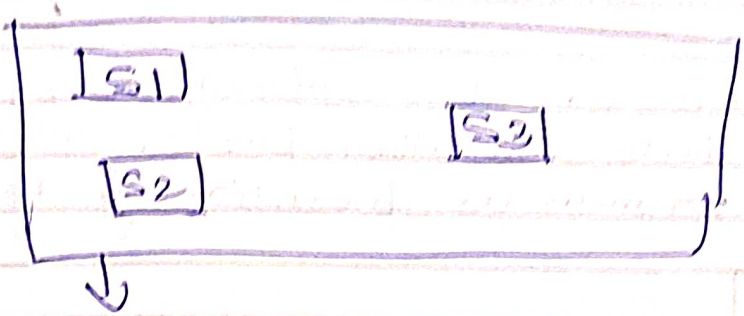
Clustering in DBMS



Clustering

- Here S1, S2 & S3 all are databases which store replica of datasets.
- Here redundancy is useful to overcome the problem of overload of server and issue of website down.

- Database clustering is the process of combining more than one servers connecting a single database.

- Some advantages are given below:-

(1) load balancing, distribution of requests across multiple servers, which prevents any single server from being overwhelmed.

(2) High availability, clustering ensures that the system remains operational even if one or more server fails.

Partitioning & Sharding in DBMS
DB optimisation

- A big problem can be solved when it is broken down into smaller parts. This technique is known as partitioning technique.

Partitioning

- A technique to divide the stored database objects into separate servers. Due to this, there is an increase in performance.

- Two types of partitioning:-

① Horizontally

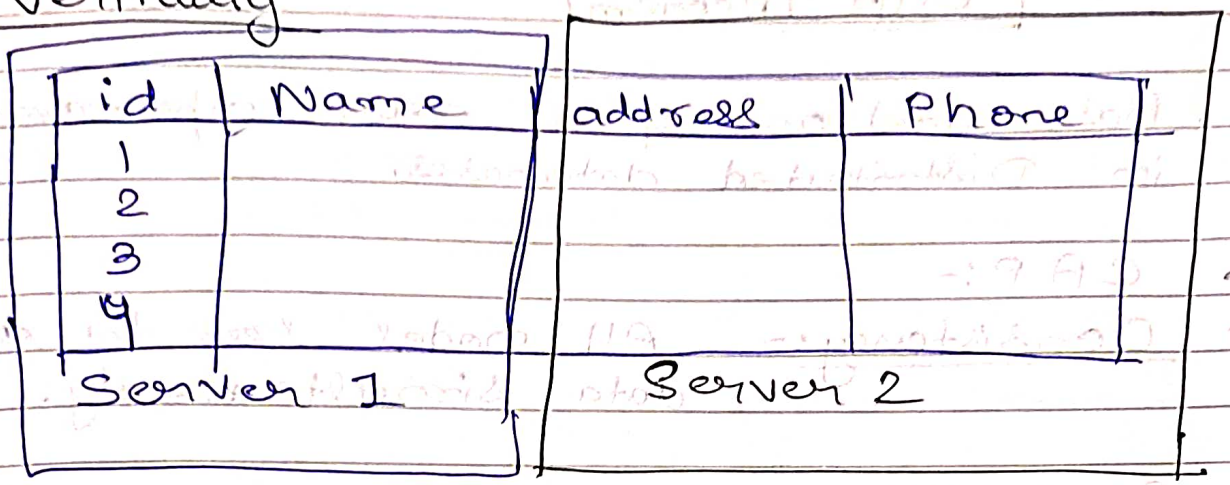
Server 1

id	Name	address	Phone
1	-	-	-
2	-	-	-
3	-	-	-
4	-	-	-

Server 2

- Slicing relation horizontally / row-wise
- Independent chunks of data tuple are stored in different servers.

② Vertically



- Slicing relation vertically / column-wise.
- Need to access different servers to get complete tuples.

⑧ Why partitioning ?

Ans • Dataset become much huge that managing and dealing with it become a tedious task.

- The number of requests are enough larger than the single DB server access is taking huge time
- Advantages :- Parallelism, availability, Performance, Reduce cost.
- Distributed database :- A single database is spread across multiple locations.
  Eg. => clustering, Partitioning and Sharding.
- Sharding :- Technique to implement horizontal partitioning.
- Instead of keeping DB on one instance, split it and use a Routing layer to forward the request to the right instance.