Write down detail about MongoDB Shrading with its applications.

MongoDB Shrading :-

Shrading is a method for distributing large collection (dataset) and allocating it across multiple servers. MongoDB uses shrading to help deployment with very big data sets and high volume operations.
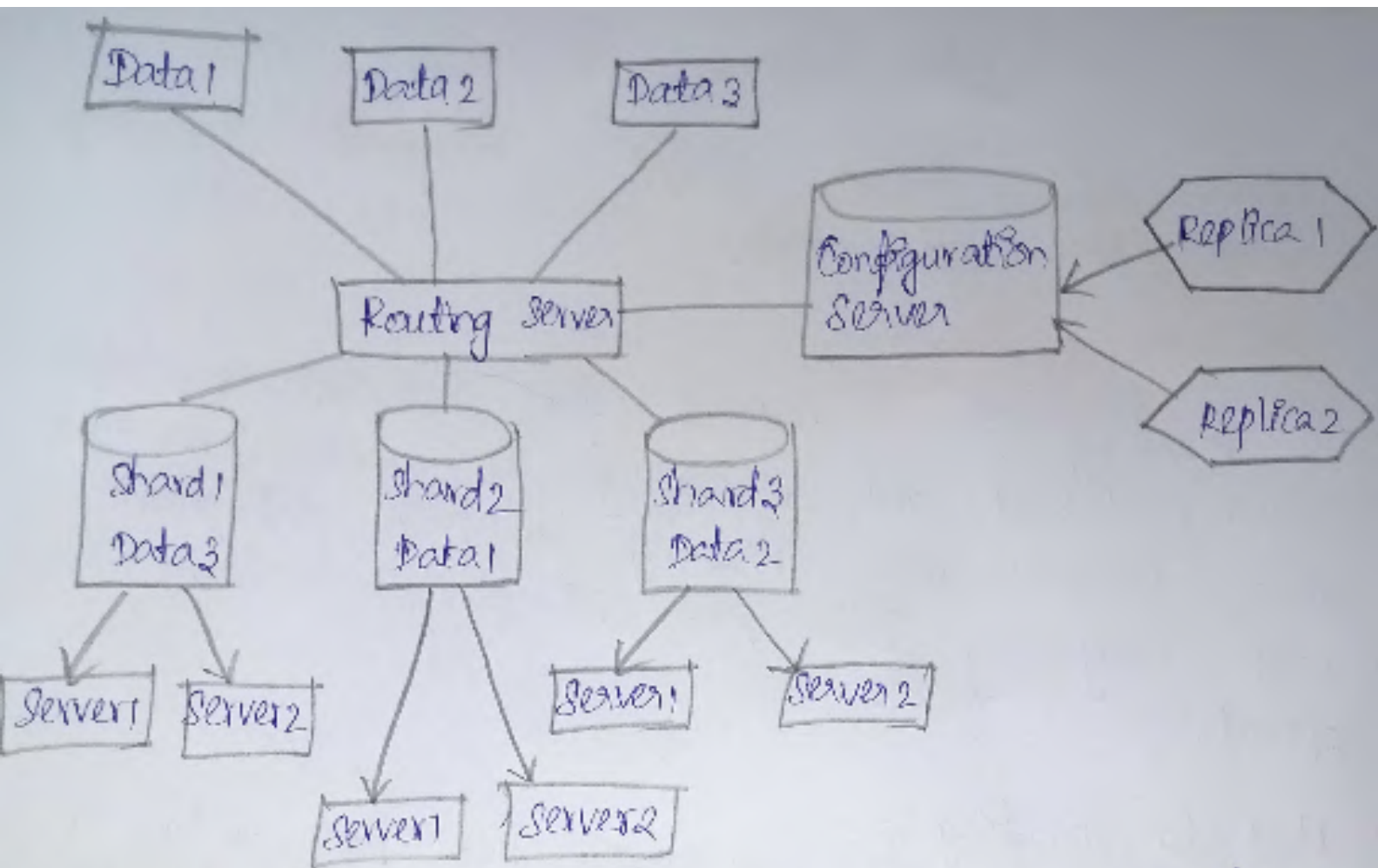
Need for Shrading :-

Database Systems that have big data sets or high throughput requests cannot be handled by a single server.

for Eg:- High Query flow can drain the CPU limit of the server and large dataset stress the I/O capacity of the disk drive.

How does Shrading work ?

Shrading determines the problem with horizontal scaling.

It breaks the system dataset and store it over multiple servers, adding new servers to increase the volume as needed.

Now, Instead of one single as primary, we have multiple servers called shard we have different routing server that will route data to the shard servers.

For Eg:- let say we have Data1, Data2, Data3 this will be going to the routing server which will route the data (i.e., Different data will go to particular shard). Each shard holds some pieces of data.

Advantages :-

1. Shrading adds more server to a data field automatically adjust data loads across various servers.

2. The no. of operations each shard manage got reduced

3. It also increases the write capacity by splitting the write load over multiple instances.

4. It gives high availability due to deployment of replica servers for shard and config

5. Total capacity will get increased by adding multiple shards.

Conclusion:

Replication and Shrading are essential components of MongoDB's architecture, enabling high availability, fault tolerance, scalability. By utilizing these features, organizations can ensure that their data is always accessible and can scale with growing data and user demands.