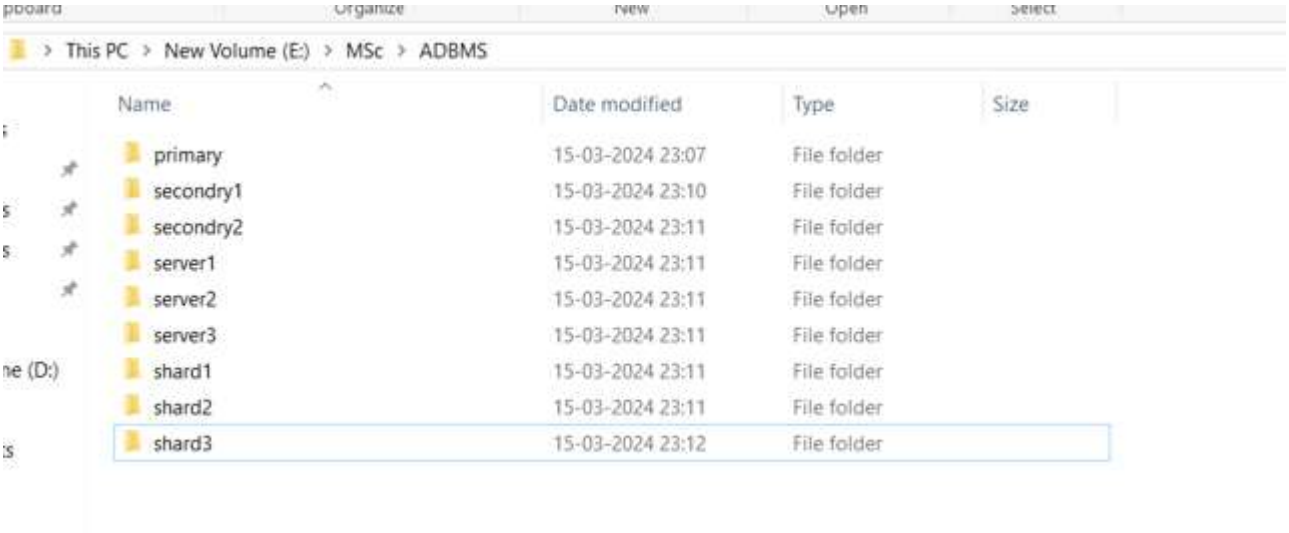
KASHINATH TAWTE 40778230023

PRACTICAL -05

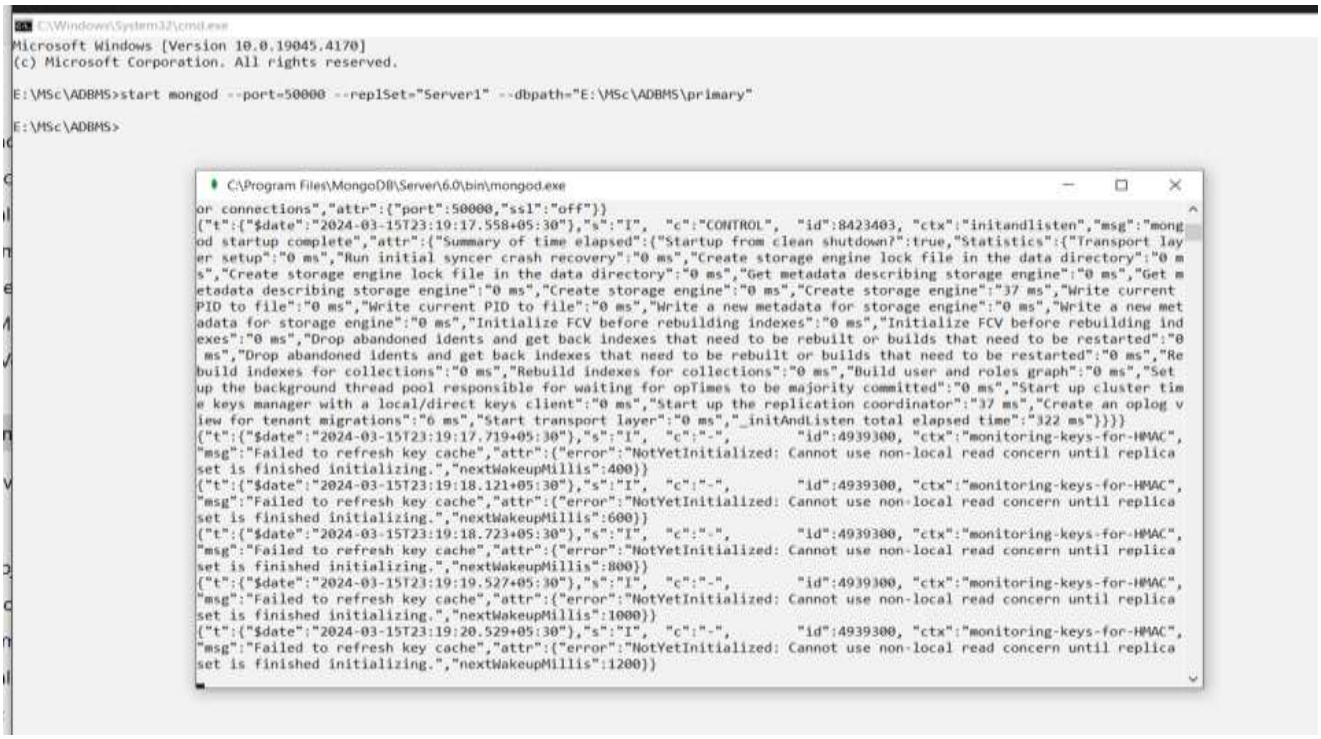
Step1: create a folder and in that folder make 9 files/folders with name(primary, secondry1, secondry2, server1, server2, server3, shard1, shard2, shard3) and run the commands mentioned below



REPLICATION

Step2: open cmd and run commands

cd (path in which you created your folder)



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Step3:

start mongod --port=50001 --replSet="Server1" --dbpath="(folder path)/secondry1"

start mongod --port=50002 --replSet="Server1" --dbpath="(folder path)/secondry2"

```
E:\MSc\ADBMS>start mongod --port=50001 --replSet="Server1" --dbpath="E:\MSc\ADBMS\secondry1"

E:\MSc\ADBMS>start mongod --port=50002 --replSet="Server1" --dbpath="E:\MSc\ADBMS\secondry2"
```

Step4:

mongosh --port=50000

```
test> rs.initiate({
... _id:"Server1",
... members:[
... {_id:0,host:"localhost:50000"},
... {_id:1,host:"localhost:50001"},
... {_id:2,host:"localhost:50002"}
... ]
... });
{ ok: 1 }
Server1 [direct: other] test> rs.status()
{
  set: 'Server1',
  date: ISODate('2024-03-15T18:45:03.695Z'),
  myState: 1,
  term: Long('1'),
  syncSourceHost: '',
  syncSourceId: -1,
  heartbeatIntervalMillis: Long('2000'),
  majorityVoteCount: 2,
  writeMajorityCount: 2,
  votingMembersCount: 3,
  writableVotingMembersCount: 3,
  optimes: {
    lastCommittedOpTime: { ts: Timestamp({ t: 1710528298, i: 1 }), t: Long('1') },
    lastCommittedWallTime: ISODate('2024-03-15T18:44:58.148Z'),
    readConcernMajorityOpTime: { ts: Timestamp({ t: 1710528298, i: 1 }), t: Long('1') },
    appliedOpTime: { ts: Timestamp({ t: 1710528298, i: 1 }), t: Long('1') },
    durableOpTime: { ts: Timestamp({ t: 1710528298, i: 1 }), t: Long('1') },
    lastAppliedWallTime: ISODate('2024-03-15T18:44:58.148Z'),
    lastDurableWallTime: ISODate('2024-03-15T18:44:58.148Z')
  },
  lastStableRecoveryTimestamp: Timestamp({ t: 1710528268, i: 1 }),
  electionCandidateMetrics: {
    lastElectionReason: 'electionTimeout',
    lastElectionDate: ISODate('2024-03-15T17:58:47.793Z'),
    electionTerm: Long('1'),
    lastCommittedOpTimeAtElection: { ts: Timestamp({ t: 1710525516, i: 1 }), t: Long('-1') },
    lastSeenOpTimeAtElection: { ts: Timestamp({ t: 1710525516, i: 1 }), t: Long('-1') },
    numVotesNeeded: 2,
    priorityAtElection: 1,
    electionTimeoutMillis: Long('10000'),
    numCatchUpOps: Long('0'),
    newTermStartDate: ISODate('2024-03-15T17:58:47.826Z'),
    wMajorityWriteAvailabilityDate: ISODate('2024-03-15T17:58:48.919Z')
  },
  members: [
```

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CONFIG SERVER

Step5:

mongod --configsvr --port=1030 --replSet="Server1" --dbpath="(folder path)/server1"

```
E:\MSc\ADBMS>mongod --configsvr --port=1030 --replSet="Server1" --dbpath="E:\MSc\ADBMS\server1"
{"t":{"$date":"2024-03-15T23:31:59.370+05:30"},"s":"I",  "c":"NETWORK",  "id":4915701, "ctx":"-","msg":"
Initialized wire specification","attr":{"spec":{"incomingExternalClient":{"minWireVersion":0,"maxWireVer
sion":17},"incomingInternalClient":{"minWireVersion":0,"maxWireVersion":17},"outgoing":{"minWireVersion"
:6,"maxWireVersion":17},"isInternalClient":true}}}
{"t":{"$date":"2024-03-15T23:31:59.371+05:30"},"s":"I",  "c":"CONTROL",  "id":23285,   "ctx":"thread1","
msg":"Automatically disabling TLS 1.0, to force-enable TLS 1.0 specify --sslDisabledProtocols 'none'"}
{"t":{"$date":"2024-03-15T23:31:59.371+05:30"},"s":"I",  "c":"NETWORK",  "id":4648602, "ctx":"thread1","
msg":"Implicit TCP FastOpen in use."}
{"t":{"$date":"2024-03-15T23:31:59.373+05:30"},"s":"I",  "c":"REPL",     "id":5123008, "ctx":"thread1","
```

mongod --configsvr --port=1040 --replSet="Server1" --dbpath="(folder path)/server2"

```
E:\MSc\ADBMS>mongod --configsvr --port=1040 --replSet="Server1" --dbpath="E:\MSc\ADBMS\server2"
{"t":{"$date":"2024-03-15T23:33:26.702+05:30"},"s":"I",  "c":"CONTROL",  "id":23285,   "ctx":"-","msg":"Automatically d
sabling TLS 1.0, to force-enable TLS 1.0 specify --sslDisabledProtocols 'none'"}
{"t":{"$date":"2024-03-15T23:33:27.775+05:30"},"s":"I",  "c":"NETWORK",  "id":4915701, "ctx":"thread1","msg":"Initializ
d wire specification","attr":{"spec":{"incomingExternalClient":{"minWireVersion":0,"maxWireVersion":17},"incomingInterna
lClient":{"minWireVersion":0,"maxWireVersion":17},"outgoing":{"minWireVersion":6,"maxWireVersion":17},"isInternalClient"
:true}}}
{"t":{"$date":"2024-03-15T23:33:27.778+05:30"},"s":"I",  "c":"NETWORK",  "id":4648602, "ctx":"thread1","msg":"Implicit
```

mongod --configsvr --port=1050 --replSet="Server1" --dbpath="(folder path)/server3"

```
E:\MSc\ADBMS>mongod --configsvr --port=1050 --replSet="Server1" --dbpath="(folder path)/server3"
{"t":{"$date":"2024-03-15T23:34:37.809+05:30"},"s":"I",  "c":"NETWORK",  "id":4915701, "ctx":"-","msg":"Initialized wire
 specification","attr":{"spec":{"incomingExternalClient":{"minWireVersion":0,"maxWireVersion":17},"incomingInternalClien
t":{"minWireVersion":0,"maxWireVersion":17},"outgoing":{"minWireVersion":6,"maxWireVersion":17},"isInternalClient":true}
}}
{"t":{"$date":"2024-03-15T23:34:37.812+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":"2024-03-15T23:34:38.879+05:30"},"s":"I",  "c":"NETWORK",  "id":4648602, "ctx":"thread1","msg":"Implicit T
```

```
test> rs.initiate({
... _id:"Server1",
... configsvr:true,
... members:[
... {_id:0, host:"localhost:1030"},
... {_id:1, host:"localhost:1040"},
... {_id:2, host:"localhost:1050"}
... ]
... })
{ ok: 1, lastCommittedOpTime: Timestamp({ t: 1710526309, i: 1 }) }
Server1 [direct: other] test>
```

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SHARDING

Step6:

mongod --shardsvr --port=1130 --dbpath="(folder path)/shard1" --replSet="Server1"

```
E:\MSc\ADBMS\shard1>mongod --shardsvr --port=1130 --dbpath="E:\MSc\ADBMS\shard1" --replSet="Server1"
{"t":{"$date":"2024-03-15T23:51:25.829+05:30"},"s":"I",  "c":"NETWORK",  "id":4915701, "ctx":"-","msg":"Initialized w
 specification","attr":{"spec":{"incomingExternalClient":{"minWireVersion":0,"maxWireVersion":17},"incomingInternalCl
t":{"minWireVersion":0,"maxWireVersion":17},"outgoing":{"minWireVersion":6,"maxWireVersion":17},"isInternalClient":tr
}}
{"t":{"$date":"2024-03-15T23:51:27.010+05:30"},"s":"I",  "c":"CONTROL",  "id":23285,   "ctx":"-","msg":"Automatically
sabling TLS 1.0, to force-enable TLS 1.0 specify --sslDisabledProtocols 'none'"}
{"t":{"$date":"2024-03-15T23:51:27.012+05:30"},"s":"I",  "c":"NETWORK",  "id":4648602, "ctx":"thread1","msg":"Implici
CP FastOpen in use."}
```

mongod --shardsvr --port=1140 --dbpath="(folder path)/shard2" --replSet="Server1"

```
E:\MSc\ADBMS\shard2>mongod --shardsvr --port=1140 --dbpath="E:\MSc\ADBMS\shard2" --replSet="Server1"
{"t":{"$date":"2024-03-15T23:52:28.971+05:30"},"s":"I",  "c":"NETWORK",  "id":4915701, "ctx":"-","msg":"Initialized wir
 specification","attr":{"spec":{"incomingExternalClient":{"minWireVersion":0,"maxWireVersion":17},"incomingInternalClie
t":{"minWireVersion":0,"maxWireVersion":17},"outgoing":{"minWireVersion":6,"maxWireVersion":17},"isInternalClient":true
}}
{"t":{"$date":"2024-03-15T23:52:30.116+05:30"},"s":"I",  "c":"CONTROL",  "id":23285,   "ctx":"-","msg":"Automatically d
sabling TLS 1.0, to force-enable TLS 1.0 specify --sslDisabledProtocols 'none'"}
{"t":{"$date":"2024-03-15T23:52:30.117+05:30"},"s":"I",  "c":"NETWORK",  "id":4648602, "ctx":"thread1","msg":"Implicit
CP FastOpen in use."}
```

mongod --shardsvr --port=1150 --dbpath="(folder path)/shard3" --replSet="Server1"

```
E:\MSc\ADBMS\shard3>
E:\MSc\ADBMS\shard3>mongod --shardsvr --port=1150 --dbpath="E:\MSc\ADBMS\shard3" --replSet="Server1"
{"t":{"$date":"2024-03-15T23:56:09.871+05:30"},"s":"I",  "c":"NETWORK",  "id":4915701, "ctx":"-","msg":"Initialized wire
 specification","attr":{"spec":{"incomingExternalClient":{"minWireVersion":0,"maxWireVersion":17},"incomingInternalClien
t":{"minWireVersion":0,"maxWireVersion":17},"outgoing":{"minWireVersion":6,"maxWireVersion":17},"isInternalClient":true}
}}
{"t":{"$date":"2024-03-15T23:56:09.874+05:30"},"s":"I",  "c":"CONTROL",  "id":23285,   "ctx":"-","msg":"Automatically di
sabling TLS 1.0, to force-enable TLS 1.0 specify --sslDisabledProtocols 'none'"}
{"t":{"$date":"2024-03-15T23:56:11.025+05:30"},"s":"I",  "c":"NETWORK",  "id":4648602, "ctx":"thread1","msg":"Implicit T
CP FastOpen in use."}
```

```
test> rs.initiate({
... _id:"Server1",
... members:[
... {_id: 0, host:"localhost:1130"},
... {_id: 1, host:"localhost:1140"},
... {_id: 2, host:"localhost:1150"}
... ]
... })
{ ok: 1 }
```

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STATUS

```
Server1 [direct: other] test> rs.status()
{
  set: 'Server1',
  date: ISODate('2024-03-15T18:38:40.267Z'),
  myState: 1,
  term: Long('1'),
  syncSourceHost: '',
  syncSourceId: -1,
  heartbeatIntervalMillis: Long('2000'),
  majorityVoteCount: 2,
  writeMajorityCount: 2,
  votingMembersCount: 3,
  writableVotingMembersCount: 3,
  optimes: {
    lastCommittedOpTime: { ts: Timestamp({ t: 1710527915, i: 1 }), t: Long('1') },
    lastCommittedWallTime: ISODate('2024-03-15T18:38:35.036Z'),
    readConcernMajorityOpTime: { ts: Timestamp({ t: 1710527915, i: 1 }), t: Long('1') },
    appliedOpTime: { ts: Timestamp({ t: 1710527915, i: 1 }), t: Long('1') },
    durableOpTime: { ts: Timestamp({ t: 1710527915, i: 1 }), t: Long('1') },
    lastAppliedWallTime: ISODate('2024-03-15T18:38:35.036Z'),
    lastDurableWallTime: ISODate('2024-03-15T18:38:35.036Z')
  },
  lastStableRecoveryTimestamp: Timestamp({ t: 1710527875, i: 1 }),
  electionCandidateMetrics: {
    lastElectionReason: 'electionTimeout',
    lastElectionDate: ISODate('2024-03-15T18:29:14.924Z'),
    electionTerm: Long('1'),
    lastCommittedOpTimeAtElection: { ts: Timestamp({ t: 1710527343, i: 1 }), t: Long('-1') },
    lastSeenOpTimeAtElection: { ts: Timestamp({ t: 1710527343, i: 1 }), t: Long('-1') },
    numVotesNeeded: 2,
    priorityAtElection: 1,
    electionTimeoutMillis: Long('10000'),
    numCatchUpOps: Long('0'),
    newTermStartDate: ISODate('2024-03-15T18:29:14.949Z'),
    wMajorityWriteAvailabilityDate: ISODate('2024-03-15T18:29:16.255Z')
  },
  members: [
    {
      _id: 0,
      name: 'localhost:1130',
      health: 1,
      state: 1,
      stateStr: 'PRIMARY',
      uptime: 1035,
      optime: { ts: Timestamp({ t: 1710527915, i: 1 }), t: Long('1') },
      optimeDate: ISODate('2024-03-15T18:38:35.000Z'),
      lastAppliedWallTime: ISODate('2024-03-15T18:38:35.036Z'),
      lastDurableWallTime: ISODate('2024-03-15T18:38:35.036Z'),
      syncSourceHost: '',
```

```
    {
      _id: 1,
      name: 'localhost:1140',
      health: 1,
      state: 2,
      stateStr: 'SECONDARY',
      uptime: 576,
      optime: { ts: Timestamp({ t: 1710527915, i: 1 }), t: Long('1') },
      optimeDurable: { ts: Timestamp({ t: 1710527915, i: 1 }), t: Long('1') },
      optimeDate: ISODate('2024-03-15T18:38:35.000Z'),
      optimeDurableDate: ISODate('2024-03-15T18:38:35.000Z'),
      lastAppliedWallTime: ISODate('2024-03-15T18:38:35.036Z'),
      lastDurableWallTime: ISODate('2024-03-15T18:38:35.036Z'),
      lastHeartbeat: ISODate('2024-03-15T18:38:39.277Z'),
      lastHeartbeatRecv: ISODate('2024-03-15T18:38:38.801Z'),
      pingMs: Long('0'),
      lastHeartbeatMessage: '',
      syncSourceHost: 'localhost:1130',
      syncSourceId: 0,
      infoMessage: '',
      configVersion: 1,
      configTerm: 1
    },
    {
      _id: 2
```

```
    {
      _id: 2,
      name: 'localhost:1150',
      health: 1,
      state: 2,
      stateStr: 'SECONDARY',
      uptime: 576,
      optime: { ts: Timestamp({ t: 1710527915, i: 1 }), t: Long('1') },
      optimeDurable: { ts: Timestamp({ t: 1710527915, i: 1 }), t: Long('1') },
      optimeDate: ISODate('2024-03-15T18:38:35.000Z'),
      optimeDurableDate: ISODate('2024-03-15T18:38:35.000Z'),
      lastAppliedWallTime: ISODate('2024-03-15T18:38:35.036Z'),
      lastDurableWallTime: ISODate('2024-03-15T18:38:35.036Z'),
      lastHeartbeat: ISODate('2024-03-15T18:38:39.275Z'),
      lastHeartbeatRecv: ISODate('2024-03-15T18:38:38.801Z'),
      pingMs: Long('0'),
      lastHeartbeatMessage: '',
      syncSourceHost: 'localhost:1130',
      syncSourceId: 0,
      infoMessage: '',
      configVersion: 1,
      configTerm: 1
    }
  ],
```

```
  ok: 1,
  '$clusterTime': {
    clusterTime: Timestamp({ t: 1710527915, i: 1 }),
    signature: {
      hash: Binary.createFromBase64('AAAAAAAAAAAAAAAAAAAAAAAAAAA=', 0),
      keyId: Long('0')
    }
  },
  operationTime: Timestamp({ t: 1710527915, i: 1 })
}
Server1 [direct: primary] test>
```