15/12/2023

Zookeeper

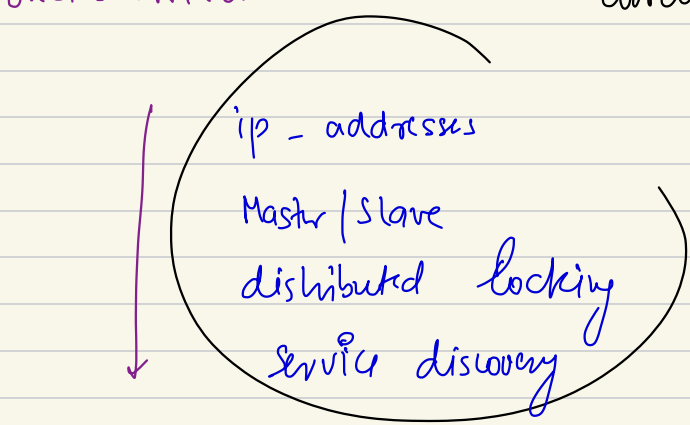
Kafka

ZOOKEEPER

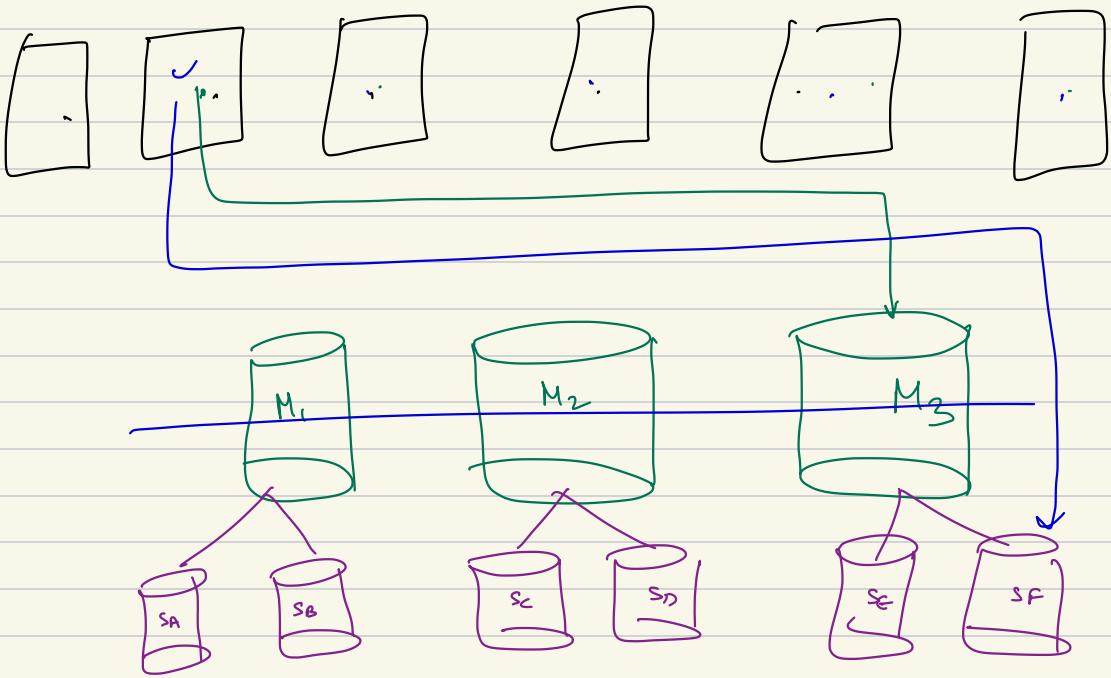
distributed configuration management system

ORCHESTRATOR

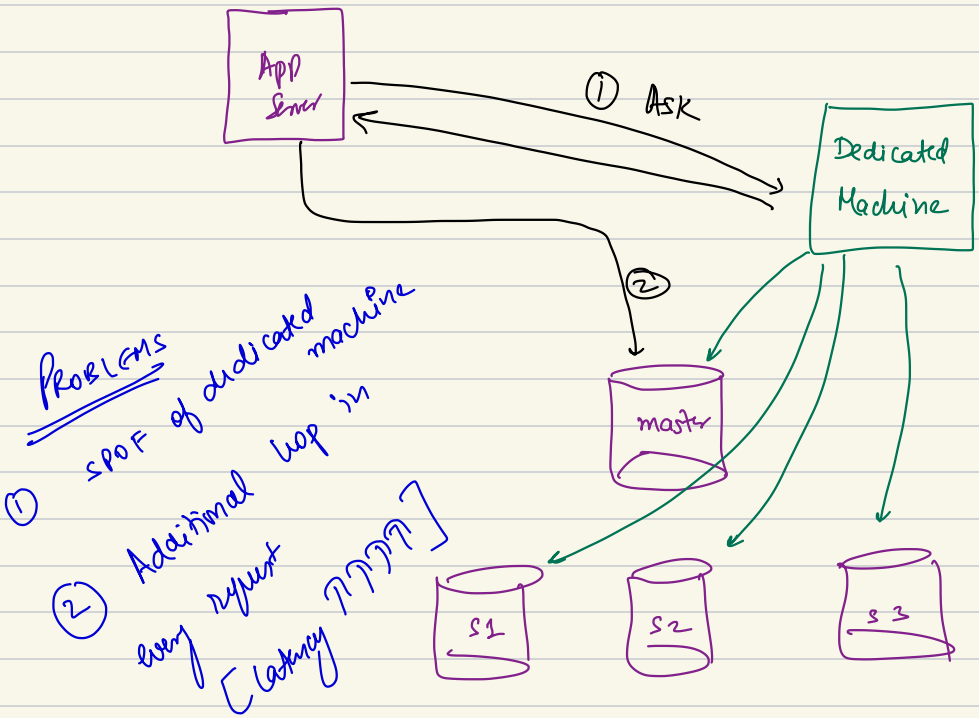
Coordination System



Example problem:

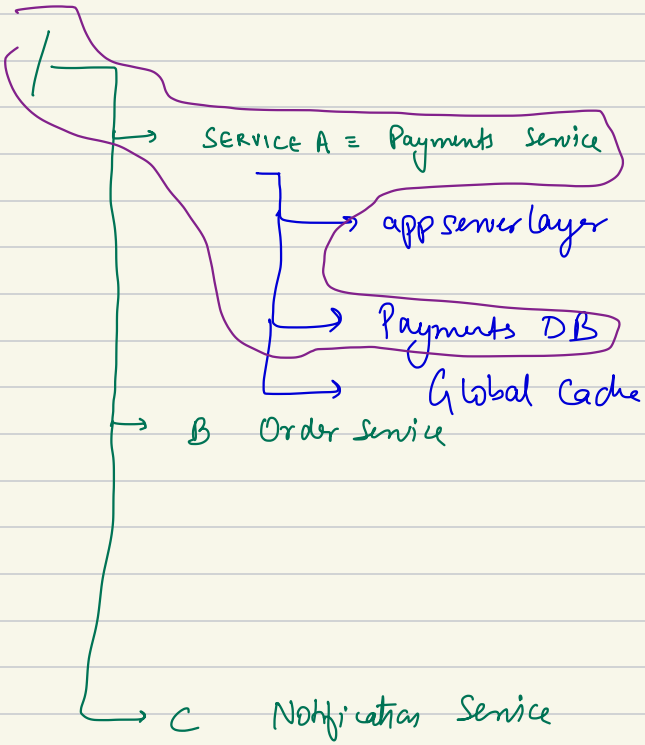


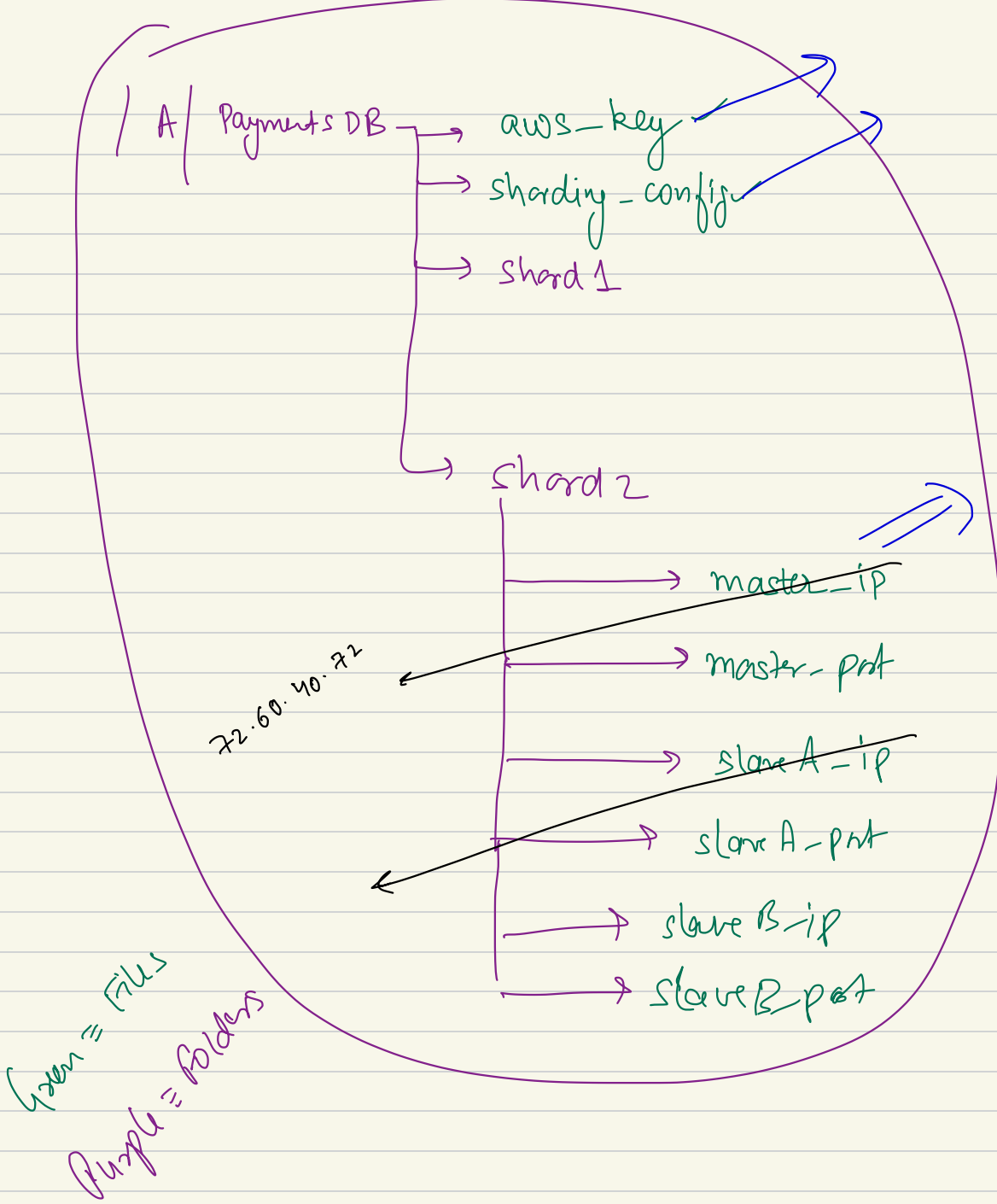
Naive Solution



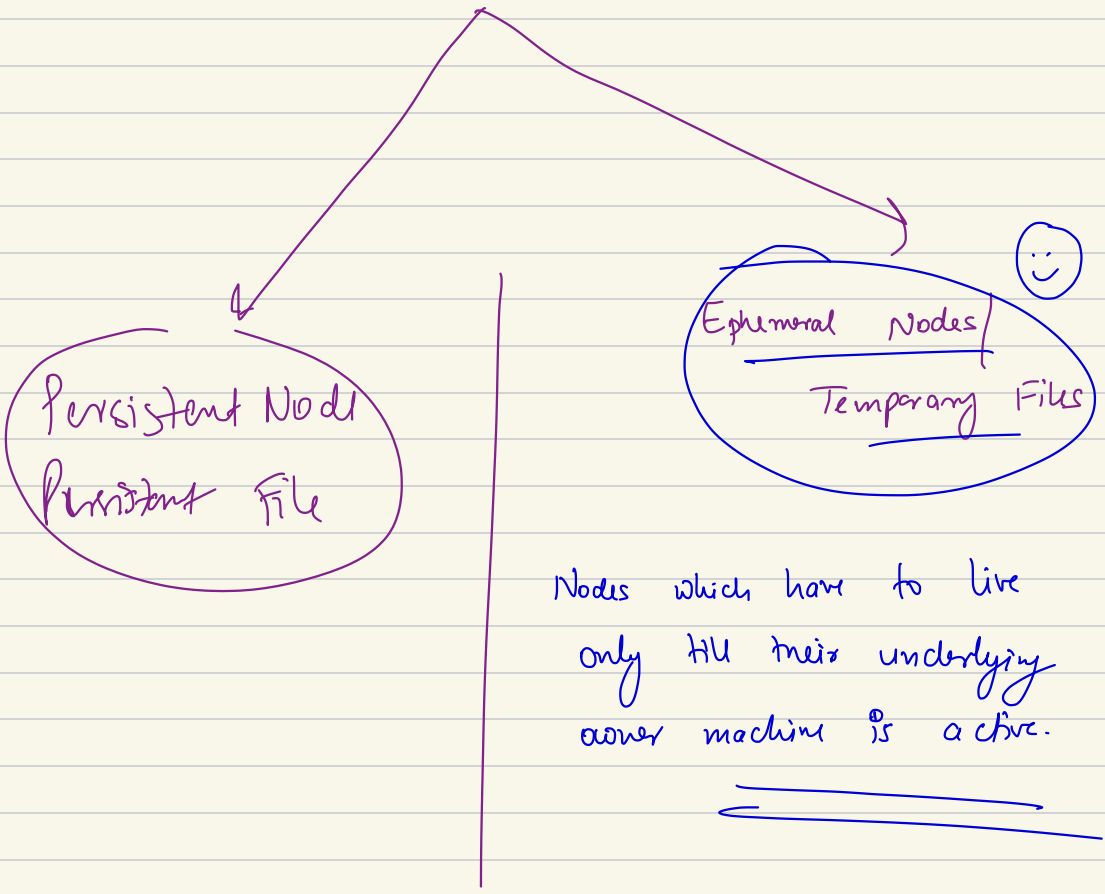
Solution: zookeeper ☺

ZK is exactly file system

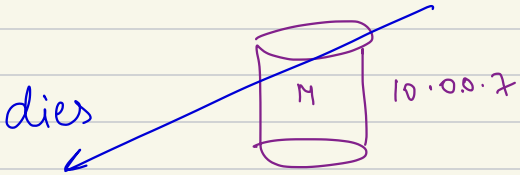


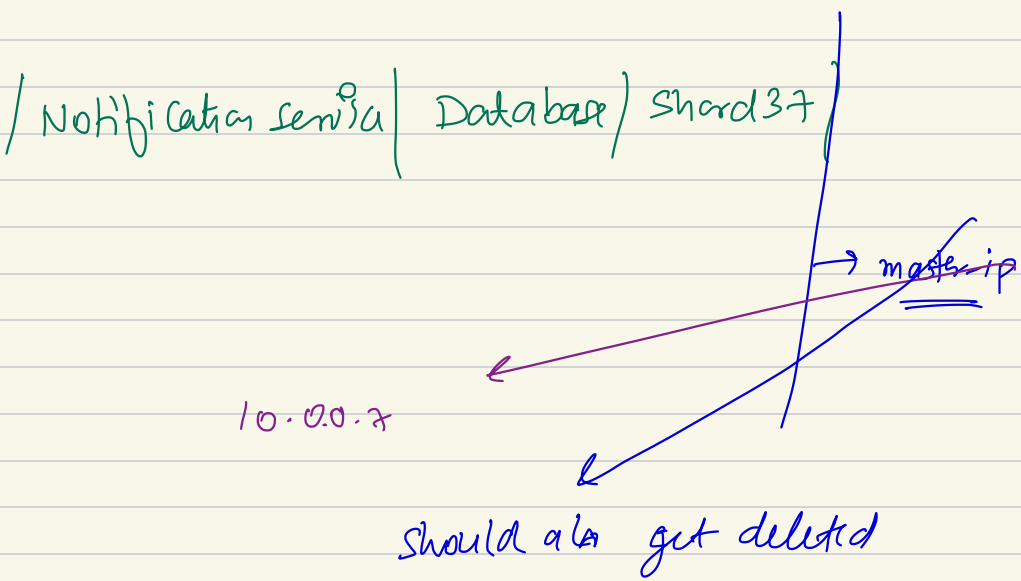

/ A / Payments DB
aws_key
sharding_config
shard 1
shard 2
master_ip
master_port
72.60.40.72
slave A_ip
slave A_port
slave B_ip
slave B_port
Green = Files
Purple = Folders

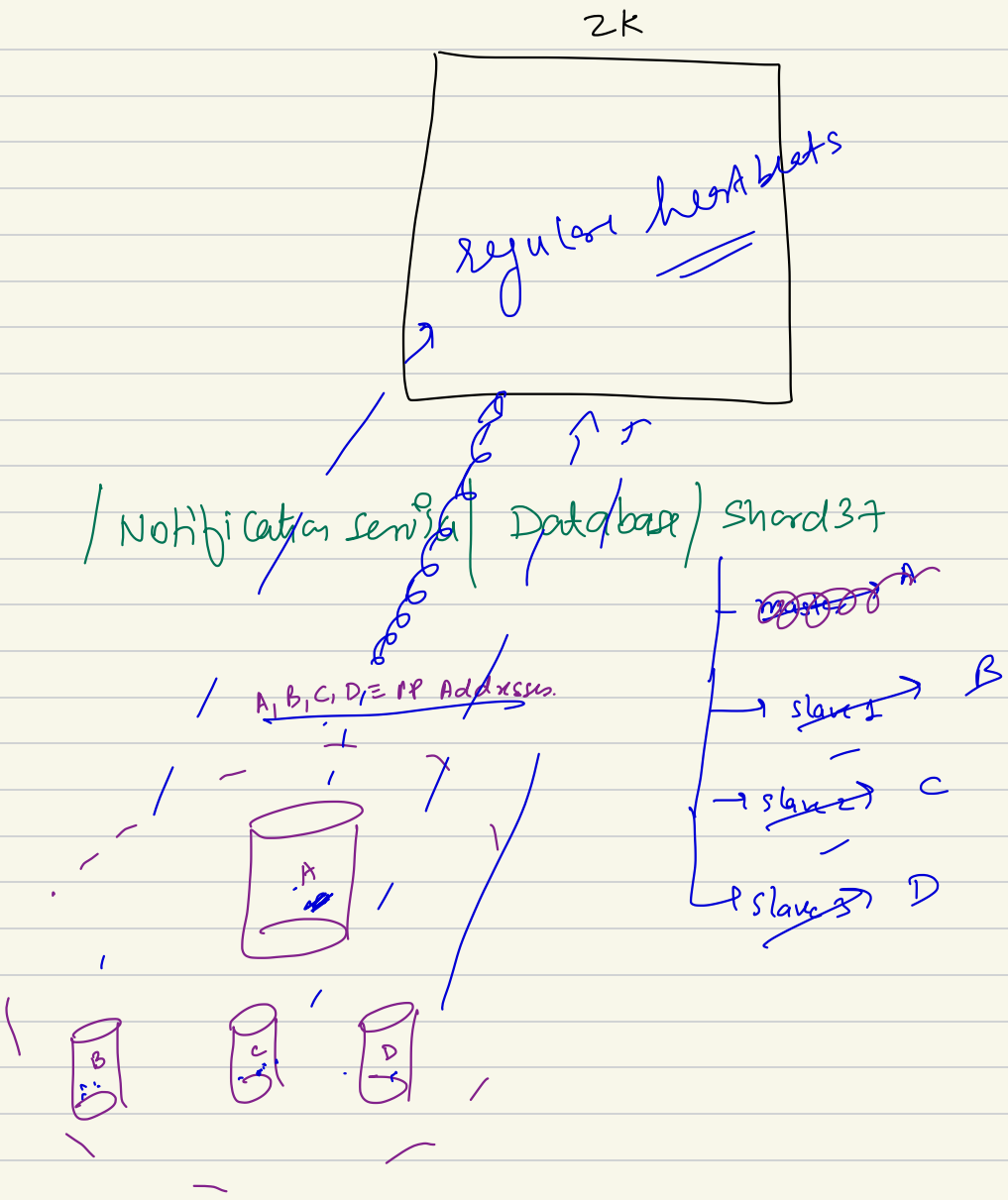
ZKNode ≡ ZK Node

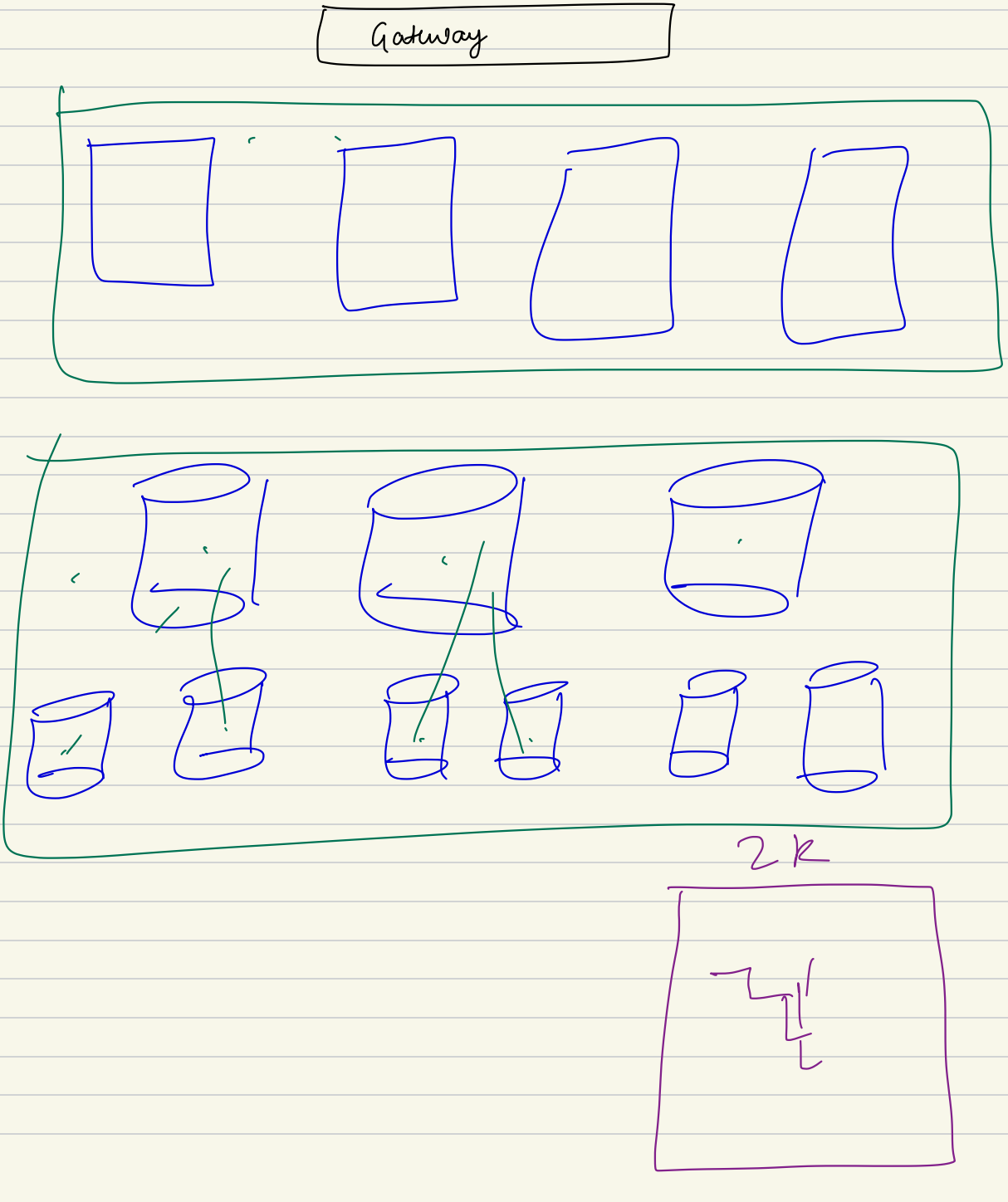


Nodes which have to live only till their underlying server machine is active.

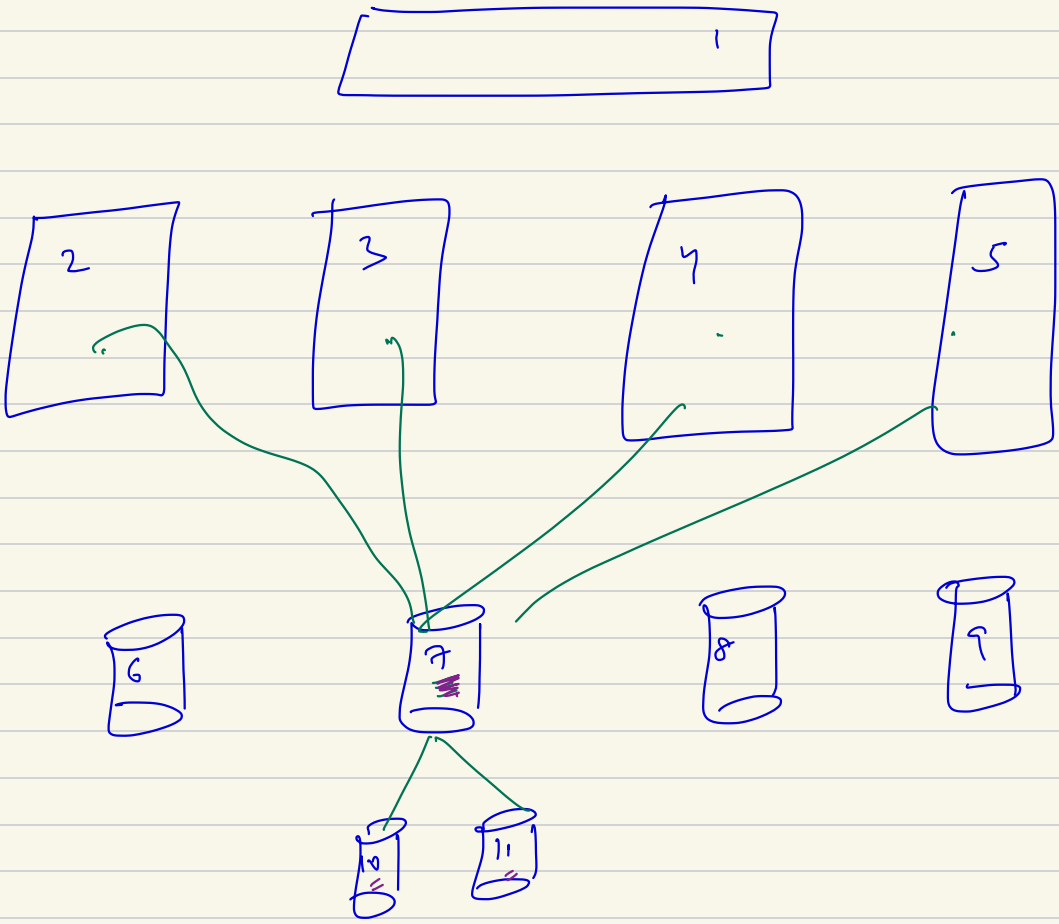

dies
M
10.00.7

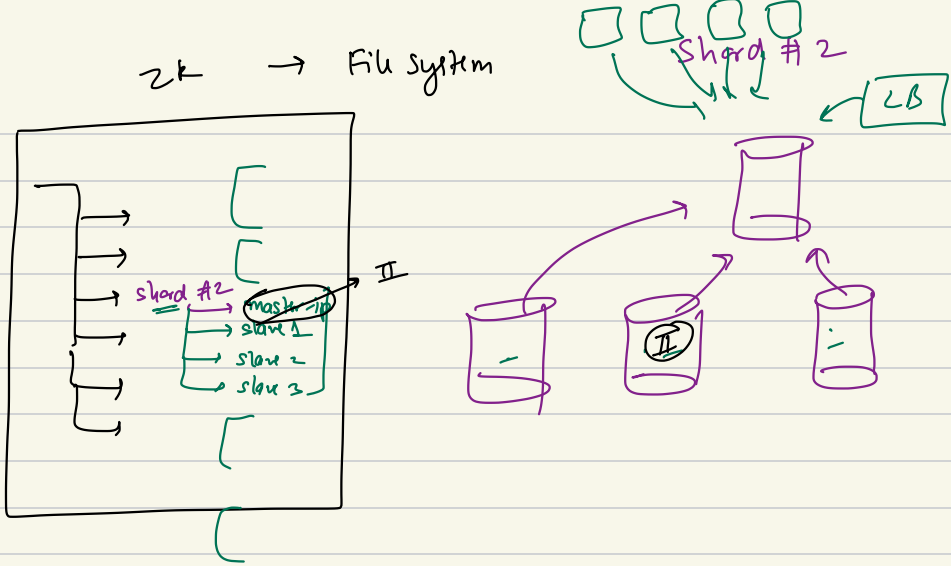

/ Notification service / Database / Shard37 /
master-ip
10.00.7
Should ala get deleted


2K
regular heartbeats
Notification service
Database
Shard37
A, B, C, D = IP Addresses
A
B
C
D
master
slave 1
slave 2
slave 3


Gateway
2K

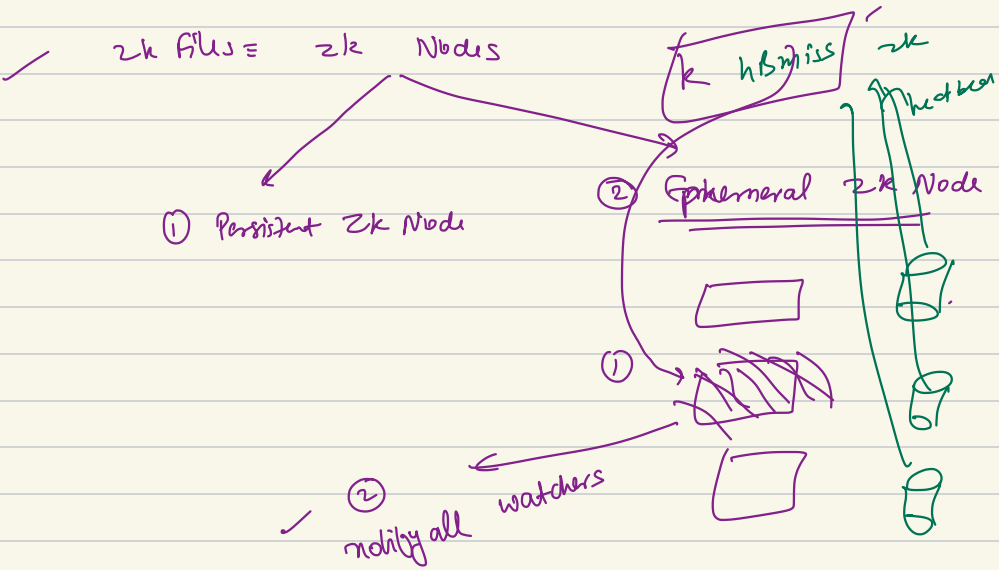
Zk watch





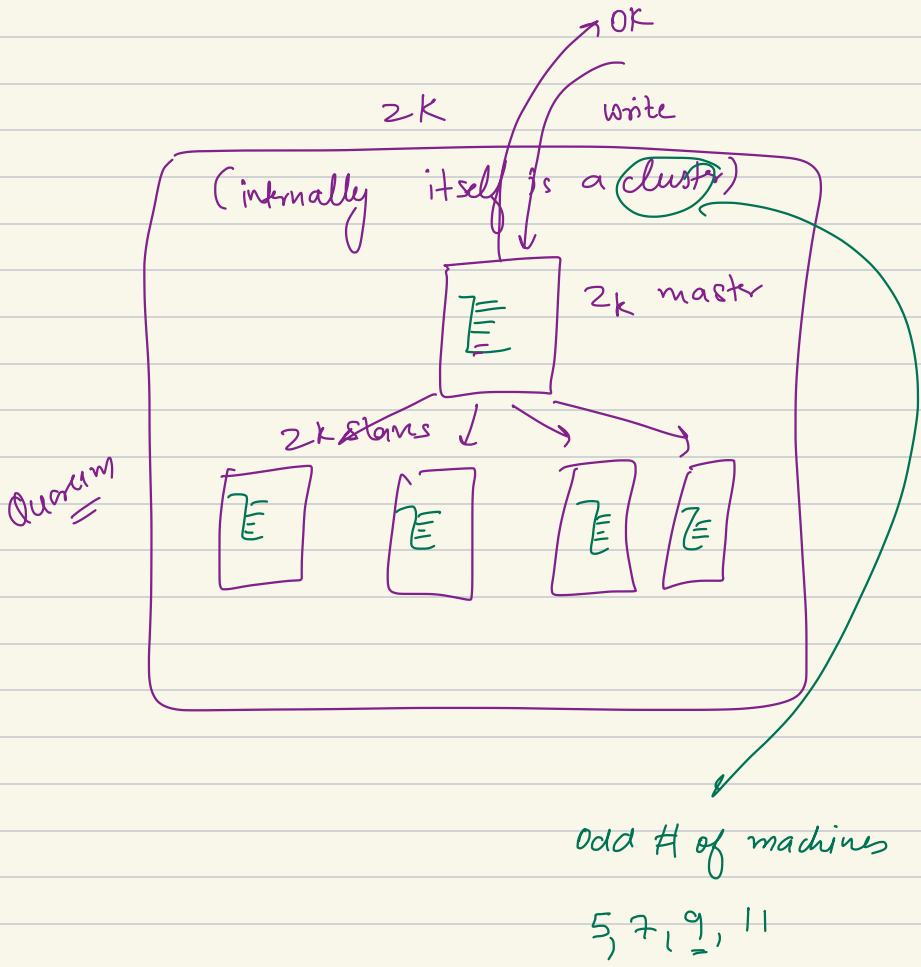
✓ Zk ≡ File system

✓ Zk files ≡ Zk Nodes

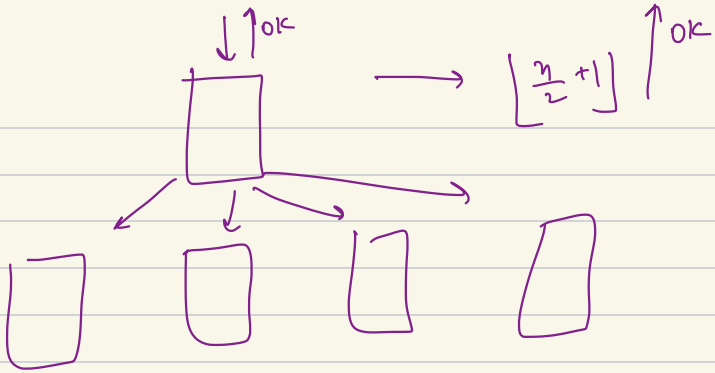


10:46 - Break

10:56 PM - Kafka



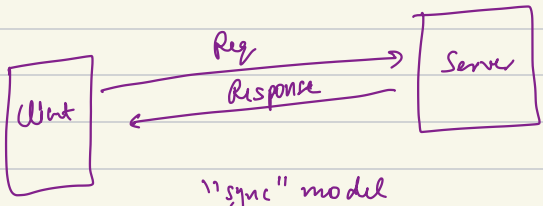
Quorum



10:48 - 10:58 PM ☺

Async Tasks

Request Response Model

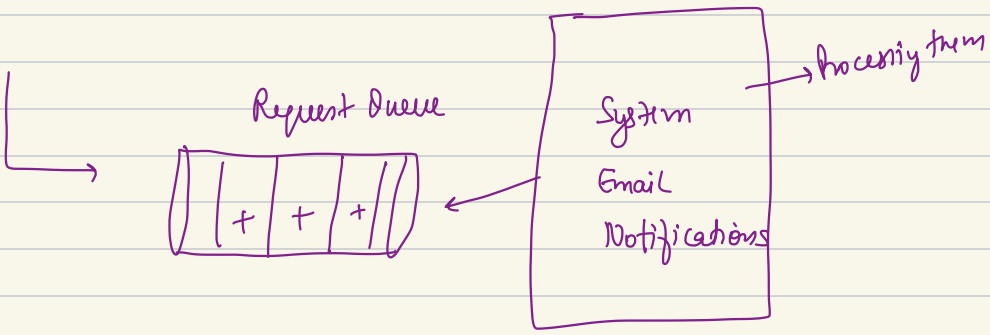


"sync" model

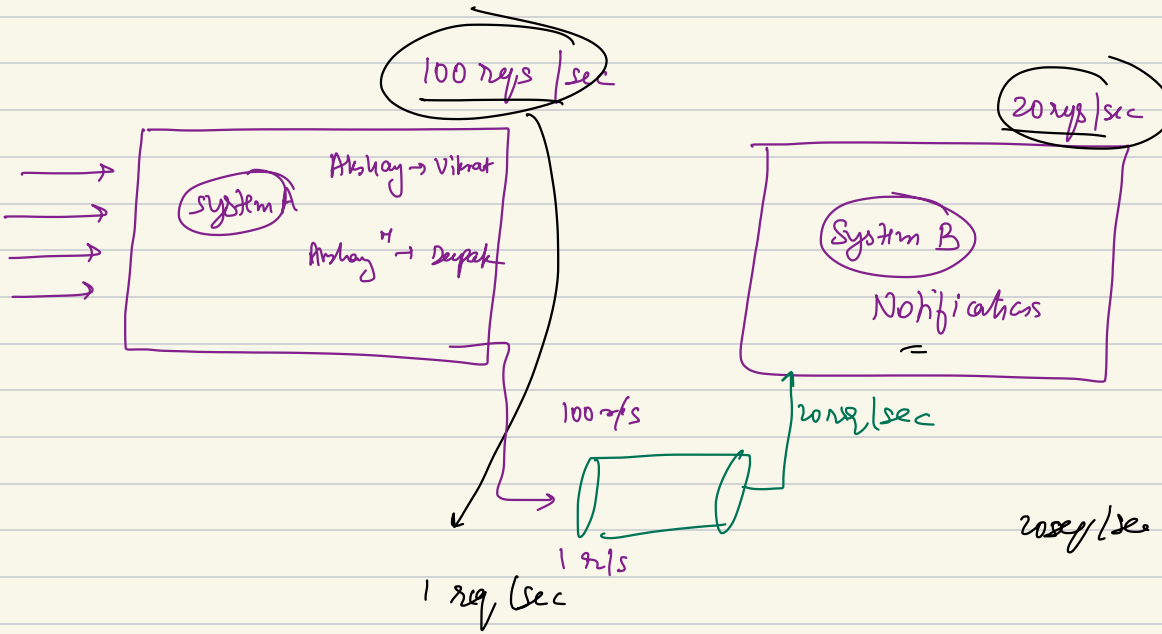
① Processing takes lot of time, let's introduce a queue.

① non-blocking tasks

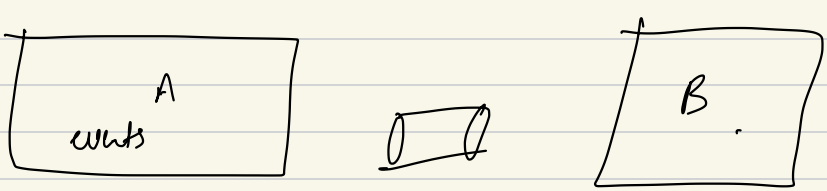
② Event Registered



Notification Systems



(2) Rate of consumption ≠ Rate of production



(3) If you want to do aggregations in b/w,

ASYNC TASKS → Persistent Queues

Publish Subscribe

Pub-Sub

Message Queues

ex.

ex

Kafka ✓

RabitMQ ✓

Kafka

① distributed ≡ Horizontally scalable

ex 10M msgs / second

② Persistance ⇒ msgs are written to disk.

③ Realtime ⇒ Read Throughput and Latency is less

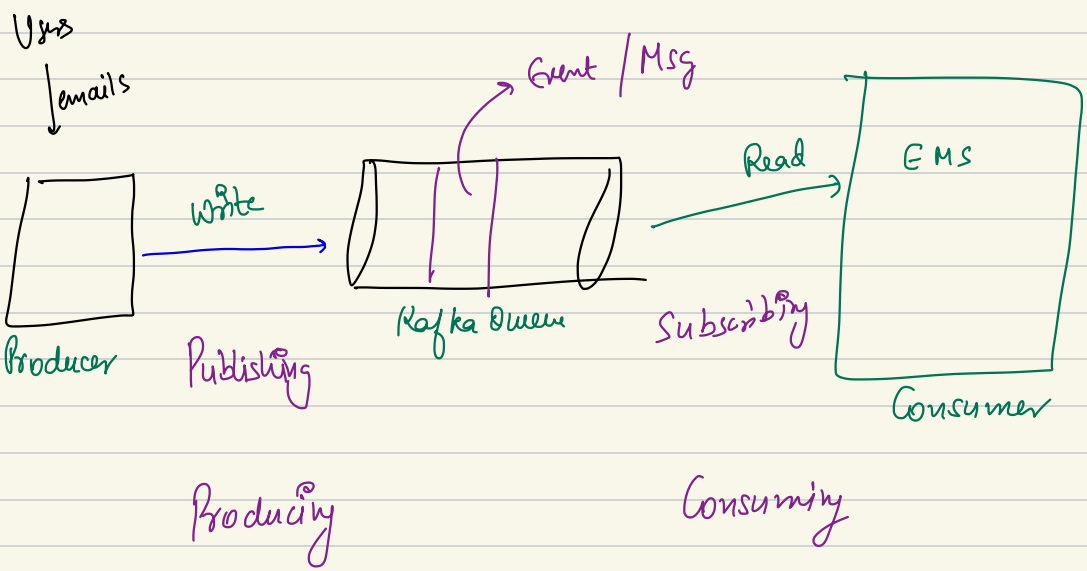
Flipkart

Users → Sending complaint emails

User Emails

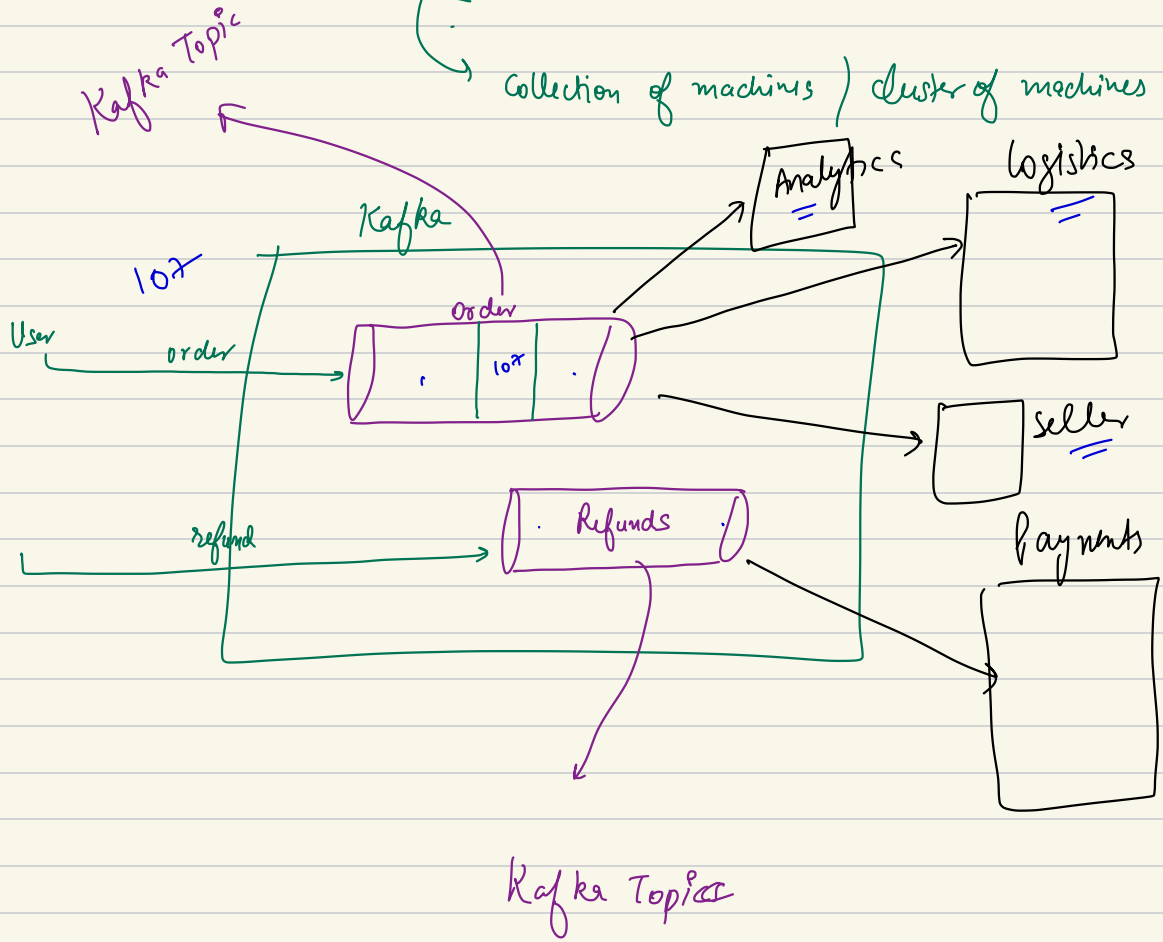
Complaint Management Systems

Complaints / Requests to sellers

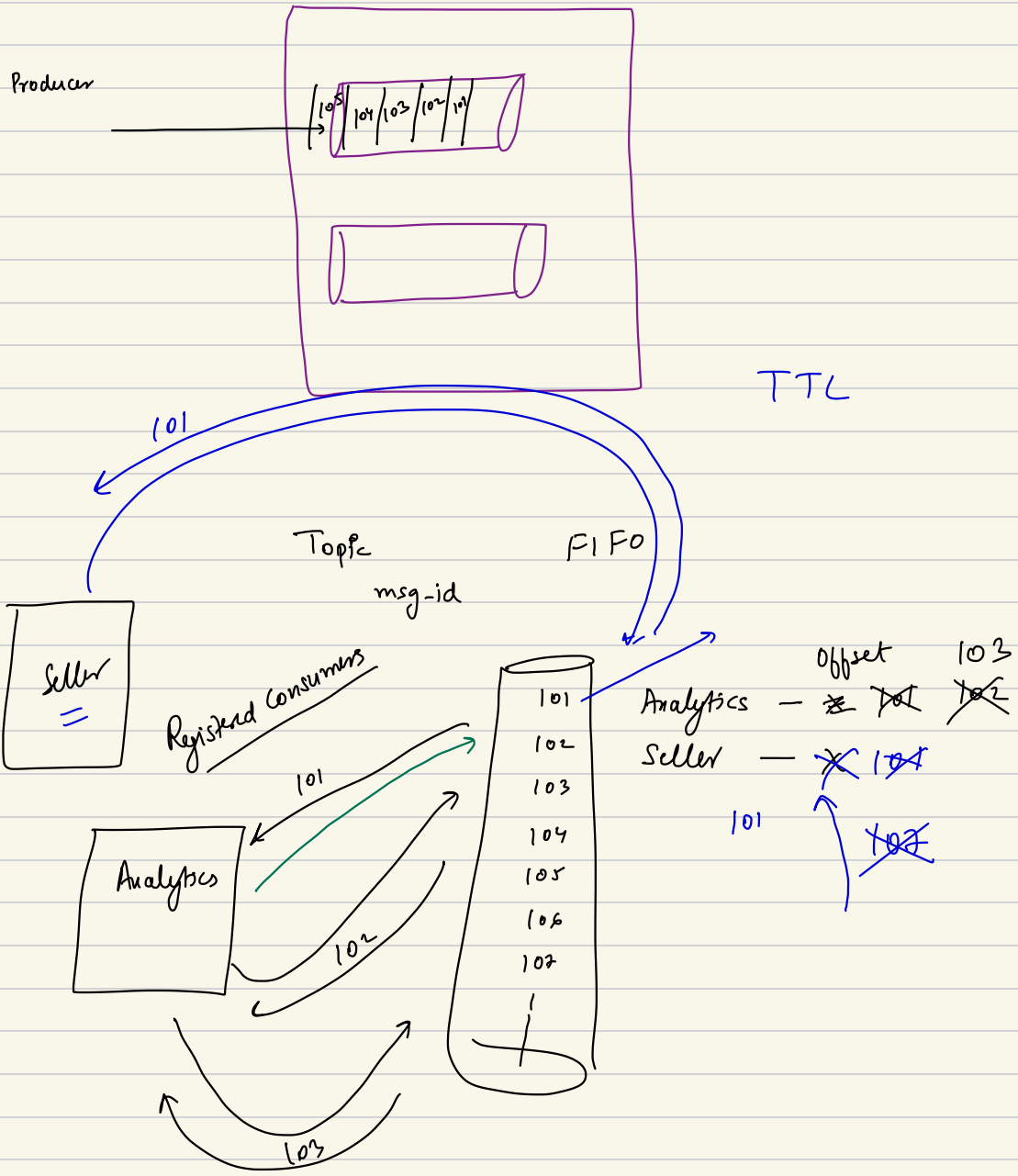


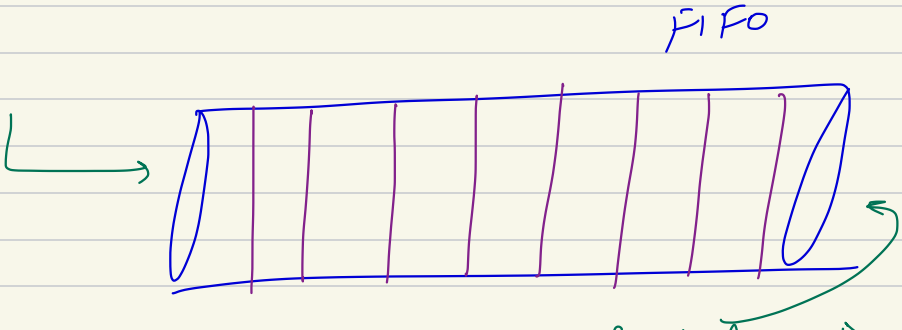
Kafka Queue / Message Queue

Collection of machines / cluster of machines



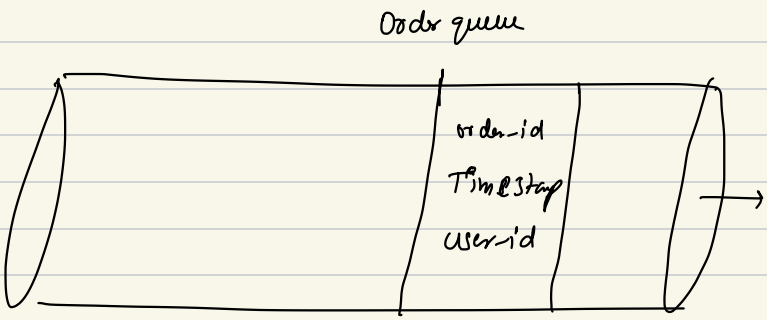
Kafka Topics


Producer
105
104
103
102
101
TTL
101
Topic
FIFO
msg-id
Seller
Registered Consumers
101
Analytics
102
103
101
102
103
104
105
106
107
1
Offset
103
Analytics —
Seller —
101

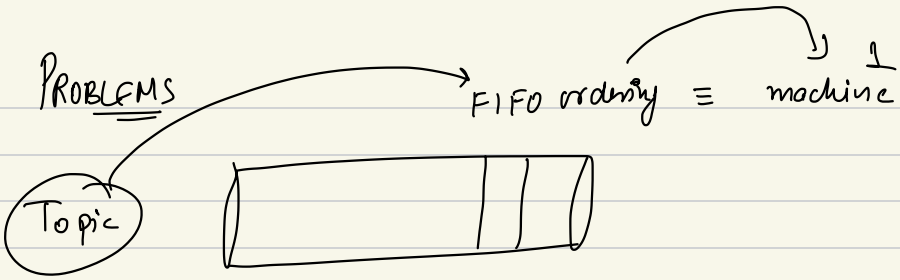


- Service A - 102
- Service B - 200

Msgs have a TTL which is independent of offsets.



PROBLEMS



① I can't grow my queue beyond a point.

②