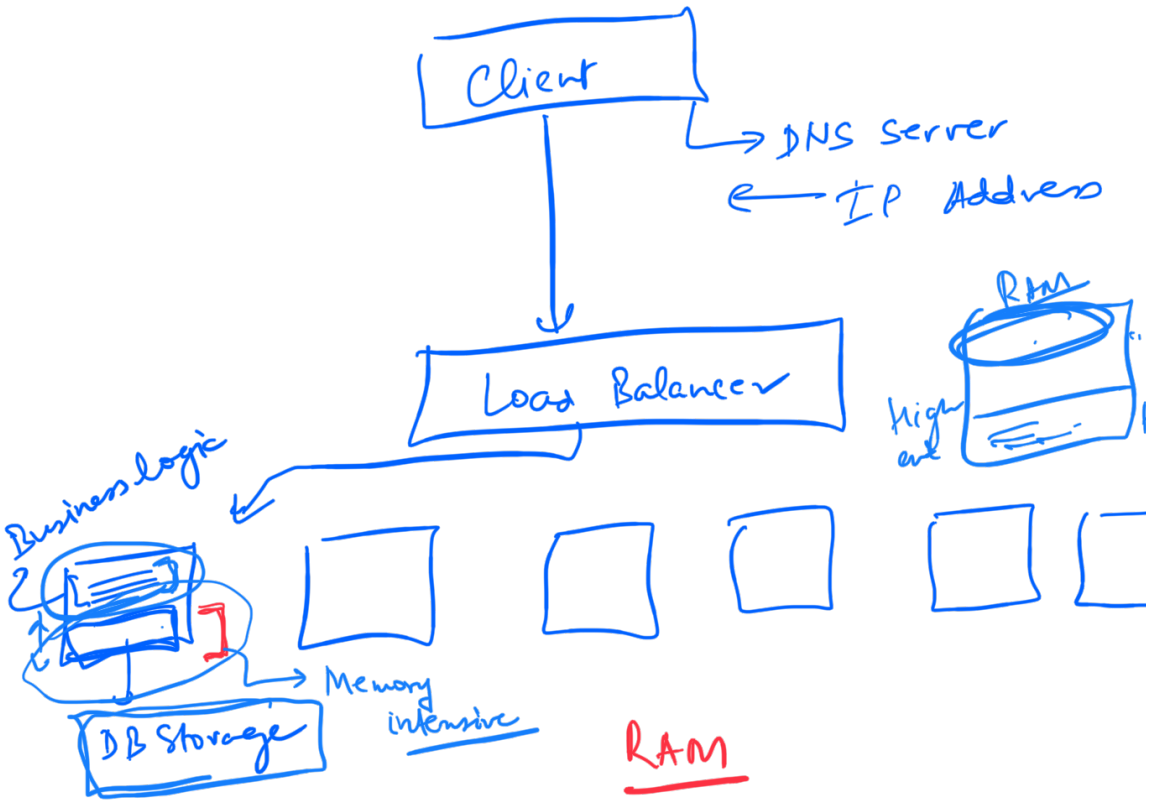
APPSERVER + CACHING



RAM

CPU

10 million entries

Case 1

RAM ↑

① Read array from HD in memory

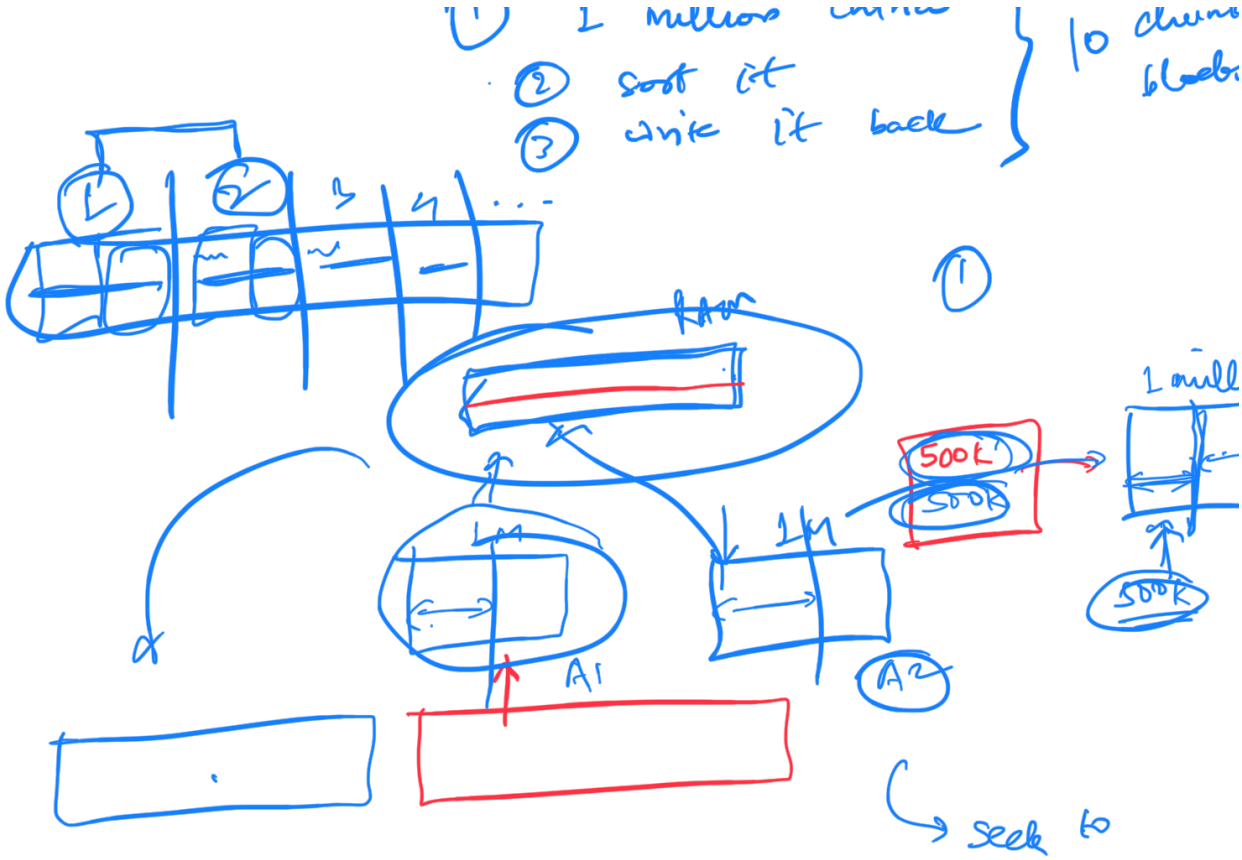
② Sort

③ Dump it to HD

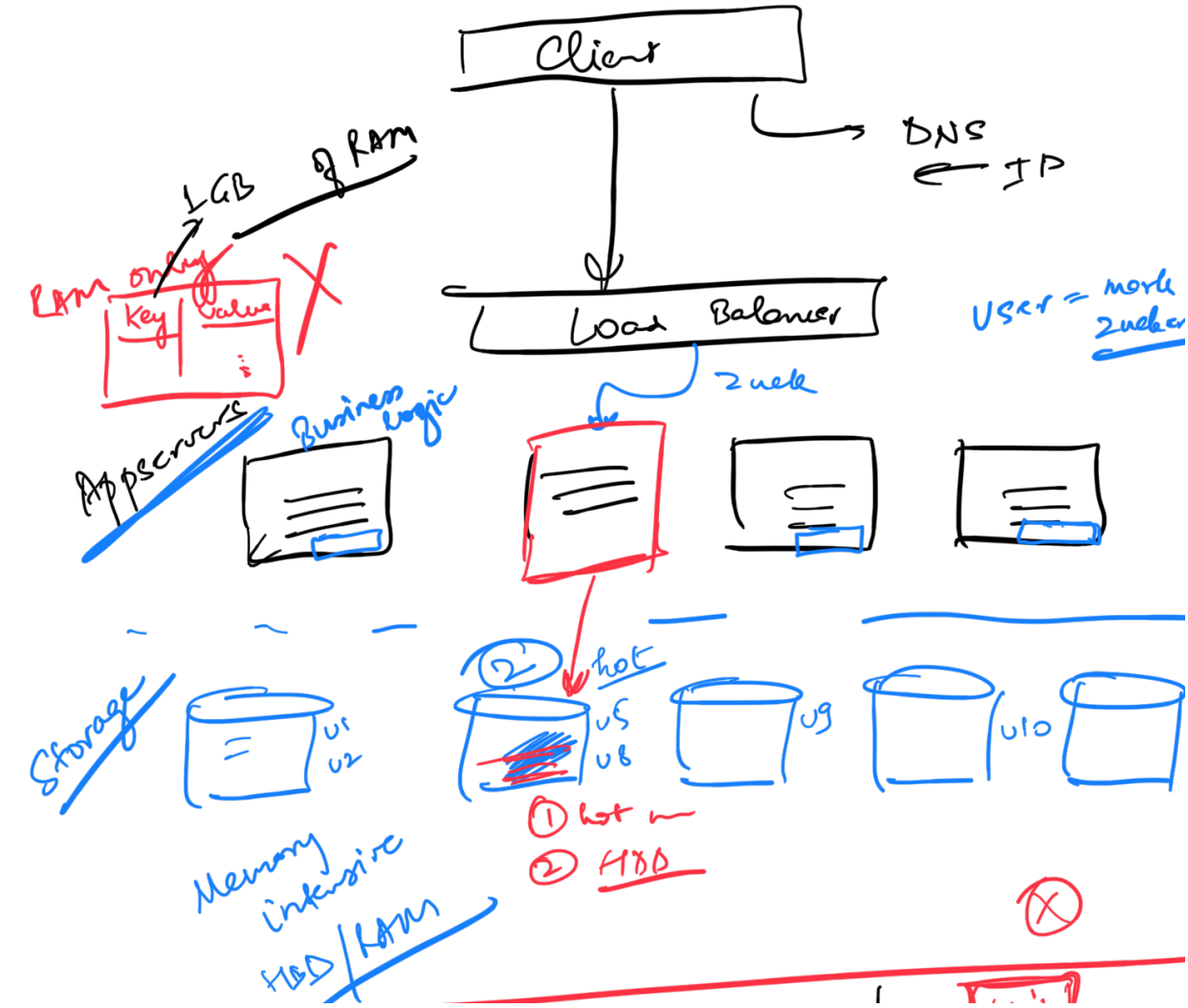
Case 2

RAM → 1 million entries at a time

① Read



1 million
2 sort it
3 write it back
10 chunk blocks
RAM
1M
1M
500K
500K
500K
1 mill
A1
A2
seek to



Client
DNS
IP
1GB
of RAM
RAM only
Key
Value
Load Balancer
User = mark zucker
zuck
Appservers
Business logic
Storage
hot
U1
U2
U5
U8
U9
U10
1 hot
2 HDD
Memory intensive
HDD/RAM

Hit
Miss

1. How do I increase hit %
2. (design goals) caching respects the design goals
3. where all can I build cache?

High Consistent

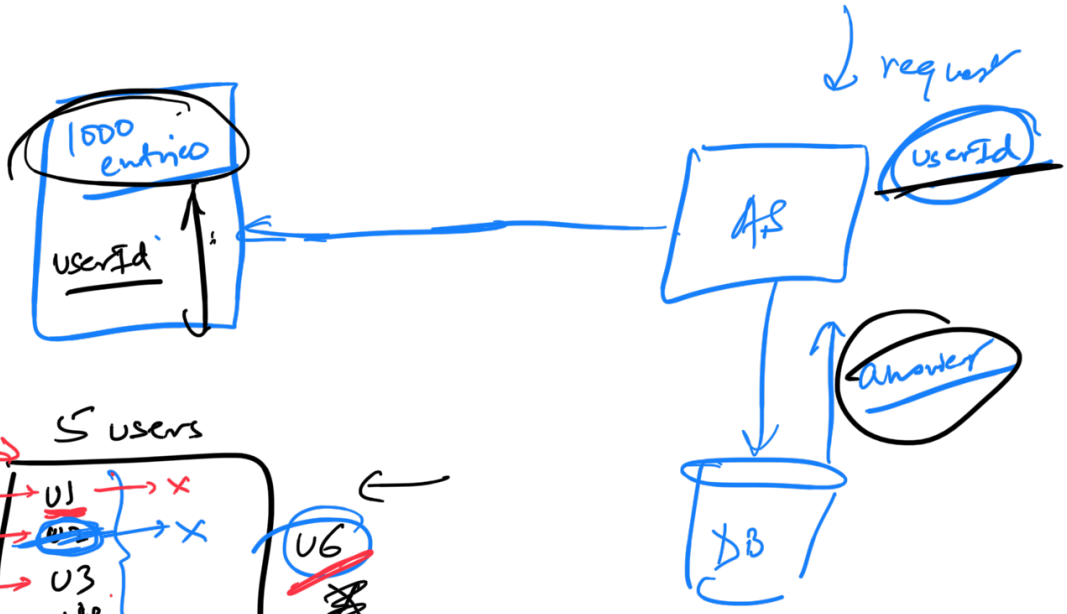
Cache

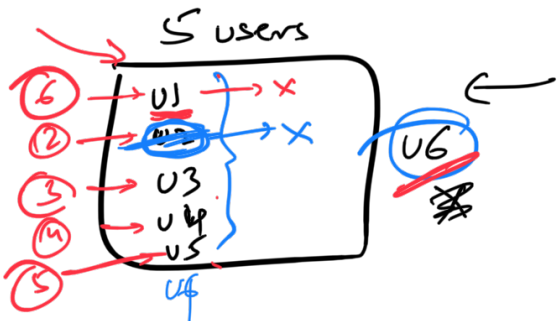
DB

Maintain freq.

Lowest frequency item

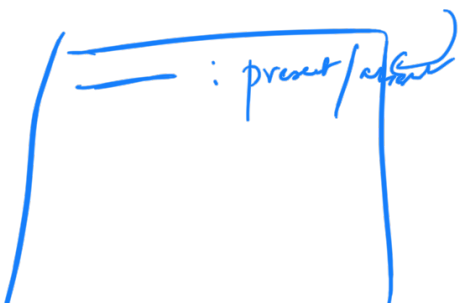
1. Most frequently queried items
2. Least recently queried need not be stored
3. First in, first out

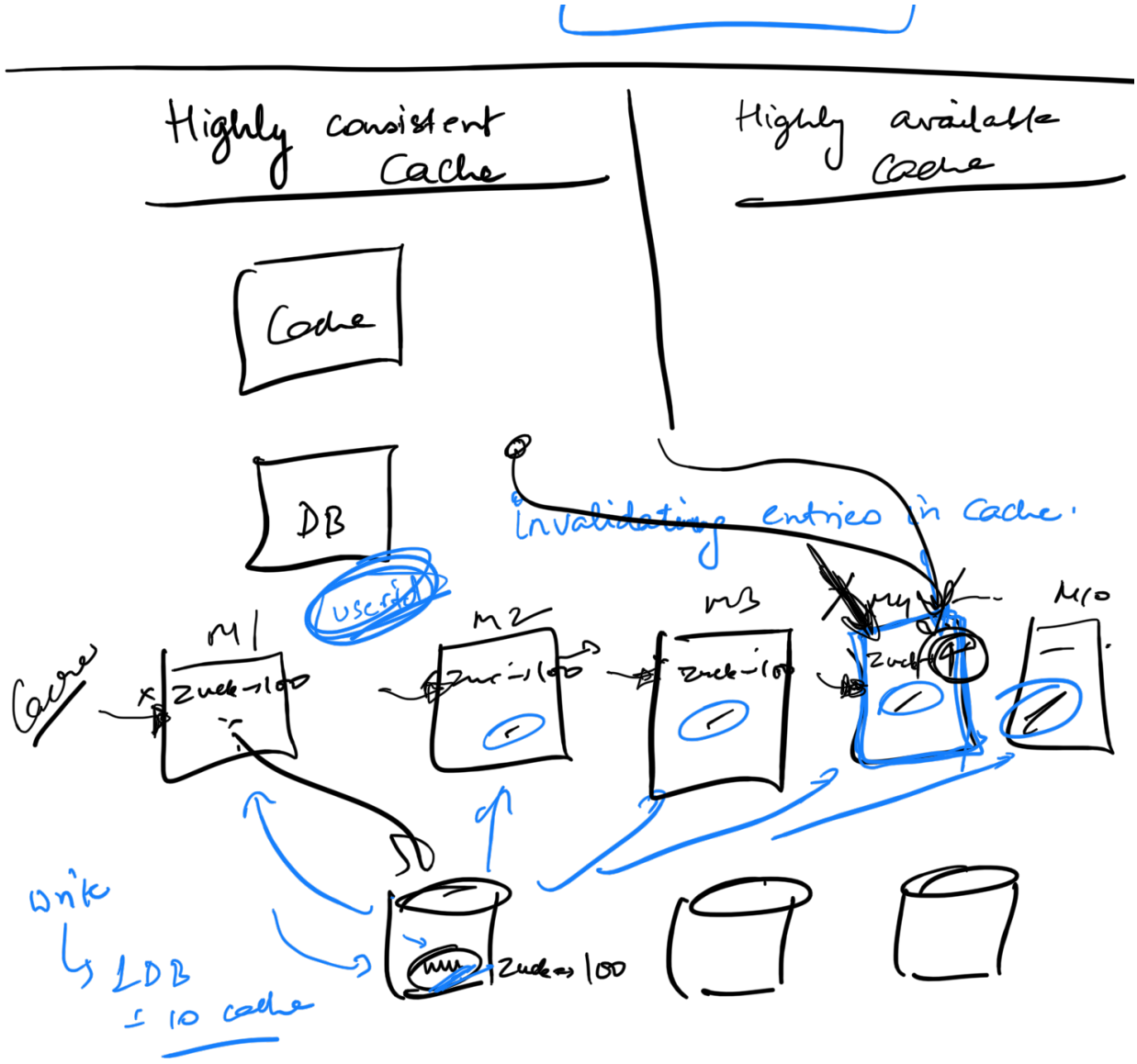


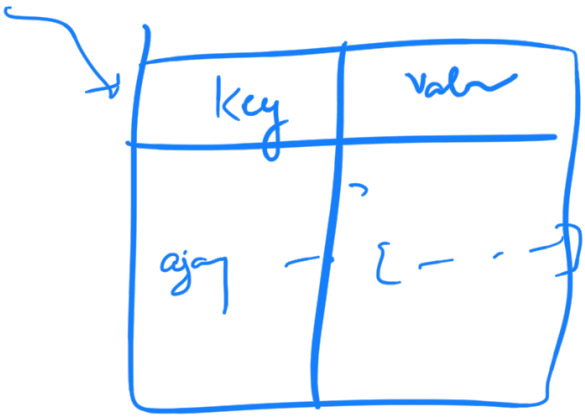


cache eviction

LRU cac

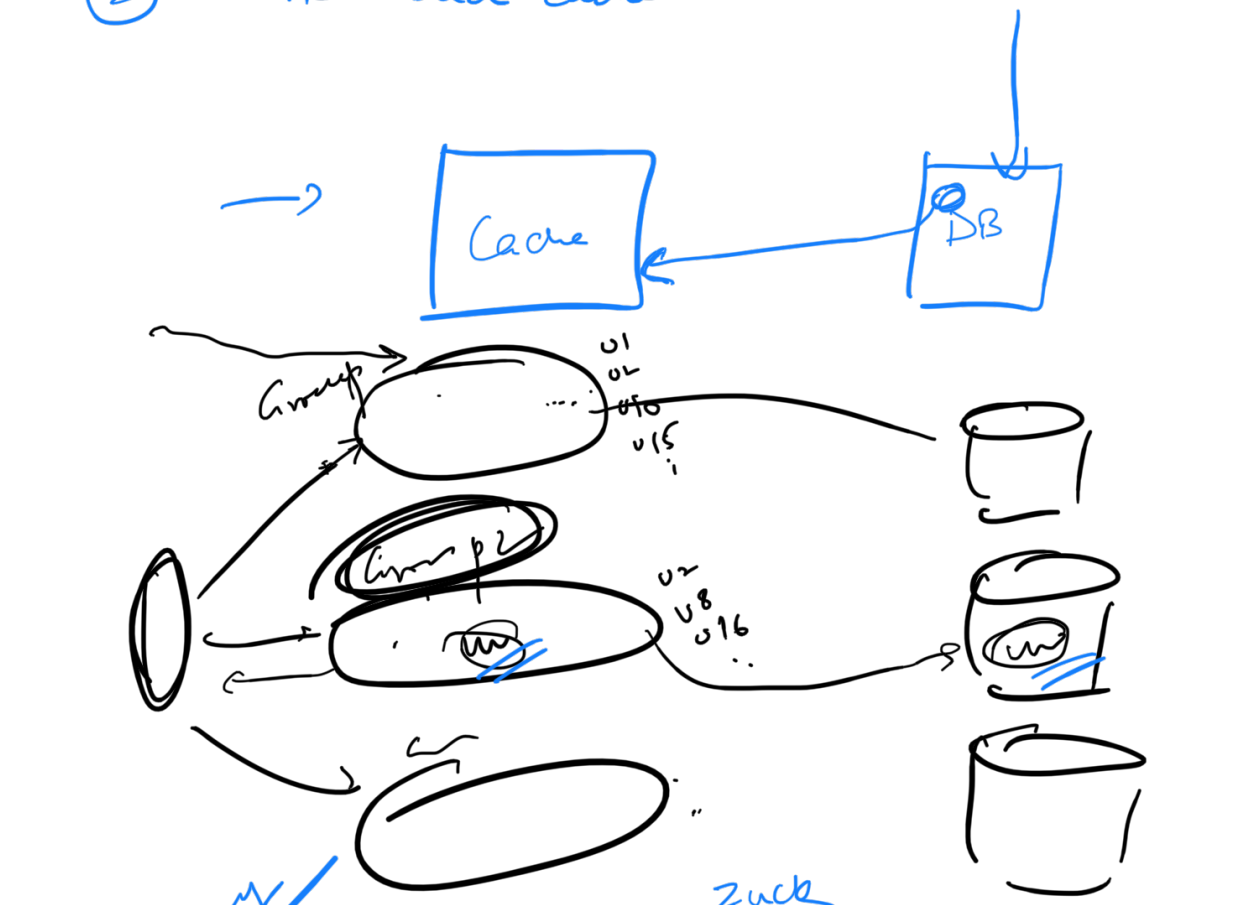


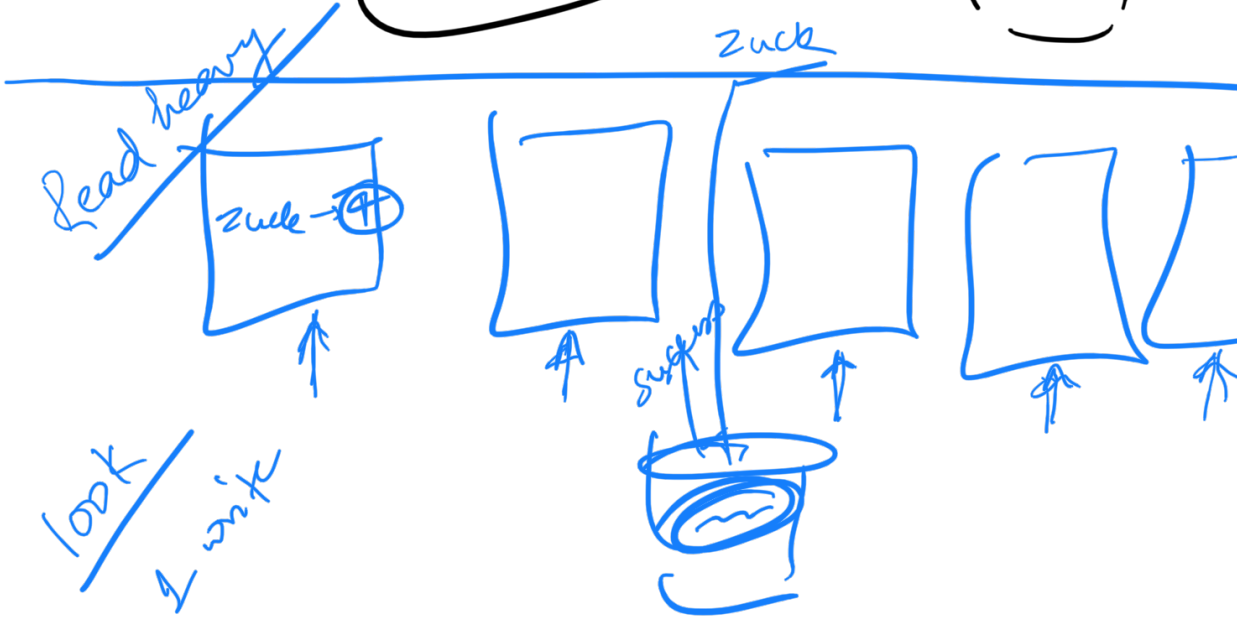


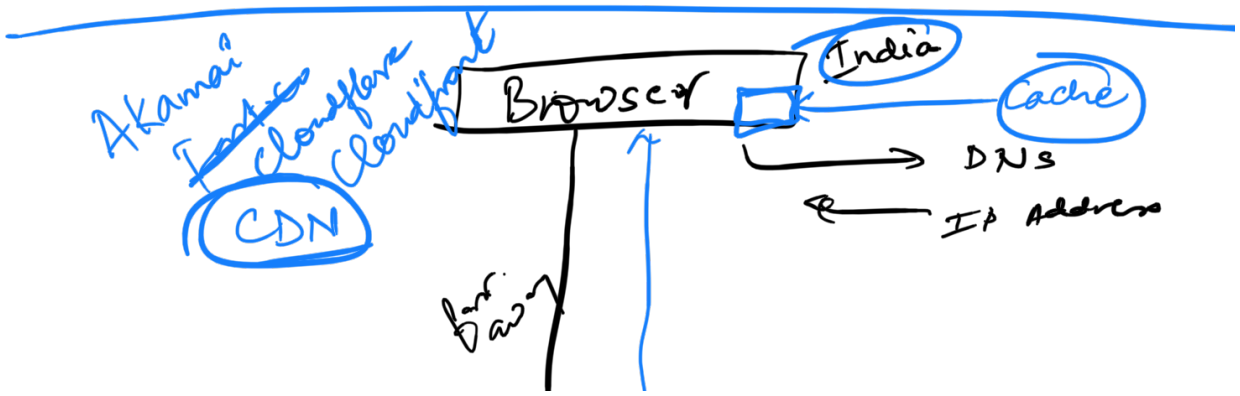


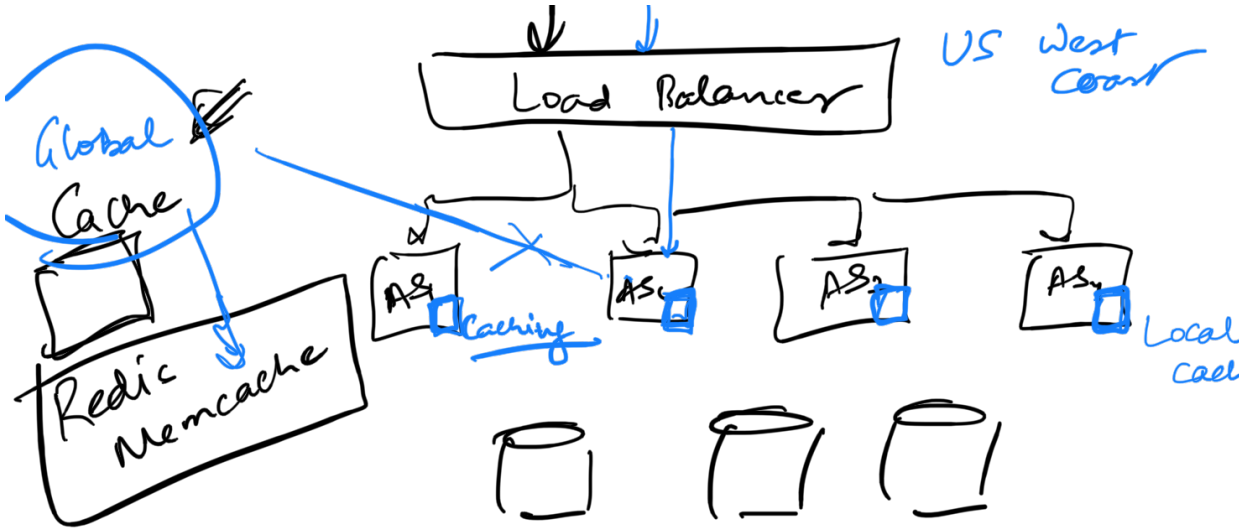
(1) write through cache

② write back cache

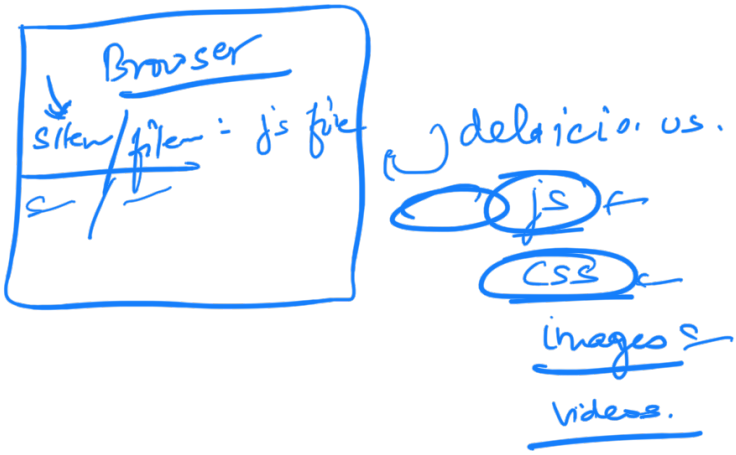


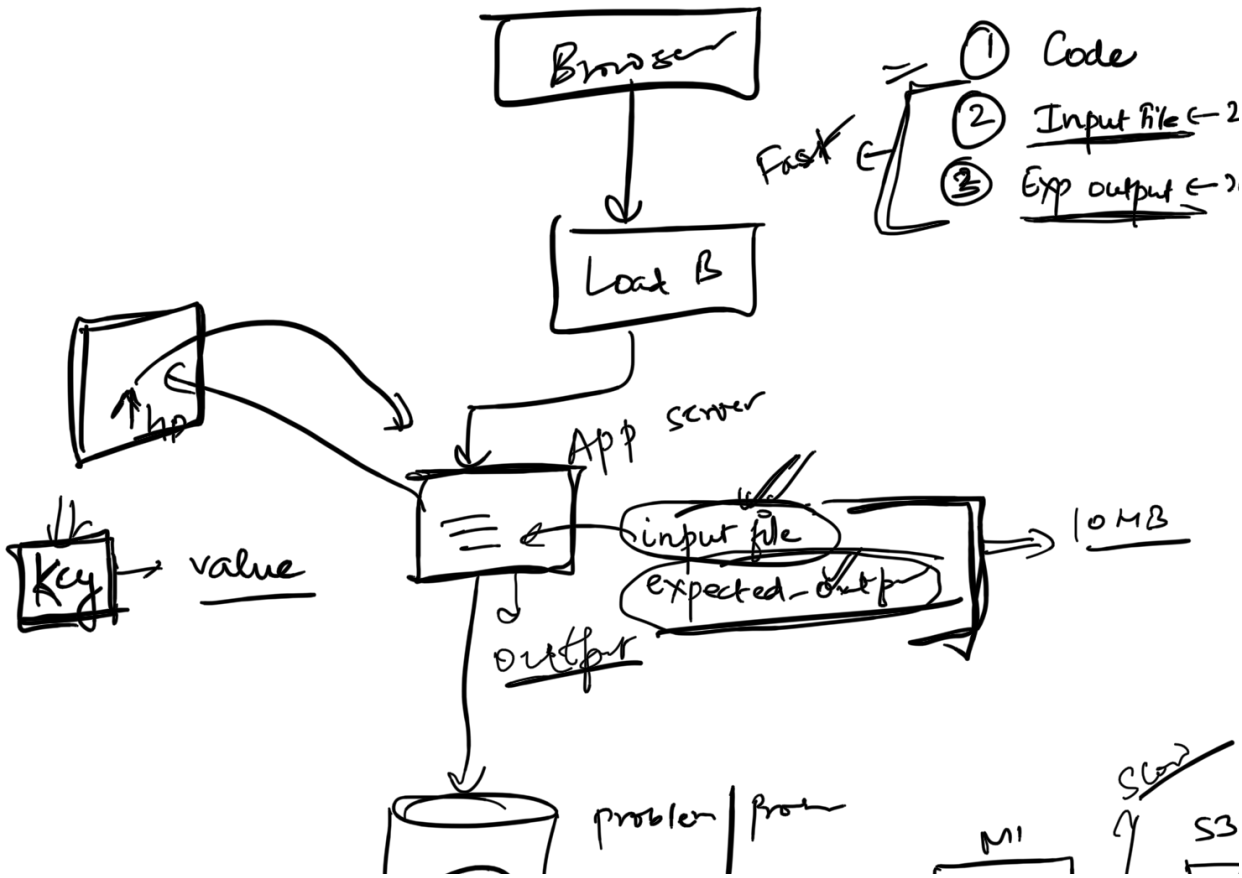


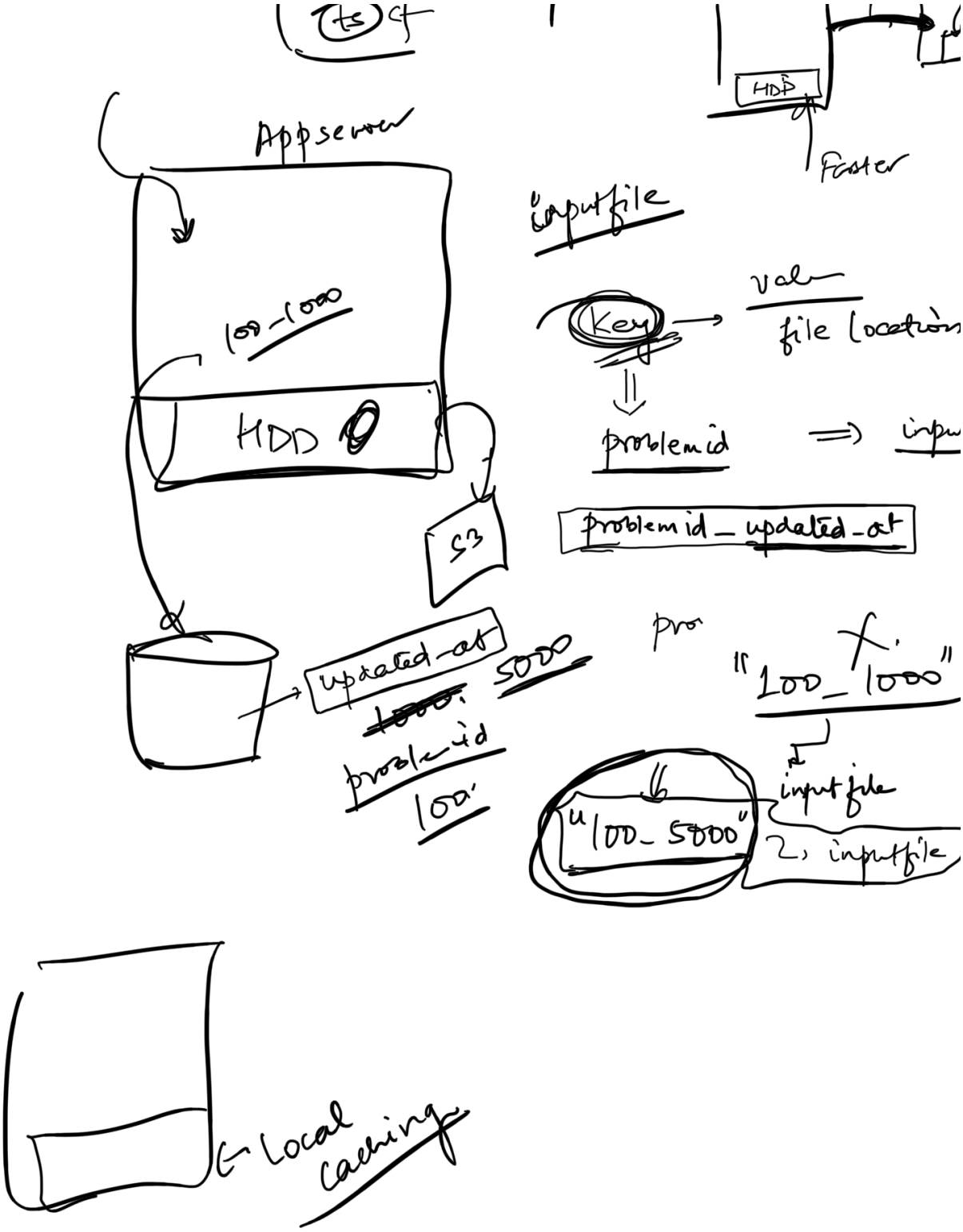


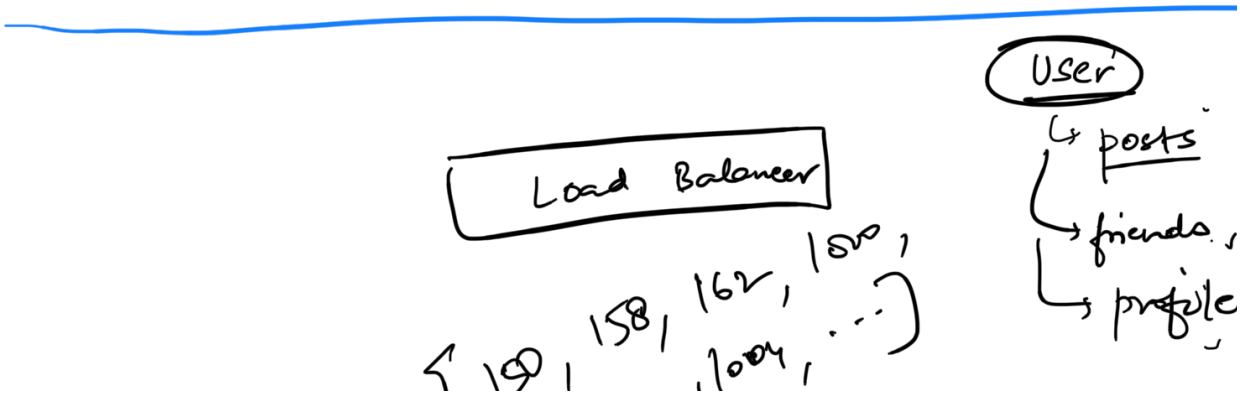

Load Balancer
US West Coast
Global Cache
Redis Memcache
AS1
Caching
AS2
AS3
Local cach

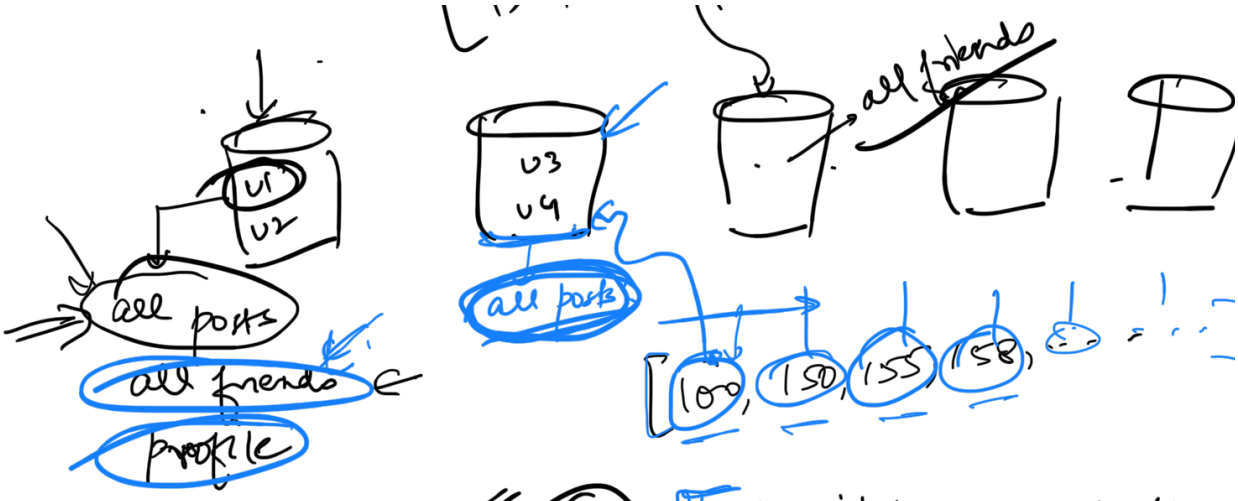
LRU


Browser
site/file : js file
delicious.
js
CSS
images
videos.


Browser
Load B
Fast
1 Code
2 Input file
3 Exp output
App server
input file
expected_output
10MB
output
Key
value
problem
M1
S3


HDD
Faster
Appserver
inputfile
100-1000
HDD
Key
value
file location
problemid
problemid_updated_at
S3
updated_at
5000
problemid
100
"100_1000"
inputfile
"100_5000"
2, inputfile
Local caching


User
posts
friends
profile
Load Balancer



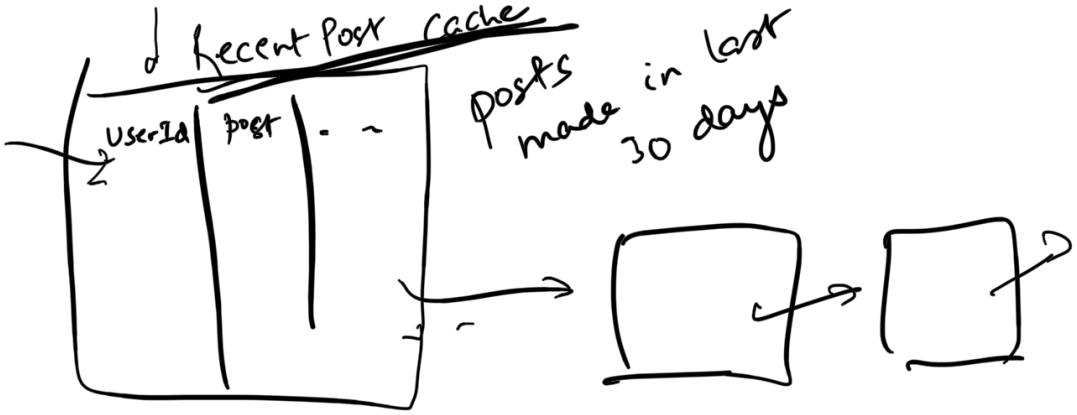
10 million * 1 KB
= 10 GB
X 30
300 GB

1
2
3

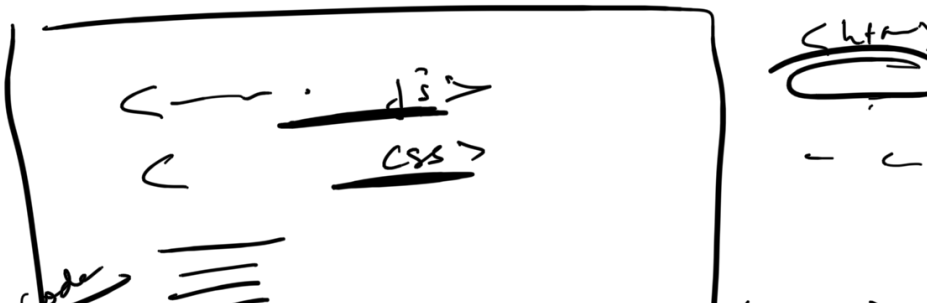
10 million new posts Created every day

post ← 1 KB

News feed has recent ite



UserId IN (



HTML
Scale
<img src="https://akar.../...")