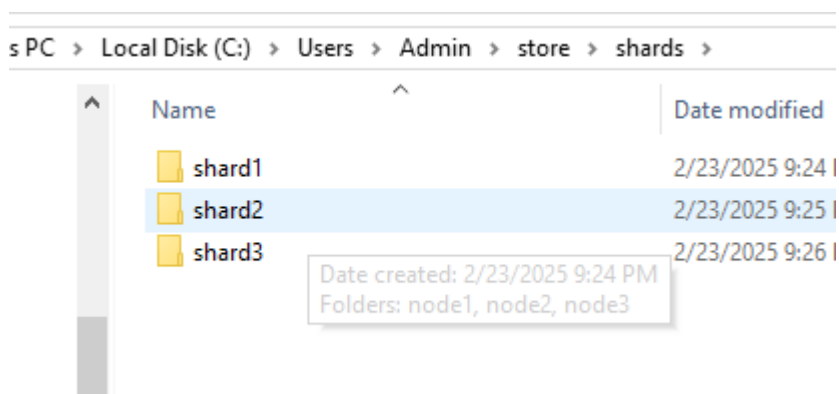
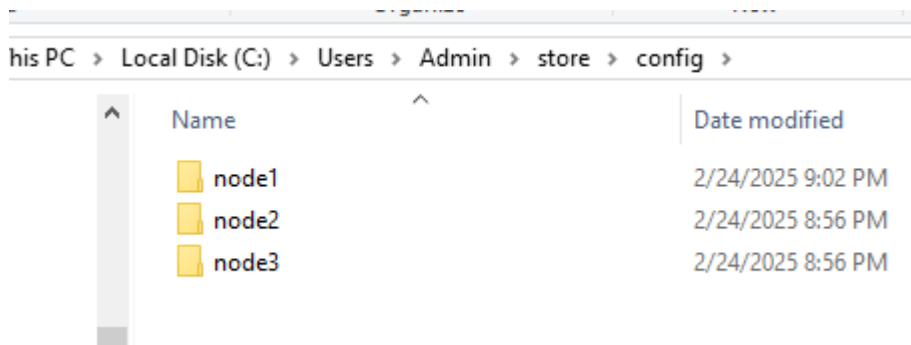
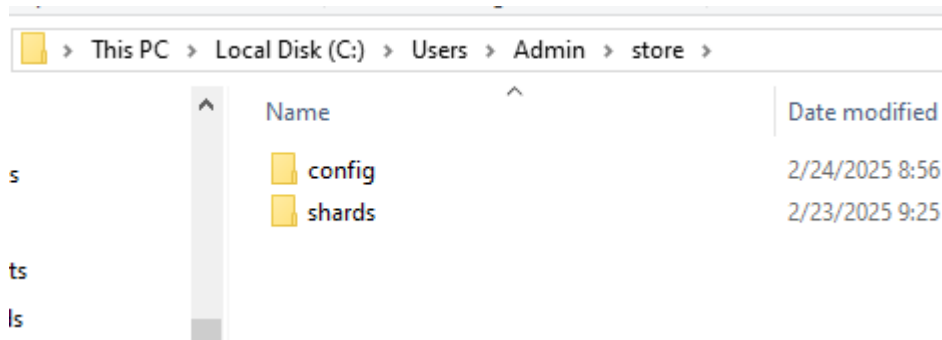


## SHARDING

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Roll No. – L022




### Create the file



C > Local Disk (C:) > Users > Admin > store > shards > shard1 >	
Name	Date modified
node1	2/23/2025 9:24 PM
node2	2/23/2025 9:24 PM
node3	2/23/2025 9:24 PM

This PC > Local Disk (C:) > Users > Admin > store > shards > shard2 >	
Name	Date modified
node1	2/23/2025 9:25 PM
node2	2/23/2025 9:25 PM
node3	2/23/2025 9:25 PM

PC > Local Disk (C:) > Users > Admin > store > shards > shard3 >

Name	Date modified	Type
 node1	2/23/2025 9:26 PM	Folder
 node2	2/23/2025 9:26 PM	Folder
 node3	2/23/2025 9:26 PM	Folder

## # Initialize MongoDB Shards

Try the new cross-platform PowerShell <https://aka.ms/pscore6>

```
PS C:\Users\Admin> mongod --configsvr --port=1001 --replSet="configserver-rs" --dbpath="./store/config/node1"
{"t":{"$date":"2025-02-24T21:28:08.493+05:30"},"s":"I", "c":"CONTROL", "id":23285, "svc":"-", "ctx":"thread1"}
{"t":{"$date":"2025-02-24T21:28:08.494+05:30"},"s":"I", "c":"CONTROL", "id":5945603, "svc":"-", "ctx":"thread1"}
{"t":{"$date":"2025-02-24T21:28:08.495+05:30"},"s":"I", "c":"NETWORK", "id":4648601, "svc":"-", "ctx":"thread1"}
Implicit TCP FastOpen unavailable. If TCP FastOpen is required, set at least one of the related parameters "at
```

Try the new cross-platform PowerShell <https://aka.ms/pscore6>

```
PS C:\Users\Admin> mongod --configsvr --port=1002 --replSet="configserver-rs" --dbpath="./store/config/node2"
{"t":{"$date":"2025-02-24T21:29:06.632+05:30"},"s":"I", "c":"CONTROL", "id":23285, "svc":"-", "ctx":"thread1"}
{"t":{"$date":"2025-02-24T21:29:09.654+05:30"},"s":"I", "c":"CONTROL", "id":5945603, "svc":"-", "ctx":"thread1"}
{"t":{"$date":"2025-02-24T21:29:09.655+05:30"},"s":"I", "c":"NETWORK", "id":4648601, "svc":"-", "ctx":"thread1"}
Implicit TCP FastOpen unavailable. If TCP FastOpen is required, set at least one of the related parameters "att
relatedParameters":{"tcpFastOpenServer","tcpFastOpenClient","tcpFastOpenQueueSize"}}
{"t":{"$date":"2025-02-24T21:29:09.655+05:30"},"s":"I", "c":"NETWORK", "id":4915701, "svc":"-", "ctx":"thread1"}
Initialized wire specification "attr":{"spec":{"incomingExternalClient":{"minWireVersion":0,"maxWireVersion":25
```

```
PS C:\Users\Admin> mongod --configsvr --port=1003 --replSet="configserver-rs" --dbpath="./store/config/node3"
{"t":{"$date":"2025-02-24T21:30:37.721+05:30"},"s":"I", "c":"CONTROL", "id":23285, "ctx":"thread1","msg":"Automati
ly disabling TLS 1.0, to force-enable TLS 1.0 specify --sslDisabledProtocols 'none!'"
{"t":{"$date":"2025-02-24T21:30:37.723+05:30"},"s":"I", "c":"CONTROL", "id":5945603, "svc":"-", "ctx":"thread1","msg
"Multi threading initialized"}
{"t":{"$date":"2025-02-24T21:30:37.724+05:30"},"s":"I", "c":"NETWORK", "id":4648601, "svc":"-", "ctx":"thread1","msg
```

## # Connect using mongosh

```
PS C:\Users\Admin> mongosh --port=1001
Current Mongosh Log ID: 67bc92a9874dd2b543fa4213
Connecting to: mongod://127.0.0.1:1001/?directConnection=true
Using MongoDB: 8.0.4
Using Mongosh: 2.4.0

For mongosh info see: https://www.mongodb.com/docs/mongodb-shell/

-----
The server generated these startup warnings when booting
2025-02-24T21:00:14.175+05:30: Access control is not enabled for
figuration is unrestricted
2025-02-24T21:00:14.176+05:30: This server is bound to localhost.
server. Start the server with --bind_ip <address> to specify which IP
bind_ip_all to bind to all interfaces. If this behavior is desired,
this warning
-----
test> _
```

## # Initiate Replica Set

```
test> rs.initiate({
...   _id:"configserver-rs",
...   configsvr:true,
...   members:[
...     {_id:0, host:"localhost:1001"},
...     {_id:1, host:"localhost:1002"},
...     {_id:2, host:"localhost:1003"}
...   ]
... });
```

```

    },
    ok: 1,
    '$clusterTime': {
      clusterTime: Timestamp({ t: 1740382453, i: 1 }),
      signature: {
        hash: Binary.createFromBase64('AAAAAAAAAAAAAAAAAAAAAAAAAAAA=', 0),
        keyId: Long('0')
      }
    },
    operationTime: Timestamp({ t: 1740382453, i: 1 })
  }
}

```

## # MongoDB Shards - DONE

Initialize MongoDB Shards using shardsvr and replSet options

```

PS C:\Users\Admin> cd "C:\Users\Admin\Desktop\Work\MONGODB_SHARDING\CLUSTER"
PS C:\Users\Admin\Desktop\Work\MONGODB_SHARDING\CLUSTER> mongod --shardsvr --port=1023 --replSet="shard2-rs" --dbpath=".
/store/shards/shard2/node3"
{"t":{"date":"2025-02-24T13:23:47.234+05:30"},"s":"I", "c":"NETWORK", "id":4915701, "ctx":"thread1", "msg":"Initializ
d wire specification", "attr":{"spec":{"incomingExternalClient":{"minWireVersion":0,"maxWireVersion":21},"incomingIntern
lClient":{"minWireVersion":0,"maxWireVersion":21},"outgoing":{"minWireVersion":6,"maxWireVersion":21},"isInternalClient"
:true}}}
{"t":{"date":"2025-02-24T13:23:48.825+05:30"},"s":"I", "c":"CONTROL", "id":23285, "ctx":"thread1", "msg":"Automatica
lly disabling TLS 1.0, to force-enable TLS 1.0 specify --sslDisabledProtocols 'none'"}
{"t":{"date":"2025-02-24T13:23:48.825+05:30"},"s":"I", "c":"NETWORK", "id":4648602, "ctx":"thread1", "msg":"Implicit T
CP FastOpen in use."}
{"t":{"date":"2025-02-24T13:23:48.827+05:30"},"s":"I", "c":"REPL", "id":5123008, "ctx":"thread1", "msg":"Successful
ly registered PrimaryOnlyService", "attr":{"service":"RenameCollectionParticipantService", "namespace":"config.localRename
Participants"}}
{"t":{"date":"2025-02-24T13:23:48.827+05:30"},"s":"I", "c":"REPL", "id":5123008, "ctx":"thread1", "msg":"Successful
ly registered PrimaryOnlyService", "attr":{"service":"ShardingDDLCoordinator", "namespace":"config.system.sharding_ddl_oo
rdinators"}}

```

Initiate that Replica Set by connecting it to mongosh.

```

PS C:\Users\Admin> mongosh --port=1021
Current Mongosh Log ID: 67bc25957bd4f1fd550a16d0
Connecting to:      mongodb://127.0.0.1:1021/?directConnection=true&se
1.5
Using MongoDB:      7.0.5
Using Mongosh:      2.1.5
mongosh 2.4.0 is available for download: https://www.mongodb.com/try/download

For mongosh info see: https://docs.mongodb.com/mongodb-shell/

-----
The server generated these startup warnings when booting
2025-02-24T13:22:51.480+05:30: Access control is not enabled for the da
figuration is unrestricted
2025-02-24T13:22:51.481+05:30: This server is bound to localhost. Remot
rver. Start the server with --bind_ip <address> to specify which IP address
bind_ip_all to bind to all interfaces. If this behavior is desired, start
this warning
-----

test> rs.initiate({
...   _id:"shard2-rs",
...   members:[
...     {_id:0, host:"localhost:1021"},
...     {_id:1, host:"localhost:1022"},
...     {_id:2, host:"localhost:1023"}
...   ]
... });

```

Initialize a Query Router which is a mongos process.

```

PS C:\Users\Admin> cd "C:\Users\Admin\Desktop\Work\MONGODB_SHARDING\CLUSTER"
PS C:\Users\Admin\Desktop\Work\MONGODB_SHARDING\CLUSTER> mongos --port=2000 --configdb="configserver-rs/localhost:1001,localhost:1002,localhost:1003"
{"t":{"$date":"2025-02-24T13:35:46.485+05:30"},"s":"I", "c":"CONTROL", "id":23285, "ctx":"thread1","msg":"Automatica
lly disabling TLS 1.0, to force-enable TLS 1.0 specify --sslDisabledProtocols 'none'"}
{"t":{"$date":"2025-02-24T13:35:46.489+05:30"},"s":"I", "c":"NETWORK", "id":4915701, "ctx":"thread1","msg":"Initialize
d wire specification","attr":{"spec":{"incomingExternalClient":{"minWireVersion":0,"maxWireVersion":21},"incomingIntern
alClient":{"minWireVersion":0,"maxWireVersion":21},"outgoing":{"minWireVersion":21,"maxWireVersion":21},"isInternalClient
":true}}}

```

Connect Shards and Query Router

```

[direct: mongos] test> sh.addShard("shard1-rs/localhost:1011,localhost:1012,localhost:1013")
{
  shardAdded: 'shard1-rs',
  ok: 1,
  '$clusterTime': {
    clusterTime: Timestamp({ t: 1740384456, i: 4 }),
    signature: {
      hash: Binary.createFromBase64('AAAAAAAAAAAAAAAAAAAAAAAAAA=', 0),
      keyId: Long('0')
    }
  },
  operationTime: Timestamp({ t: 1740384456, i: 4 })
}
[direct: mongos] test> sh.addShard("shard2-rs/localhost:1021,localhost:1022,localhost:1023")
{
  shardAdded: 'shard2-rs',
  ok: 1,
  '$clusterTime': {
    clusterTime: Timestamp({ t: 1740384505, i: 13 }),
    signature: {
      hash: Binary.createFromBase64('AAAAAAAAAAAAAAAAAAAAAAAAAA=', 0),
      keyId: Long('0')
    }
  },
  operationTime: Timestamp({ t: 1740384505, i: 3 })
}

[direct: mongos] test> sh.enableSharding("amazon")
{
  ok: 1,
  '$clusterTime': {
    clusterTime: Timestamp({ t: 1740384577, i: 8 }),
    signature: {
      hash: Binary.createFromBase64('AAAAAAAAAAAAAAAAAAAAAAAAAA=', 0),
      keyId: Long('0')
    }
  },
  operationTime: Timestamp({ t: 1740384577, i: 2 })
}
[direct: mongos] test> sh.shardCollection("amazon.reviews",{userid:"hashed",productid: 1})
{
  collectionsharded: 'amazon.reviews',
  ok: 1,
  '$clusterTime': {
    clusterTime: Timestamp({ t: 1740384759, i: 47 }),
    signature: {
      hash: Binary.createFromBase64('AAAAAAAAAAAAAAAAAAAAAAAAAA=', 0),
      keyId: Long('0')
    }
  },
  operationTime: Timestamp({ t: 1740384759, i: 47 })
}
[direct: mongos] test> use amazon
switched to db amazon
[direct: mongos] amazon> db.reviews.find().count()
0
[direct: mongos] amazon>

```

Verify shard by checking connection

```

PS C:\Users\Admin> mongosh mongodb://localhost:1021,localhost:1022,localhost:1023
Current Mongosh Log ID: 67bc3515c1a6563eb4d39551
Connecting to:      mongodb://localhost:1021,localhost:1022,localhost:1023
ame=mongosh+2.1.5
Using MongoDB:      7.0.5
Using Mongosh:      2.1.5
mongosh 2.4.0 is available for download: https://www.mongodb.com/try/download/mongosh
For mongosh info see: https://docs.mongodb.com/mongodb-shell/

-----
The server generated these startup warnings when booting
2025-02-24T13:22:51.480+05:30: Access control is not enabled for the database.
Configuration is unrestricted
2025-02-24T13:22:51.481+05:30: This server is bound to localhost. Remove
server. Start the server with --bind_ip <address> to specify which IP address
bind_ip_all to bind to all interfaces. If this behavior is desired, start
this warning
-----

shard2-rs [primary] amazon> db.reviews.find().count()
0
shard2-rs [primary] amazon> |

```