→ Introductory class starts at 9:06pm

AGENDA

- Introduction
- Why is python and DSA important for a devops Engineer?
- Monolithic and Microservice architecture
- What is devops
- Phases of Devops
- How does the internet work?
- What are the top technologies Available in the market?
- How will be we studying DEVOPS?
- What are the job opportunities?

Introduction.

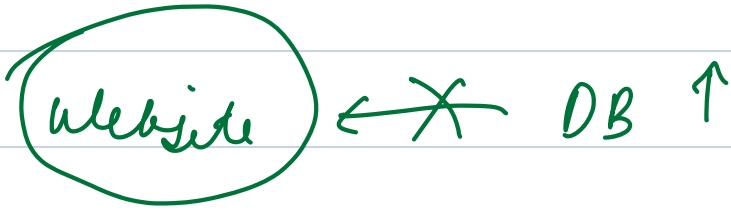
→ CKA (Certified Kubernetes Admin)
→ AWS Solutions Architect (Professional, Associate)
→ Terraform Certified.
→ OCI Foundation.

Q. Why is python and DSA important for a DEVOPS engineer?

① Problem Solving Skill.

② Troubleshooting.

③ Automation and Scripting.



abcd.com.

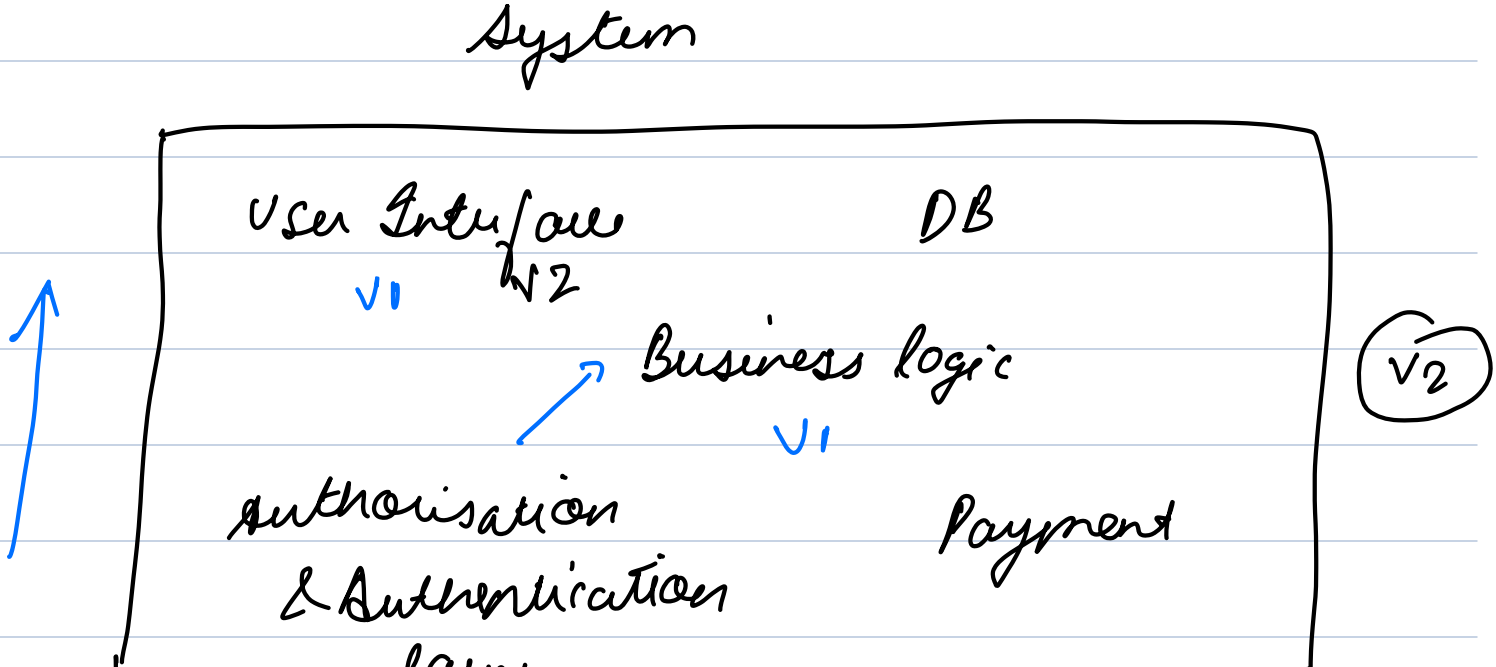
Monitor the URL for downtime.

Print if you see any 500 errors.

↳ HTTP respons.

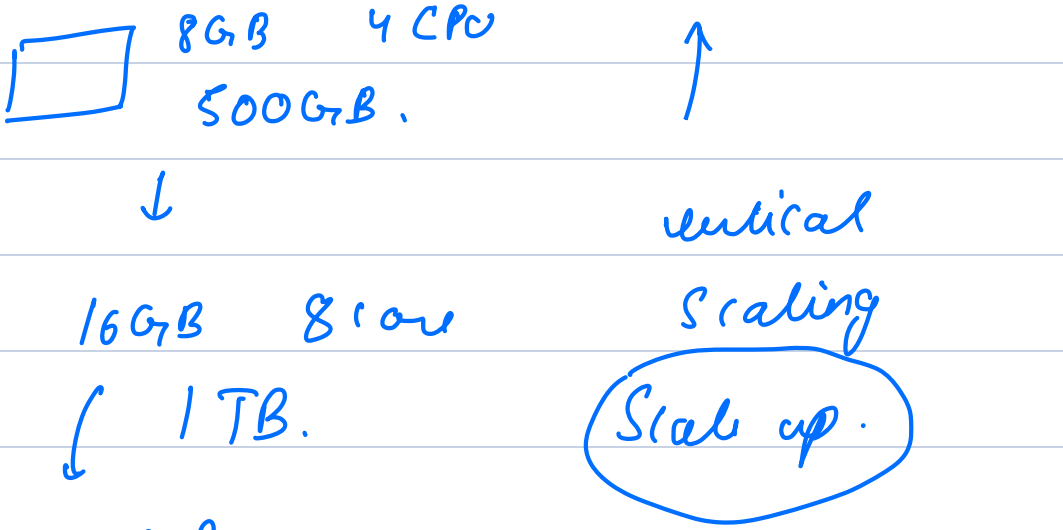
→ curl.

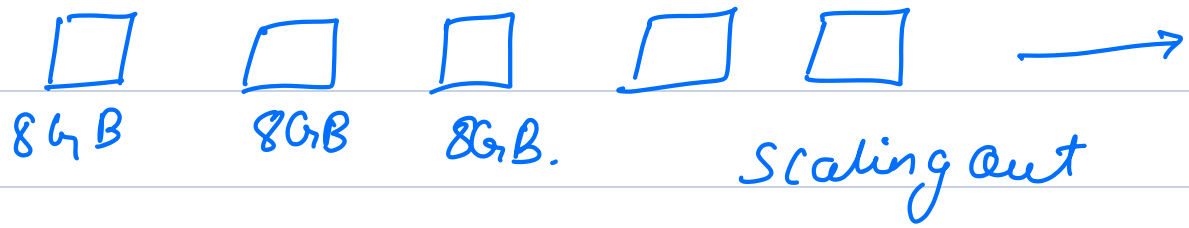
Monolithic Architecture.



Challenges

① Scaling. Vertical & horizontal Scaling.





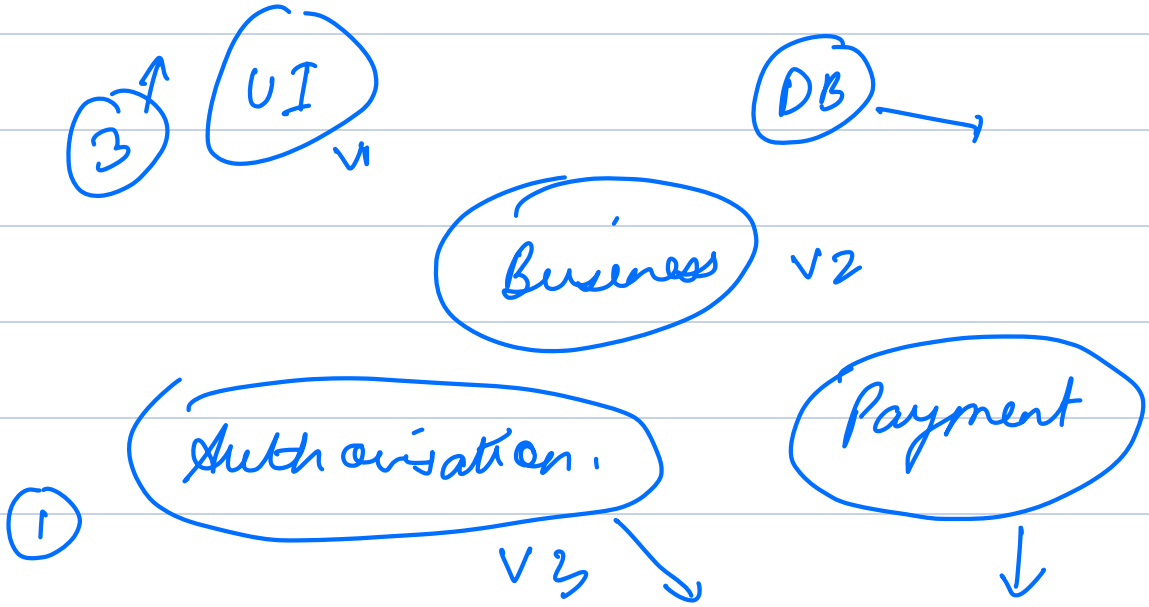
every component experiences a varying load.

② Outages

③ Redeployment.

→ Microservice.

→ loosely coupled
→ independently deployable.



① Scaling.
② Deployments.
③ Fault Isolation.

V1

q What is DEVOPS

SDLC

Development
→ designing

Operations
→ testing

→ code
→ Build.

→ implementation.

2 weeks.

2 weeks

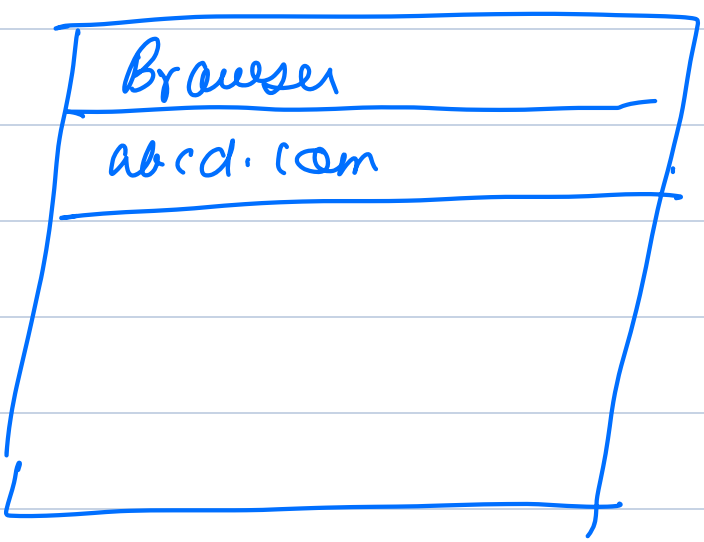
FEEDBACK (bugs, new innovation)

SD is taking time

Devops is a practice where the development and the operations team work together to improve the software delivery time.

Q How does the internet work.

application is live.



abcd.com.

bookstore website

IP

google.com

IP

ICANN → Internet corporation of

Assigned Names and Numbers.

IPv4
IPv6

2^8 2^8 2^8 2^8
A . B . C . D → 2^{32} ≃ 4 Billion

0-255 0-255

256 → 2^8

problem of exhaustion of IP address.

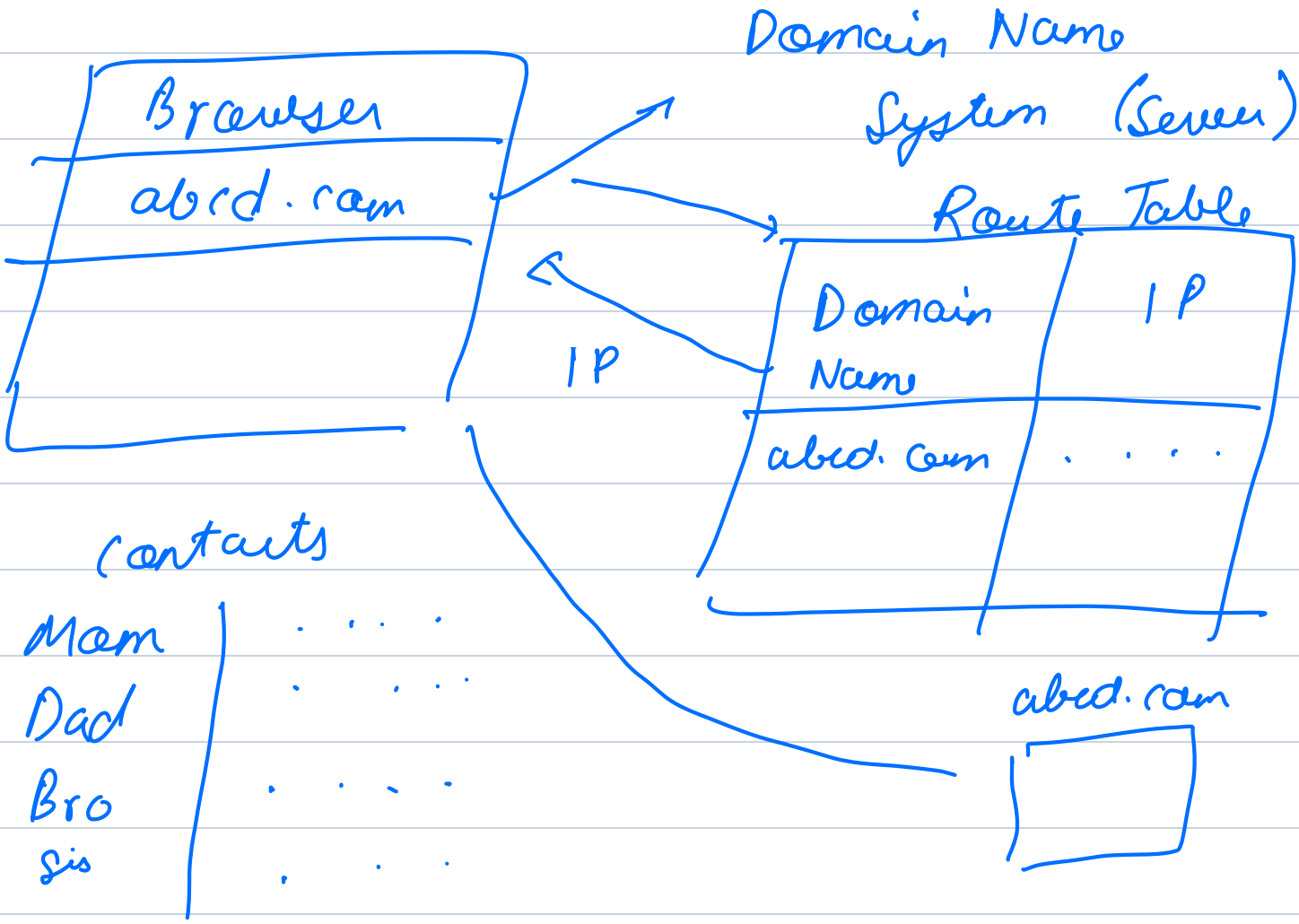
private IP
public IP → internet facing.

Class A → 10.0.0.0 → 10.255.255.255
Class B → 172.16.0.0 → 172.31.255.255
Class C → 192.168.0.0 → 192.168.255.255

NAT → network address translator.

IP4 ISP (airtel, IP2

IP_3



→ Break 10:20

Phases of DEVOPS

① Planning. eg:- jira, confluence, Service now.

② Coding.

v1, v2 eg:- github.
↳ bitbucket

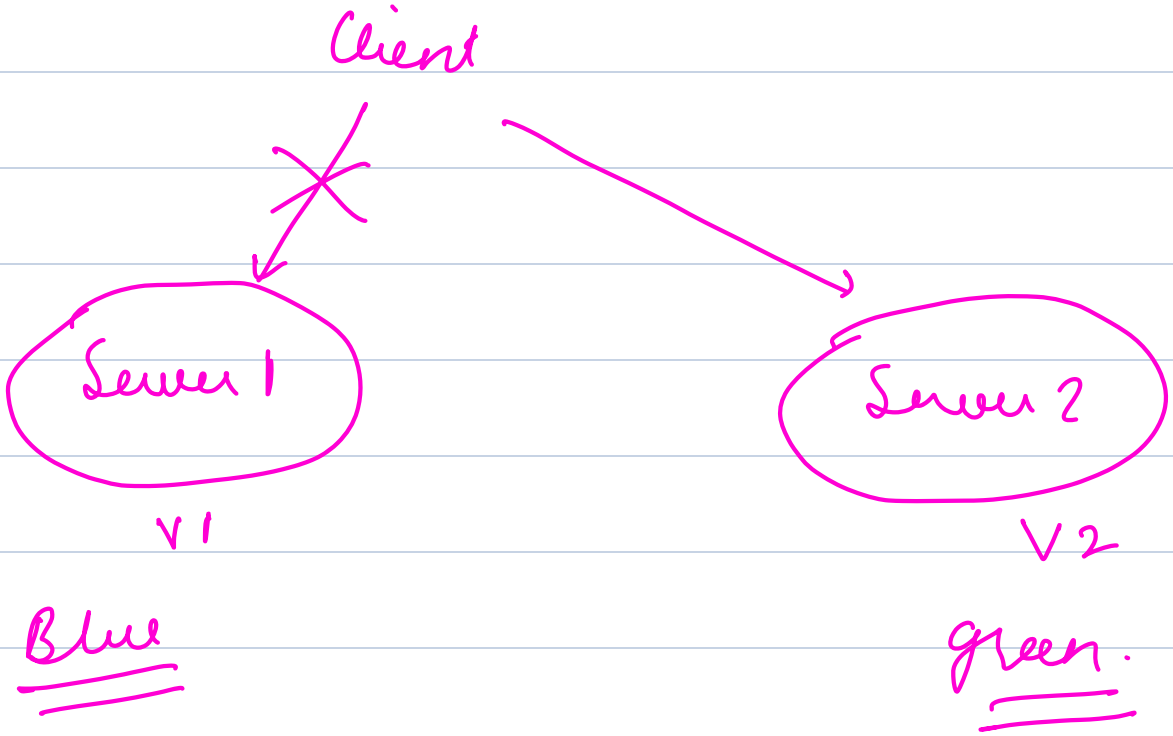
repos?

(3) Build. (code needs to become executable).
Maven, gradle.

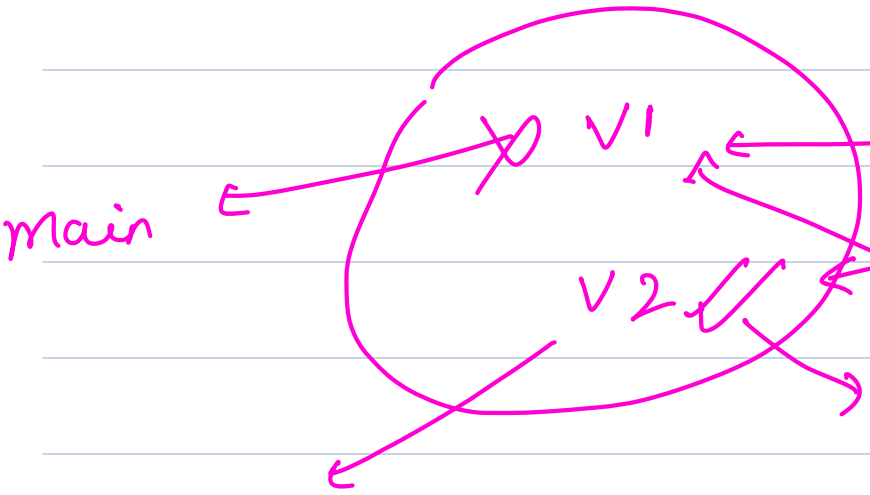
(4) Testing. selenium, postman.

(5) Deployment.
different deployment strategies

① Blue - green deployment.



② Shadow deployment.



abcd.com / shadow.

enable → (shadow)

commit → (main)

③ Canary deployment.

Pakistan

□ V1

China.

□ V1

India

□ V1 V2

Srilanka

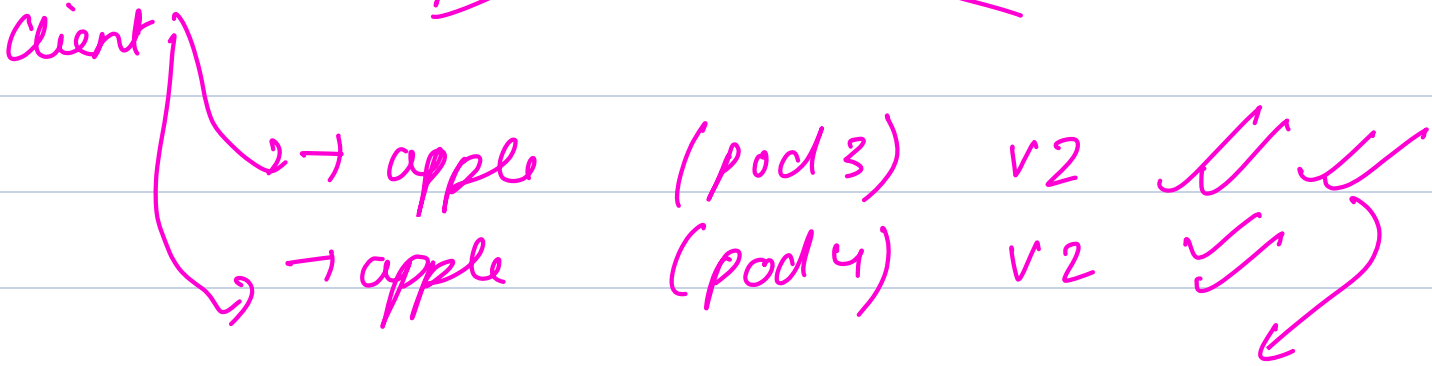
□ V1

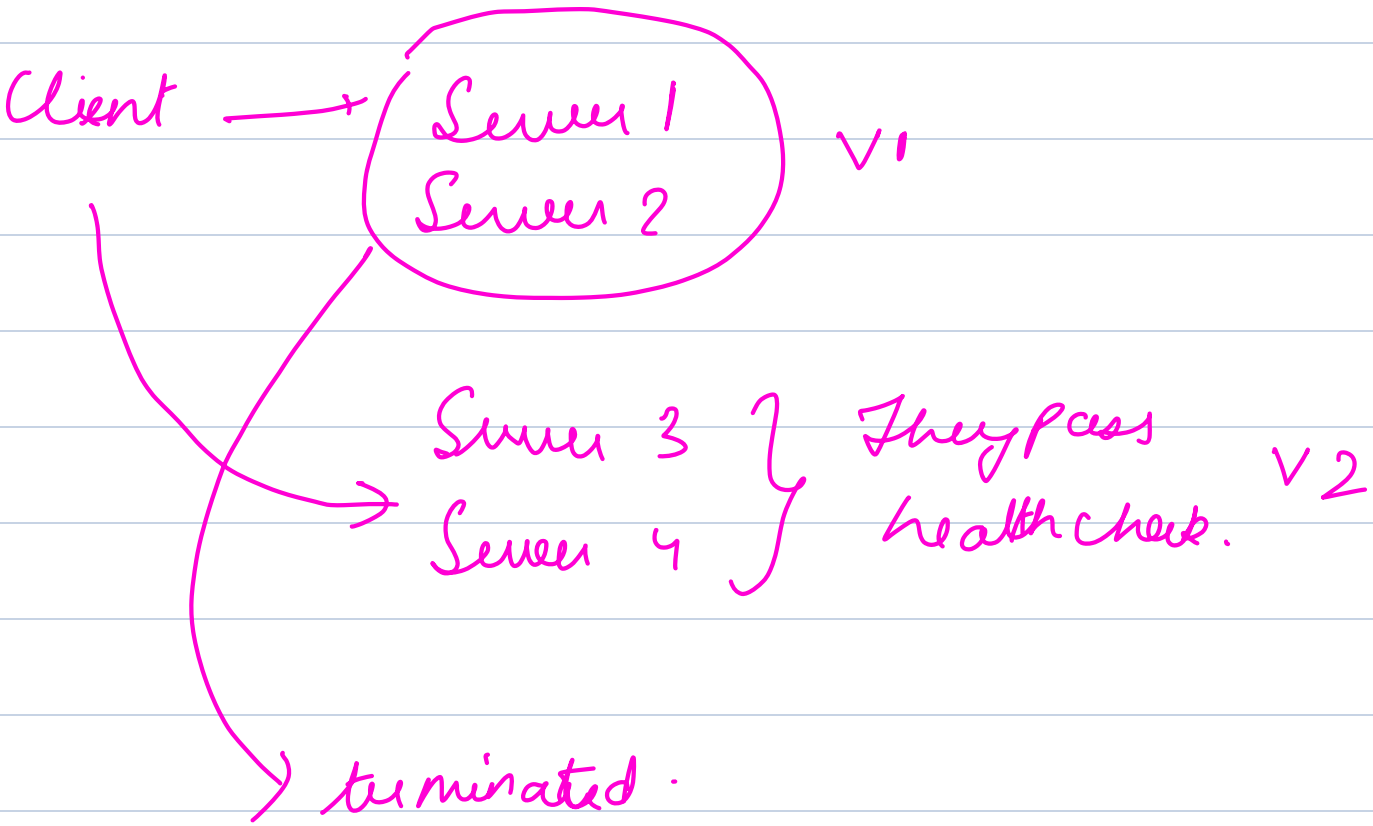
observe

④ Rolling update. (guaranteed 0 time)

→ apple (pod 1) V1 Terminated.

→ apple (pod 2) V1





⑥ Operate phase.

→ monitoring
→ maintenance
→ logging
→ scaling

→ Security.
→ Alerting.

Top technologies in the market.

① Which Cloud?

AWS.

EC2 instances. Auto Scaling group.

Azure

Virtual machine VMSS (Scale set)

GCP

instances instance group.

↓

instance template.

② Scripting.

→ python shel

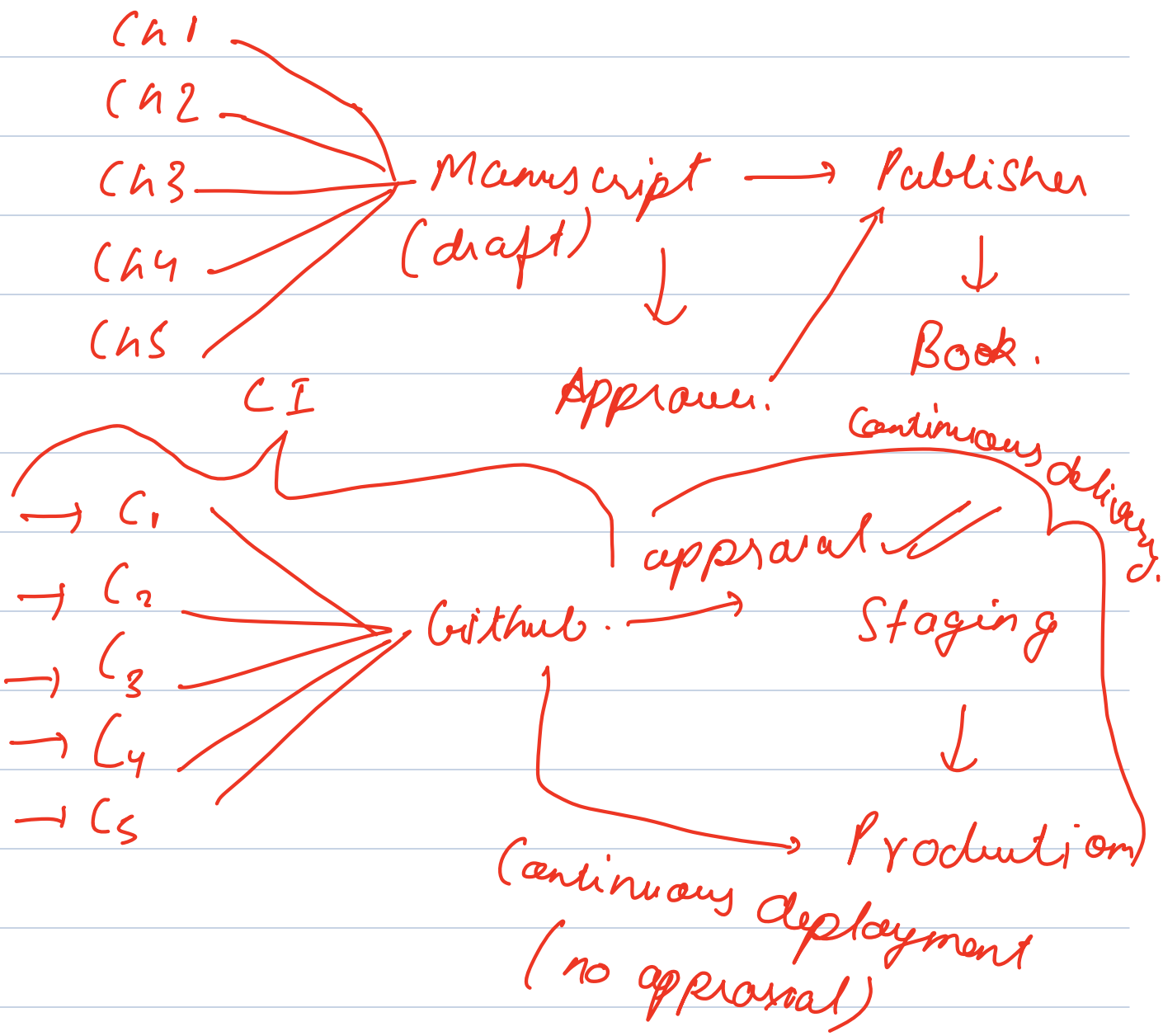
→ js.

→ groovy (Jenkins pipelines)

→ Ruby.

→ go.

(3) CI CD.



→ Gitops → Production.

→ Argo CD

→ Jenkins

④ Infrastructure as a Code.

→ terraform (AWS, Azure, GCP)
→ cloudformation. (AWS)

⑤ Configuration Management.

→ Ansible puppet chef.

⑥ Containerisation.

Image → Package of all things needed to run a software

Container → Server ← Application code

config files
env variables.

→ docker, Kubernetes.

⑦ Monitoring Tools.

① Infra Monitoring tools

Prometheus, zabbix, nagios.

② Cloud Monitoring tools.
cloudwatch, Azure monitor.

③ Container monitoring tools.
Prometheus, grafana.

④ Logging
Kibana. ELK.

How will we be learning DEVOPS?

Module 1 → Python } done
Module 2 → DSA
Module 3 → Linux and Computer Systems.
(2.5 months) → OS (linux)
→ Shell scripting
→ Computer networks.
→ Databases.

Module 4 → Devops Tools.
(2.5 months) → Docker
→ Kubernetes
→ Jenkins

→ Terraform
→ Ansible
→ Chef
→ puppet
→ github, ArgoCD, gitops, git
→ Prometheus, grafana.

Module 5 → AWS

Module 6 → System design

Module 7 → Advance DSA.

Devops Engineer
→ Automation
→ infrastructure provisioning.
→ Containerisation.

SRE →
→ Automation
→ Reliability & uptime.
→ Incident planning.

Cloud Engineer.

→ architecture

→ cloud infra

→ automation.