1. **How do you deploy Docker containers on AWS?**

We can deploy Docker containers on AWS using:

* Amazon ECS (Elastic Container Service) – A managed container orchestration service.
* Amazon EKS (Elastic Kubernetes Service) – A managed Kubernetes service for container orchestration.
* EC2 Instances

1. **What is the role of Amazon ECR (Elastic Container Registry)?**

Amazon ECR is a managed container registry that stores, manages, and deploys Docker container images securely. It integrates with AWS services like ECS, EKS, and Lambda, providing private or public repositories with fine-grained access control.

1. **What is the difference between ECS and EKS in AWS?**

Amazon ECS (Elastic Container Service): AWS-native container orchestration for Docker. Uses EC2 or Fargate.

Amazon EKS (Elastic Kubernetes Service): A managed Kubernetes service to run containerized applications using Kubernetes.

1. **How does Docker integrate with AWS CI/CD pipelines?**

Docker integrates with AWS CI/CD pipelines using:

AWS CodeBuild: it is used build the docker images and pushes them to amazon ECR

AWS CodePipeline: Automates the CI/CD process

AWS CodeDeploy: It is used to deploy containers to ECS or EKS

GitHub Actions / Jenkins / GitLab CI – Can integrate with AWS services for Docker deployments.

**5. What is the role of AWS Fargate in Docker container deployment?**

AWS Fargate is a serverless compute engine that runs Docker containers without needing to provision or manage EC2 instances. It handles scaling, security, and infrastructure, reducing operational overhead.

**6. How do you manage Docker container scaling on AWS?**

**manual scaling:** adjusting container count manually

**Autoscaling(Horizontal scaling):** Increasing or decreasing the number of running containers

**Auto scaling(vertical scaling):** Adjusting CPU and memoryeach container

**Event driven scaling:** scaling based on AWS Lambda triggers and SQS messages

**7. What is a Docker Compose file, and how can it be used with AWS?**

Docker compose is a tool

It is used to manage multi container applications

It is a YAML file

ECS with Compose CLI

AWS App Runner: for simple container based apps

EKS with Kompose: to convert Docker Compose to Kubernetes manifests

**8. How do you monitor Docker containers in AWS?**

* Amazon CloudWatch Logs & Metrics: Logs container activity and metrics.
* AWS X-Ray: Traces requests through containerized applications.
* AWS CloudTrail: Logs API activity for security audits.
* Prometheus & Grafana: For detailed monitoring in EKS.
* Datadog, New Relic, ELK Stack:- third-party monitoring tools.

**9. How do you secure Docker containers on AWS?**

* Using IAM roles & policies
* Using AWS Secrets Manager
* Enable Security Groups
* Implement AWS WAF & Shield
* Using Amazon Inspector
* Sign & scan Docker images

**10. How do you optimize cost while running Docker containers on AWS?**

* Using AWS fargate Spot Instances
* Right-size EC2 instances
* Enable auto-scaling
* Using AWS Savings Plans