# Task - A1

No of Servers = 6 and shards = 4 , each shard has 3 replicas. For 10,000 Write requests:

Total time taken is 1428.0282044410706 seconds. Speed is 7.002811 requests per second.

For 10,000 Read requests:

Total time taken is 837.5015664100647 seconds. Speed is 11.947431 requests per second.

Configuration used:

{

"N": 6,

"schema": { "columns": ["Stud\_id","Stud\_name", "Stud\_marks"],

"dtypes": ["Number","String", "String"] },

"shards": [{"Stud\_id\_low": 0, "Shard\_id": "sh1", "Shard\_size": 4096},

{"Stud\_id\_low": 4096, "Shard\_id": "sh2","Shard\_size": 4096},

{"Stud\_id\_low": 8192, "Shard\_id": "sh3","Shard\_size": 4096},

{"Stud\_id\_low": 12288, "Shard\_id": "sh4","Shard\_size": 4096}],

"servers": {"Server0": ["sh1", "sh2"],

"Server1": ["sh3", "sh4"],

"Server2": ["sh1", "sh3"],

"Server3": ["sh4", "sh2"],

"Server4": ["sh1", "sh4"],

"Server5": ["sh3", "sh2"] }

}

# Task - A2

For 10,000 write requests:

Total time taken is 1887.2157386729 seconds. Speed is 5.2991190812 requests per second.

Write Speed down w.r.t Task 1 = 0.7 For 10,000 read requests:

Total time taken is 756.0694181919098 seconds.

Speed is 13.228035382326433 requests per second.

Read Speed up w.r.t Task 1 = 1.08

Configuration used:

{

"N": 7,

"schema": { "columns": ["Stud\_id","Stud\_name", "Stud\_marks"],

"dtypes": ["Number","String", "String"] },

"shards": [{"Stud\_id\_low": 0, "Shard\_id": "sh1", "Shard\_size": 4096},

{"Stud\_id\_low": 4096, "Shard\_id": "sh2","Shard\_size": 4096},

{"Stud\_id\_low": 8192, "Shard\_id": "sh3","Shard\_size": 4096},

{"Stud\_id\_low": 12288, "Shard\_id": "sh4","Shard\_size": 4096}],

"servers": {"Server0": ["sh1", "sh2", "sh3", "sh4"],

"Server1": ["sh1", "sh2", "sh3", "sh4"],

"Server2": ["sh1", "sh2", "sh3", "sh4"],

"Server3": ["sh1", "sh2", "sh3", "sh4"],

"Server4": ["sh1", "sh2", "sh3", "sh4"],

"Server5": ["sh1", "sh2", "sh3", "sh4"],

"Server6": ["sh1", "sh2", "sh3", "sh4"]}

}

# Task - A3

For 10,000 write requests:

Total time taken is 2082.44410706 seconds.

Speed is 8.143322475 requests per second.

Write speed up = 0.65

For 10,000 read requests

Total time taken is 687.5015664100647 seconds. Speed is 14.46731088027 requests per second.

Read speed up = 1.15

Configuration used:

{

"N": 10,

"schema": { "columns": ["Stud\_id","Stud\_name", "Stud\_marks"],

"dtypes": ["Number","String", "String"] },

"shards": [{"Stud\_id\_low": 0, "Shard\_id": "sh1", "Shard\_size": 2730},

{"Stud\_id\_low": 2730, "Shard\_id": "sh2","Shard\_size": 2730},

{"Stud\_id\_low": 5460, "Shard\_id": "sh3","Shard\_size": 2730},

{"Stud\_id\_low": 8190, "Shard\_id": "sh4","Shard\_size": 2730},

{"Stud\_id\_low": 10920, "Shard\_id": "sh5","Shard\_size": 2730},

{"Stud\_id\_low": 13650, "Shard\_id": "sh6","Shard\_size": 2730}],

"servers": {"Server0": ["sh1", "sh4", "sh5", "sh2", "sh6"],

"Server1": ["sh1", "sh2", "sh4", "sh5", "sh6"],

"Server2": ["sh1", "sh3", "sh4", "sh5", "sh6"],

"Server3": ["sh1", "sh3", "sh4", "sh5", "sh6"],

"Server4": ["sh1", "sh2", "sh3", "sh4", "sh6"],

"Server5": ["sh1", "sh2", "sh3", "sh4", "sh6"],

"Server6": ["sh1", "sh2", "sh3", "sh5", "sh4"],

"Server7": ["sh1", "sh2", "sh3", "sh5", "sh4"],

"Server8": ["sh5", "sh6", "sh2", "sh3"],

"Server9": ["sh5", "sh6", "sh2", "sh3"]}

|  |  |
| --- | --- |
| } |  |
|  |  |

# Task – A4

**Init end point:**

**Payload:**

{

"N": 6,

"schema": { "columns": ["Stud\_id","Stud\_name", "Stud\_marks"],

 "dtypes": ["Number","String", "String"] },

"shards": [{"Stud\_id\_low": 0, "Shard\_id": "sh1", "Shard\_size": 4096},

{"Stud\_id\_low": 4096, "Shard\_id": "sh2","Shard\_size": 4096},

{"Stud\_id\_low": 8192, "Shard\_id": "sh3","Shard\_size": 4096},

{"Stud\_id\_low": 12288, "Shard\_id": "sh4","Shard\_size": 4096}],

"servers": {"Server0": ["sh1", "sh2"],

        "Server1": ["sh3", "sh4"],

 "Server2": ["sh1", "sh3"],

  "Server3": ["sh4", "sh2"],

  "Server4": ["sh1", "sh4"],

  "Server5": ["sh3", "sh2"] }

}

**Result**

{

    "config\_responses": {

        "Server0": {

            "message": "Server0:sh1, Server0:sh2 configured",

            "status": "success"

        },

        "Server1": {

            "message": "Server1:sh3, Server1:sh4 configured",

            "status": "success"

        },

        "Server2": {

            "message": "Server2:sh1, Server2:sh3 configured",

            "status": "success"

        },

        "Server3": {

            "message": "Server3:sh4, Server3:sh2 configured",

            "status": "success"

        },

        "Server4": {

            "message": "Server4:sh1, Server4:sh4 configured",

            "status": "success"

        },

        "Server5": {

            "message": "Server5:sh3, Server5:sh2 configured",

            "status": "success"

        }

    },

    "message": "Configured Database",

    "status": "success"

}

**add end point:**

**payload:**

{

"n":2,

"new\_shards":[{"Stud\_id\_low":45545,"Shard\_id":"sh5","Shard\_size":4096}],

"servers":{"Server7":["sh3","sh5"],

 "Server[5]":["sh2","sh5"]}

}

**Result:**

{

    "N": 2,

    "message": "Add Server:Server7, Server978",

    "status": "success"

}

**rm end point:**

**payload**

{

  "n":3,

  "servers":["Server7","Server5"]

  }

{

    "message": {

        "N": 3,

        "servers": [

            "Server7",

            "Server5",

            "Server4"

        ]

    },

    "status": "successful"

}

**Write end point:**

**Payload:**

{

    "data":[{"Stud\_id":2250,"Stud\_name":"sdafs","Stud\_marks":27},

                {"Stud\_id":2251,"Stud\_name":"Adsfas","Stud\_marks":28},

                {"Stud\_id":2252,"Stud\_name":"GHI","Stud\_marks":29},

                {"Stud\_id":2253,"Stud\_name":"GHI","Stud\_marks":25},

                {"Stud\_id":2254,"Stud\_name":"GHI","Stud\_marks":26},

                {"Stud\_id":4094,"Stud\_name":"sdafs","Stud\_marks":27},

                {"Stud\_id":4097,"Stud\_name":"Adsfas","Stud\_marks":28},

                {"Stud\_id":4098,"Stud\_name":"GHI","Stud\_marks":29},

                {"Stud\_id":4099,"Stud\_name":"GHI","Stud\_marks":25},

                {"Stud\_id":4100,"Stud\_name":"GHI","Stud\_marks":26}

    ]

}

**Result:**

{

    "message": "10 Data entries added",

    "status": "success"

}

**read end point:**

**payload:**

{

"Stud\_id":{"low":1000,"high":8000}

 }

**result:**

{

    "data": [

        {

            "Stud\_id": 2250,

            "Stud\_marks": "27",

            "Stud\_name": "sdafs"

        },

        {

            "Stud\_id": 2251,

            "Stud\_marks": "28",

            "Stud\_name": "Adsfas"

        },

        {

            "Stud\_id": 2252,

            "Stud\_marks": "29",

            "Stud\_name": "GHI"

        },

        {

            "Stud\_id": 2253,

            "Stud\_marks": "25",

            "Stud\_name": "GHI"

        },

        {

            "Stud\_id": 2254,

            "Stud\_marks": "26",

            "Stud\_name": "GHI"

        },

        {

            "Stud\_id": 4094,

            "Stud\_marks": "27",

            "Stud\_name": "sdafs"

        },

        {

            "Stud\_id": 4097,

            "Stud\_marks": "28",

            "Stud\_name": "Adsfas"

        },

        {

            "Stud\_id": 4098,

            "Stud\_marks": "29",

            "Stud\_name": "GHI"

        },

        {

            "Stud\_id": 4099,

            "Stud\_marks": "25",

            "Stud\_name": "GHI"

        },

        {

            "Stud\_id": 4100,

            "Stud\_marks": "26",

            "Stud\_name": "GHI"

        }

    ],

    "shards\_queried": [

        "sh1",

        "sh2"

    ],

    "status": "success"

}

**del end point:**

**payload:**

{

  "Stud\_id":2252

 }

**result:**

{

    "message": "Data entry for Stud\_id: 2252 deleted",

    "status": "success"

}

**Update end point:**

**Payload:**

{

  "Stud\_id": 4099,

  "data":{"Stud\_id":2252,"Stud\_name":"GHI","Stud\_marks":660}

}

**Result:**

{

    "message": "Data entry for Stud\_id: 4099 updated",

    "status": "success"

}

**Status end point:**

**Result:**

{

    "N": 6,

    "schema": {

        "columns": [

            "Stud\_id",

            "Stud\_name",

            "Stud\_marks"

        ],

        "dtypes": [

            "Number",

            "String",

            "String"

        ]

    },

    "servers": {

        "Server0": [

            "sh1",

            "sh2"

        ],

        "Server1": [

            "sh3",

            "sh4"

        ],

        "Server2": [

            "sh1",

            "sh3"

        ],

        "Server3": [

            "sh4",

            "sh2"

        ],

        "Server4": [

            "sh1",

            "sh4"

        ],

        "Server5": [

            "sh3",

            "sh2"

        ]

    },

    "shards": [

        {

            "Shard\_id": "sh1",

            "Shard\_size": 4096,

            "Stud\_id\_low": 0

        },

        {

            "Shard\_id": "sh2",

            "Shard\_size": 4096,

            "Stud\_id\_low": 4096

        },

        {

            "Shard\_id": "sh3",

            "Shard\_size": 4096,

            "Stud\_id\_low": 8192

        },

        {

            "Shard\_id": "sh4",

            "Shard\_size": 4096,

            "Stud\_id\_low": 12288

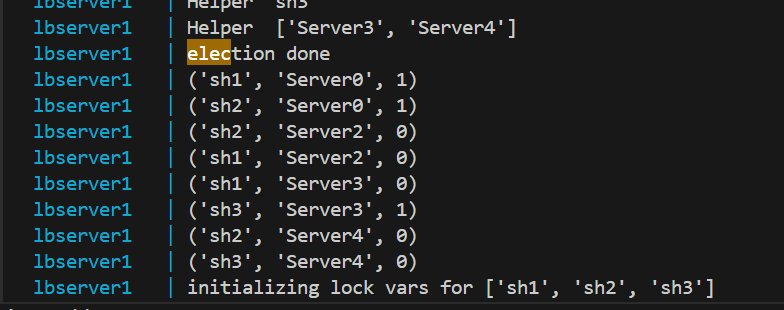
        }

    ]

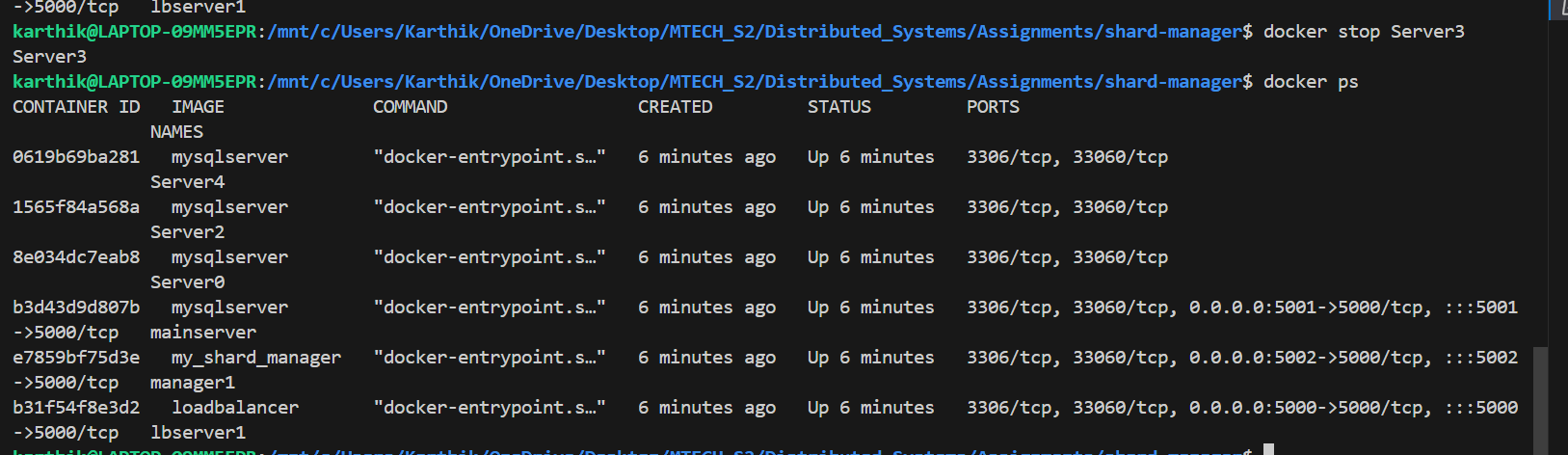
}

**Spawn check:**

Initially on sh3 server3 is the primary server.



I manually stopped the server3.



Now after the server3 has dropped, new primary server is elected on sh3, which is server4.

