course	Unbiased	Cordial & Caring	Total
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5/6/2022 13:47:54	922119104004	ANANTHA NIVETHAN	5	4	4	4	4	4	3	4	5	5	5	5	5	5	5	5	5	5	5	5	92
5/6/2022 14:00:14	922119104005	Aravindhan.G	5	3	4	5	5	5	5	3	4	4	5	5	5	5	5	5	5	5	5	5	93
5/6/2022 11:21:20	922119104006	BENAZIR S	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	100
5/6/2022 13:48:16	922119104007	CATHERIN FREEDA F	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	100
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5/6/2022 13:46:57	922119104012	Guru v	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	100
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5/6/2022 11:27:06	922119104014	Jabitha.B	5	5	5	5	5	5	4	5	5	5	5	5	4	5	5	5	5	5	5	5	98
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5/6/2022 18:40:11	922119104020	M.Madhumitha	5	5	5	5	5	5	5	4	5	5	5	5	5	5	5	5	5	5	5	5	99
5/6/2022 11:29:11	922119104023	Menaka.c	5	4	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	100
5/6/2022 16:48:25	922119104024	MOHAMED FAZIL S	5	5	5	2	4	5	4	4	5	5	5	5	5	5	4	5	4	5	5	5	97
5/6/2022 12:06:27	922119104025	S.Y.Nivethitha	5	5	5	5	5	5	5	5	5	5	5	5	5	4	4	5	5	5	5	5	92
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Timestamp	Register Number	Student Name	Language	Voice - Audible	Voice - Clarity	Voice - Monotony	Written - Legible	Terminology Intr	Diagrams	Usage of OHP /LCD	Hands-on Abilities	Lab Demonstrations	Question & Answer	Problem Solving Cap	Practical Knowledge	Depth of Coverage	Conduct of Tutorials	Industrial Product	Guidance on Projects	Conduct of Course	Unbiased	Cordial & Caring	Total
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5/6/2022 11:22:12	922119104047	M.P.VASANTHAN	5	5	5	5	5	5	5	5	5	5	4	5	4	5	5	4	4	4	5	4	86
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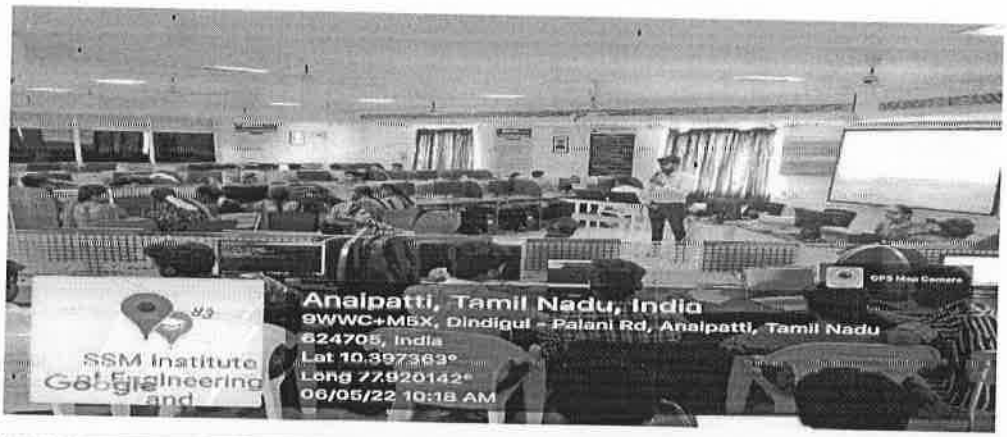
		Average	4.9	4.7	4.7	4.7	4.8	4.8	4.7	4.7	4.9	4.9	4.8	4.9	4.8	4.8	4.8	4.7	4.7	4.8	4.8	4.8	

Faculty Co-Ordinators

HoD/CSE

Principal


SSM Institute of Engineering and
Anaipatti, Tamil Nadu, India
9WWC+M5X, Dindigul - Palani Rd, Anaipatti, Tamil Nadu
624705, India
Lat 10.39739°
Long 77.920207°
06/05/22 02:58 PM


SSM Institute of Engineering and
Anaipatti, Tamil Nadu, India
9WWC+M5X, Dindigul - Palani Rd, Anaipatti, Tamil Nadu
624705, India
Lat 10.397363°
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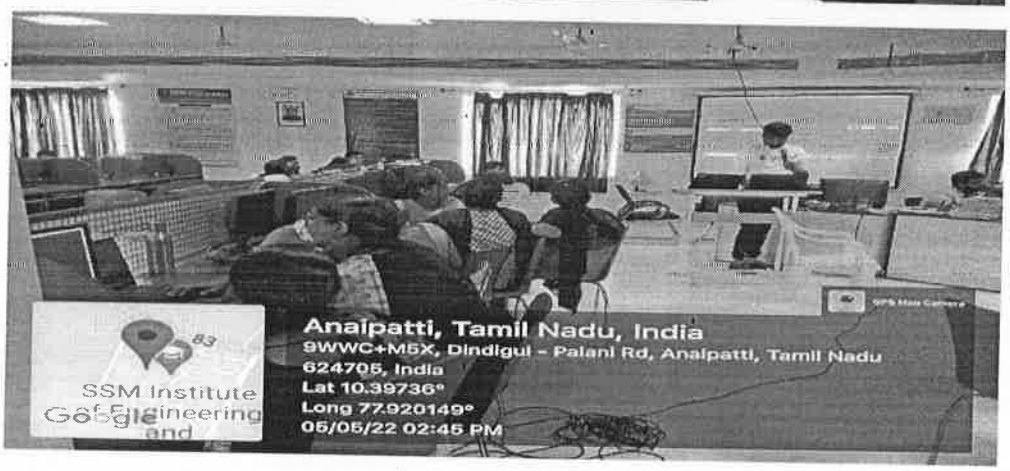
SSM Institute of Engineering and
Anaipatti, Tamil Nadu, India
9WWC+M5X, Dindigul - Palani Rd, Anaipatti, Tamil Nadu
624705, India
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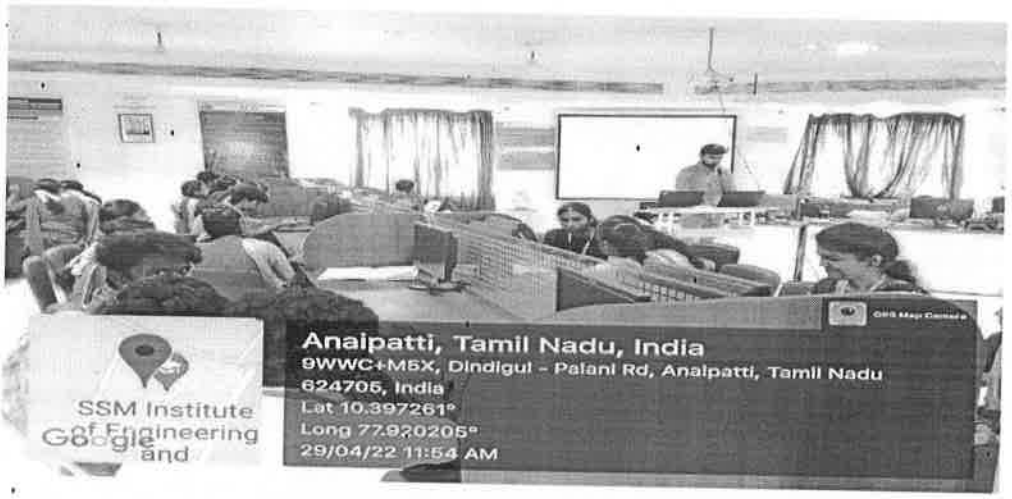
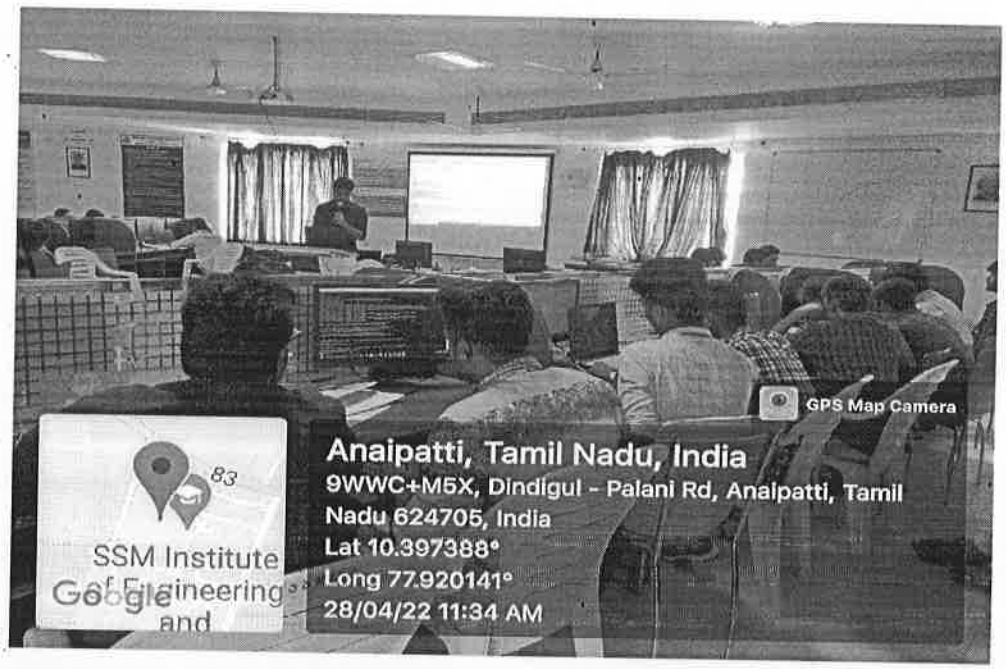
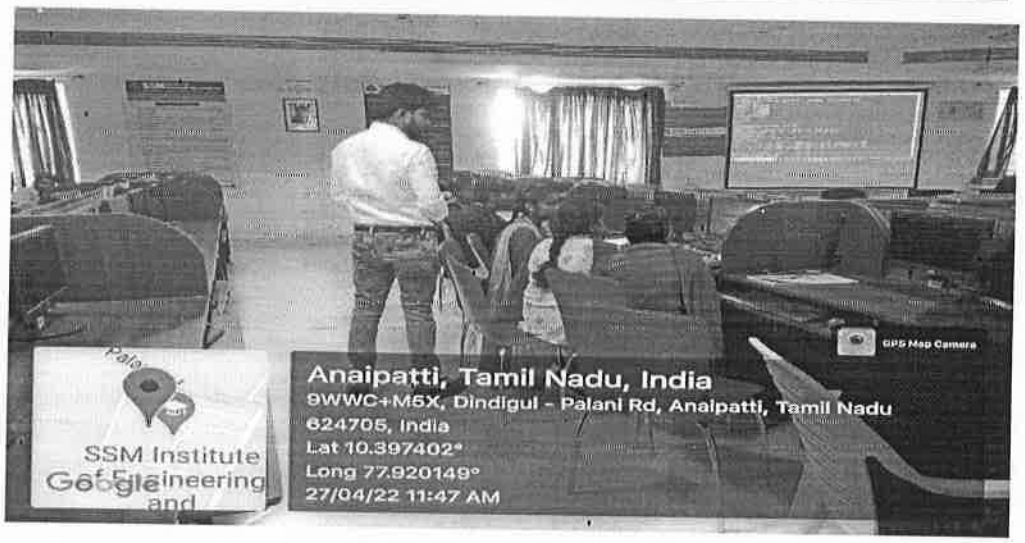
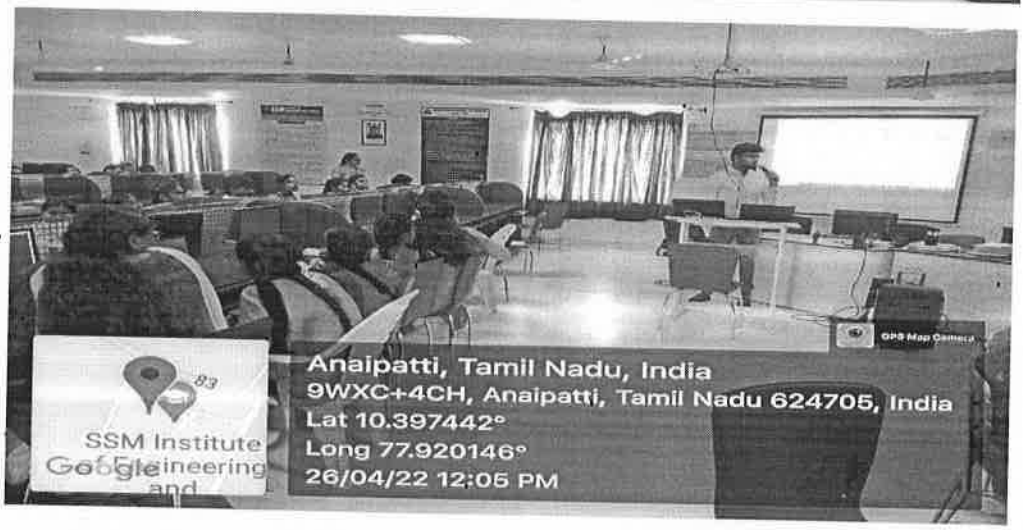

SSM Institute
of Engineering
and
Anaipatti, Tamil Nadu, India
9WWC+M5X, Dindigul - Palani Rd, Anaipatti, Tamil Nadu
624705, India
Lat 10.397261°
Long 77.920205°
29/04/22 11:54 AM


SSM Institute
of Engineering
and
GPS Map Camera
Anaipatti, Tamil Nadu, India
9WWC+M5X, Dindigul - Palani Rd, Anaipatti, Tamil
Nadu 624705, India
Lat 10.397388°
Long 77.920141°
28/04/22 11:34 AM


SSM Institute
of Engineering
and
GPS Map Camera
Anaipatti, Tamil Nadu, India
9WWC+M5X, Dindigul - Palani Rd, Anaipatti, Tamil Nadu
624705, India
Lat 10.397402°
Long 77.920149°
27/04/22 11:47 AM


SSM Institute
Anaipatti, Tamil Nadu, India
9WXC+4CH, Anaipatti, Tamil Nadu 624705, India
Lat 10.39737°
Long 77.920154°
27/04/22 09:52 AM


SSM Institute
Anaipatti, Tamil Nadu, India
9WXC+4CH, Anaipatti, Tamil Nadu 624705, India
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MONGODB

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Task no.01

Show replication of data to Primary to secondary

- Login to root user
- And then login to mongo (primary) (using mongo –port 27018)
- Create the db and login this db (ssmmongodb)
- And then insert data and create the collection.

  (db.ssmtest1.insert({"dept":"cse"}

  RS1:PRIMARY> db.ssmtest1.insert({"dept":"cse"})

  WriteResult({ "nInserted" : 1 })

  RS1:PRIMARY> db.ssmtest1.insert({"dept":"ece"})

The data are successfully created in primary

```
RS1:PRIMARY> show collections
ssmtest
ssmtest1
```

- Login to root user
- And then login to mongo (secondary) (using mongo –port 27019)
- Use db(ssmmongodb) and type **show dbs** to get data
- Now we can find a replication of data stored in primary in secondary

```
RS1:SECONDARY> rs.secondaryOk()
RS1:SECONDARY> use ssmmongodb
switched to db ssmmongodb
RS1:SECONDARY> show collections
ssmtest
ssmtest1
RS1:SECONDARY>
```

Note:If data not show use **rs.secondryOk()** cmd

Task no.02

What is the default location of mongodb data directory ?

Ans: /var /lib /mongo

Task no.03

What is the default port of mongodb ?

Ans: port no.27017

```
bye
[root@localhost ~]# mongo
MongoDB shell version v4.4.13
connecting to: mongodb://127.0.0.1:27017/?compressors=disabled&gssapiServiceName=mongodb
Implicit session: session { "id" : UUID("41ea5efc-be10-45b0-9762-e4421d161212") }
MongoDB server version: 4.4.13
---
```

Task no.04

How do you check mongodb is running or not ?

Ans:service mongod status

ps -ef | grep mongo

```
[root@localhost ~]# ps -ef | grep mongo
root       3013   1171  0 21:17 ?        00:00:00 sshd: ssmmongodb [priv]
ssmmongo+  3017   3013  0 21:17 ?        00:00:00 sshd: ssmmongodb@pts/1
root       3229      1  2 21:22 ?        00:01:43 mongod -f /mongodata/mongo-config-files/mongo-pri.conf
root       3451   1171  0 21:24 ?        00:00:00 sshd: ssmmongodb [priv]
ssmmongo+  3474   3451  0 21:25 ?        00:00:00 sshd: ssmmongodb@pts/2
root       3672      1  1 21:26 ?        00:01:03 mongod -f /mongodata/mongo-config-files/mongo-pril.conf
root       4541      1  1 21:39 ?        00:01:03 mongod -f /mongodata/mongo-config-files/mongo-config.conf
root       8520   3556  0 22:40 pts/2    00:00:00 grep --color=auto mongo
```

Task no.05

How do you connect a mongodb which is running on port 27018 ?

Ans: mongo --port 27018

```
[root@localhost ~]# mongo --port 27018
MongoDB shell version v4.4.13
connecting to: mongodb://127.0.0.1:27018/?compressors=disabled&gssapiServiceName=mongodb
Implicit session: session { "id" : UUID("2c1d9[illegible]") }
MongoDB server version: 4.4.13
---
The server generated these startup warnings when booting:
        2022-05-05T21:26:37.003-07:00: Access control is not enabled for the database. Read and write access to data and configuration is unrestricted
        2022-05-05T21:26:37.003-07:00: You are running this process as the root user, which is not recommended
        2022-05-05T21:26:37.003-07:00: /sys/kernel/mm/transparent_hugepage/enabled is 'always'. We suggest setting it to 'never'
        2022-05-05T21:26:37.003-07:00: /sys/kernel/mm/transparent_hugepage/defrag is 'always'. We suggest setting it to 'never'
        2022-05-05T21:26:37.003-07:00: soft rlimits too low
        2022-05-05T21:26:37.003-07:00:         currentValue: 1024
        2022-05-05T21:26:37.003-07:00:         recommendedMinimum: 64000
---
---
Free Monitoring URL:
https://cloud.mongodb.com/freemonitoring/cluster/WAIAVJ3JDABGNNJCHOIAA4MDDMEN
---
rs2:PRIMARY>
```

Task no.06

How do you list out the databases in mongodb?

Ans: show dbs

```
RS2:PRIMARY> show dbs
admin          0.000GB
config         0.000GB
local          0.001GB
populations    0.000GB
test           0.000GB
RS2:PRIMARY>
```

Task no.07

Create a collection "ssmiet" under the database ssmmongotest

Ans:

```
RS2:PRIMARY> use ssmmongotest
switched to db ssmmongotest
RS2:PRIMARY> db.createCollection("ssmiet");
{
        "ok" : 1,
        "$gleStats" : {
                "lastOpTime" : {
                        "ts" : Timestamp(1651617362, 1),
                        "t" : NumberLong(2)
                },
                "electionId" : ObjectId("7fffffff0000000000000002")
        },
        "lastCommittedOpTime" : Timestamp(1651617357, 1),
        "$configServerState" : {
                "opTime" : {
                        "ts" : Timestamp(1651617360, 1),
                        "t" : NumberLong(2)
                }
        },
        "$clusterTime" : {
                "clusterTime" : Timestamp(1651617362, 1),
                "signature" : {
                        "hash" : BinData(0,"AAAAAAAAAAAAAAAAAAAAAAAAAAA="),
                        "keyId" : NumberLong(0)
                }
        },
        "operationTime" : Timestamp(1651617362, 1)
}
RS2:PRIMARY> show collections
ssmiet
RS2:PRIMARY>
```

Task no.08

Insert a field "student name" with the value "kumar" in to a collection "ssmiet"

- Ans: insert first: db.ssmiet.insert({"studentname":"kumar"})

```
RS2:PRIMARY> db.ssmiet.insert({"studentname":"kumar"})
WriteResult({ "nInserted" : 1 })
```

Task no.09

View all the documents in collection "ssmiet"

Ans:

- View the data : db.ssmiet.find()

```
RS2:PRIMARY> db.ssmiet.find()
{ "_id" : ObjectId("6274bdf9daa4e47c95bf4e95"), "studentname" : "kumar" }
RS2:PRIMARY>
```

Task no.10

Create a user "ssmiet" with password "ssmiet" and the role should be "root"

Ans:

```
RS1:PRIMARY> db.createUser(
... {
... user : "ssmiet",
...
... pwd: "ssmiet",
...
... roles: [ { role: "root", db: "admin" }
... ] } )
Successfully added user: {
        "user" : "ssmiet",
        "roles" : [
                {
                        "role" : "root",
                        "db" : "admin"
                }
        ]
```

Task no.11

create a single node replicaset

Replset name : ssmtest

Datadir: /mongodata/ssmtest

Port : 37016

Team members:

A P AarthickRaja

R Sujith

Task 1:

login to root user --> su -

login to mongo primary --> mongo --port 27018

add Arb -- > rs.add Arb("localhost","localdomain":27016)

```
RS1:PRIMARY> rs.addArb("localhost.localdomain:27016")
{
        "ok" : 1,
        "$clusterTime" : {
                "clusterTime" : Timestamp(1651646020, 1),
                "signature" : {
                        "hash" : BinData(0,"AAAAAAAAAAAAAAAAAAAAAAAAAAA="),
                        "keyId" : NumberLong(0)
                }
        },
        "operationTime" : Timestamp(1651646020, 1)
}
RS1:PRIMARY> rs.status()
```

login to ssmmongodb -->use ssmmongodb

database insert -->db.ssmtest.insert({"dept":"cse"})

```
RS1:PRIMARY> use ssmmongodb
switched to db ssmmongodb
RS1:PRIMARY> db.ssmtest.insert({"dept":"cse"})
WriteResult({ "nInserted" : 1 })
RS1:PRIMARY> db.ssmtest.insert({"dept":"cse"})
WriteResult({ "nInserted" : 1 })
RS1:PRIMARY> show collections
```

exit

login to secondary --> mongo

To display the collections in primary to secondary --> rs.secondaryOk()

```
[root@localhost ~]# ps -ef | grep mongo
root        5403      1  1 10:23 ?        00:01:27 mongod -f /mongodata/mongo-config-files/mongo-config.conf
root        5623      1  1 10:23 ?        00:01:19 mongod -f /mongodata/mongo-config-files/mongo-pri.conf
root        5706      1  1 10:24 ?        00:01:16 mongod -f /mongodata/mongo-config-files/mongo-pri1.conf
root       10884   1182  0 11:42 ?        00:00:00 sshd: ssmmongodb [priv]
ssmmong+   10922  10884  0 11:43 ?        00:00:00 sshd: ssmmongodb@pts/0
root       11838  10990  0 11:56 pts/0    00:00:00 grep --color=auto mongo
[root@localhost ~]#
```

Task 5:

how to connect the mongodb which is running on port 27018?

monog --port 27018

Task 6:

how do you list out the databases in mongodb?

show dbs

```
RS1:PRIMARY> show dbs
admin         0.000GB
config        0.000GB
local         0.001GB
populations   0.000GB
ssmmongotest  0.000GB
```

Task 7:

create a collections name "ssmiet" under a database "ssmmongotest"?

use ssmmongotest

db.createCollection("ssmiet");

```
RS1:PRIMARY> use ssmmongotest
switched to db ssmmongotest
RS1:PRIMARY> show collections
ssmiet
RS1:PRIMARY> db.ssmiet.find()
{ "_id" : ObjectId("6274be9594d985e914e4a424"), "studentname" : "kumar" }
RS1:PRIMARY>
```

Task 10:

create a user "ssmiet" with password "ssmiet" and the role should be "root"

```
db.createUser(
{
        user : "ssmiet",.

        pwd: "ssmiet",

        roles: [ { role: "root", db: "ssmiet" }]
})
```

Task 11:

create a single node replicaset

Replset name : ssmtest

Datadir: /mongodata/ssmtest

Port : 37016

vi /mongodata/mongo-config-files/mongo-ssmtest.conf

mongod -f /mongodata/mongo-config-files/mongo-ssmtest.conf

REPORT ON TECHNOLOGY TRAINING

TOPIC	Mongo DB
TRAINER	Mr. Amjath Ibrahim, Infrastructure Architect, IBM
DATE	25th April,2022 – 6th May,2022
VENUE	SSMIET – CSE Lab -2
TIME	9.00A.M. -3.00P.M.

INTRODUCTION:

- Mongo DB training provides a complete knowledge to handle the Mongo DB database administration work as independently.
- Mongo DB is a document database which is a top most rated database in NoSQL category.
- It has been preferred by many customers since it has very good features like good scalability, availability and dynamic schema.
- The course is designed to get complete architecture knowledge and hands on experience so that candidate can directly work in real time environment.

COURSE OBJECTIVES:

- This course gives complete knowledge to administrate the Mongo DB database in real time environment.
- After taking this course you will become confident to work in real time environment and you can handle the projects and production issues independently.

WHY SHOULD WE LEARN MongoDB?

- While a traditional database system might be able to process data of a specific type, the era of NoSQL and MongoDB is here to stay.
- Posing a challenge to RDBMS, MongoDB is definitely the future of data.
- Most of the times, it is not intuitive to analyse if there is a need for a NoSQL database like Mongo DB.

WHO CAN LEARN MONGODB ADMINISTRATION?

1. Freshers
2. RDBMS DBA's (Oracle, MS-SQL, MySQL, etc)
3. IT Professionals who knows basics of any database and UNIX commands.
4. Anyone who wants to get into IT industry

JOB OPPORTUNITY:

Very good opportunities are there in market for NoSQL and Big Data technologies. In NoSQL especially for Mongo DB there are lot of openings coming but in market only limited resources are there. So it's good to start moving on the new emerging technologies on the right time.

SYLLABUS

DAY	TOPICS COVERED
DAY-1 (25-04-2022)	Introduction to NoSQL
DAY-2 (26-04-2022)	Architecture
DAY-3 (27-04-2022)	CRUD Operations
DAY-4 (28-04-2022)	Schema Design and Data Modelling
DAY-5 (29-04-2022)	Indexes
DAY-6 (30-04-2022)	Administration Commands
DAY-7 (02-05-2022)	Replication
DAY-8 (04-05-2022)	Scalability
DAY-9 (05-05-2022)	Backup and Security
DAY-10 (06-05-2022)	Monitoring and other Tools

- Our session was divided into two slots – Theory session and Practical session.

- In the first part we were briefly explained about the theory part to be covered on that day.
- The latter part consists of hands-on practice of the theoretical session.
- In this method of teaching we came to get a clear cut idea about each and every topic.
- All the links for downloading the tools wanted to progress was shared to us via our college group mail.
- We were availed with a Whatsapp group named "Mongo DB -SSMIET" were our trainer pinged us on all the important source codes, important notes.

DAY 1 - INTRODUCTION TO NOSQL (25-04-2022)

THEORY SESSION:

On day 1, we were taught about the topic NoSQL. We were given a brief detailed Introduction to No SQL databases. Topics that are covered include:

- What is No SQL
- Types of No SQL databases
- Why No SQL databases are needed
- Comparison between SQL and No- SQL databases
- Benefits of NoSQL databases
- ACID and BASE properties
- CAP Theorem
- Installation of Mongo DB
- START and STOP process of Mongo DB.

PRACTICAL SESSION:

In the practical session we dealt with

- Installation of Setting a Linux machine in AWS cloud or VM Player
- Installing Mongo DB
- Configuration
- Starting and Stopping the process
- Connecting through mongo shell.

DAY 2 – CRUD OPERATIONS (26-04-2022)

THEORY SESSION:

On day 2 we dealt with CRUD Operations and operations that can be performed on documents. The topics covered are

- Create, Read, Update & Remove the documents
- Bulk Insert operation
- Updating multiple document
- Sorting the documents
- Limiting documents
- Filtering documents
- Dropping the collections

PRACTICAL SESSION:

In the practical session we hands on practice on CRUD operations and other operations like Bulk Insert, updating, sorting, limiting, filtering, filtering of the documents, dropping of collections.

DAY 3– LOGICAL AND PHYSICAL STORAGE STRUCTURE (27-04-2022)

THEORY SESSION:

On day 3, we had brief discussion about

- Overview of Mongo DB
- Document, Collection, Databases
- JSON and BSON
- Object ID Data type
- Journaling
- Storage Engines (Wired Tiger, MMAP & In-memory)
- Capped Collection
- TTL Index

PRACTICAL SESSION:

In the practical session we practiced

- Creating/Dropping Database, Collection
- Understanding the storage engine
- Creating capped collection and TTL Index
- Default system collections

DAY 4– SCHEMA DESIGN AND DATA MODELLING (28-04-2022)

THEORY SESSION:

On day 4, we had brief discussion about

- Dynamic Schema
- What is Data modeling?
- Embedding Document

- Reference Document

PRACTICAL SESSION:
In the practical session we practiced
- Schema Creation
- Storing and retrieving array of docs
- Creating embedded document

DAY 5- INDEXES (29-04-2022)
THEORY SESSION:
On day 5 we dealt with the following topics:
- Introduction to Indexing
- Types of indexes
- Creating Indexes
- Managing Indexes
- Index Rebuilding
- Explain plan

PRACTICAL SESSION:
In the practical session we hands on practice on all the indexing operations like creating, managing, rebuilding indexes.

DAY 6- ADMINISTRATION COMMANDS (30-04-2022)
THEORY SESSION:
On day 6 we dealt with the following topics:
- Server & Database health check
- Terminating Running Operations
- Managing the log files
- Locking & Connections
- Profiling for Performance issues
- Changing configuration files
- Authentication and authorization
- Users and Roles
- Role based access control
- Copy and Clone database
- Troubleshooting issues
- Upgrading the database

PRACTICAL SESSION:
We practiced all the theoretical part we learned which includes locking, copy and clone database, troubleshooting issues, upgrading operations, etc

DAY 7- REPLICATION (02-05-2022)
THEORY SESSION:
- Introduction to replication
- Replica Set
- Automatic Failover
- Replica Set members
- Role of Oplog in replication
- Arbiter, Hidden, Priority and Delayed replica node
- Read and Write Concern
- Replica set nodes health check
- Resyncing a member
- Rollbacks during failover
- Key file authentication

PRACTICAL SESSION:
This session was one of the toughest parts of the training but our trainer made it more and easier with all his experience and easy hacks to make us understand this concept. The following topics were dealt under this topic:
- Building a Replica set using key file authentication
- Add/Remove a node to existing Replica set
- Changing Priority of nodes and making delayed nodes
- Re sync a member of Replica set
- Changing the Oplog size
- Replica set health checks
- Handling rollbacks
- Checking the read, write concerns

DAY 8- REPLICATION (04-05-2022)
THEORY SESSION:
On day 8, we learned about the replication of our databases in order to keep our databases safe in case of any internet calamities.
Under replication we learned:
- Concept of Shrading

- Shrading concept
- Shradkey and Chunks
- Choosing Shradkey
- Shrading components

PRACTICAL SESSION:
Replication practical session was really easy and fun working hands on and the following topics were practiced by us

- Building a shraded cluster
- Building a shraded Replica set cluster
- Shrading a collection
- Shrading health checks
- Moving chunks manually
- Managing the balancer

DAY 9- BACKUP AND SECURITY (05-05-2022)
THEORY SESSION:
Almost by day 8 we covered all the basic control keys, syntax we learnt about backup, recovery and security of our databases to protect our database from cybercrime. The following topics are covered:

- Introduction to backups
- Mongo export/Mongo import
- Mongo dump/Mongo restore
- Oplog backup
- LVM Backups
- Backups using MMS/Ops Manager

PRACTICAL SESSION:
In the practical session we practiced

- Mongo export/Mongo import
- Mongo dump/Mongo restore

DAY 10- BACKUP AND SECURITY (05-05-2022)
THEORY SESSION:
On the last day of training we learned about monitoring the database that we have created and managing it. The following topics are covered:

- MMS Manager/Cloud Manager
- Ops Manager
- Mongo utility commands
- Mongo developer tools

PRACTICAL SESSION:
Talking about the practical session on the last day we monitored the details that,we worked on for the past days of our training. We used a code freemonitoring (), which on pressing entering gave us and URL in return. The URL when pasted in the browser and executed gave us a pictorial representation of the database that we created and maintained during the course period.

TASKS AND ASSIGNMENTS:

Throughout the period of the course we were provided with assignments to work on that were uploaded in the Whatsapp group were we have to upload all the commands that we are working out to be copied and pasted in the notepad for our future reference.
On the last day we were allotted with assignments and tasks. We were provided with basic questions based on the past 10 days of training.
That was really good part of the session which helped us to recollect all the important points, commands, so and so,
Finally we had a doubt clarifying session on both theoretical and practical.

CONCLUSION

On the whole the technical training on Mongo DB was super exciting and we all really got an idea about on how to start working on database.
Since Mongo DB is the growing technology in the IT industry it was really helpful for our career point of view.
It was mutually a non-coding platform it helped us evolving a new field of study at the back-end development.
Since we were completely trained on the basis of the working model of an IT based module it was super experience for us who are aiming to be placed in a well reputed MNC's.