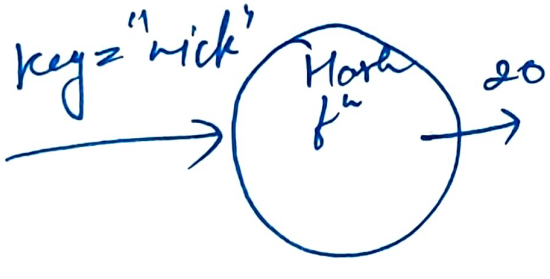
Consistent Hashing

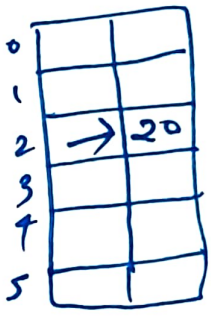
→ Hashing: Random length → fixed len

Mod hashing: fixed len % size of hash table



Mod Hashing : size = 6

20 % 6 = 2



Problem:

* If size is fixed ⇒ NO Problem

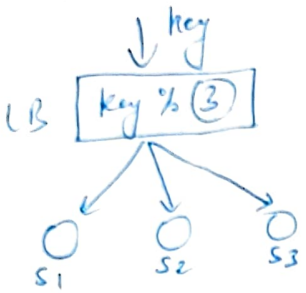
BUT

* If size = variable ⇒ PROBLEM

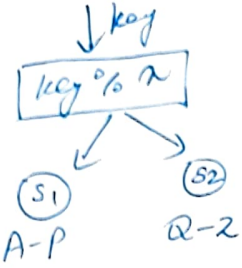
↙ load balancing

↘ Horizontal ~~Partitioning~~ (Sharding)

LB

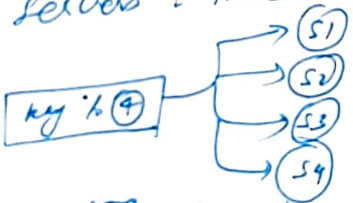


H.Sharding



Problem: Data is NOT evenly distributed among all servers.

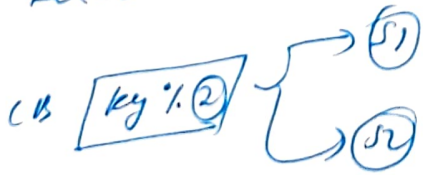
Case 1: servers : increase



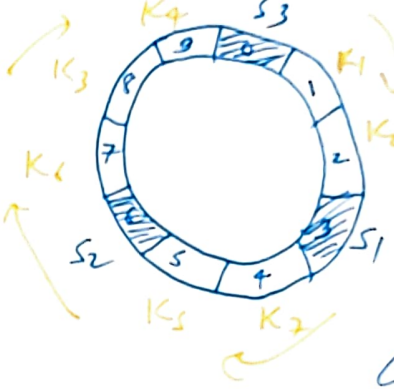
same key can give diff. server.

⇒ All keys need to Re-balance.

Case 2: servers: decrease.



⇒ Again, Re-balance all keys.



$S_1 = hf(S1) = 3$

$S_2 = hf(S2) = 6$

$S_3 = hf(S3) = 0$

Go clockwise

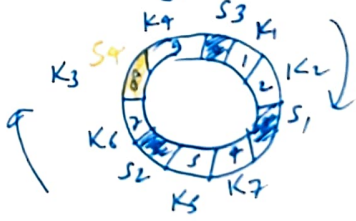
$K_1, K_2 = S_1$

$K_5, K_7 = S_2$

$K_3, K_4, K_6 = S_3$

① Adding of server:

$S_4 = hf(S4) = 8$



$S_1 = K_1, K_2$

$S_2 = K_5, K_7$

$S_3 = K_4$

$S_4 = K_3, K_6$

Only 2 keys got re-balanced.