1. Pod is in CrashLoopBackOff. How do you debug?

first check logs and then describe the pod to see events:

kubectl logs pod-name

kubectl logs pod-name --previous

kubectl describe pod pod-name

Most common causes you will see are:

- Application crash
- Wrong env variables
- Missing config/secret
- Image issues
  If needed, exec into the container and validate configs.

2. Deployment rollout failed. How do you rollback without downtime?

Check rollout status:

kubectl rollout status deployment app

Then rollback:

kubectl rollout undo deployment app

In production, always use **RollingUpdate strategy** with proper **readiness probes** to avoid downtime.

3. Pods are running but traffic isn't reaching them. What do you do?

Verify in this order:

1. Pod readiness probe
2. Service selector vs Pod labels
3. Service endpoints:

kubectl get endpoints <**svc-name**>

4. Ingress rules / ALB target health (in AWS)

Most issues are **label mismatch or failed readiness probes**.

4. One Pod works, multiple replicas don't. Why?

Usually:

- App is not stateless
- Shared file system issue
- Cache/session stored locally
  Confirm by checking logs across replicas and fix by:
- Externalising session storage (Redis, DynamoDB)
- Making the app stateless

5. Pod gets killed randomly. How do you identify why?

Run kubectl describe pod <**pod-name**>

If you see OOMKilled, it's memory. Then:

- Increase memory limits
- Enable VPA recommendations if required

6. Service works internally but not externally. Fix?

Check:

- Service type (NodePort / LoadBalancer)
- Security groups on worker nodes
- ALB health checks (for EKS)
  Most AWS issues come from **security group or subnet routing**.

7. NodePort vs Ingress — when do you use which?

- **NodePort** → quick testing, non-prod
- **Ingress (ALB)** → production
  Ingress gives:
  - TLS termination
  - Path-based routing
  - One ALB for multiple services

8. Ingress returns 404. What do you check?

1. Ingress rules (host/path)
2. Ingress controller logs
3. Backend service name & port
4. ALB target group health
   404 usually means **rule mismatch**, not app failure.

9. Pods on different nodes can't communicate. Debug?

Check:

- CNI plugin (AWS VPC CNI)
- Security groups
- NetworkPolicies (if enabled)
  In EKS, most of the time it's **SG or NACL misconfiguration**.

10. How do you expose multiple apps using one LoadBalancer?

Using **Ingress with ALB**:

- Path-based routing & Host-based routing
  This reduces cost and simplifies management.

11. HPA configured but not scaling. Why?

Common reasons:

- Metrics server missing
- Resource requests not defined
- CPU usage below threshold

Verify: kubectl get hpa && kubectl top pods

12. CPU low, memory increasing. What do you do?

Memory leak suspicion. Mostly action and remediation will be taken care by Developers

Actions:

- Increase memory limit temporarily
- Restart pods
- Ask dev team to profile
- Use VPA in recommendation mode

13. Traffic spike happens suddenly. How does K8s help?

Keep:

- HPA already configured
- Enough node capacity
- Cluster Autoscaler enabled

14. One node goes down. What happens?

- Node marked NotReady
- Pods rescheduled to healthy nodes
- ReplicaSet ensures desired count

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15. Run Pod only on specific nodes. How?

Using:

- NodeSelector (simple)
- NodeAffinity (preferred in prod)
  Example: GPU workloads, infra workloads.

16. Why taints & tolerations?

To **protect nodes**. Like

- Dedicated nodes for monitoring/logging
- Prevent app pods from landing there

17. Pod stuck in Pending. How do you debug?

kubectl describe pod <pod-name>

Usually:

- Insufficient CPU/memory
- No matching nodes
- PVC pending

18. DB pod restarted and data lost. Why?

Because:

- No Persistent Volume & used Deployment instead of StatefulSet

Fix it using

- Use StatefulSet
- Use EBS-backed PVC

19. StatefulSet vs Deployment — can you describe real use case?

- **StatefulSet** → MySQL, Kafka, Elasticsearch
- **Deployment** → APIs, microservices
  Stateful apps need stable identity and storage.

20. PVC stuck in Pending. What do you check?

- StorageClass
- EBS CSI driver
- AZ mismatch
  Most common issue in AWS is **AZ mismatch** (EBS Volume are AZ specific)

21. How do you store DB passwords securely?

The secrets will be stored in **AWS Secrets Manager** and will be fetched directly using **CSI driver**

22. Restrict one service talking to another?

Can be done using **NetworkPolicies**.

implement "Default deny + explicit allow" critical for zero-trust architecture.

23. How do you give a developer access to only one namespace in Kubernetes

To give a developer access to only one namespace, you can use Kubernetes RBAC with a Role and RoleBinding. The Role limits permissions to that specific namespace, and the RoleBinding assigns it to the developer. This ensures least-privilege access and prevents impact on other teams or environments.

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