Day 2 - 13th June 2024

Recap Day 1

1. Theory
    a. Server Deployment
    b. VM server deployment
    c. Containerization
        i. Docker
        ii. CRIO
        iii. Podman
        iv. Containerd
        v. Buildah
    d. Kubernetes -- Project -- GGoogle
    e. Openshift --- Product -- Openshift

2. Openshift Resources
    a. Project / Namespace
    b. Pods
    c. ReplicaSets
    d. Deployments.
    e. Services
        i. ClusterIP
        ii. NodePort
        iii. LoadBalancer
        iv. External Name

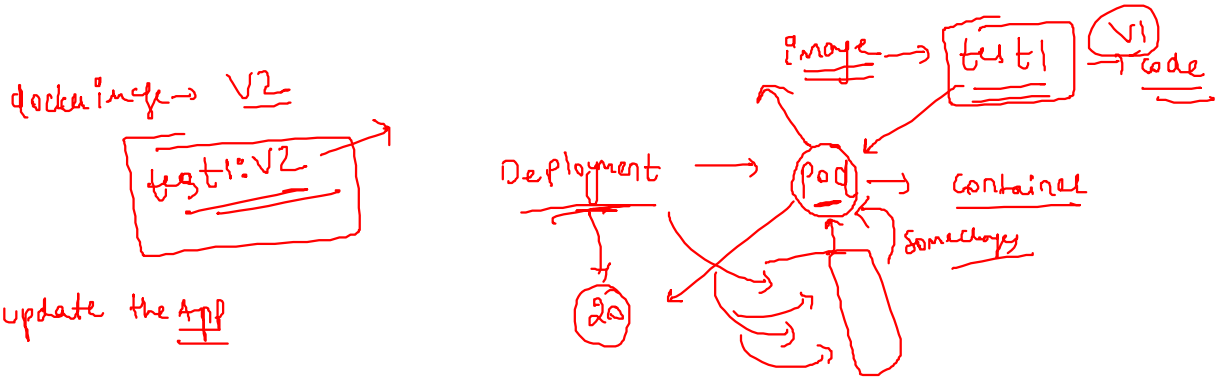
Agenda Day 2 :-

1. Strategy
    i. Rolling Update
    ii. Recreate
    iii. Rollback

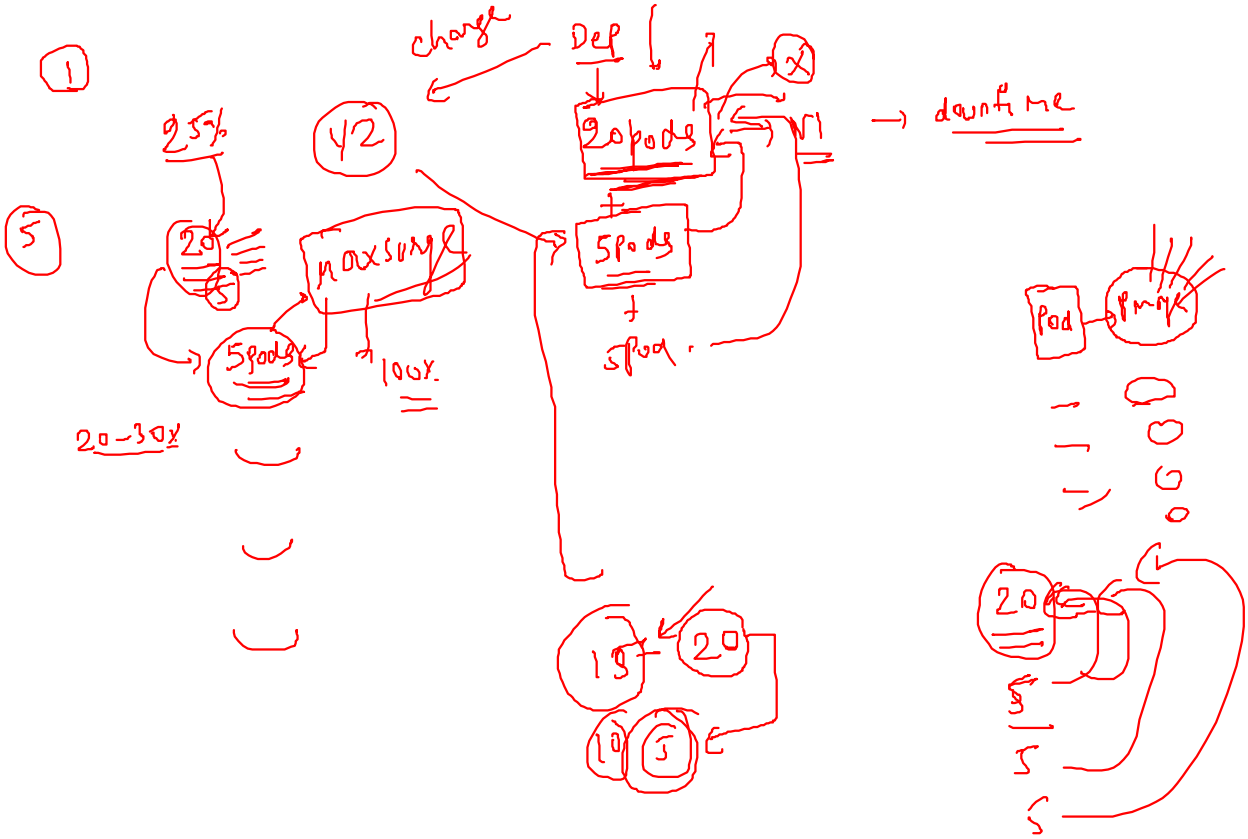
2. Configmap & Secrets

3. Managing Resources
    i. Quota
    ii. Resources
    iii. Limit Range

4. Application Scaling
    i. MAnual Scaling
    ii. AUtomatic Scaling



edit → image → New image



old = 20 → 15

5

5

New Pod = 20

→ Rolling Update → 0.001

old

New

95%

2

→ update image

testing

V1

Depl → 20 pods → Terminated → downtime

20 pods

Recreate

Migrating

2

Storage

V1 → V2 → V3

Rollback

RollingUpdate

Recreate

Rollback

1

1 - 1 dep → 1 Pod

2 Pod

3 Pod

Pod Scaling

Manual → Scale   dev   SL

Auto

20

edit

dep → RU

dep → Recreate

Stack → App

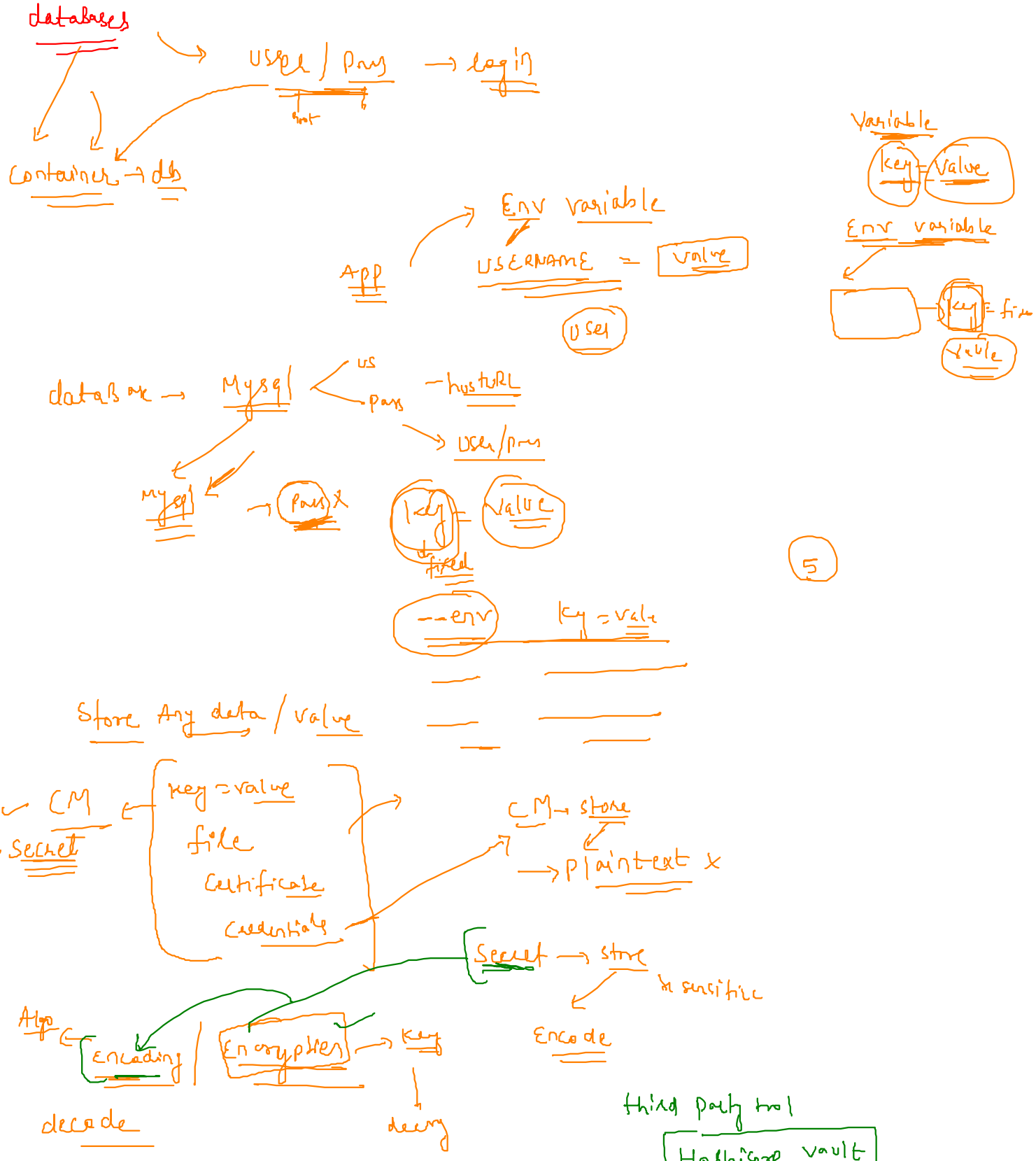
observability

ELK

Monitoring } → Grafana

logging } → central Logs → Config

Alerts


databases
user / pass
login
container → db
Variable
key = value
Env variable
App
Env variable
USERNAME = value
user
database → Mysql
us
pass
hostURL
user/pass
mysql
pass X
key
value
fixed
5
--env
key = value
Store Any data / value
CM
Secret
key = value
file
Certificate
Credentials
CM → store
→ plaintext x
Secret → store
x sensitive
Encode
Algo
Encoding
Encryption
key
decode
decoy
third party tool
Hashicorp vault
Secret → 3 types
1 Generic
2 tls → https → certificate
3 docker-registry = user/pass / URL

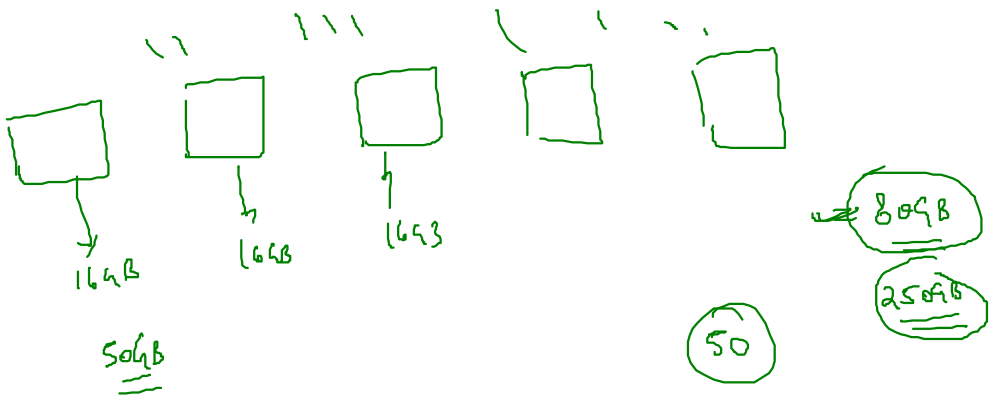
mysql ← env

root — pwd
db
user —
pwd —

Store → file, data, value → open

configmap → plaintext → pod
CM ← configmap

Secret → encoded → pod
Sensitive ← Secret



Pod → open → all resource

Limitation → on project level

(1) Resource Limitation

Pod = 10
Ser = 5
RS = 10

Project = Pod = 10

2 = Pods
2 = svc
less resources

Resource Quota
Reservation

Pod = 2 → open → all RAM

2. LimitRange → Project

Pod → cpu = 2vcpu
and memory = 2GB
min = ____

Container = max = cpu = 1.5vcpu
memory = 1GB

test → Deploy → Pending
mention CPU = 3vcpu ✗ → stuck
memory = 4GB ✗

(1) quota

(2) LimitRange

(3) Deploy = Resource allocation

strategy = OC Scale = manual scaling

Metric Server = Pod = CPU, mem
Node = CPU, mem

Automatic scaling ↑Pods → HPA

Horizontal Pod Autoscaling

Deploy = resource = CPU = 1 (600m)
me = 1G
min = 1

CPU = 70% = max pods = 20

4.5.1

HPA → (1) dep → resources

HPA → CPU = 60% ↑ max = 10, min = 1

↑↑↑↑↑

4 4 4 4 4

1 2 .5 3 .5

.1 .1 .1 .1 .1

200M

Remains

Limit

Depl. = 500M

[illegible] . 200M

Pending X

available

Metrics Server

Limit R

Cont

Pod

min = quite s Avg = 110 Gmi

→ Max → cpu = 3 vcpu, mem = 4g

Min → cpu = 110M, mem = 6Mi

dep

Req.
→ cpu = 110M
memory = 6Mi

Limit
cpu = 3 ↓
mem = 4g ↓