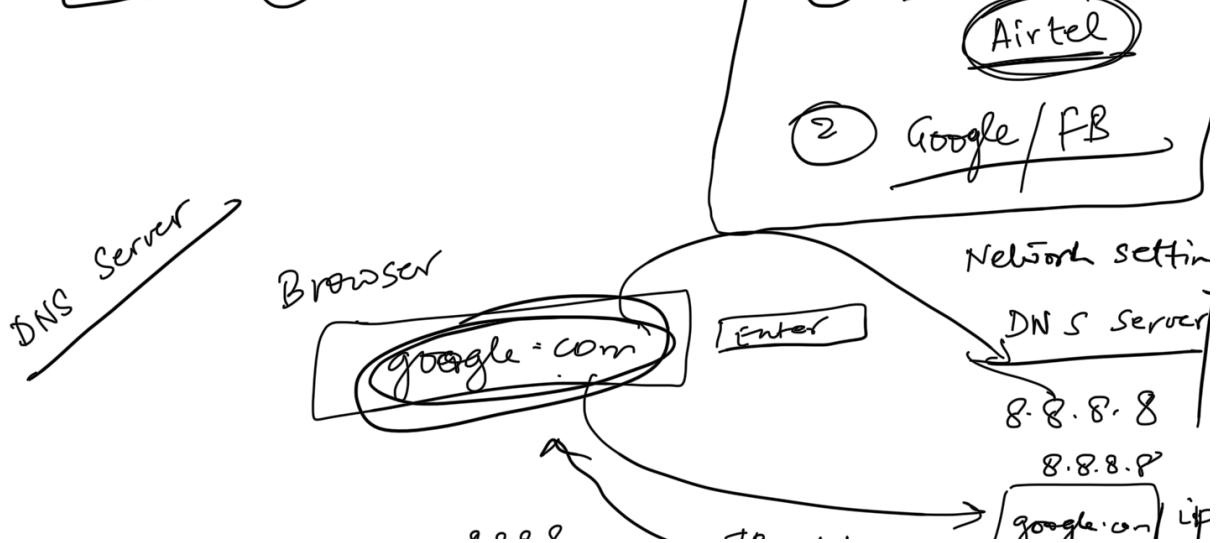
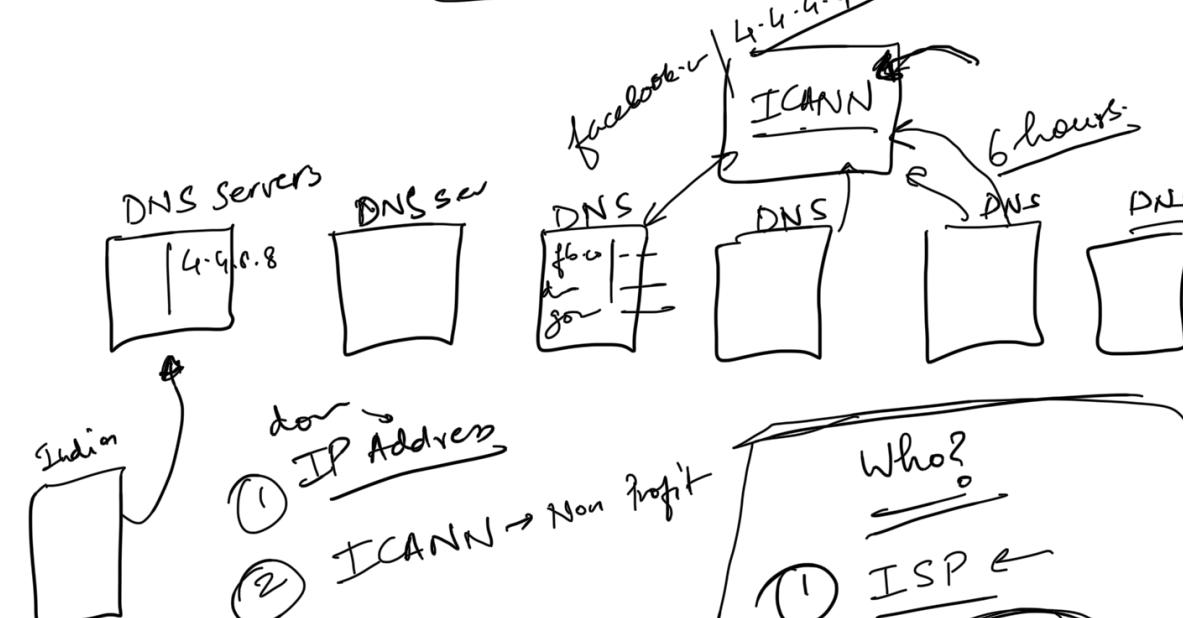
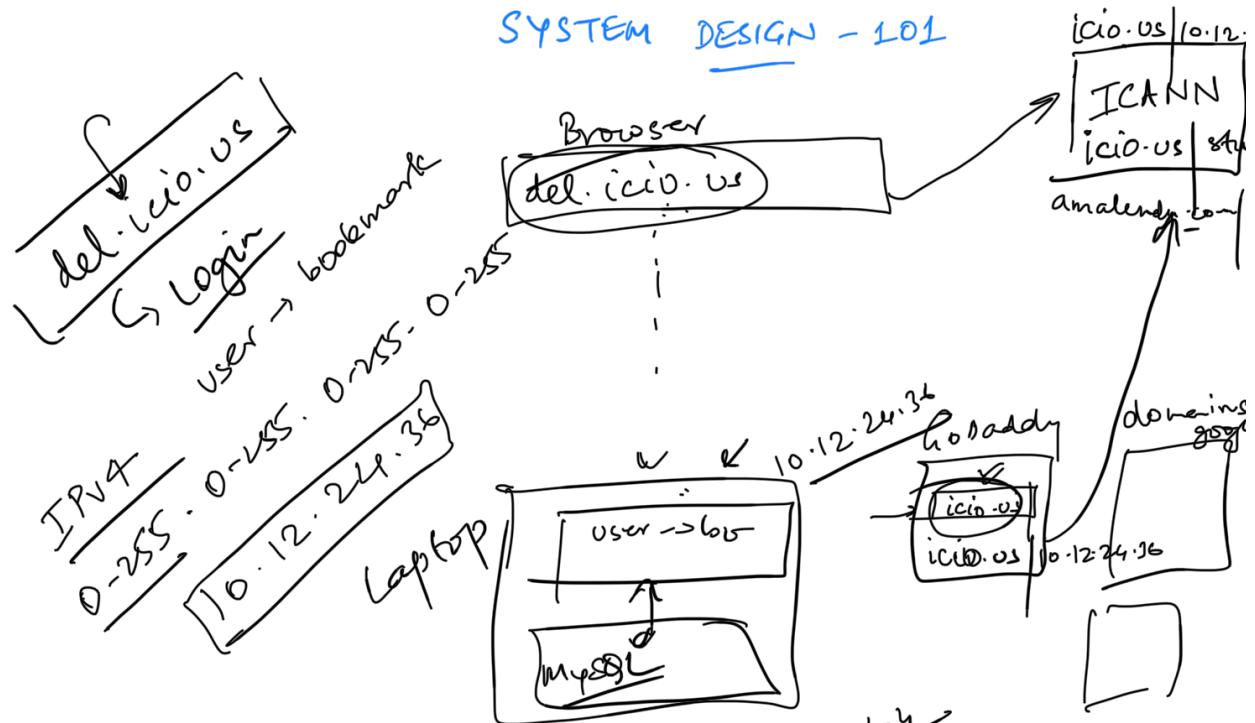
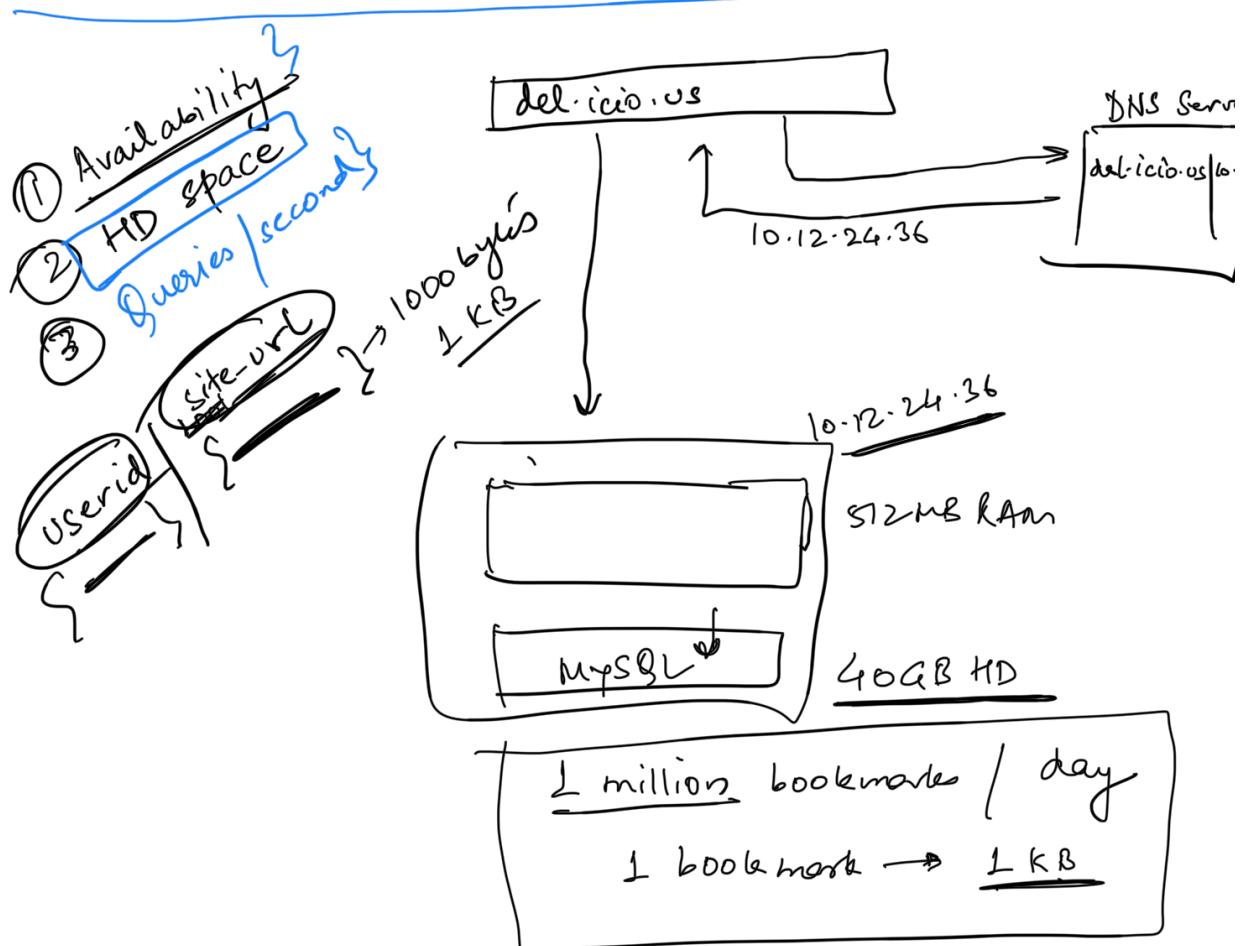


SYSTEM DESIGN - LO1





getAllBookmarks
more bookmarks

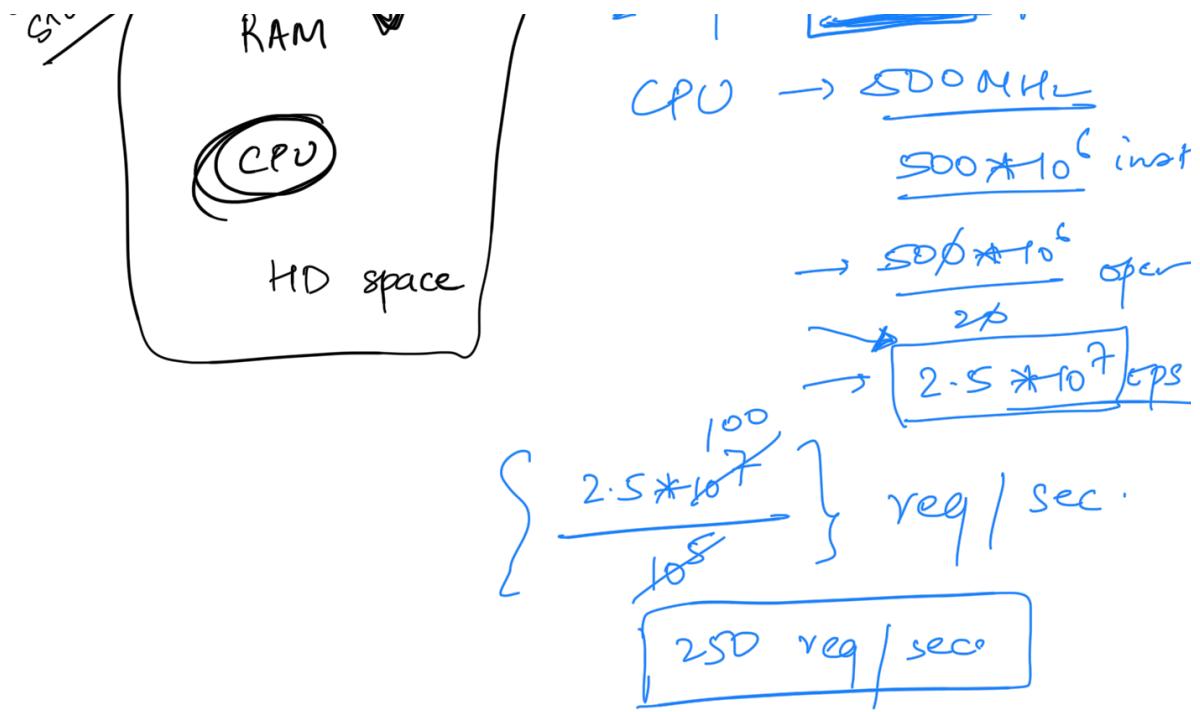
1 million * 1 KB

$$\frac{1000 \times 1000}{1} \times \frac{1 \text{ KB}}{\text{MB}}$$

$\Rightarrow \frac{1 \text{ GB}}{1}$

0/1 inst

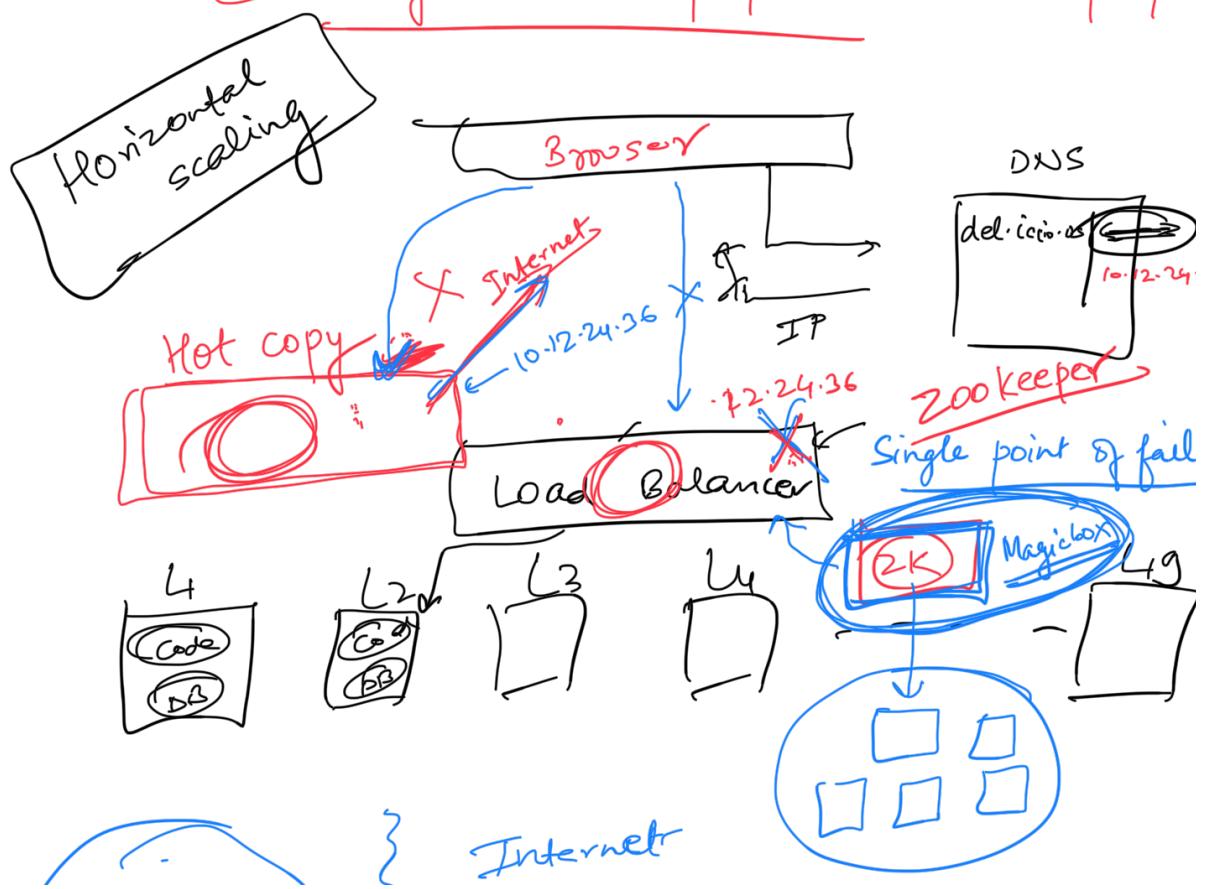
Queries/sec
1 req → 100000 operations.

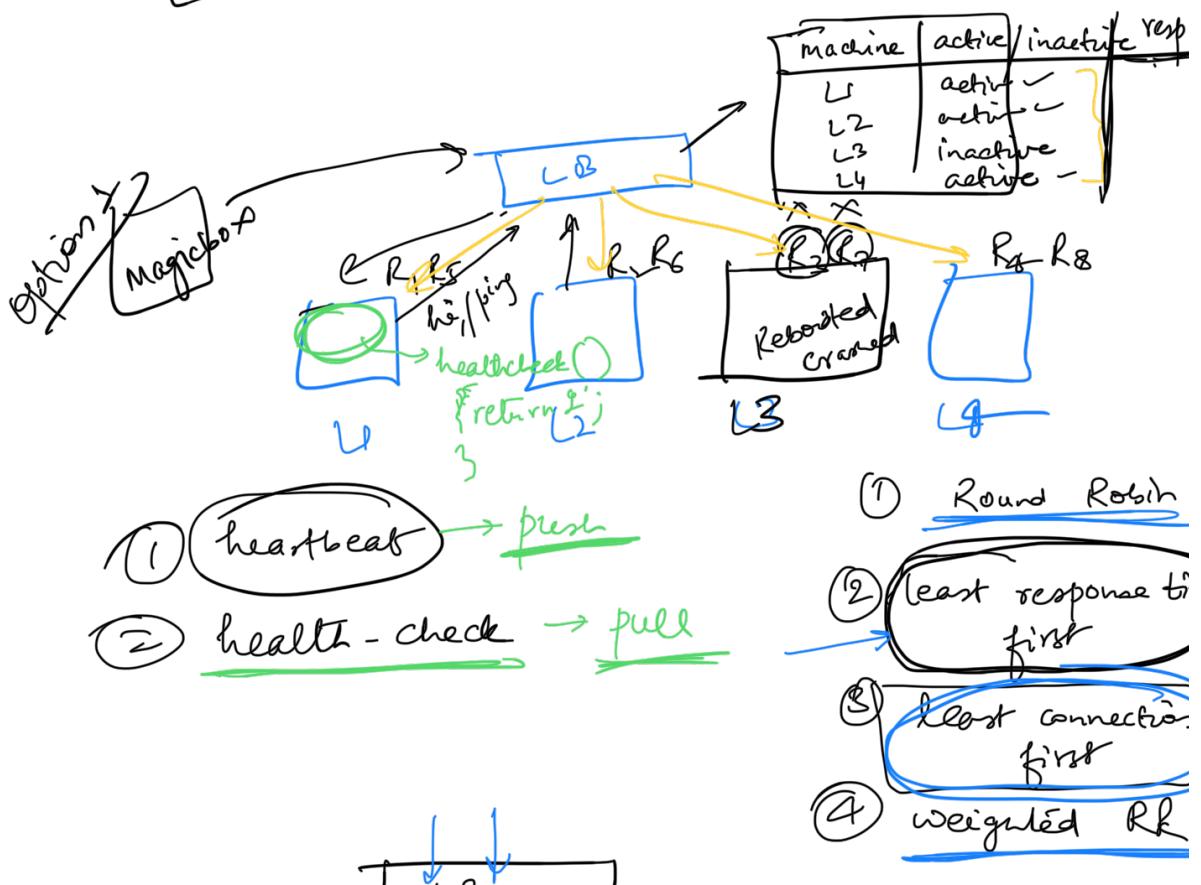
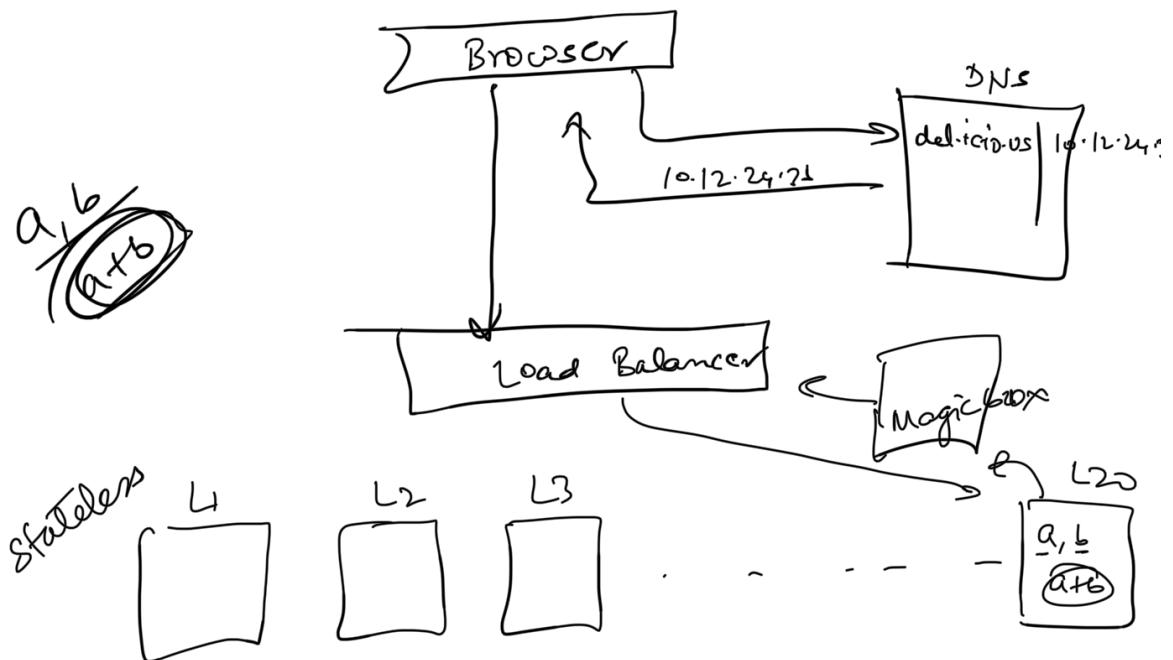
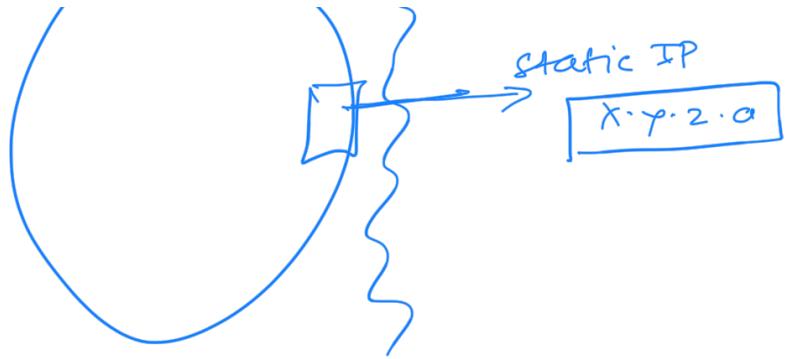


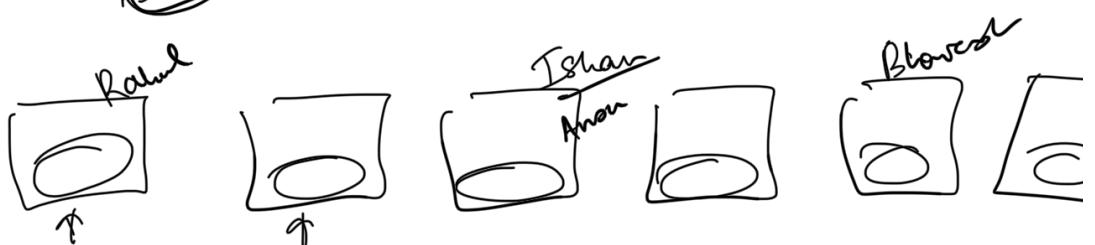
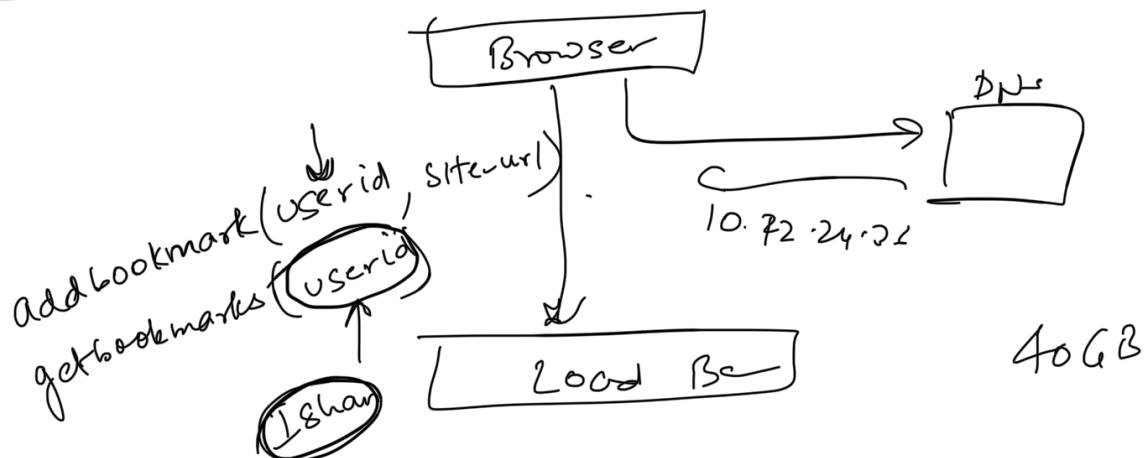
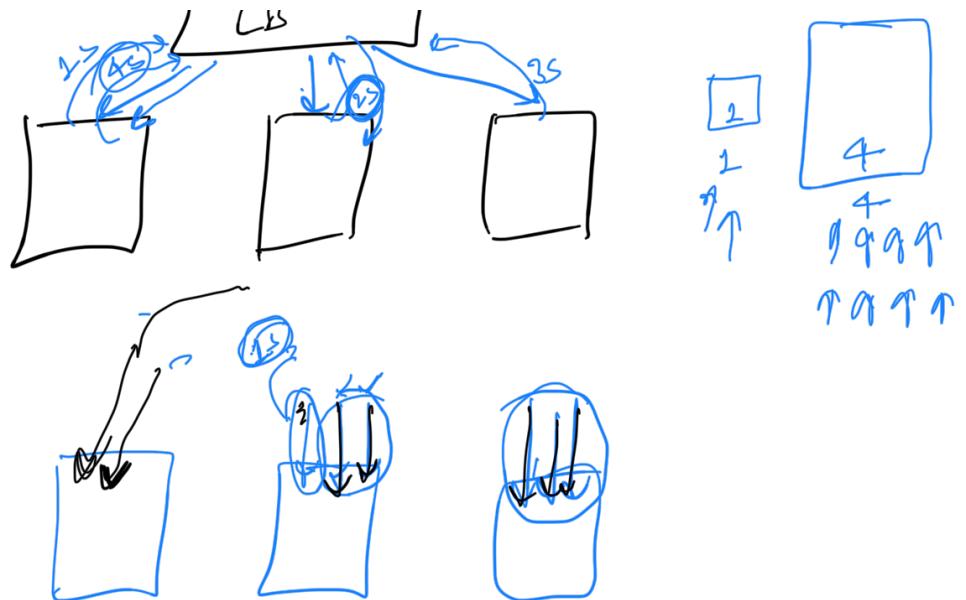
① Buy a better laptop / HD 100 GB

Vertical scaling

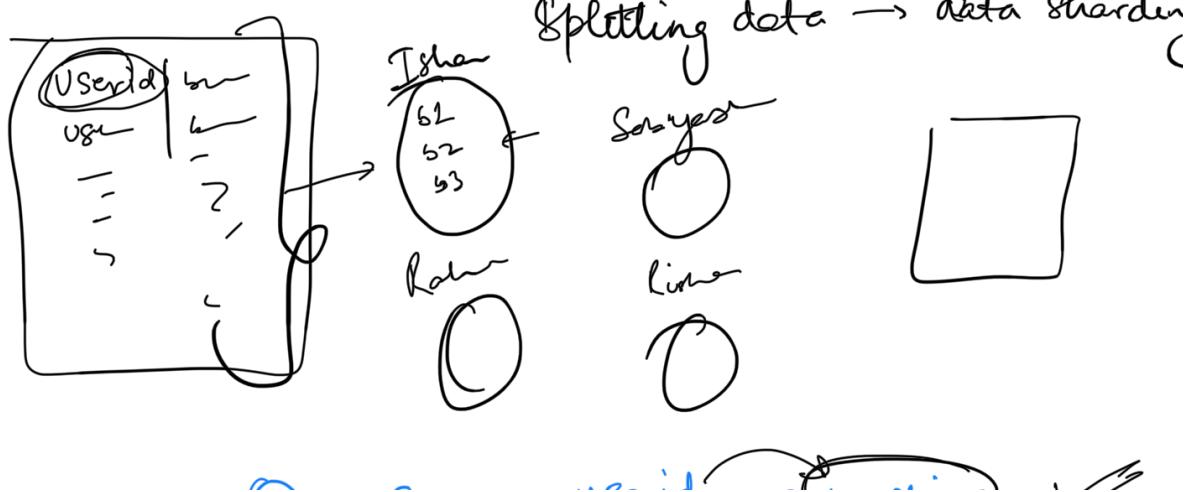
② Buy more laptops → 20 laptops

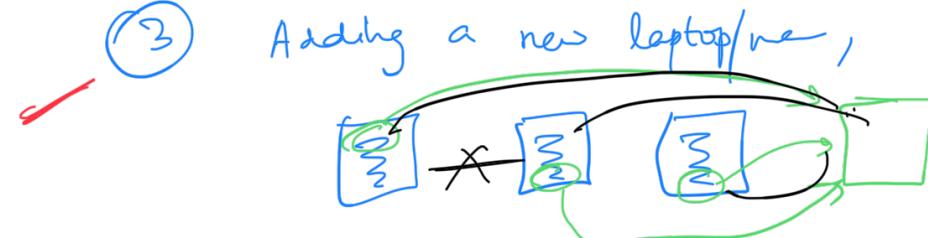
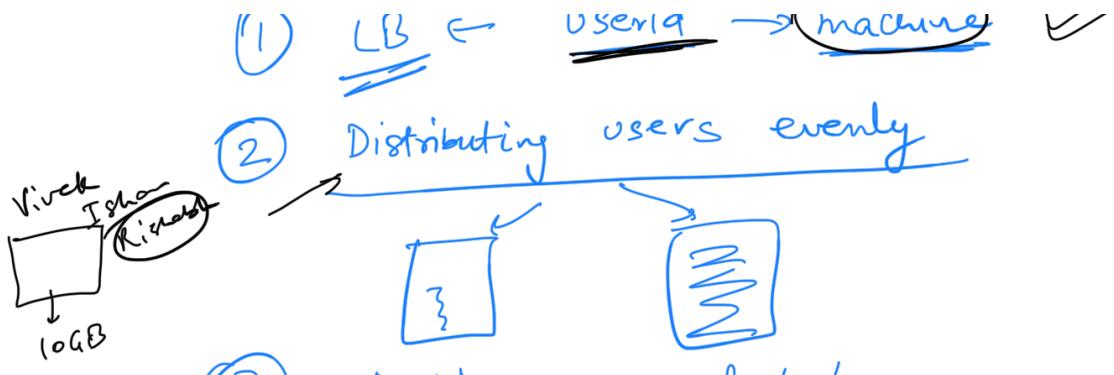






$$40\text{GB} \times 20 = \underline{\underline{800\text{GB}}}$$





④ Remove a machine/laptop



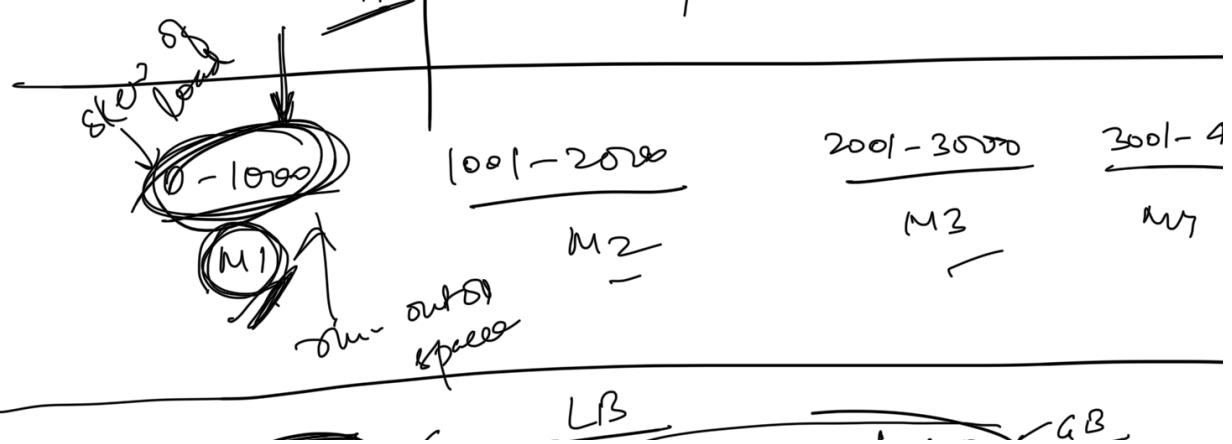
User

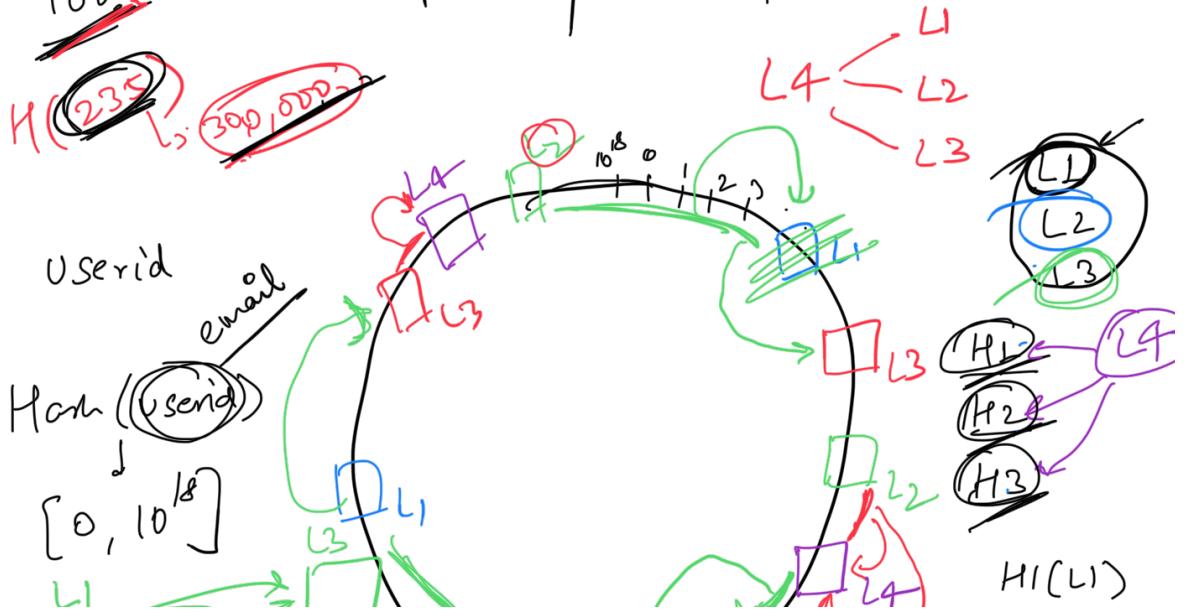
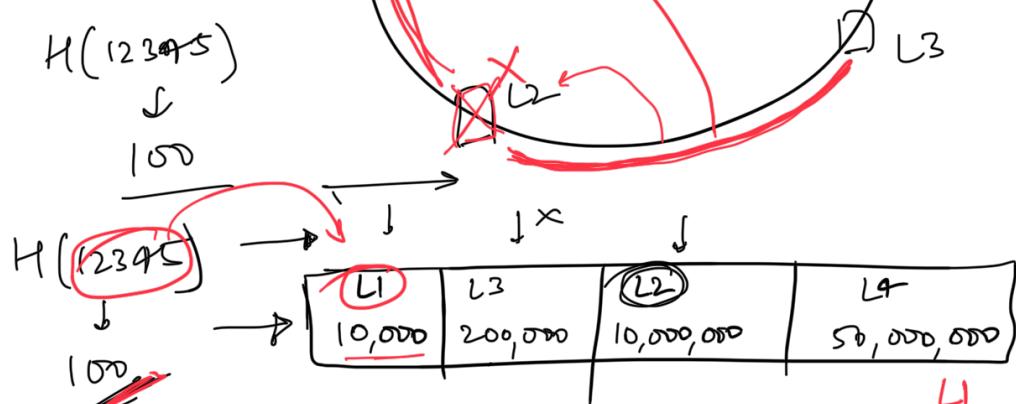
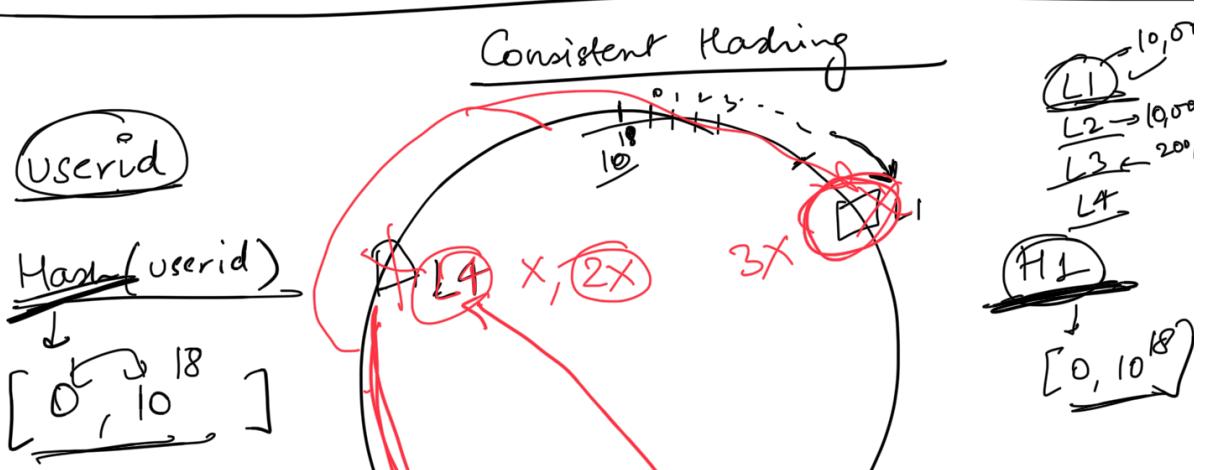
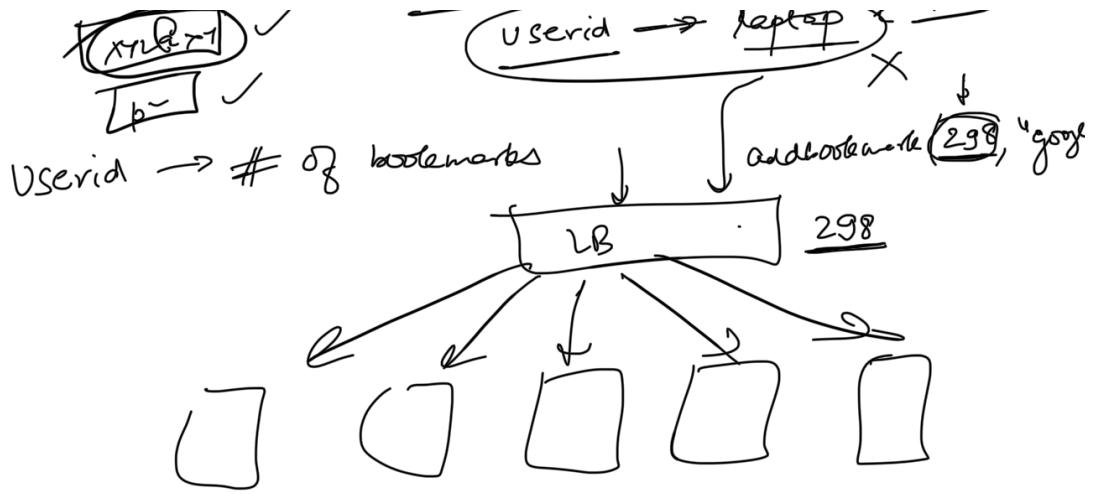
5 laptops.

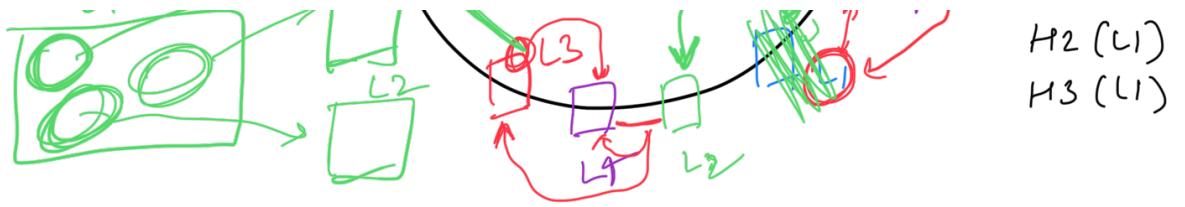
Userid % 5 → 0, 1, 2, 3, 4

26/6

	5 laptops	6 laptops
26.	1	2
12	2	0
15	0	3
19	4	1
28	2	3
28	3	4
41	1	5





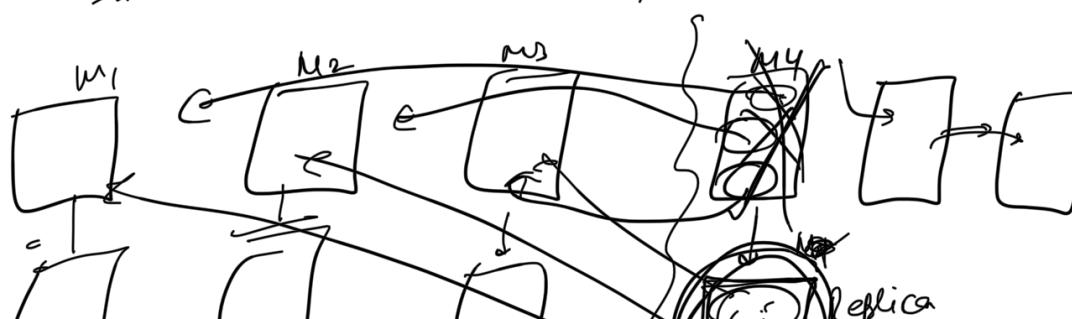
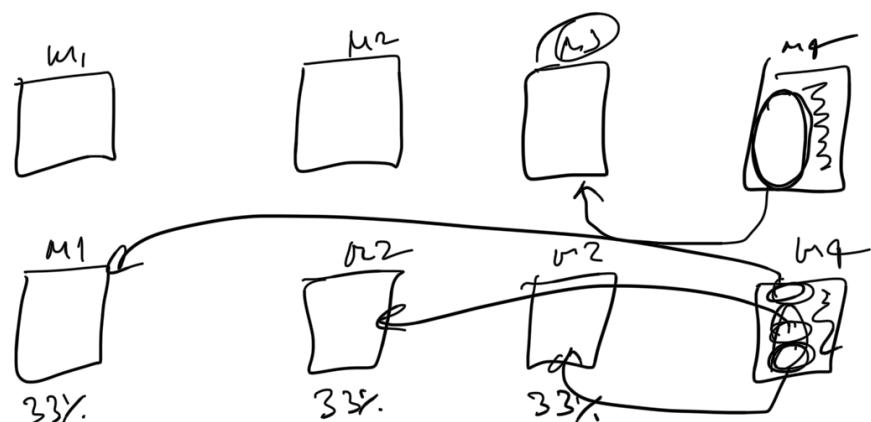


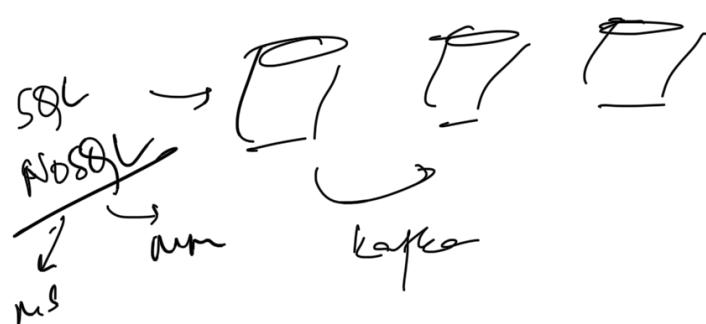
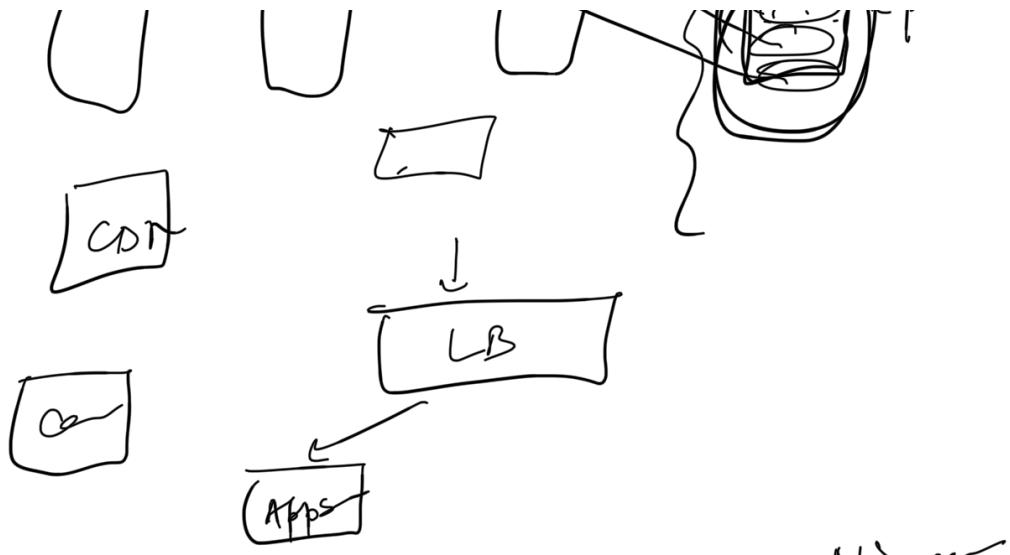
L1	L3	L1	L1	L2
10,000	200,000	10,000,000	20,000,000	100

of laptops * # of hosts
 ↴
 Modified consistent hashing
 Hash(cjor) ↴
 123456

L1	L1	L1	L2	L2
10,000	50,000,000	280,000,000	100,000	80,000,000,000,000
10,000	150,000	500,000	50,000,000	100,000,000,000,000

Hash(shashen)
 ↓
 123456





Microservices
Virtual

LB

