Interview preparation Cheat Sheet

1. What are the types of Docker volumes?

Answer:
Docker provides three types of volumes:

1. **Host Volume** – Maps a directory from the host machine to the container.
2. **Anonymous Volume** – Docker manages the volume without a specific name.
3. **Named Volume** – User-defined and persisted independently of containers.

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2. What is Kubernetes taint and tolerance?

Answer:

- **Taint** is applied on a node to **restrict** pod scheduling.
- **Toleration** is applied on pods to **allow** them to run on tainted nodes.

Used to **isolate workloads**, e.g., run only specific apps on specific nodes.

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3. If you want to add an existing resource to the Terraform state file?

Answer:
Use the command:

```
terraform import <resource_address> <resource_id>
```

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4. Can pod-to-pod communication happen by default?

Answer:
Yes.
In Kubernetes, all pods can communicate with each other by default within the cluster because the cluster network is **flat and non-restrictive** unless **Network Policies** restrict it.

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5. What are Helm charts?

Answer:
A **Helm chart** is a package of YAML templates used to deploy Kubernetes applications through versioned, repeatable, and configurable deployments.

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6. How will you deploy Jenkins in your organization?

Answer:
4 common approaches:

1. **EC2 installation** (manual setup)
2. **Docker container**
3. **Helm chart deployment on EKS**
4. **Kubernetes YAML manifests**

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7. When you deploy Jenkins with Helm, what is the folder structure?

Answer:
A Helm chart typically includes:

```
Chart.yaml
values.yaml
templates/
    deployment.yaml
    service.yaml
    ingress.yaml
    configmap.yaml
    pvc.yaml
charts/
README.md
```

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8. How much time will be taken for a Jenkins job completion?

Answer:
Depends on pipeline stages, application build time, tests, and infra speed.

Typically ranges from **1 minute to 15+ minutes** depending on the complexity.

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9. Where do you deploy the microservices?

Answer:
Usually deployed in:

- **Kubernetes (EKS)**
- **Docker containers**
- **ECS**
- **EC2**
- **Fargate**

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10. Who manages the infrastructure in your organization?

Answer:
Infrastructure is usually managed by the **DevOps Team** using IaC tools like **Terraform**, **CloudFormation**, and **Ansible**.

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11. Application deployed in EKS but not accessible externally — how will you debug?

Steps:

1. Check **Service type** (LoadBalancer / NodePort).
2. Check **Ingress** configuration.
3. Check **Security Groups** inbound rules.
4. Check **NACLs / VPC routing**.
5. Check **DNS** mapping.
6. Check if pods are running and service endpoints exist.

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12. Explain the Git branching strategy.

Answer:
Most common: **Gitflow**

- **main/master** → Stable production
- **develop** → Active development
- **feature/** → New features
- **release/** → Pre-production
- **hotfix/** → Quick patches on production

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13. How can you restrict pod-to-pod communication?

Answer:
Using **Kubernetes NetworkPolicies**:

- Deny all traffic
- Allow only specific namespace/app/labels

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14. Suppose Jenkins pipeline fails — how will you debug?

- Check **Console output**
- Check **agent availability**
- Validate **credentials**
- Check **Docker build errors**
- Check **Git authentication**
- Check **Stage-specific errors**

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15. How does communication happen in an EKS cluster?

Answer:
Through:

- **Kubernetes network (CNI plugin)**
- **Service (ClusterIP / NodePort / LoadBalancer)**
- **CoreDNS**
- **VPC routing**

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16. Python program to read log file and print error count

```
count = 0
with open("app.log", "r") as f:
    for line in f:
        if "ERROR" in line:
            count += 1
print("Total ERROR messages:", count)
```

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17. What type of agents are you using in Jenkins?

- **Static EC2 agents**
- **Dynamic agents via Kubernetes plugin**
- **Docker agents**
- **Self-hosted runners**

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18. How are you deploying Jenkins: EC2 or EKS?

Answer:
Depends on the organization, but commonly using **EKS with Helm** for scalability.

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19. Difference between StatefulSet and Deployment?

Deployment:

- Stateless apps
- No stable identity
- ReplicaPods identical

StatefulSet:

- Stateful apps (DB, Kafka)
- Stable network identity
- Persistent storage per pod

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20. Explain RBAC in Kubernetes.

RBAC = Role-Based Access Control
Controls **who** can access **what** using:

- **Roles**
- **ClusterRoles**
- **RoleBinding**
- **ClusterRoleBinding**

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21. Jenkins deployed via Helm — how to update plugins?

Two ways:

1. Update **values.yaml** → plugin list
2. Upgrade chart:

```
helm upgrade jenkins -f values.yaml jenkins/jenkins
```

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22. How do you store secrets in Kubernetes?

Using:

- **Kubernetes Secrets** (Base64 encoded)
- **AWS Secrets Manager + CSI driver**
- **HashiCorp Vault**

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23. Lost Jenkins password — how to restore?

- If using Helm:

```
kubectl exec -it <pod> -- cat
/var/jenkins_home/secrets/initialAdminPassword
```

- Reset via admin account
- Restore backup (if taken)

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24. What plugins do you use in Jenkins?

Common ones:

- Git
- Pipeline
- Credentials
- Blue Ocean
- Docker
- Kubernetes
- Slack
- SonarQube

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25. How many DevOps engineers are in your team?

Typical answer:
4–6 DevOps engineers, depending on project size.

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26. What is your project architecture?

A clean high-level answer:

- Microservices in **EKS**
- CI/CD via **Jenkins/GitHub Actions**
- IaC via **Terraform**
- Monitoring via **Prometheus & Grafana**
- Images in **ECR**
- Logs in **CloudWatch**

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27. How do you receive tickets?

Through:

- **JIRA**
- **ServiceNow**
- **Azure DevOps** Boards

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28. EC2 instance type used to deploy apps? Is it sufficient?

Example answer:
t3.medium / t3.large
Choose based on:

- CPU
- Memory
- Auto-scaling
- Application load

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29. Deployment strategies used?

- **Rolling update**
- **Blue-Green**
- **Canary**
- **Recreate**

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30. Install Nginx on 10 servers using Ansible?

Use inventory + playbook:

```
hosts: web
tasks:
  - name: Install nginx
    apt: name=nginx state=present
```

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31. Explain Ansible structure.

Folder structure:

```
inventories/
roles/
playbooks/
group_vars/
host_vars/
ansible.cfg
```

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32. What is a playbook?

A YAML file that defines **tasks**, **modules**, and **roles** to execute automation.

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33. What rollback strategies do you follow?

- Helm rollback
- Kubernetes deployment revision
- EC2 AMI rollback
- Terraform rollback (manual state revert)
- Git revert

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34. Difference between git clone vs git fork, merge vs rebase

- **Clone:** Copy repo locally
- **Fork:** Copy repo under your account
- **Merge:** Combines changes with merge commit
- **Rebase:** Rewrites commit history for cleaner log

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35. How to combine multiple commits into single commit?

```
git rebase -i HEAD~n
```

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36. What is .git folder?

It stores:

- Repo history
- Branches
- Objects
- Configuration

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37. If you lost .git folder — how to restore?

You cannot fully restore.
You must **reinitialize**:

```
git init
git remote add origin <url>
git fetch
```

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38. Difference between git pull and git fetch?

- **git fetch** → downloads but doesn't merge
- **git pull** → downloads + merges automatically

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39. Where do you store Jenkinsfiles and Dockerfiles?

Typically in each service repository:

```
/app
  Dockerfile
  Jenkinsfile
```

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40. Docker stops & restarts — data lost. How to fix?

Use **Docker volumes** or **bind mounts** to persist data.

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41. What is CrashLoopBackOff?

Pod keeps crashing and Kubernetes keeps restarting it.
Causes:

- App errors
- Wrong configs
- Missing dependencies
- Liveness probe failure

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42. How to delete unused Docker containers and images?

```
docker system prune -a
```

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43. What type of Load Balancers have you used?

- **ALB**
- **NLB**
- **CLB**
  In Kubernetes:
- **Ingress Controller**
- **Service LoadBalancer**

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44. What are S3 storage classes?

- Standard
- Standard-IA
- One Zone-IA
- Glacier
- Glacier Deep Archive
- Intelligent-Tiering

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45. How to locate the path of a file?

```
find / -name filename
```

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46. How to delete log files >50MB and older than 30 days?

```
find /var/log -type f -size +50M -mtime +30 -delete
```

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47. Difference between CMD and ENTRYPOINT?

CMD: Default command (can be overridden).
ENTRYPOINT: Always executed and cannot be overridden (unless using `--entrypoint`).

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48. How did you reduce deployment cost by 40%?

Sample answer:

- Migrated workloads to **EKS with auto-scaling**
- Used **Spot instances**
- Implemented **CI/CD** to reduce idle compute
- Optimized Docker images
- Reduced unused infrastructure with **Terraform** cleanup
- Used **S3 lifecycle policies**
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