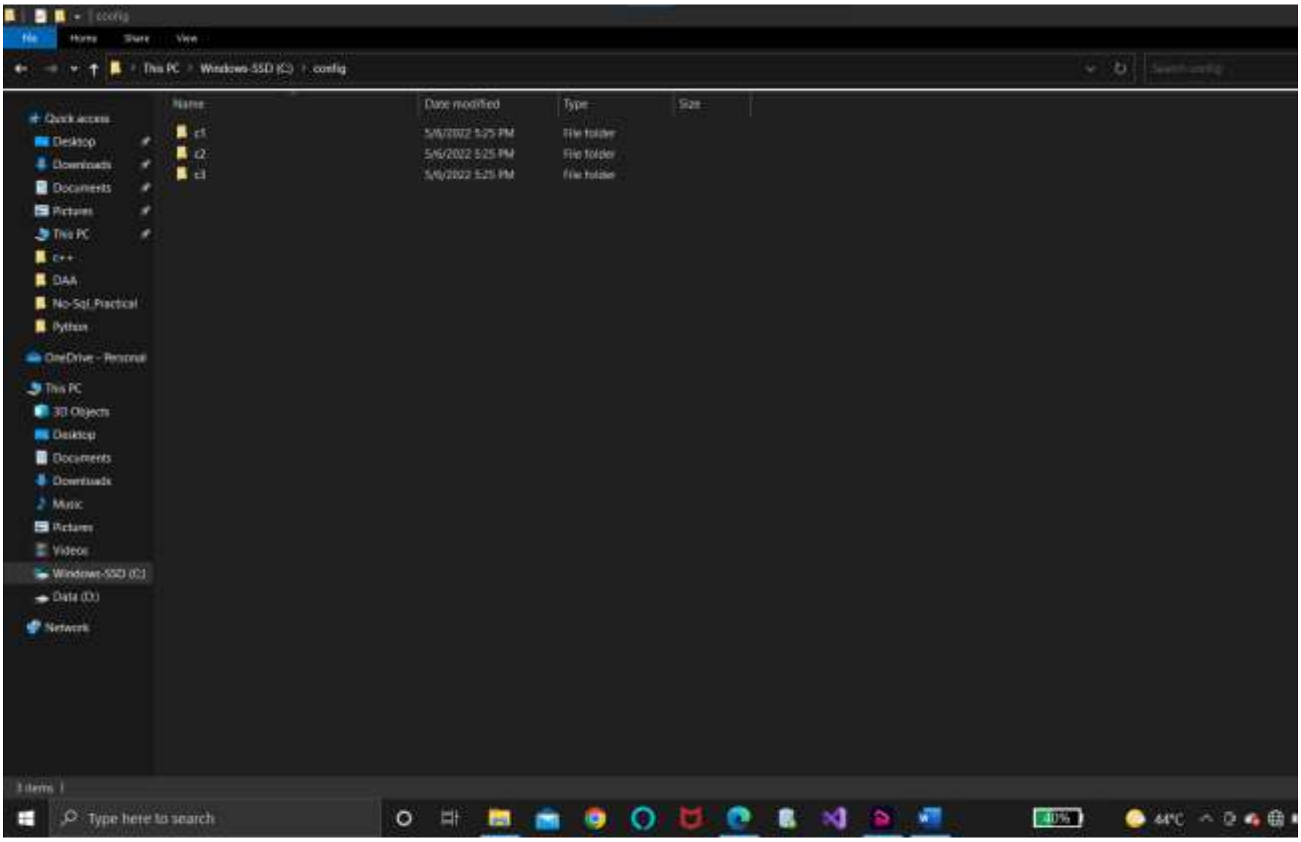
Practical -6

Aim - Implementation of Sharding in MongoDB.

STEP 1

Create config folder in C Drive.Inside that create three folders c1,c2,c3.

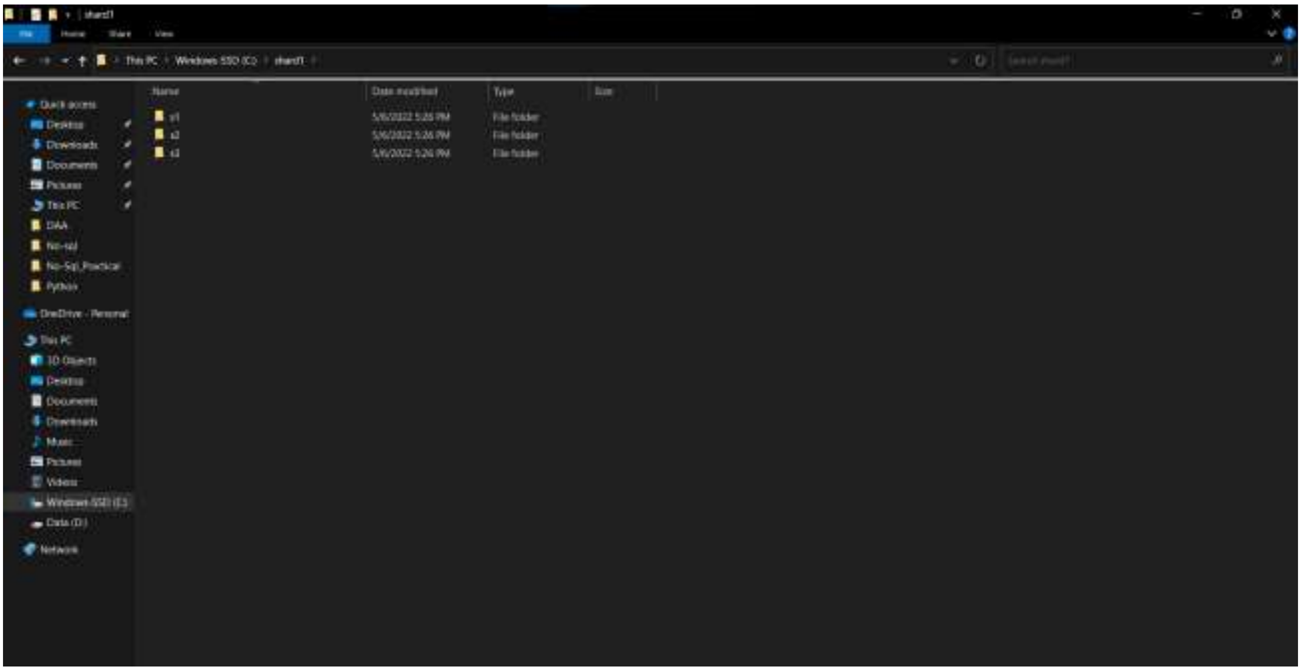


This PC > Windows-SSD (C:) > config

Name	Date modified	Type	Size
c1	5/6/2022 5:25 PM	File folder	
c2	5/6/2022 5:25 PM	File folder	
c3	5/6/2022 5:25 PM	File folder	

STEP 2

Create shard1 folder in drive. Inside that create three sub folders s1,s2,s3.

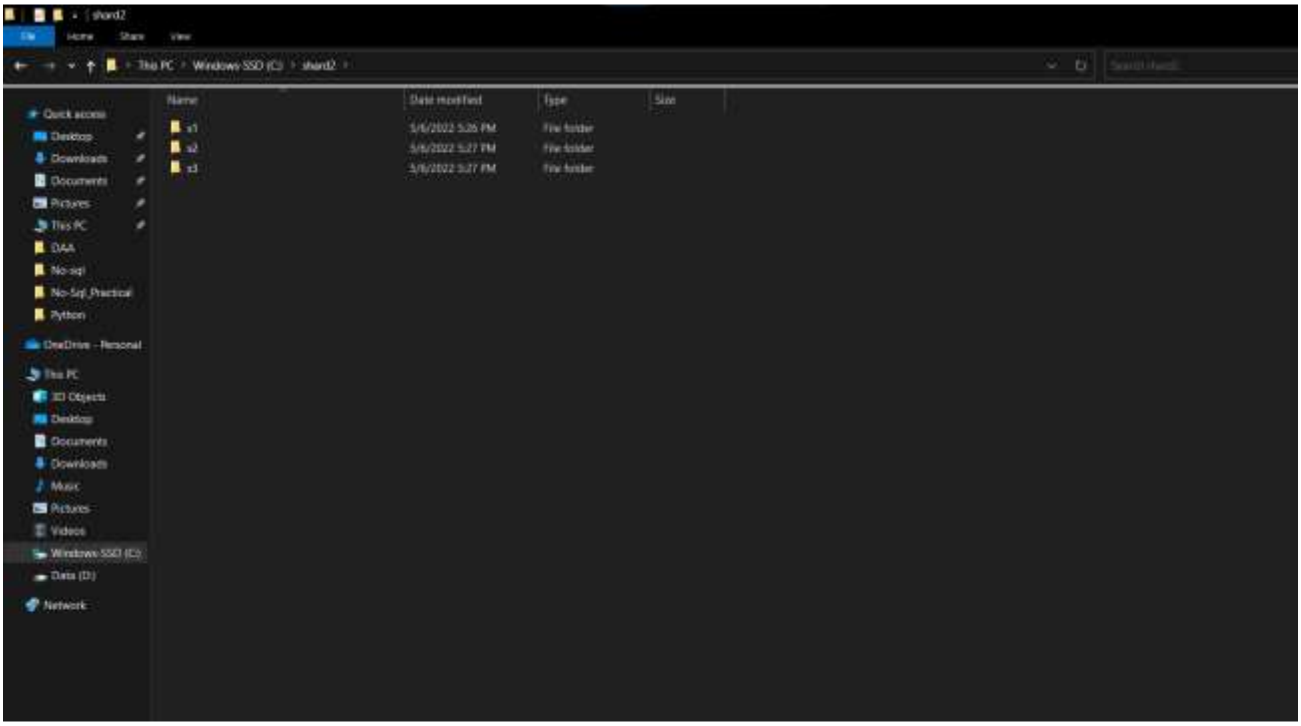


This PC › Windows SSD (C:) › shard1

Name	Date modified	Type	Size
s1	5/6/2022 5:26 PM	File folder	
s2	5/6/2022 5:26 PM	File folder	
s3	5/6/2022 5:26 PM	File folder	

STEP 3

Create shard2 folder in drive. Inside that create three sub folders s1,s2,s3.



This PC › Windows SSD (C:) › shard2

Name	Date modified	Type	Size
s1	5/6/2022 5:26 PM	File folder	
s2	5/6/2022 5:27 PM	File folder	
s3	5/6/2022 5:27 PM	File folder	

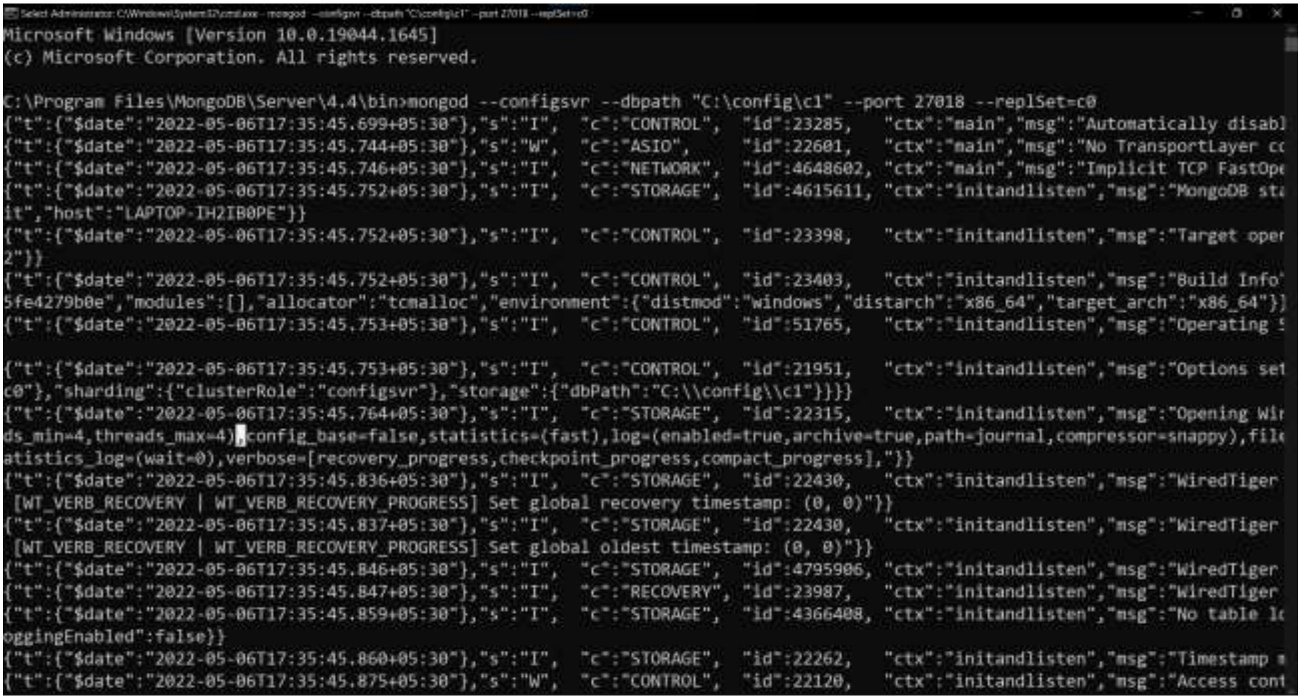
STEP 4

OPEN command Prompt.

Create three Config Server. Then Set one Config Server as Primary and remaining two as secondary.

Using below commands.

C:\Program Files\MongoDB\Server\4.2\bin>mongod --configsvr --dbpath "C:\config\c1" --port 27018 --replSet=c0

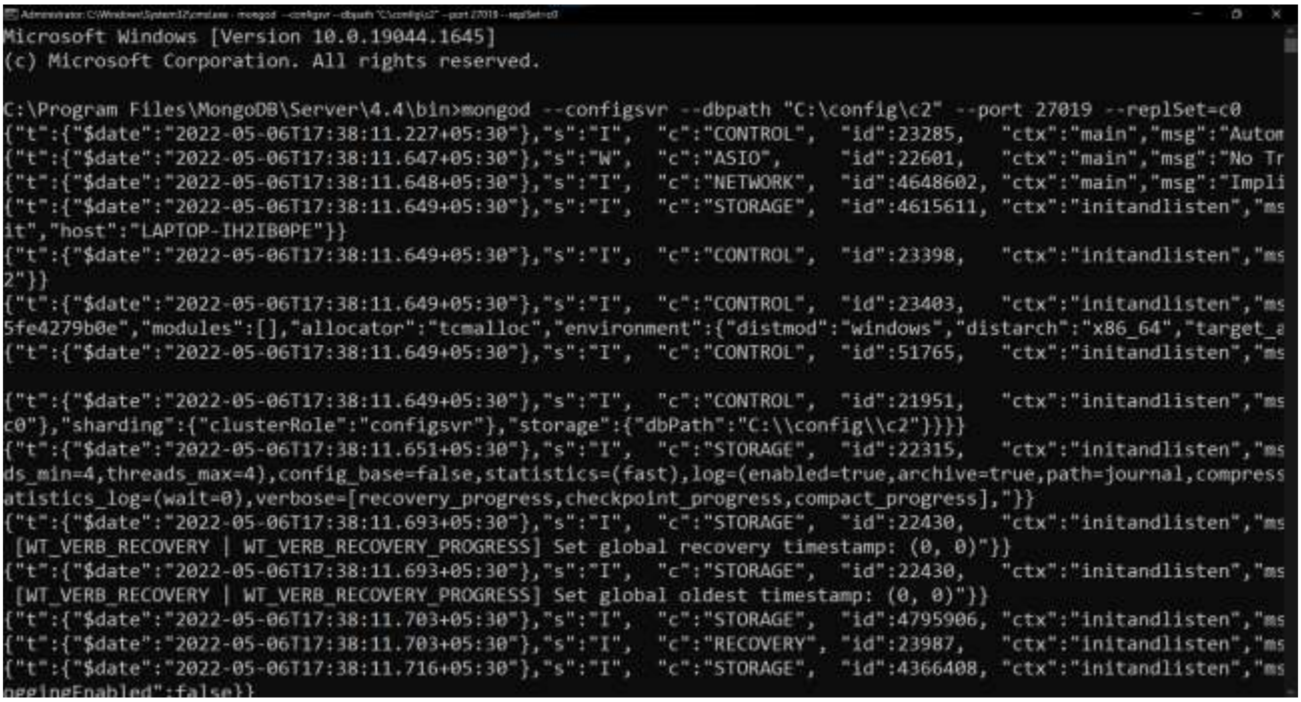


```
Microsoft Windows [Version 10.0.19044.1645]
(c) Microsoft Corporation. All rights reserved.

C:\Program Files\MongoDB\Server\4.4\bin>mongod --configsvr --dbpath "C:\config\c1" --port 27018 --replSet=c0
{"t":{"$date":"2022-05-06T17:35:45.699+05:30"},"s":"I",  "c":"CONTROL",  "id":23285,   "ctx":"main","msg":"Automatically disabl
{"t":{"$date":"2022-05-06T17:35:45.744+05:30"},"s":"W",  "c":"ASIO",     "id":22601,   "ctx":"main","msg":"No TransportLayer cc
{"t":{"$date":"2022-05-06T17:35:45.746+05:30"},"s":"I",  "c":"NETWORK",  "id":4648602, "ctx":"main","msg":"Implicit TCP FastOpe
{"t":{"$date":"2022-05-06T17:35:45.752+05:30"},"s":"I",  "c":"STORAGE",  "id":4615611, "ctx":"initandlisten","msg":"MongoDB sta
it","host":"LAPTOP-IH2IB0PE"}}
{"t":{"$date":"2022-05-06T17:35:45.752+05:30"},"s":"I",  "c":"CONTROL",  "id":23398,   "ctx":"initandlisten","msg":"Target oper
2"}}
{"t":{"$date":"2022-05-06T17:35:45.752+05:30"},"s":"I",  "c":"CONTROL",  "id":23403,   "ctx":"initandlisten","msg":"Build Info"
5fe4279b0e","modules":[],"allocator":"tcmalloc","environment":{"distmod":"windows","distarch":"x86_64","target_arch":"x86_64"}}
{"t":{"$date":"2022-05-06T17:35:45.753+05:30"},"s":"I",  "c":"CONTROL",  "id":51765,   "ctx":"initandlisten","msg":"Operating S

{"t":{"$date":"2022-05-06T17:35:45.753+05:30"},"s":"I",  "c":"CONTROL",  "id":21951,   "ctx":"initandlisten","msg":"Options set
c0"},"sharding":{"clusterRole":"configsvr"},"storage":{"dbPath":"C:\\config\\c1"}}}}
{"t":{"$date":"2022-05-06T17:35:45.764+05:30"},"s":"I",  "c":"STORAGE",  "id":22315,   "ctx":"initandlisten","msg":"Opening Wir
ds_min=4,threads_max=4),config_base=false,statistics=(fast),log=(enabled=true,archive=true,path=journal,compressor=snappy),file
atistics_log=(wait=0),verbose=[recovery_progress,checkpoint_progress,compact_progress],"}}
{"t":{"$date":"2022-05-06T17:35:45.836+05:30"},"s":"I",  "c":"STORAGE",  "id":22430,   "ctx":"initandlisten","msg":"WiredTiger
 [WT_VERB_RECOVERY | WT_VERB_RECOVERY_PROGRESS] Set global recovery timestamp: (0, 0)"}}
{"t":{"$date":"2022-05-06T17:35:45.837+05:30"},"s":"I",  "c":"STORAGE",  "id":22430,   "ctx":"initandlisten","msg":"WiredTiger
 [WT_VERB_RECOVERY | WT_VERB_RECOVERY_PROGRESS] Set global oldest timestamp: (0, 0)"}}
{"t":{"$date":"2022-05-06T17:35:45.846+05:30"},"s":"I",  "c":"STORAGE",  "id":4795906, "ctx":"initandlisten","msg":"WiredTiger
{"t":{"$date":"2022-05-06T17:35:45.847+05:30"},"s":"I",  "c":"RECOVERY", "id":23987,   "ctx":"initandlisten","msg":"WiredTiger
{"t":{"$date":"2022-05-06T17:35:45.859+05:30"},"s":"I",  "c":"STORAGE",  "id":4366408, "ctx":"initandlisten","msg":"No table lo
oggingEnabled":false}}
{"t":{"$date":"2022-05-06T17:35:45.860+05:30"},"s":"I",  "c":"STORAGE",  "id":22262,   "ctx":"initandlisten","msg":"Timestamp m
{"t":{"$date":"2022-05-06T17:35:45.875+05:30"},"s":"W",  "c":"CONTROL",  "id":22120,   "ctx":"initandlisten","msg":"Access cont
```

C:\Program Files\MongoDB\Server\4.2\bin>mongod --configsvr --dbpath "C:\config\c2" --port 27019 --replSet=c0

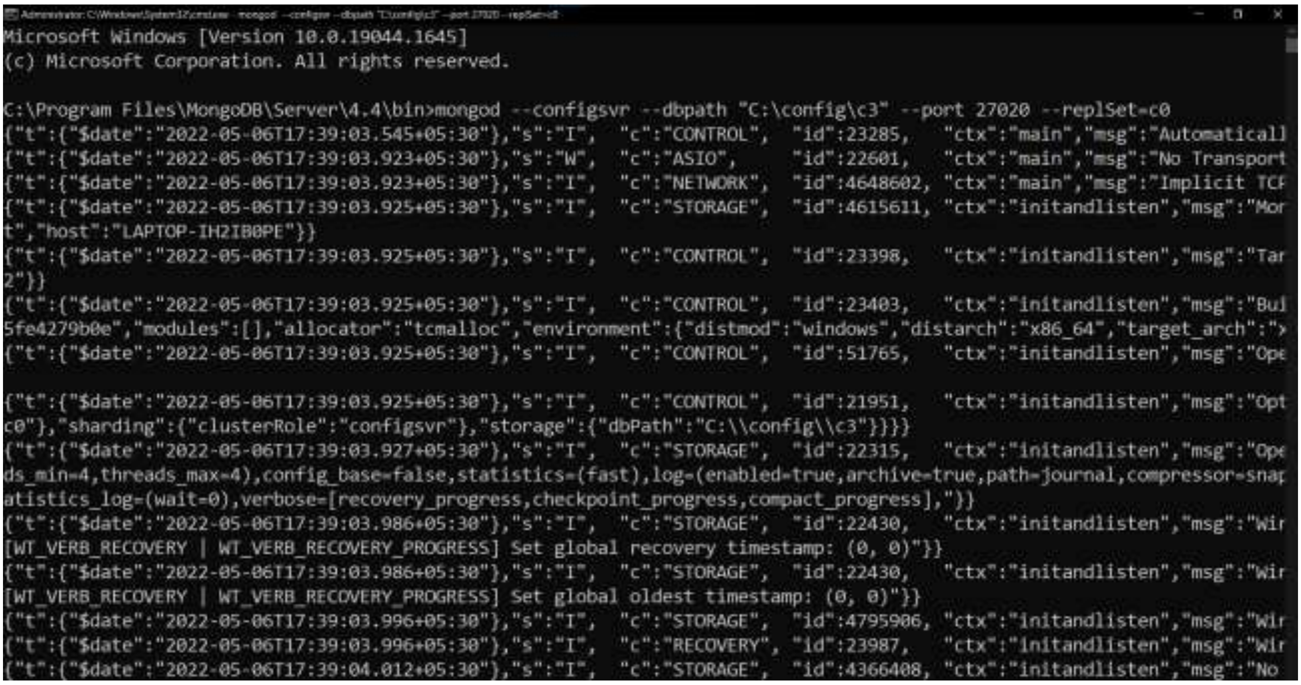


```
Microsoft Windows [Version 10.0.19044.1645]
(c) Microsoft Corporation. All rights reserved.

C:\Program Files\MongoDB\Server\4.4\bin>mongod --configsvr --dbpath "C:\config\c2" --port 27019 --replSet=c0
{"t":{"$date":"2022-05-06T17:38:11.227+05:30"},"s":"I",  "c":"CONTROL",  "id":23285,   "ctx":"main","msg":"Autom
{"t":{"$date":"2022-05-06T17:38:11.647+05:30"},"s":"W",  "c":"ASIO",     "id":22601,   "ctx":"main","msg":"No Tr
{"t":{"$date":"2022-05-06T17:38:11.648+05:30"},"s":"I",  "c":"NETWORK",  "id":4648602, "ctx":"main","msg":"Impli
{"t":{"$date":"2022-05-06T17:38:11.649+05:30"},"s":"I",  "c":"STORAGE",  "id":4615611, "ctx":"initandlisten","ms
it","host":"LAPTOP-IH2IB0PE"}}
{"t":{"$date":"2022-05-06T17:38:11.649+05:30"},"s":"I",  "c":"CONTROL",  "id":23398,   "ctx":"initandlisten","ms
2"}}
{"t":{"$date":"2022-05-06T17:38:11.649+05:30"},"s":"I",  "c":"CONTROL",  "id":23403,   "ctx":"initandlisten","ms
5fe4279b0e","modules":[],"allocator":"tcmalloc","environment":{"distmod":"windows","distarch":"x86_64","target_a
{"t":{"$date":"2022-05-06T17:38:11.649+05:30"},"s":"I",  "c":"CONTROL",  "id":51765,   "ctx":"initandlisten","ms

{"t":{"$date":"2022-05-06T17:38:11.649+05:30"},"s":"I",  "c":"CONTROL",  "id":21951,   "ctx":"initandlisten","ms
c0"},"sharding":{"clusterRole":"configsvr"},"storage":{"dbPath":"C:\\config\\c2"}}}}
{"t":{"$date":"2022-05-06T17:38:11.651+05:30"},"s":"I",  "c":"STORAGE",  "id":22315,   "ctx":"initandlisten","ms
ds_min=4,threads_max=4),config_base=false,statistics=(fast),log=(enabled=true,archive=true,path=journal,compress
atistics_log=(wait=0),verbose=[recovery_progress,checkpoint_progress,compact_progress],"}}
{"t":{"$date":"2022-05-06T17:38:11.693+05:30"},"s":"I",  "c":"STORAGE",  "id":22430,   "ctx":"initandlisten","ms
 [WT_VERB_RECOVERY | WT_VERB_RECOVERY_PROGRESS] Set global recovery timestamp: (0, 0)"}}
{"t":{"$date":"2022-05-06T17:38:11.693+05:30"},"s":"I",  "c":"STORAGE",  "id":22430,   "ctx":"initandlisten","ms
 [WT_VERB_RECOVERY | WT_VERB_RECOVERY_PROGRESS] Set global oldest timestamp: (0, 0)"}}
{"t":{"$date":"2022-05-06T17:38:11.703+05:30"},"s":"I",  "c":"STORAGE",  "id":4795906, "ctx":"initandlisten","ms
{"t":{"$date":"2022-05-06T17:38:11.703+05:30"},"s":"I",  "c":"RECOVERY", "id":23987,   "ctx":"initandlisten","ms
{"t":{"$date":"2022-05-06T17:38:11.716+05:30"},"s":"I",  "c":"STORAGE",  "id":4366408, "ctx":"initandlisten","ms
ggingEnabled":false}}
```

C:\Program Files\MongoDB\Server\4.2\bin>mongod --configsvr --dbpath "C:\config\c3" --port 27020 --replSet=c0



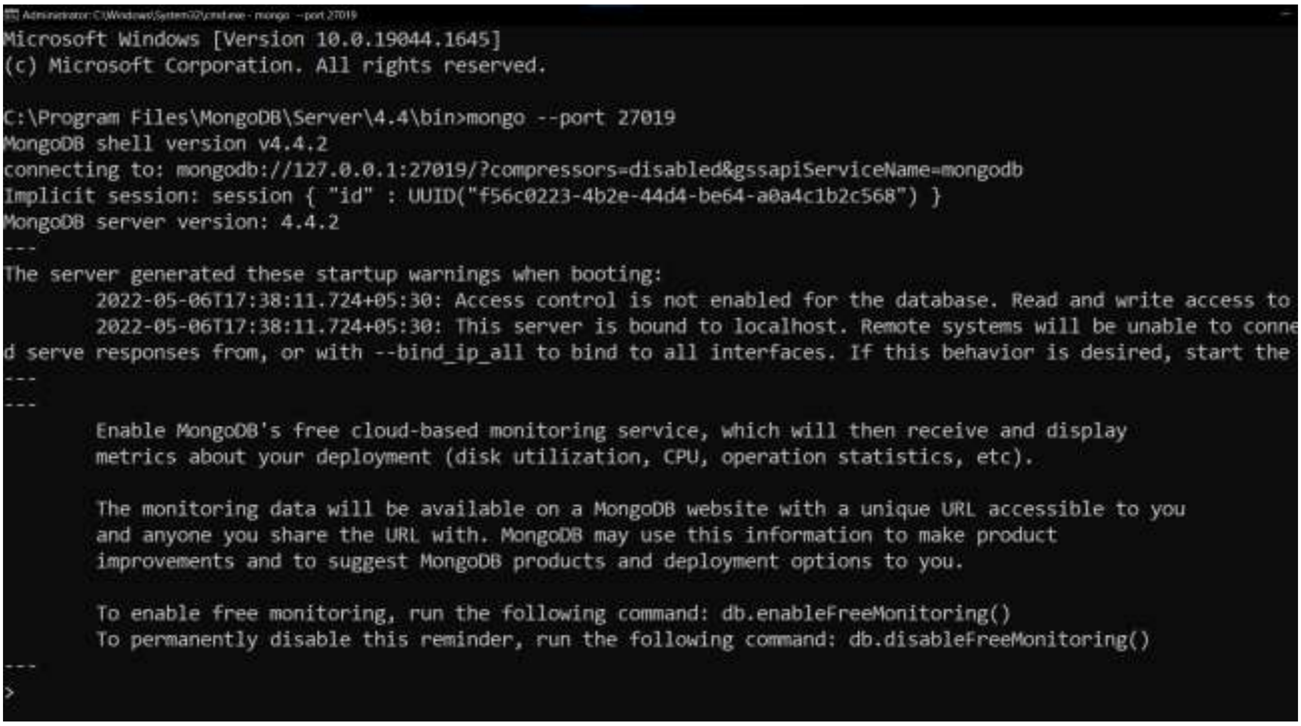
```
Microsoft Windows [Version 10.0.19044.1645]
(c) Microsoft Corporation. All rights reserved.

C:\Program Files\MongoDB\Server\4.4\bin>mongod --configsvr --dbpath "C:\config\c3" --port 27020 --replSet=c0
{"t":{"$date":"2022-05-06T17:39:03.545+05:30"},"s":"I",  "c":"CONTROL",  "id":23285,   "ctx":"main","msg":"Automaticall
{"t":{"$date":"2022-05-06T17:39:03.923+05:30"},"s":"W",  "c":"ASIO",     "id":22601,   "ctx":"main","msg":"No Transport
{"t":{"$date":"2022-05-06T17:39:03.923+05:30"},"s":"I",  "c":"NETWORK",  "id":4648602, "ctx":"main","msg":"Implicit TCP
{"t":{"$date":"2022-05-06T17:39:03.925+05:30"},"s":"I",  "c":"STORAGE",  "id":4615611, "ctx":"initandlisten","msg":"Mor
t","host":"LAPTOP-IH2IB0PE"}}
{"t":{"$date":"2022-05-06T17:39:03.925+05:30"},"s":"I",  "c":"CONTROL",  "id":23398,   "ctx":"initandlisten","msg":"Tar
2"}}
{"t":{"$date":"2022-05-06T17:39:03.925+05:30"},"s":"I",  "c":"CONTROL",  "id":23403,   "ctx":"initandlisten","msg":"Bui
5fe4279b0e","modules":[],"allocator":"tcmalloc","environment":{"distmod":"windows","distarch":"x86_64","target_arch":">
{"t":{"$date":"2022-05-06T17:39:03.925+05:30"},"s":"I",  "c":"CONTROL",  "id":51765,   "ctx":"initandlisten","msg":"Ope

{"t":{"$date":"2022-05-06T17:39:03.925+05:30"},"s":"I",  "c":"CONTROL",  "id":21951,   "ctx":"initandlisten","msg":"Opt
c0"},"sharding":{"clusterRole":"configsvr"},"storage":{"dbPath":"C:\\config\\c3"}}}}
{"t":{"$date":"2022-05-06T17:39:03.927+05:30"},"s":"I",  "c":"STORAGE",  "id":22315,   "ctx":"initandlisten","msg":"Ope
ds_min=4,threads_max=4),config_base=false,statistics=(fast),log=(enabled=true,archive=true,path=journal,compressor=snap
atistics_log=(wait=0),verbose=[recovery_progress,checkpoint_progress,compact_progress],"}}
{"t":{"$date":"2022-05-06T17:39:03.986+05:30"},"s":"I",  "c":"STORAGE",  "id":22430,   "ctx":"initandlisten","msg":"Wir
[WT_VERB_RECOVERY | WT_VERB_RECOVERY_PROGRESS] Set global recovery timestamp: (0, 0)"}}
{"t":{"$date":"2022-05-06T17:39:03.986+05:30"},"s":"I",  "c":"STORAGE",  "id":22430,   "ctx":"initandlisten","msg":"Wir
[WT_VERB_RECOVERY | WT_VERB_RECOVERY_PROGRESS] Set global oldest timestamp: (0, 0)"}}
{"t":{"$date":"2022-05-06T17:39:03.996+05:30"},"s":"I",  "c":"STORAGE",  "id":4795906, "ctx":"initandlisten","msg":"Wir
{"t":{"$date":"2022-05-06T17:39:03.996+05:30"},"s":"I",  "c":"RECOVERY", "id":23987,   "ctx":"initandlisten","msg":"Wir
{"t":{"$date":"2022-05-06T17:39:04.012+05:30"},"s":"I",  "c":"STORAGE",  "id":4366408, "ctx":"initandlisten","msg":"No
```

Now open any mongo client among all and connect with server using below command.

C:\>mongo --port 27019


Administrator: C:\Windows\System32\cmd.exe - mongo --port 27019

```
Microsoft Windows [Version 10.0.19044.1645]
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C:\Program Files\MongoDB\Server\4.4\bin>mongo --port 27019
MongoDB shell version v4.4.2
connecting to: mongodb://127.0.0.1:27019/?compressors=disabled&gssapiServiceName=mongodb
Implicit session: session { "id" : UUID("f56c0223-4b2e-44d4-be64-a0a4c1b2c568") }
MongoDB server version: 4.4.2
---
The server generated these startup warnings when booting:
        2022-05-06T17:38:11.724+05:30: Access control is not enabled for the database. Read and write access to
        2022-05-06T17:38:11.724+05:30: This server is bound to localhost. Remote systems will be unable to conne
d serve responses from, or with --bind_ip_all to bind to all interfaces. If this behavior is desired, start the
---
---
        Enable MongoDB's free cloud-based monitoring service, which will then receive and display
        metrics about your deployment (disk utilization, CPU, operation statistics, etc).

        The monitoring data will be available on a MongoDB website with a unique URL accessible to you
        and anyone you share the URL with. MongoDB may use this information to make product
        improvements and to suggest MongoDB products and deployment options to you.

        To enable free monitoring, run the following command: db.enableFreeMonitoring()
        To permanently disable this reminder, run the following command: db.disableFreeMonitoring()
---
>
```

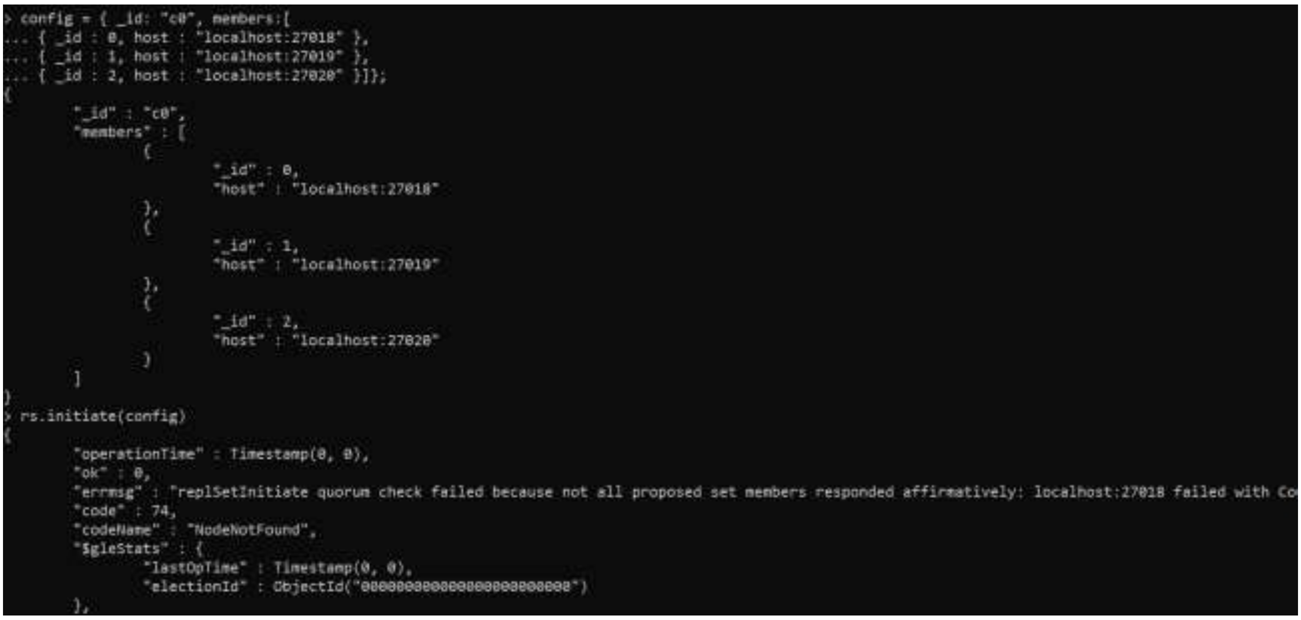
Create a group ,assign ids and replica using below command.

config = { _id: "c0", members:[

{ _id : 0, host : "localhost:27018" }, { _id :

1, host : "localhost:27019" },

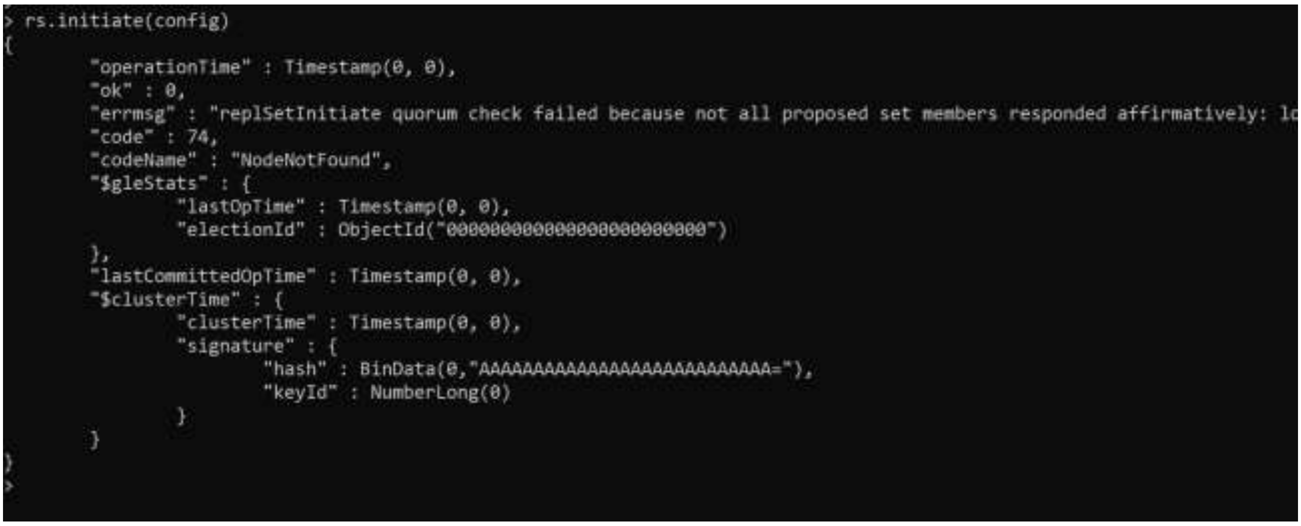
{ _id : 2, host : "localhost:27020" }]};



```
> config = { _id: "c0", members:[
... { _id : 0, host : "localhost:27018" },
... { _id : 1, host : "localhost:27019" },
... { _id : 2, host : "localhost:27020" }]};
{
        "_id" : "c0",
        "members" : [
                {
                        "_id" : 0,
                        "host" : "localhost:27018"
                },
                {
                        "_id" : 1,
                        "host" : "localhost:27019"
                },
                {
                        "_id" : 2,
                        "host" : "localhost:27020"
                }
        ]
}
> rs.initiate(config)
{
        "operationTime" : Timestamp(0, 0),
        "ok" : 0,
        "errmsg" : "replSetInitiate quorum check failed because not all proposed set members responded affirmatively: localhost:27018 failed with Co
        "code" : 74,
        "codeName" : "NodeNotFound",
        "$gleStats" : {
                "lastOpTime" : Timestamp(0, 0),
                "electionId" : ObjectId("000000000000000000000000")
        },
```

Set any node as primary node using below given command.

rs.initiate(config)



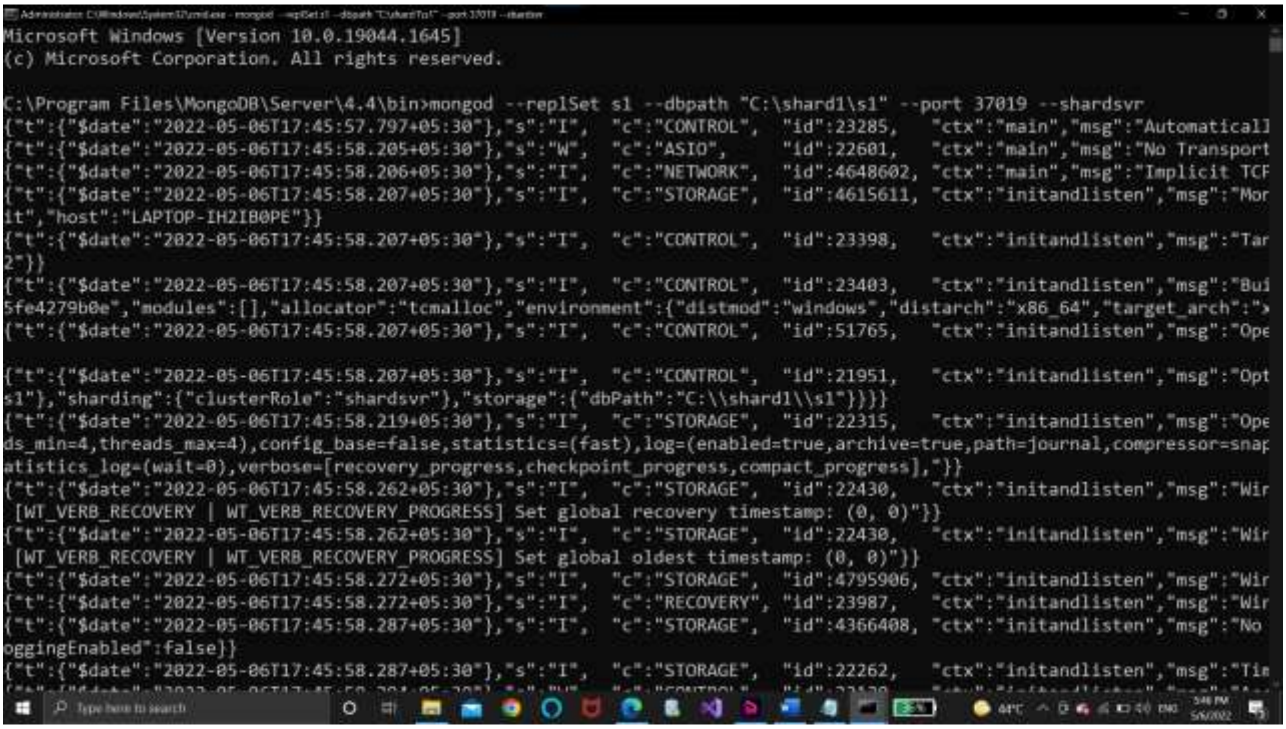
```
> rs.initiate(config)
{
        "operationTime" : Timestamp(0, 0),
        "ok" : 0,
        "errmsg" : "replSetInitiate quorum check failed because not all proposed set members responded affirmatively: lo
        "code" : 74,
        "codeName" : "NodeNotFound",
        "$gleStats" : {
                "lastOpTime" : Timestamp(0, 0),
                "electionId" : ObjectId("000000000000000000000000")
        },
        "lastCommittedOpTime" : Timestamp(0, 0),
        "$clusterTime" : {
                "clusterTime" : Timestamp(0, 0),
                "signature" : {
                        "hash" : BinData(0,"AAAAAAAAAAAAAAAAAAAAAAAAAAA="),
                        "keyId" : NumberLong(0)
                }
        }
}
>
```

STEP 5 (SHARD 1)

OPEN command Prompt.

Create three Shard Server. Then Set one shard Server as Primary and remaining two as secondary. ***Using below commands.***

C:\Program Files\MongoDB\Server\4.2\bin>mongod --replSet s1 --dbpath "C:\shard2\s1" --port 37019 --shardsvr



```
Microsoft Windows [Version 10.0.19044.1645]
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C:\Program Files\MongoDB\Server\4.4\bin>mongod --replSet s1 --dbpath "C:\shard1\s1" --port 37019 --shardsvr
{"t":{"$date":"2022-05-06T17:45:57.797+05:30"},"s":"I",  "c":"CONTROL",  "id":23285,   "ctx":"main","msg":"Automaticall
{"t":{"$date":"2022-05-06T17:45:58.205+05:30"},"s":"W",  "c":"ASIO",     "id":22601,   "ctx":"main","msg":"No Transport
{"t":{"$date":"2022-05-06T17:45:58.206+05:30"},"s":"I",  "c":"NETWORK",  "id":4648602, "ctx":"main","msg":"Implicit TCF
{"t":{"$date":"2022-05-06T17:45:58.207+05:30"},"s":"I",  "c":"STORAGE",  "id":4615611, "ctx":"initandlisten","msg":"Mor
it","host":"LAPTOP-IH2IB0PE"}}
{"t":{"$date":"2022-05-06T17:45:58.207+05:30"},"s":"I",  "c":"CONTROL",  "id":23398,   "ctx":"initandlisten","msg":"Tar
2"}}
{"t":{"$date":"2022-05-06T17:45:58.207+05:30"},"s":"I",  "c":"CONTROL",  "id":23403,   "ctx":"initandlisten","msg":"Bui
5fe4279b0e","modules":[],"allocator":"tcmalloc","environment":{"distmod":"windows","distarch":"x86_64","target_arch":"x
{"t":{"$date":"2022-05-06T17:45:58.207+05:30"},"s":"I",  "c":"CONTROL",  "id":51765,   "ctx":"initandlisten","msg":"Ope

{"t":{"$date":"2022-05-06T17:45:58.207+05:30"},"s":"I",  "c":"CONTROL",  "id":21951,   "ctx":"initandlisten","msg":"Opt
s1"},"sharding":{"clusterRole":"shardsvr"},"storage":{"dbPath":"C:\\shard1\\s1"}}}}
{"t":{"$date":"2022-05-06T17:45:58.219+05:30"},"s":"I",  "c":"STORAGE",  "id":22315,   "ctx":"initandlisten","msg":"Ope
ds_min=4,threads_max=4),config_base=false,statistics=(fast),log=(enabled=true,archive=true,path=journal,compressor=snap
atistics_log=(wait=0),verbose=[recovery_progress,checkpoint_progress,compact_progress],"}}
{"t":{"$date":"2022-05-06T17:45:58.262+05:30"},"s":"I",  "c":"STORAGE",  "id":22430,   "ctx":"initandlisten","msg":"Wir
 [WT_VERB_RECOVERY | WT_VERB_RECOVERY_PROGRESS] Set global recovery timestamp: (0, 0)"}}
{"t":{"$date":"2022-05-06T17:45:58.262+05:30"},"s":"I",  "c":"STORAGE",  "id":22430,   "ctx":"initandlisten","msg":"Wir
 [WT_VERB_RECOVERY | WT_VERB_RECOVERY_PROGRESS] Set global oldest timestamp: (0, 0)"}}
{"t":{"$date":"2022-05-06T17:45:58.272+05:30"},"s":"I",  "c":"STORAGE",  "id":4795906, "ctx":"initandlisten","msg":"Wir
{"t":{"$date":"2022-05-06T17:45:58.272+05:30"},"s":"I",  "c":"RECOVERY", "id":23987,   "ctx":"initandlisten","msg":"Wir
{"t":{"$date":"2022-05-06T17:45:58.287+05:30"},"s":"I",  "c":"STORAGE",  "id":4366408, "ctx":"initandlisten","msg":"No
oggingEnabled":false}}
{"t":{"$date":"2022-05-06T17:45:58.287+05:30"},"s":"I",  "c":"STORAGE",  "id":22262,   "ctx":"initandlisten","msg":"Tim
```
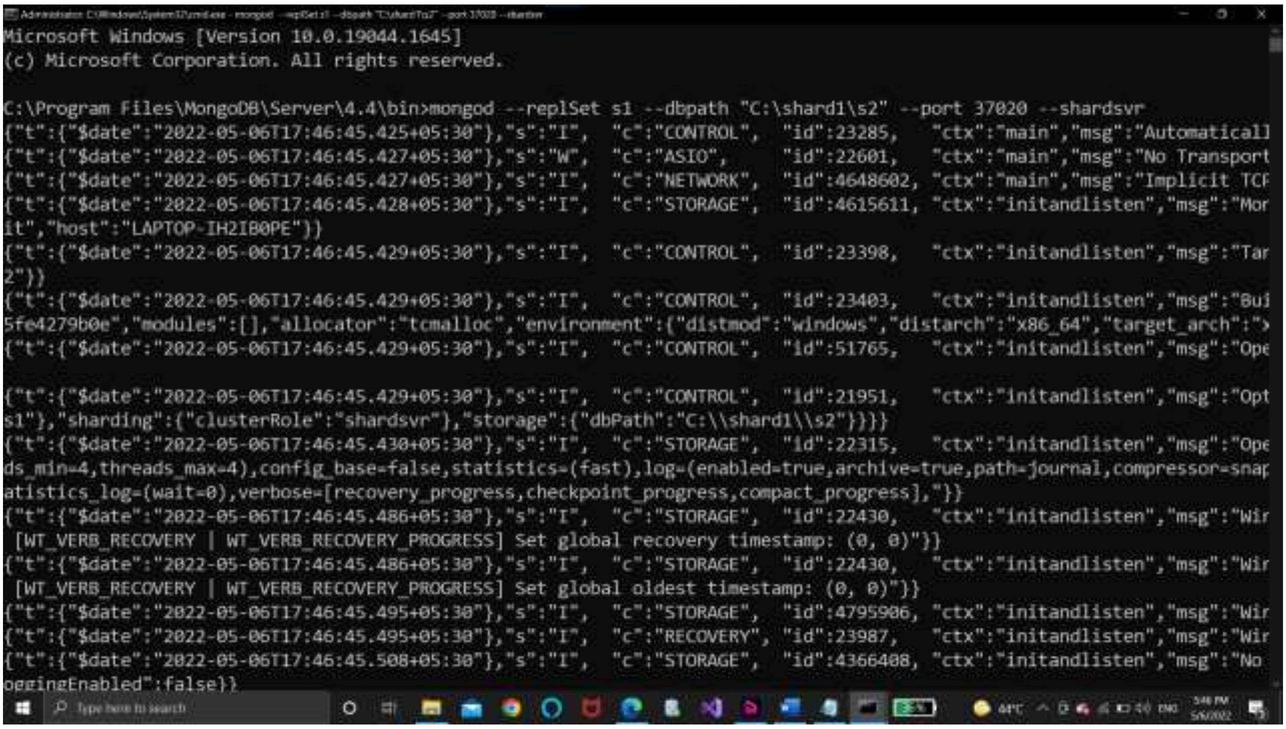

C:\Program Files\MongoDB\Server\4.2\bin>mongod --replSet s1 --dbpath "C:\shard2\s2" --port 37020 --shardsvr



```
Microsoft Windows [Version 10.0.19044.1645]
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C:\Program Files\MongoDB\Server\4.4\bin>mongod --replSet s1 --dbpath "C:\shard1\s2" --port 37020 --shardsvr
{"t":{"$date":"2022-05-06T17:46:45.425+05:30"},"s":"I",  "c":"CONTROL",  "id":23285,   "ctx":"main","msg":"Automaticall
{"t":{"$date":"2022-05-06T17:46:45.427+05:30"},"s":"W",  "c":"ASIO",     "id":22601,   "ctx":"main","msg":"No Transport
{"t":{"$date":"2022-05-06T17:46:45.427+05:30"},"s":"I",  "c":"NETWORK",  "id":4648602, "ctx":"main","msg":"Implicit TCF
{"t":{"$date":"2022-05-06T17:46:45.428+05:30"},"s":"I",  "c":"STORAGE",  "id":4615611, "ctx":"initandlisten","msg":"Mor
it","host":"LAPTOP-IH2IB0PE"}}
{"t":{"$date":"2022-05-06T17:46:45.429+05:30"},"s":"I",  "c":"CONTROL",  "id":23398,   "ctx":"initandlisten","msg":"Tar
2"}}
{"t":{"$date":"2022-05-06T17:46:45.429+05:30"},"s":"I",  "c":"CONTROL",  "id":23403,   "ctx":"initandlisten","msg":"Bui
5fe4279b0e","modules":[],"allocator":"tcmalloc","environment":{"distmod":"windows","distarch":"x86_64","target_arch":">
{"t":{"$date":"2022-05-06T17:46:45.429+05:30"},"s":"I",  "c":"CONTROL",  "id":51765,   "ctx":"initandlisten","msg":"Ope

{"t":{"$date":"2022-05-06T17:46:45.429+05:30"},"s":"I",  "c":"CONTROL",  "id":21951,   "ctx":"initandlisten","msg":"Opt
s1"},"sharding":{"clusterRole":"shardsvr"},"storage":{"dbPath":"C:\\shard1\\s2"}}}}
{"t":{"$date":"2022-05-06T17:46:45.430+05:30"},"s":"I",  "c":"STORAGE",  "id":22315,   "ctx":"initandlisten","msg":"Ope
ds_min=4,threads_max=4),config_base=false,statistics=(fast),log=(enabled=true,archive=true,path=journal,compressor=snap
atistics_log=(wait=0),verbose=[recovery_progress,checkpoint_progress,compact_progress],"}}
{"t":{"$date":"2022-05-06T17:46:45.486+05:30"},"s":"I",  "c":"STORAGE",  "id":22430,   "ctx":"initandlisten","msg":"Wir
 [WT_VERB_RECOVERY | WT_VERB_RECOVERY_PROGRESS] Set global recovery timestamp: (0, 0)"}}
{"t":{"$date":"2022-05-06T17:46:45.486+05:30"},"s":"I",  "c":"STORAGE",  "id":22430,   "ctx":"initandlisten","msg":"Wir
 [WT_VERB_RECOVERY | WT_VERB_RECOVERY_PROGRESS] Set global oldest timestamp: (0, 0)"}}
{"t":{"$date":"2022-05-06T17:46:45.495+05:30"},"s":"I",  "c":"STORAGE",  "id":4795906, "ctx":"initandlisten","msg":"Wir
{"t":{"$date":"2022-05-06T17:46:45.495+05:30"},"s":"I",  "c":"RECOVERY", "id":23987,   "ctx":"initandlisten","msg":"Wir
{"t":{"$date":"2022-05-06T17:46:45.508+05:30"},"s":"I",  "c":"STORAGE",  "id":4366408, "ctx":"initandlisten","msg":"No 
oggingEnabled":false}}
```
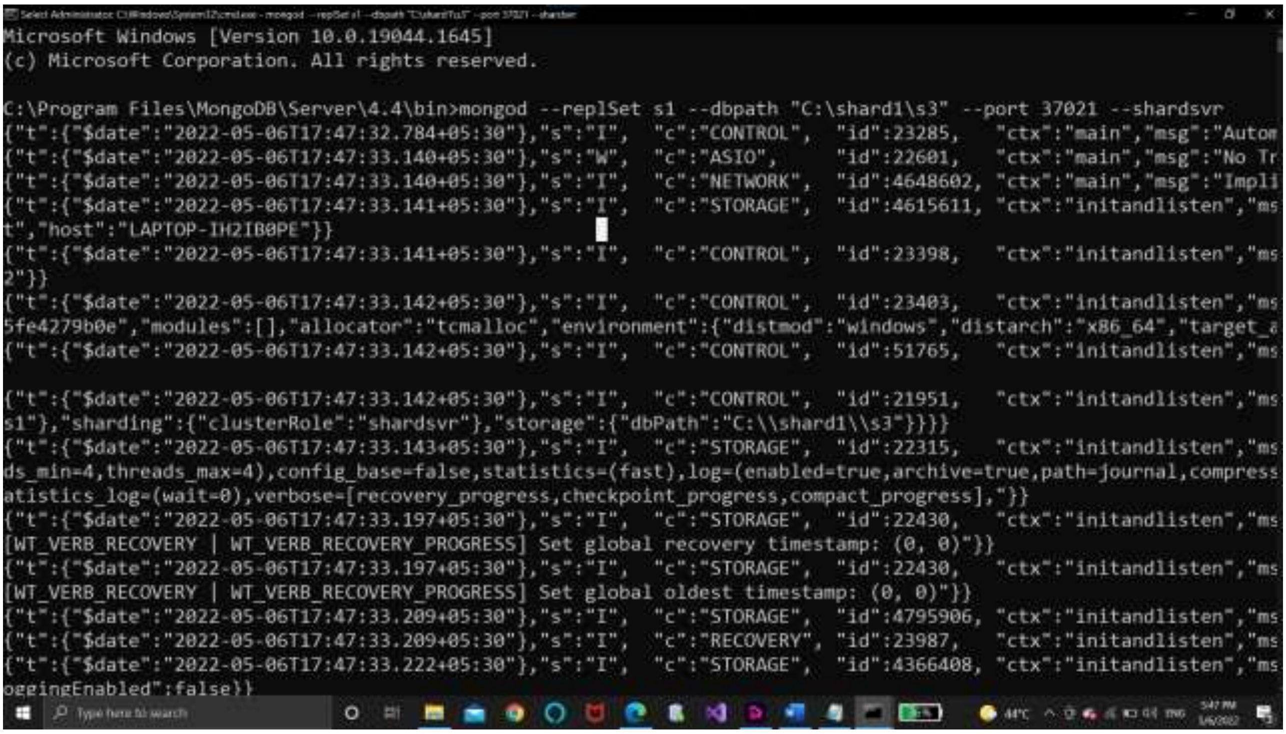
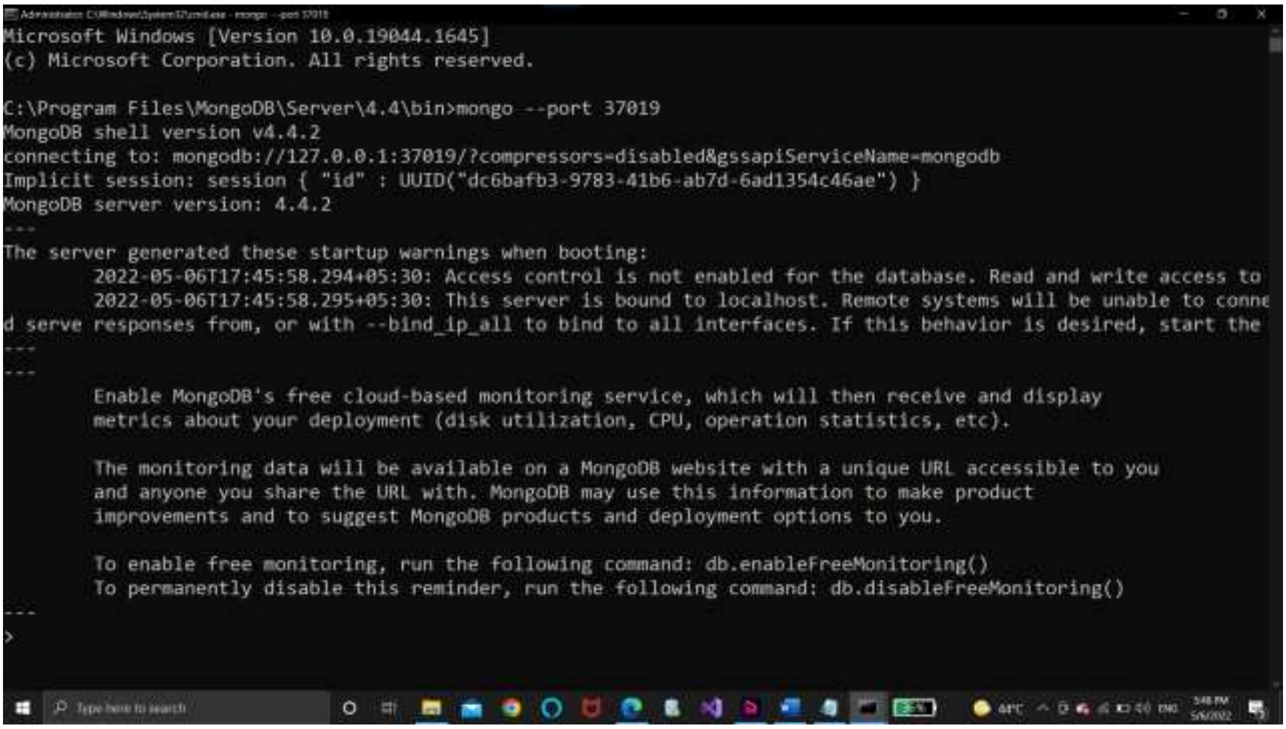

C:\Program Files\MongoDB\Server\4.2\bin>mongod --replSet s1 --dbpath "C:\shard2\s3" --port 37021 –shardsvr



```
Microsoft Windows [Version 10.0.19044.1645]
(c) Microsoft Corporation. All rights reserved.

C:\Program Files\MongoDB\Server\4.4\bin>mongod --replSet s1 --dbpath "C:\shard1\s3" --port 37021 --shardsvr
{"t":{"$date":"2022-05-06T17:47:32.784+05:30"},"s":"I",  "c":"CONTROL",  "id":23285,   "ctx":"main","msg":"Autom
{"t":{"$date":"2022-05-06T17:47:33.140+05:30"},"s":"W",  "c":"ASIO",     "id":22601,   "ctx":"main","msg":"No Tr
{"t":{"$date":"2022-05-06T17:47:33.140+05:30"},"s":"I",  "c":"NETWORK",  "id":4648602, "ctx":"main","msg":"Impli
{"t":{"$date":"2022-05-06T17:47:33.141+05:30"},"s":"I",  "c":"STORAGE",  "id":4615611, "ctx":"initandlisten","ms
t","host":"LAPTOP-IH2IB0PE"}}
{"t":{"$date":"2022-05-06T17:47:33.141+05:30"},"s":"I",  "c":"CONTROL",  "id":23398,   "ctx":"initandlisten","ms
2"}}
{"t":{"$date":"2022-05-06T17:47:33.142+05:30"},"s":"I",  "c":"CONTROL",  "id":23403,   "ctx":"initandlisten","ms
5fe4279b0e","modules":[],"allocator":"tcmalloc","environment":{"distmod":"windows","distarch":"x86_64","target_a
{"t":{"$date":"2022-05-06T17:47:33.142+05:30"},"s":"I",  "c":"CONTROL",  "id":51765,   "ctx":"initandlisten","ms

{"t":{"$date":"2022-05-06T17:47:33.142+05:30"},"s":"I",  "c":"CONTROL",  "id":21951,   "ctx":"initandlisten","ms
s1"},"sharding":{"clusterRole":"shardsvr"},"storage":{"dbPath":"C:\\shard1\\s3"}}}}
{"t":{"$date":"2022-05-06T17:47:33.143+05:30"},"s":"I",  "c":"STORAGE",  "id":22315,   "ctx":"initandlisten","ms
ds_min=4,threads_max=4),config_base=false,statistics=(fast),log=(enabled=true,archive=true,path=journal,compress
atistics_log=(wait=0),verbose=[recovery_progress,checkpoint_progress,compact_progress],"}}
{"t":{"$date":"2022-05-06T17:47:33.197+05:30"},"s":"I",  "c":"STORAGE",  "id":22430,   "ctx":"initandlisten","ms
[WT_VERB_RECOVERY | WT_VERB_RECOVERY_PROGRESS] Set global recovery timestamp: (0, 0)"}}
{"t":{"$date":"2022-05-06T17:47:33.197+05:30"},"s":"I",  "c":"STORAGE",  "id":22430,   "ctx":"initandlisten","ms
[WT_VERB_RECOVERY | WT_VERB_RECOVERY_PROGRESS] Set global oldest timestamp: (0, 0)"}}
{"t":{"$date":"2022-05-06T17:47:33.209+05:30"},"s":"I",  "c":"STORAGE",  "id":4795906, "ctx":"initandlisten","ms
{"t":{"$date":"2022-05-06T17:47:33.209+05:30"},"s":"I",  "c":"RECOVERY", "id":23987,   "ctx":"initandlisten","ms
{"t":{"$date":"2022-05-06T17:47:33.222+05:30"},"s":"I",  "c":"STORAGE",  "id":4366408, "ctx":"initandlisten","ms
oggingEnabled":false}}
```

<u>Now open any mongo client among all and connect with server using below command.</u>

C:\>mongo --port 37019



Administrator: C:\Windows\System32\cmd.exe - mongo --port 37019

```
Microsoft Windows [Version 10.0.19044.1645]
(c) Microsoft Corporation. All rights reserved.

C:\Program Files\MongoDB\Server\4.4\bin>mongo --port 37019
MongoDB shell version v4.4.2
connecting to: mongodb://127.0.0.1:37019/?compressors=disabled&gssapiServiceName=mongodb
Implicit session: session { "id" : UUID("dc6bafb3-9783-41b6-ab7d-6ad1354c46ae") }
MongoDB server version: 4.4.2
---
The server generated these startup warnings when booting:
        2022-05-06T17:45:58.294+05:30: Access control is not enabled for the database. Read and write access to
        2022-05-06T17:45:58.295+05:30: This server is bound to localhost. Remote systems will be unable to conne
d serve responses from, or with --bind_ip_all to bind to all interfaces. If this behavior is desired, start the
---
---
        Enable MongoDB's free cloud-based monitoring service, which will then receive and display
        metrics about your deployment (disk utilization, CPU, operation statistics, etc).

        The monitoring data will be available on a MongoDB website with a unique URL accessible to you
        and anyone you share the URL with. MongoDB may use this information to make product
        improvements and to suggest MongoDB products and deployment options to you.

        To enable free monitoring, run the following command: db.enableFreeMonitoring()
        To permanently disable this reminder, run the following command: db.disableFreeMonitoring()
---
>
```

Create a group ,assign ids and replica using below command.

config = { _id: "s1", members:[

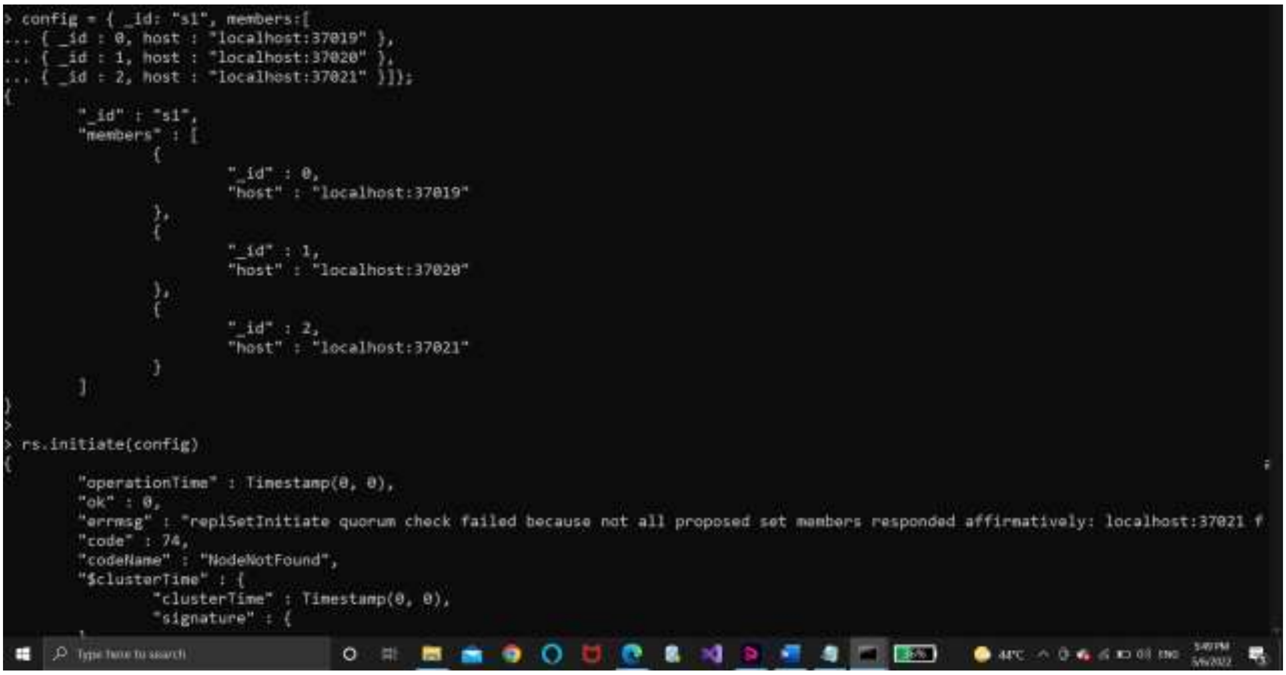
{ _id : 0, host : "localhost:37019" }, {

_id : 1, host : "localhost:37020" },

{ _id : 2, host : "localhost:37021" }]};

<u>Set any node as primary node using below given command.</u>

rs.initiate(config)



```
> config = { _id: "s1", members:[
... { _id : 0, host : "localhost:37019" },
... { _id : 1, host : "localhost:37020" },
... { _id : 2, host : "localhost:37021" }]};
{
        "_id" : "s1",
        "members" : [
                {
                        "_id" : 0,
                        "host" : "localhost:37019"
                },
                {
                        "_id" : 1,
                        "host" : "localhost:37020"
                },
                {
                        "_id" : 2,
                        "host" : "localhost:37021"
                }
        ]
}
>
> rs.initiate(config)
{
        "operationTime" : Timestamp(0, 0),
        "ok" : 0,
        "errmsg" : "replSetInitiate quorum check failed because not all proposed set members responded affirmatively: localhost:37021 f
        "code" : 74,
        "codeName" : "NodeNotFound",
        "$clusterTime" : {
                "clusterTime" : Timestamp(0, 0),
                "signature" : {
```

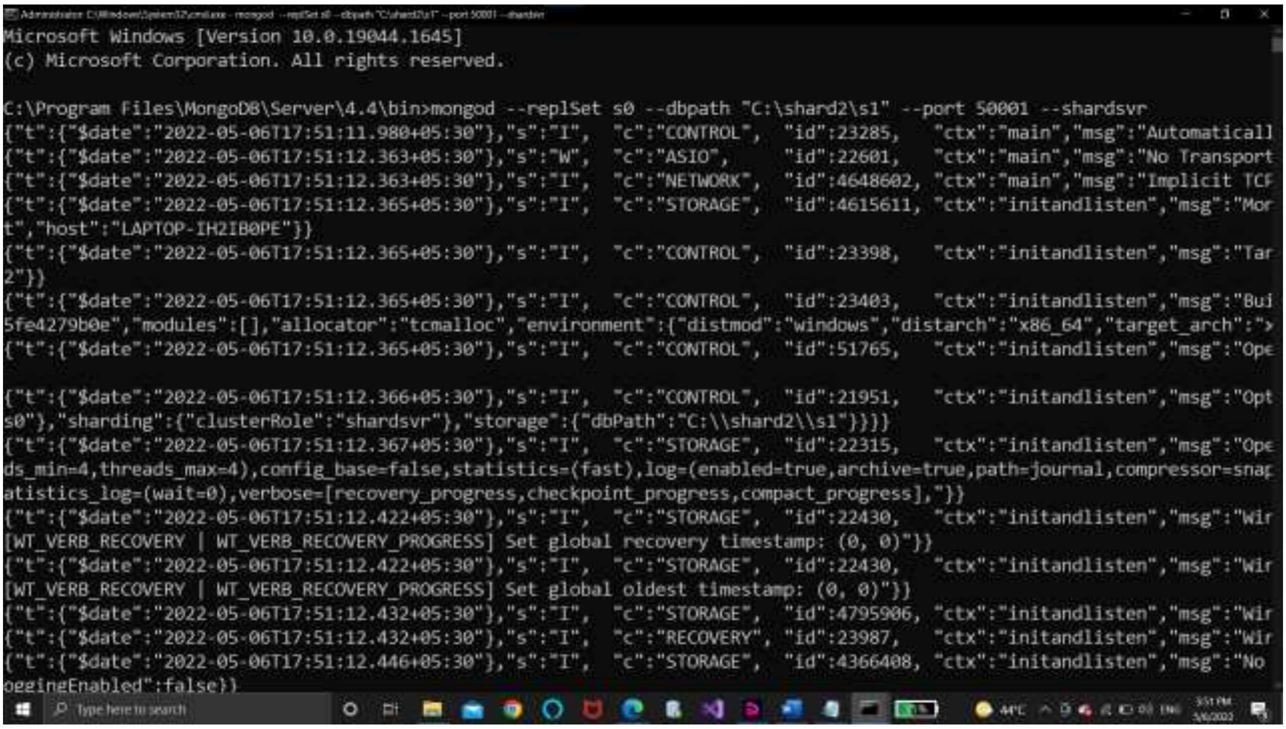
<u>STEP 6 (SHARD 2)</u>

<u>OPEN command Prompt.</u>

<u>Create three Shard Server. Then Set one shard Server as Primary and remaining two as secondary.</u>

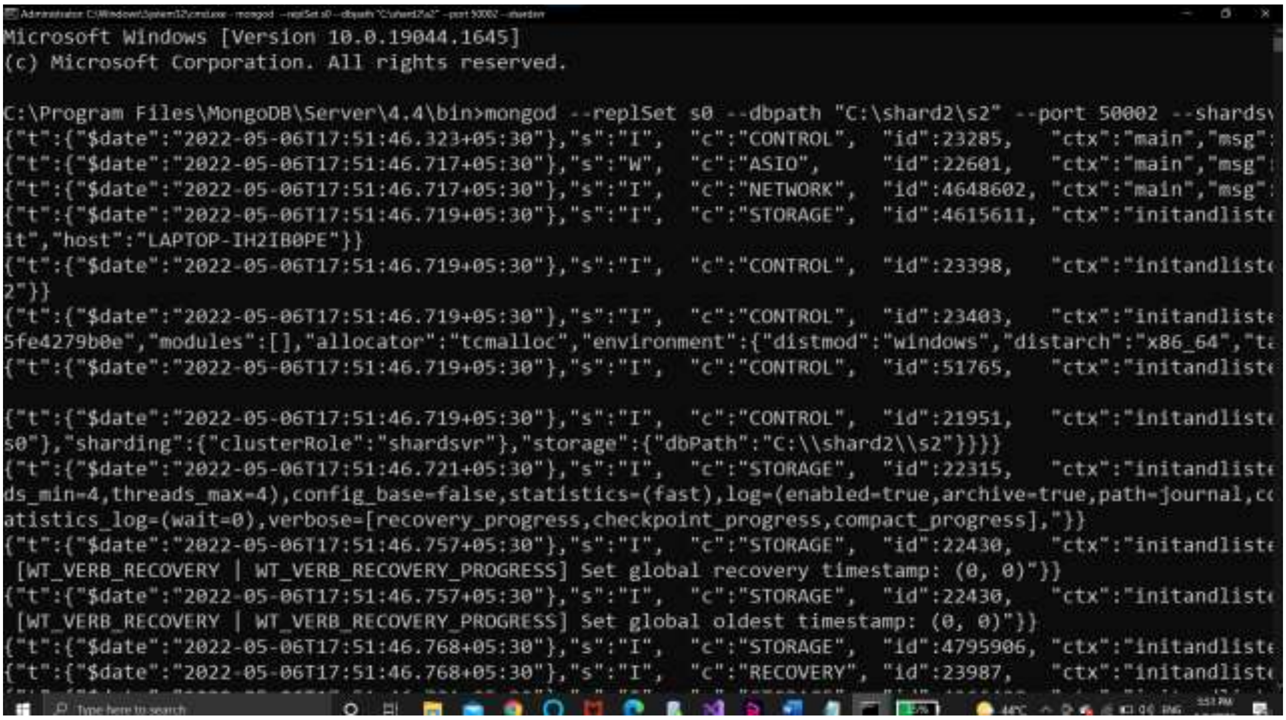
<u>Using below commands.</u>

C:\Program Files\MongoDB\Server\4.2\bin>mongod --replSet s0 --dbpath "C:\shard1\s1" --port 50001 --shardsvr



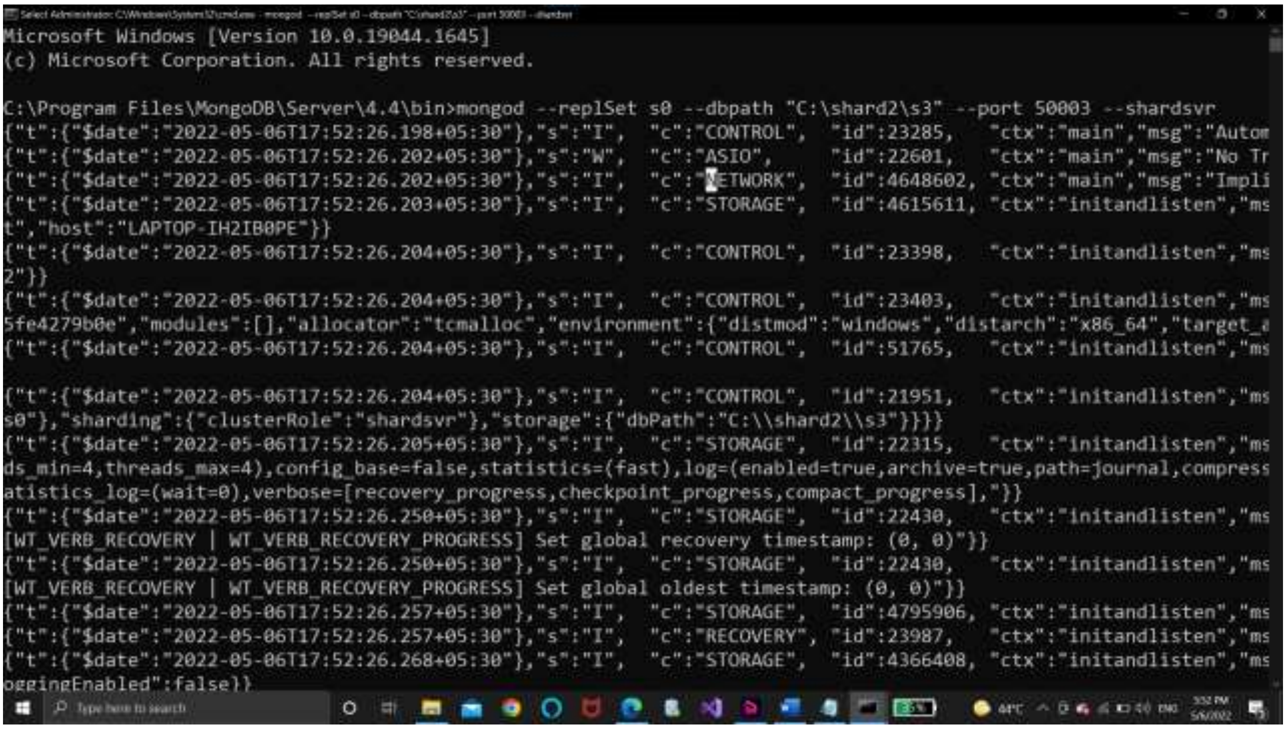
```
Microsoft Windows [Version 10.0.19044.1645]
(c) Microsoft Corporation. All rights reserved.

C:\Program Files\MongoDB\Server\4.4\bin>mongod --replSet s0 --dbpath "C:\shard2\s1" --port 50001 --shardsvr
{"t":{"$date":"2022-05-06T17:51:11.980+05:30"},"s":"I",  "c":"CONTROL",  "id":23285,   "ctx":"main","msg":"Automaticall
{"t":{"$date":"2022-05-06T17:51:12.363+05:30"},"s":"W",  "c":"ASIO",     "id":22601,   "ctx":"main","msg":"No Transport
{"t":{"$date":"2022-05-06T17:51:12.363+05:30"},"s":"I",  "c":"NETWORK",  "id":4648602, "ctx":"main","msg":"Implicit TCF
{"t":{"$date":"2022-05-06T17:51:12.365+05:30"},"s":"I",  "c":"STORAGE",  "id":4615611, "ctx":"initandlisten","msg":"Mor
t","host":"LAPTOP-IH2IB0PE"}}
{"t":{"$date":"2022-05-06T17:51:12.365+05:30"},"s":"I",  "c":"CONTROL",  "id":23398,   "ctx":"initandlisten","msg":"Tar
2"}}
{"t":{"$date":"2022-05-06T17:51:12.365+05:30"},"s":"I",  "c":"CONTROL",  "id":23403,   "ctx":"initandlisten","msg":"Bui
5fe4279b0e","modules":[],"allocator":"tcmalloc","environment":{"distmod":"windows","distarch":"x86_64","target_arch":">
{"t":{"$date":"2022-05-06T17:51:12.365+05:30"},"s":"I",  "c":"CONTROL",  "id":51765,   "ctx":"initandlisten","msg":"Ope

{"t":{"$date":"2022-05-06T17:51:12.366+05:30"},"s":"I",  "c":"CONTROL",  "id":21951,   "ctx":"initandlisten","msg":"Opt
s0"},"sharding":{"clusterRole":"shardsvr"},"storage":{"dbPath":"C:\\shard2\\s1"}}}}
{"t":{"$date":"2022-05-06T17:51:12.367+05:30"},"s":"I",  "c":"STORAGE",  "id":22315,   "ctx":"initandlisten","msg":"Ope
ds_min=4,threads_max=4),config_base=false,statistics=(fast),log=(enabled=true,archive=true,path=journal,compressor=snap
atistics_log=(wait=0),verbose=[recovery_progress,checkpoint_progress,compact_progress],"}}
{"t":{"$date":"2022-05-06T17:51:12.422+05:30"},"s":"I",  "c":"STORAGE",  "id":22430,   "ctx":"initandlisten","msg":"Wir
[WT_VERB_RECOVERY | WT_VERB_RECOVERY_PROGRESS] Set global recovery timestamp: (0, 0)"}}
{"t":{"$date":"2022-05-06T17:51:12.422+05:30"},"s":"I",  "c":"STORAGE",  "id":22430,   "ctx":"initandlisten","msg":"Wir
[WT_VERB_RECOVERY | WT_VERB_RECOVERY_PROGRESS] Set global oldest timestamp: (0, 0)"}}
{"t":{"$date":"2022-05-06T17:51:12.432+05:30"},"s":"I",  "c":"STORAGE",  "id":4795906, "ctx":"initandlisten","msg":"Wir
{"t":{"$date":"2022-05-06T17:51:12.432+05:30"},"s":"I",  "c":"RECOVERY", "id":23987,   "ctx":"initandlisten","msg":"Wir
{"t":{"$date":"2022-05-06T17:51:12.446+05:30"},"s":"I",  "c":"STORAGE",  "id":4366408, "ctx":"initandlisten","msg":"No
oggingEnabled":false}}
```

C:\Program Files\MongoDB\Server\4.2\bin>mongod --replSet s0 --dbpath "C:\shard1\s2" --port 50002 --shardsvr



```
Microsoft Windows [Version 10.0.19044.1645]
(c) Microsoft Corporation. All rights reserved.

C:\Program Files\MongoDB\Server\4.4\bin>mongod --replSet s0 --dbpath "C:\shard2\s2" --port 50002 --shards
{"t":{"$date":"2022-05-06T17:51:46.323+05:30"},"s":"I",  "c":"CONTROL",  "id":23285,   "ctx":"main","msg":
{"t":{"$date":"2022-05-06T17:51:46.717+05:30"},"s":"W",  "c":"ASIO",     "id":22601,   "ctx":"main","msg":
{"t":{"$date":"2022-05-06T17:51:46.717+05:30"},"s":"I",  "c":"NETWORK",  "id":4648602, "ctx":"main","msg":
{"t":{"$date":"2022-05-06T17:51:46.719+05:30"},"s":"I",  "c":"STORAGE",  "id":4615611, "ctx":"initandliste
it","host":"LAPTOP-IH2IB0PE"}}
{"t":{"$date":"2022-05-06T17:51:46.719+05:30"},"s":"I",  "c":"CONTROL",  "id":23398,   "ctx":"initandliste
2"}}
{"t":{"$date":"2022-05-06T17:51:46.719+05:30"},"s":"I",  "c":"CONTROL",  "id":23403,   "ctx":"initandliste
5fe4279b0e","modules":[],"allocator":"tcmalloc","environment":{"distmod":"windows","distarch":"x86_64","ta
{"t":{"$date":"2022-05-06T17:51:46.719+05:30"},"s":"I",  "c":"CONTROL",  "id":51765,   "ctx":"initandliste

{"t":{"$date":"2022-05-06T17:51:46.719+05:30"},"s":"I",  "c":"CONTROL",  "id":21951,   "ctx":"initandliste
s0"},"sharding":{"clusterRole":"shardsvr"},"storage":{"dbPath":"C:\\shard2\\s2"}}}}
{"t":{"$date":"2022-05-06T17:51:46.721+05:30"},"s":"I",  "c":"STORAGE",  "id":22315,   "ctx":"initandliste
ds_min=4,threads_max=4),config_base=false,statistics=(fast),log=(enabled=true,archive=true,path=journal,cc
atistics_log=(wait=0),verbose=[recovery_progress,checkpoint_progress,compact_progress],"}}
{"t":{"$date":"2022-05-06T17:51:46.757+05:30"},"s":"I",  "c":"STORAGE",  "id":22430,   "ctx":"initandliste
 [WT_VERB_RECOVERY | WT_VERB_RECOVERY_PROGRESS] Set global recovery timestamp: (0, 0)"}}
{"t":{"$date":"2022-05-06T17:51:46.757+05:30"},"s":"I",  "c":"STORAGE",  "id":22430,   "ctx":"initandliste
 [WT_VERB_RECOVERY | WT_VERB_RECOVERY_PROGRESS] Set global oldest timestamp: (0, 0)"}}
{"t":{"$date":"2022-05-06T17:51:46.768+05:30"},"s":"I",  "c":"STORAGE",  "id":4795906, "ctx":"initandliste
{"t":{"$date":"2022-05-06T17:51:46.768+05:30"},"s":"I",  "c":"RECOVERY", "id":23987,   "ctx":"initandliste
```

C:\Program Files\MongoDB\Server\4.2\bin>mongod --replSet s0 --dbpath "C:\shard1\s3" --port 50003 --shardsvr



```
Microsoft Windows [Version 10.0.19044.1645]
(c) Microsoft Corporation. All rights reserved.

C:\Program Files\MongoDB\Server\4.4\bin>mongod --replSet s0 --dbpath "C:\shard2\s3" --port 50003 --shardsvr
{"t":{"$date":"2022-05-06T17:52:26.198+05:30"},"s":"I",  "c":"CONTROL",  "id":23285,   "ctx":"main","msg":"Autom
{"t":{"$date":"2022-05-06T17:52:26.202+05:30"},"s":"W",  "c":"ASIO",     "id":22601,   "ctx":"main","msg":"No Tr
{"t":{"$date":"2022-05-06T17:52:26.202+05:30"},"s":"I",  "c":"NETWORK",  "id":4648602, "ctx":"main","msg":"Impli
{"t":{"$date":"2022-05-06T17:52:26.203+05:30"},"s":"I",  "c":"STORAGE",  "id":4615611, "ctx":"initandlisten","ms
t","host":"LAPTOP-IH2IB0PE"}}
{"t":{"$date":"2022-05-06T17:52:26.204+05:30"},"s":"I",  "c":"CONTROL",  "id":23398,   "ctx":"initandlisten","ms
2"}}
{"t":{"$date":"2022-05-06T17:52:26.204+05:30"},"s":"I",  "c":"CONTROL",  "id":23403,   "ctx":"initandlisten","ms
5fe4279b0e","modules":[],"allocator":"tcmalloc","environment":{"distmod":"windows","distarch":"x86_64","target_a
{"t":{"$date":"2022-05-06T17:52:26.204+05:30"},"s":"I",  "c":"CONTROL",  "id":51765,   "ctx":"initandlisten","ms

{"t":{"$date":"2022-05-06T17:52:26.204+05:30"},"s":"I",  "c":"CONTROL",  "id":21951,   "ctx":"initandlisten","ms
s0"},"sharding":{"clusterRole":"shardsvr"},"storage":{"dbPath":"C:\\shard2\\s3"}}}}
{"t":{"$date":"2022-05-06T17:52:26.205+05:30"},"s":"I",  "c":"STORAGE",  "id":22315,   "ctx":"initandlisten","ms
ds_min=4,threads_max=4),config_base=false,statistics=(fast),log=(enabled=true,archive=true,path=journal,compress
atistics_log=(wait=0),verbose=[recovery_progress,checkpoint_progress,compact_progress],"}}
{"t":{"$date":"2022-05-06T17:52:26.250+05:30"},"s":"I",  "c":"STORAGE",  "id":22430,   "ctx":"initandlisten","ms
[WT_VERB_RECOVERY | WT_VERB_RECOVERY_PROGRESS] Set global recovery timestamp: (0, 0)"}}
{"t":{"$date":"2022-05-06T17:52:26.250+05:30"},"s":"I",  "c":"STORAGE",  "id":22430,   "ctx":"initandlisten","ms
[WT_VERB_RECOVERY | WT_VERB_RECOVERY_PROGRESS] Set global oldest timestamp: (0, 0)"}}
{"t":{"$date":"2022-05-06T17:52:26.257+05:30"},"s":"I",  "c":"STORAGE",  "id":4795906, "ctx":"initandlisten","ms
{"t":{"$date":"2022-05-06T17:52:26.257+05:30"},"s":"I",  "c":"RECOVERY", "id":23987,   "ctx":"initandlisten","ms
{"t":{"$date":"2022-05-06T17:52:26.268+05:30"},"s":"I",  "c":"STORAGE",  "id":4366408, "ctx":"initandlisten","ms
oggingEnabled":false}}
```

Now open any mongo client among all and connect with server using below command.

C:\>mongo --port 50001

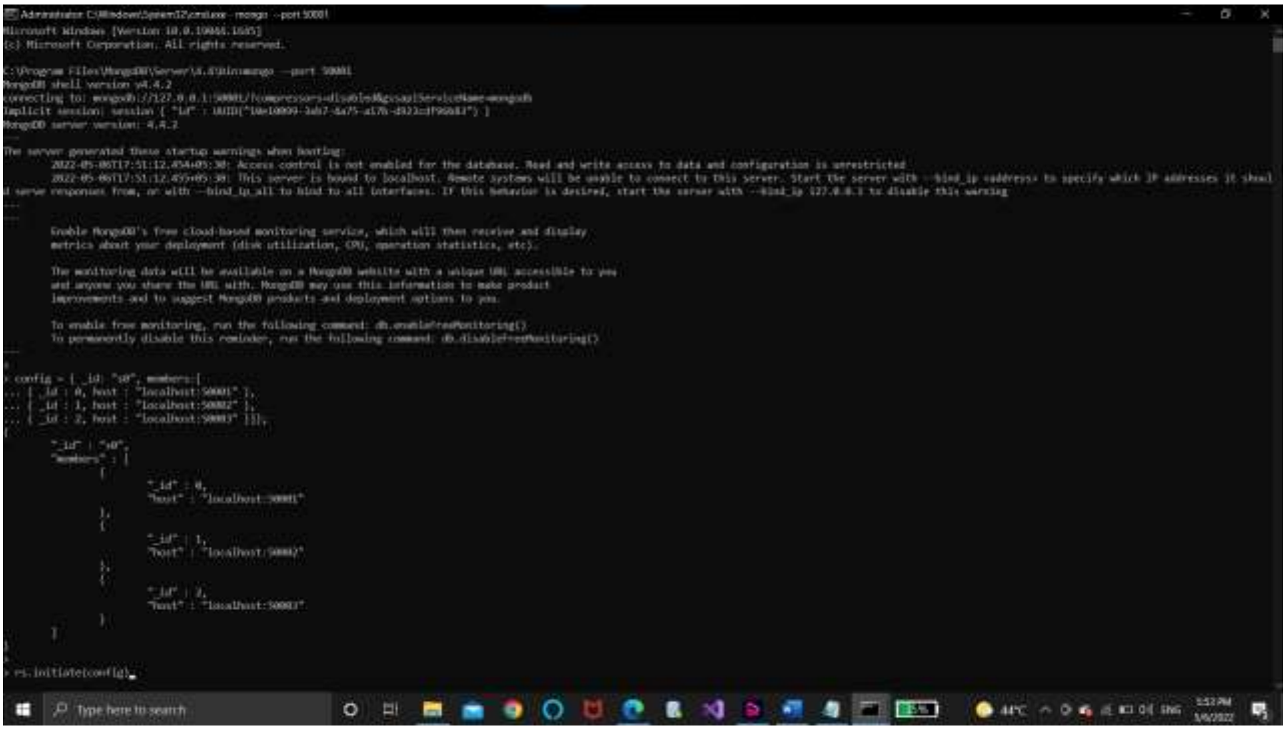
Create a group ,assign ids and replica using below command config

= { _id: "s0", members:[

{ _id : 0, host : "localhost:50001" },

{ _id : 1, host : "localhost:50002" },

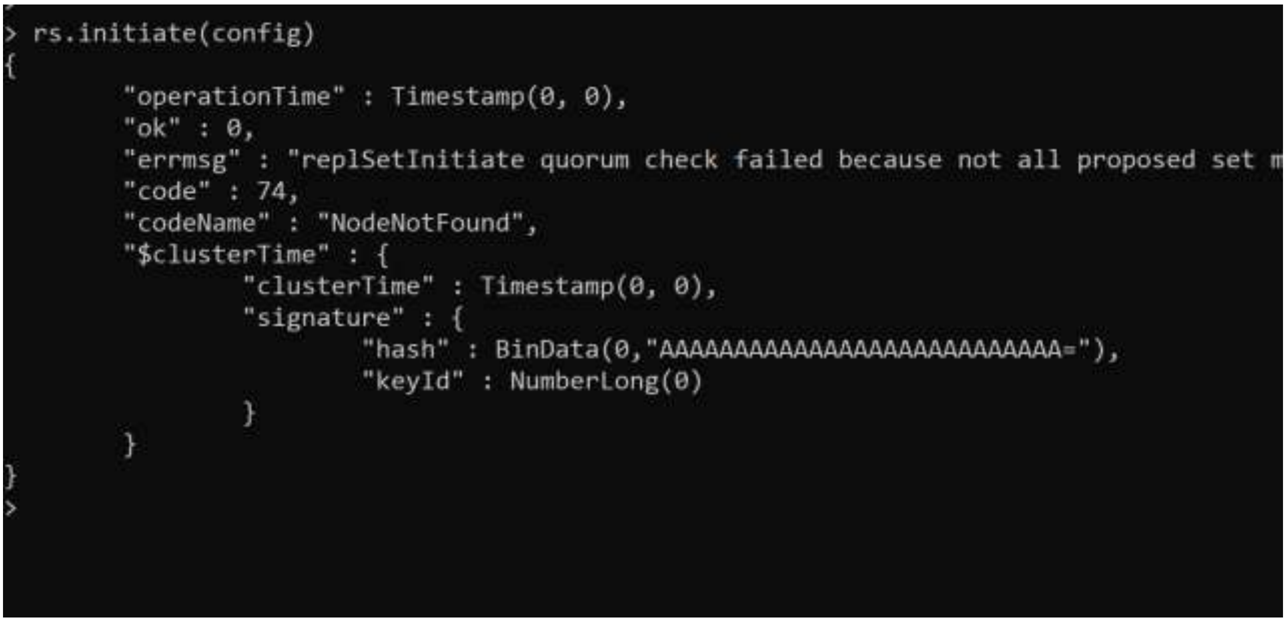
{ _id : 2, host : "localhost:50003" }]};



```
Administrator: C:\Windows\System32\cmd.exe - mongo --port 50001
Microsoft Windows [Version 10.0.19044.1645]
(c) Microsoft Corporation. All rights reserved.

C:\Program Files\MongoDB\Server\4.4\bin>mongo --port 50001
MongoDB shell version v4.4.2
connecting to: mongodb://127.0.0.1:50001/?compressors=disabled&gssapiServiceName=mongodb
Implicit session: session { "id" : UUID("10e10099-3ab7-4a75-a17b-d922cdf96b83") }
MongoDB server version: 4.4.2
---
The server generated these startup warnings when booting:
        2022-05-06T17:51:12.454+05:30: Access control is not enabled for the database. Read and write access to data and configuration is unrestricted
        2022-05-06T17:51:12.455+05:30: This server is bound to localhost. Remote systems will be unable to connect to this server. Start the server with --bind_ip <address> to specify which IP addresses it shoul
d serve responses from, or with --bind_ip_all to bind to all interfaces. If this behavior is desired, start the server with --bind_ip 127.0.0.1 to disable this warning
---
---
        Enable MongoDB's free cloud-based monitoring service, which will then receive and display
        metrics about your deployment (disk utilization, CPU, operation statistics, etc).

        The monitoring data will be available on a MongoDB website with a unique URL accessible to you
        and anyone you share the URL with. MongoDB may use this information to make product
        improvements and to suggest MongoDB products and deployment options to you.

        To enable free monitoring, run the following command: db.enableFreeMonitoring()
        To permanently disable this reminder, run the following command: db.disableFreeMonitoring()
---
>
> config = { _id: "s0", members:[
... { _id : 0, host : "localhost:50001" },
... { _id : 1, host : "localhost:50002" },
... { _id : 2, host : "localhost:50003" }]};
{
        "_id" : "s0",
        "members" : [
                {
                        "_id" : 0,
                        "host" : "localhost:50001"
                },
                {
                        "_id" : 1,
                        "host" : "localhost:50002"
                },
                {
                        "_id" : 2,
                        "host" : "localhost:50003"
                }
        ]
}
>
> rs.initiate(config)
```

Set any node as primary node using below given command.

rs.initiate(config)



```
> rs.initiate(config)
{
        "operationTime" : Timestamp(0, 0),
        "ok" : 0,
        "errmsg" : "replSetInitiate quorum check failed because not all proposed set m
        "code" : 74,
        "codeName" : "NodeNotFound",
        "$clusterTime" : {
                "clusterTime" : Timestamp(0, 0),
                "signature" : {
                        "hash" : BinData(0,"AAAAAAAAAAAAAAAAAAAAAAAAAAA="),
                        "keyId" : NumberLong(0)
                }
        }
}
>
```

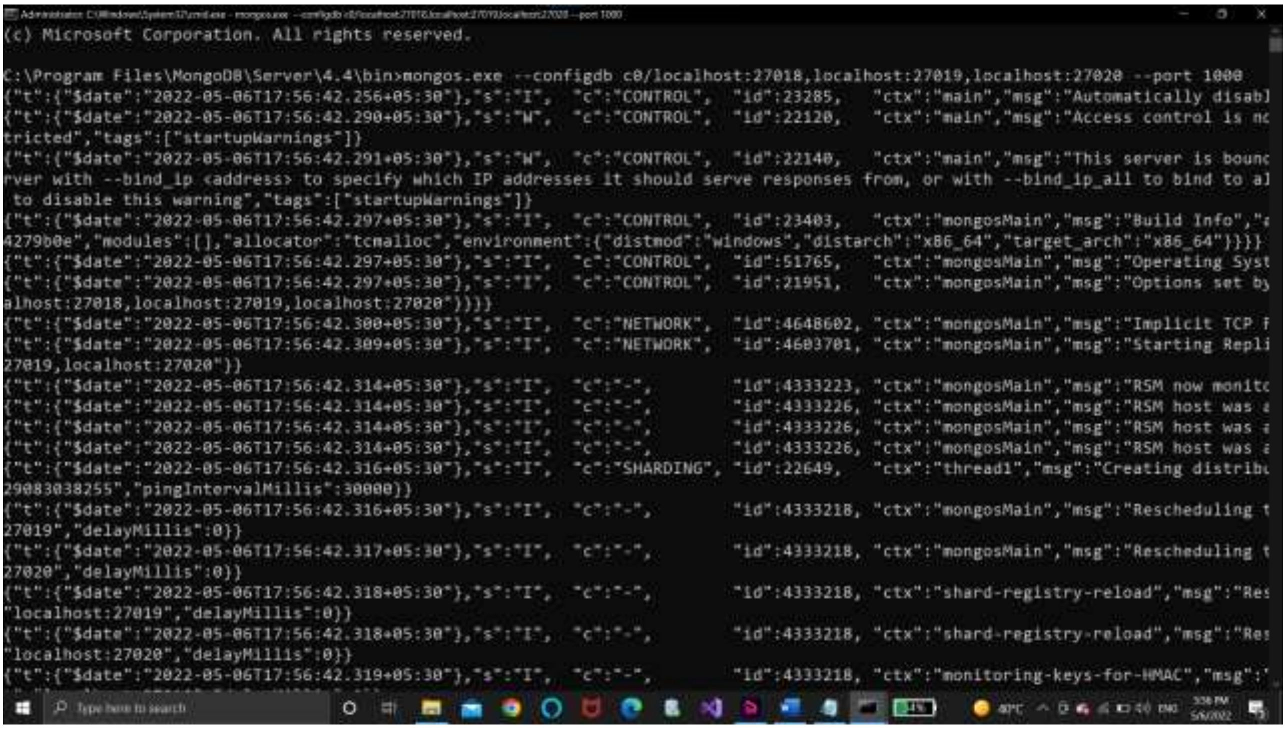
STEP 7

Communication with both shards is possible using config servers.

<u>So open cmd and write command.This creates mongos config server.</u>

C:\>mongos.exe --configdb c0/localhost:27018,localhost:27019,localhost:27020 --port 1000

Open a client mongos command window to communicate with server.



```
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C:\Program Files\MongoDB\Server\4.4\bin>mongos.exe --configdb c0/localhost:27018,localhost:27019,localhost:27020 --port 1000
{"t":{"$date":"2022-05-06T17:56:42.256+05:30"},"s":"I",  "c":"CONTROL",  "id":23285,   "ctx":"main","msg":"Automatically disabl
{"t":{"$date":"2022-05-06T17:56:42.290+05:30"},"s":"W",  "c":"CONTROL",  "id":22120,   "ctx":"main","msg":"Access control is nc
tricted","tags":["startupWarnings"]}
{"t":{"$date":"2022-05-06T17:56:42.291+05:30"},"s":"W",  "c":"CONTROL",  "id":22140,   "ctx":"main","msg":"This server is bounc
rver with --bind_ip <address> to specify which IP addresses it should serve responses from, or with --bind_ip_all to bind to al
 to disable this warning","tags":["startupWarnings"]}
{"t":{"$date":"2022-05-06T17:56:42.297+05:30"},"s":"I",  "c":"CONTROL",  "id":23403,   "ctx":"mongosMain","msg":"Build Info","a
4279b0e","modules":[],"allocator":"tcmalloc","environment":{"distmod":"windows","distarch":"x86_64","target_arch":"x86_64"}}}}
{"t":{"$date":"2022-05-06T17:56:42.297+05:30"},"s":"I",  "c":"CONTROL",  "id":51765,   "ctx":"mongosMain","msg":"Operating Syst
{"t":{"$date":"2022-05-06T17:56:42.297+05:30"},"s":"I",  "c":"CONTROL",  "id":21951,   "ctx":"mongosMain","msg":"Options set by
alhost:27018,localhost:27019,localhost:27020"}}}}
{"t":{"$date":"2022-05-06T17:56:42.300+05:30"},"s":"I",  "c":"NETWORK",  "id":4648602, "ctx":"mongosMain","msg":"Implicit TCP F
{"t":{"$date":"2022-05-06T17:56:42.309+05:30"},"s":"I",  "c":"NETWORK",  "id":4603701, "ctx":"mongosMain","msg":"Starting Repli
27019,localhost:27020"}}
{"t":{"$date":"2022-05-06T17:56:42.314+05:30"},"s":"I",  "c":"-",        "id":4333223, "ctx":"mongosMain","msg":"RSM now monitc
{"t":{"$date":"2022-05-06T17:56:42.314+05:30"},"s":"I",  "c":"-",        "id":4333226, "ctx":"mongosMain","msg":"RSM host was a
{"t":{"$date":"2022-05-06T17:56:42.314+05:30"},"s":"I",  "c":"-",        "id":4333226, "ctx":"mongosMain","msg":"RSM host was a
{"t":{"$date":"2022-05-06T17:56:42.314+05:30"},"s":"I",  "c":"-",        "id":4333226, "ctx":"mongosMain","msg":"RSM host was a
{"t":{"$date":"2022-05-06T17:56:42.316+05:30"},"s":"I",  "c":"SHARDING", "id":22649,   "ctx":"thread1","msg":"Creating distribu
29083038255","pingIntervalMillis":30000}}
{"t":{"$date":"2022-05-06T17:56:42.316+05:30"},"s":"I",  "c":"-",        "id":4333218, "ctx":"mongosMain","msg":"Rescheduling t
27019","delayMillis":0}}
{"t":{"$date":"2022-05-06T17:56:42.317+05:30"},"s":"I",  "c":"-",        "id":4333218, "ctx":"mongosMain","msg":"Rescheduling t
27020","delayMillis":0}}
{"t":{"$date":"2022-05-06T17:56:42.318+05:30"},"s":"I",  "c":"-",        "id":4333218, "ctx":"shard-registry-reload","msg":"Res
"localhost:27019","delayMillis":0}}
{"t":{"$date":"2022-05-06T17:56:42.318+05:30"},"s":"I",  "c":"-",        "id":4333218, "ctx":"shard-registry-reload","msg":"Res
"localhost:27020","delayMillis":0}}
{"t":{"$date":"2022-05-06T17:56:42.319+05:30"},"s":"I",  "c":"-",        "id":4333218, "ctx":"monitoring-keys-for-HMAC","msg":"
```

C:\>mongo.exe --host localhost --port 1000

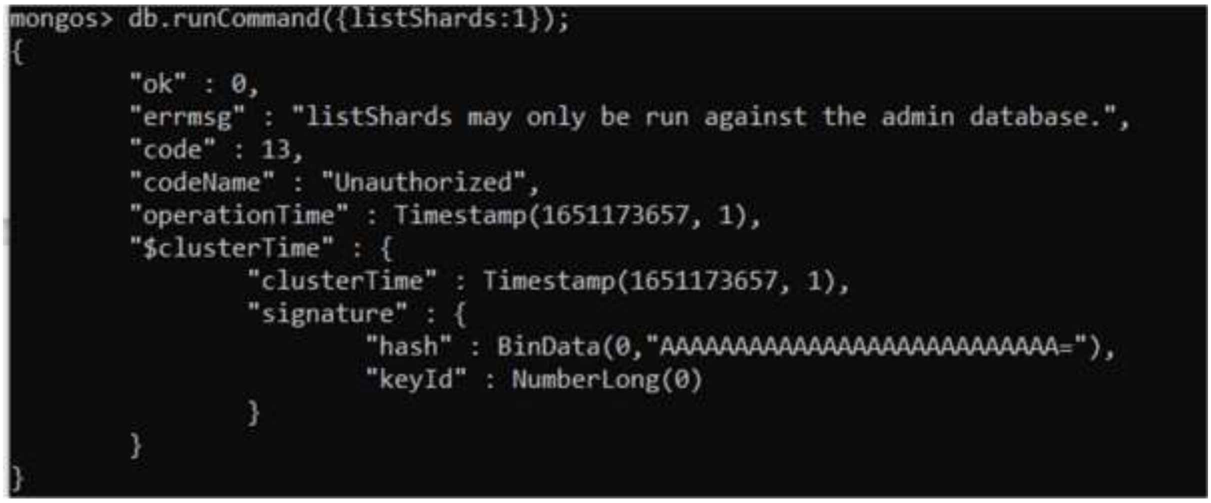
And then both the shards which we are created add that shards into shard cluster using given below commands.

mongos> sh.addShard("s0/localhost:50001"); mongos>

sh.addShard("s1/localhost:37019");

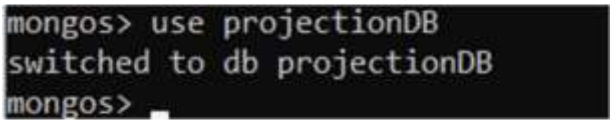
<u>STEP 8</u>

<u>To see the shards which are in shard cluster run the command in the same command prompt(1000)</u> db.runCommand({listShards:1});



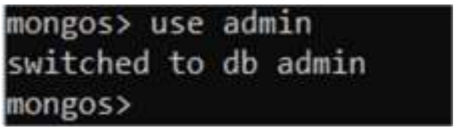
```
mongos> db.runCommand({listShards:1});
{
        "ok" : 0,
        "errmsg" : "listShards may only be run against the admin database.",
        "code" : 13,
        "codeName" : "Unauthorized",
        "operationTime" : Timestamp(1651173657, 1),
        "$clusterTime" : {
                "clusterTime" : Timestamp(1651173657, 1),
                "signature" : {
                        "hash" : BinData(0,"AAAAAAAAAAAAAAAAAAAAAAAAAAA="),
                        "keyId" : NumberLong(0)
                }
        }
}
```

1. **Now create database.**
   mongos> use projectionDB switched
   to db projectionDB



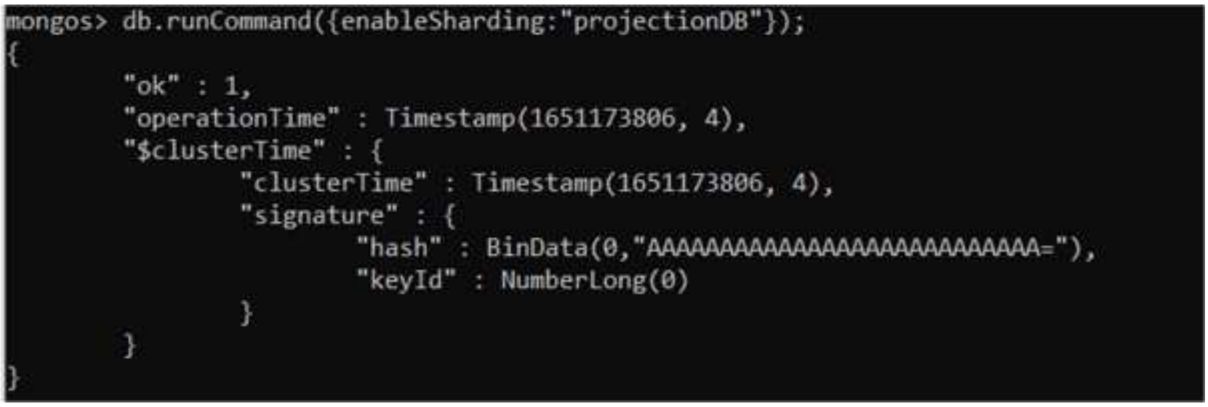
```
mongos> use projectionDB
switched to db projectionDB
mongos>
```

2. **Move to admin mode.** mongos> use admin switched to db admin



```
mongos> use admin
switched to db admin
mongos>
```

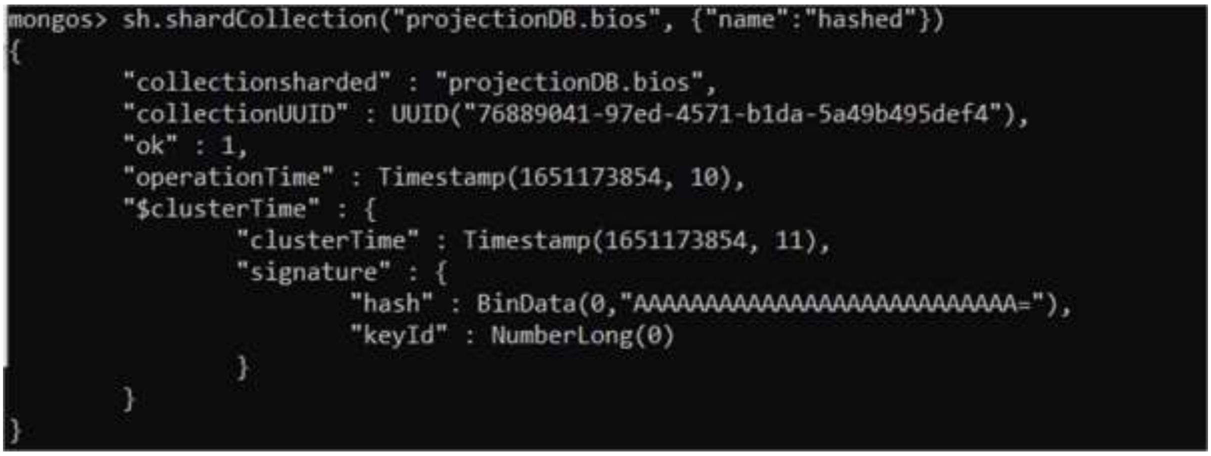
3. **Enable Database Sharding property.So that table data can be distributed on multiple shards using given command.**
   mongos> db.runCommand({enableSharding:"projectionDB"});



```
mongos> db.runCommand({enableSharding:"projectionDB"});
{
        "ok" : 1,
        "operationTime" : Timestamp(1651173806, 4),
        "$clusterTime" : {
                "clusterTime" : Timestamp(1651173806, 4),
                "signature" : {
                        "hash" : BinData(0,"AAAAAAAAAAAAAAAAAAAAAAAAAAA="),
                        "keyId" : NumberLong(0)
                }
        }
}
```

4. **Create collection and set hash key.**

   mongos> sh.shardCollection("projectionDB.bios", {"name":"hashed"})



```
mongos> sh.shardCollection("projectionDB.bios", {"name":"hashed"})
{
        "collectionsharded" : "projectionDB.bios",
        "collectionUUID" : UUID("76889041-97ed-4571-b1da-5a49b495def4"),
        "ok" : 1,
        "operationTime" : Timestamp(1651173854, 10),
        "$clusterTime" : {
                "clusterTime" : Timestamp(1651173854, 11),
                "signature" : {
                        "hash" : BinData(0,"AAAAAAAAAAAAAAAAAAAAAAAAAAA="),
                        "keyId" : NumberLong(0)
                }
        }
}
```

5. **<u>Now insert data into bios table.</u>** mongos> db.bios.insert({

```
 name:"Prachi",
 lname:"Shah",
 city:"Mehsana",
 state:"Gujarat"
});
```

```
mongos> db.bios.insert({
name:"sunita",
lname:"chauhan",
city:"Ahmedabad",
 state:"Gujarat" })
```

```
mongos> db.bios.insert({
... name:"agam",
... lname:"shah",
... city:"Mehsana",
...     state:"Gujarat"
... })
```

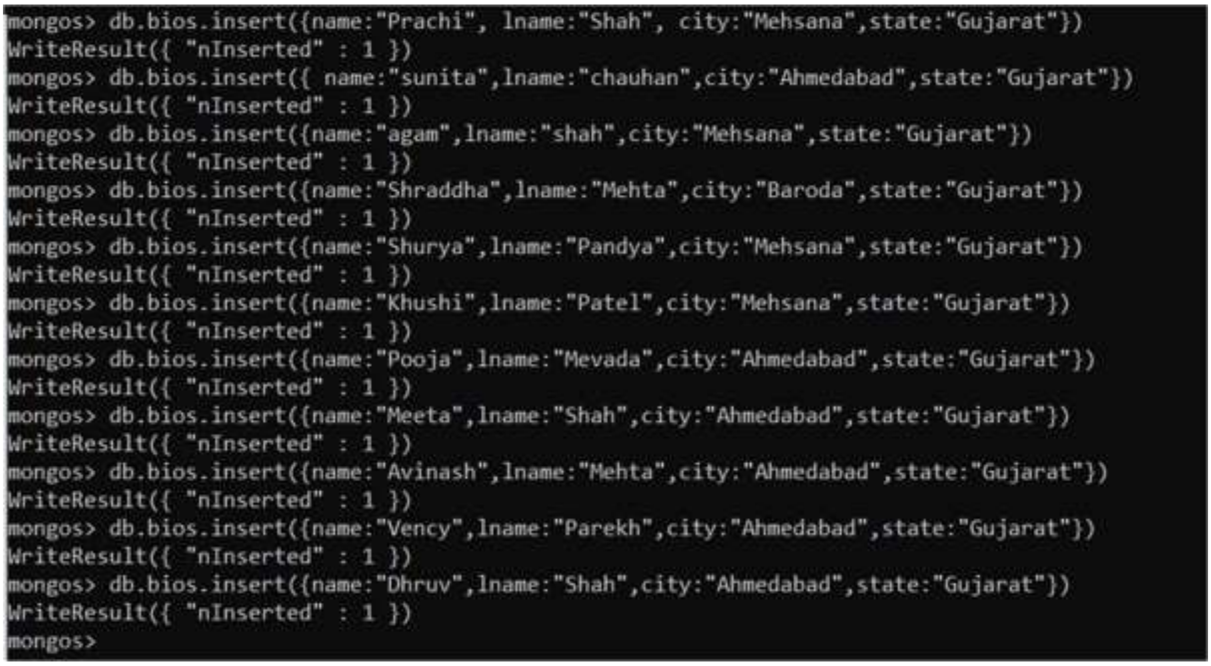
```
mongos> db.bios.insert({
... name:"Shraddha",
... lname:"Mehta",
... city:"Baroda",
...     state:"Gujarat"
... })
```

```
mongos> db.bios.insert({ ...
name:"Shurya",
... lname:"Pandya",
... city:"Mehsana",
...     state:"Gujarat"
... })

mongos> db.bios.insert({
... name:"Khushi",
... lname:"Patel",
... city:"Mehsana",
...     state:"Gujarat"
... })

mongos> db.bios.insert({ ...
name:"Pooja",
... lname:"Mevada",
... city:"Ahmedabad",
...     state:"Gujarat"
... })

mongos> db.bios.insert({ ...
name:"Meeta",
... lname:"Shah",
... city:"Ahmedabad",
...     state:"Gujarat"
... })

mongos> db.bios.insert({ ...
name:"Avinash",
... lname:"Mehta",
... city:"Ahmedabad",
...     state:"Gujarat"
... })

mongos> db.bios.insert({ ...
name:"Vency",
... lname:"Parekh",
... city:"Ahmedabad",
...     state:"Gujarat"
... })
```

```
mongos> db.bios.insert({ ...
name:"Dhruv",
... lname:"Shah",
... city:"Ahmedabad",
...     state:"Gujarat"
... })
```

Run the command to see the total number of documents in bios table.

```
db.gnu.count();
```



```
mongos> db.bios.insert({name:"Prachi", lname:"Shah", city:"Mehsana",state:"Gujarat"})
WriteResult({ "nInserted" : 1 })
mongos> db.bios.insert({ name:"sunita",lname:"chauhan",city:"Ahmedabad",state:"Gujarat"})
WriteResult({ "nInserted" : 1 })
mongos> db.bios.insert({name:"agam",lname:"shah",city:"Mehsana",state:"Gujarat"})
WriteResult({ "nInserted" : 1 })
mongos> db.bios.insert({name:"Shraddha",lname:"Mehta",city:"Baroda",state:"Gujarat"})
WriteResult({ "nInserted" : 1 })
mongos> db.bios.insert({name:"Shurya",lname:"Pandya",city:"Mehsana",state:"Gujarat"})
WriteResult({ "nInserted" : 1 })
mongos> db.bios.insert({name:"Khushi",lname:"Patel",city:"Mehsana",state:"Gujarat"})
WriteResult({ "nInserted" : 1 })
mongos> db.bios.insert({name:"Pooja",lname:"Mevada",city:"Ahmedabad",state:"Gujarat"})
WriteResult({ "nInserted" : 1 })
mongos> db.bios.insert({name:"Meeta",lname:"Shah",city:"Ahmedabad",state:"Gujarat"})
WriteResult({ "nInserted" : 1 })
mongos> db.bios.insert({name:"Avinash",lname:"Mehta",city:"Ahmedabad",state:"Gujarat"})
WriteResult({ "nInserted" : 1 })
mongos> db.bios.insert({name:"Vency",lname:"Parekh",city:"Ahmedabad",state:"Gujarat"})
WriteResult({ "nInserted" : 1 })
mongos> db.bios.insert({name:"Dhruv",lname:"Shah",city:"Ahmedabad",state:"Gujarat"})
WriteResult({ "nInserted" : 1 })
mongos>
```

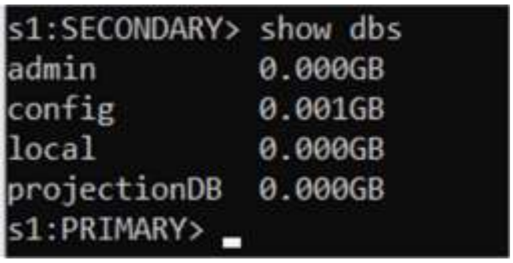
STEP 9

To see how data is distributed on shard 1.

Open the mongo client of shard 1 which is on port 50001.

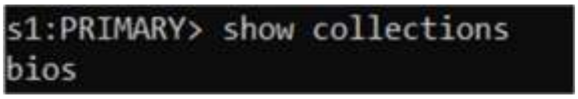
Run the commands like.

Show dbs Show



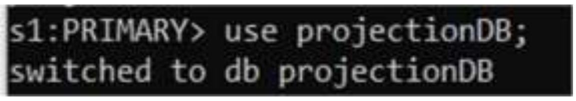
```
s1:SECONDARY> show dbs
admin         0.000GB
config        0.001GB
local         0.000GB
projectionDB  0.000GB
s1:PRIMARY> _
```

collection use



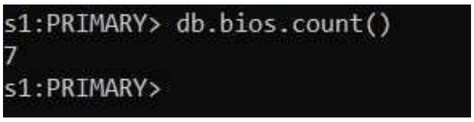
```
s1:PRIMARY> show collections
bios
```

projectionDB;



```
s1:PRIMARY> use projectionDB;
switched to db projectionDB
```

db.bios.count();



```
s1:PRIMARY> db.bios.count()
7
s1:PRIMARY>
```

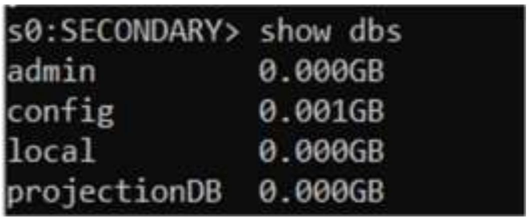
STEP 10

To see how data is distributed on shard 2.

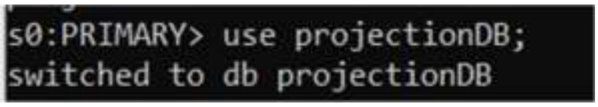
Open the mongo client of shard 2 which is on port 37019.

Run the commands like.

Show dbs Show

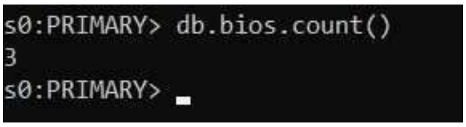


```
s0:SECONDARY> show dbs
admin         0.000GB
config        0.001GB
local         0.000GB
projectionDB  0.000GB
```



```
s0:PRIMARY> use projectionDB;
switched to db projectionDB
```

db.bios.count();



```
s0:PRIMARY> db.bios.count()
3
s0:PRIMARY> 
```