# Unit 3 Flashcards – CI/CD and Containerization (Full Set of 40)

## Flashcard 1

* Q: What is DevOps?
* A: A set of practices that combines software development and IT operations to shorten the development lifecycle and deliver high-quality software.

## Flashcard 2

* Q: What are the goals of DevOps?
* A: Faster deployment, better collaboration, automation, and improved quality.

## Flashcard 3

* Q: What are key principles of DevOps?
* A: Automation, continuous integration, continuous delivery, monitoring, and collaboration.

## Flashcard 4

* Q: What tools support DevOps?
* A: Jenkins, Git, Docker, Kubernetes, Ansible, Prometheus.

## Flashcard 5

* Q: Why is DevOps important for microservices?
* A: It enables fast, consistent, and reliable development and deployment across distributed services.

## Flashcard 6

* Q: What is Continuous Integration (CI)?
* A: Automatically integrating code changes into a shared repository multiple times a day.

## Flashcard 7

* Q: What is Continuous Delivery (CD)?
* A: Automatically preparing tested code for release into production.

## Flashcard 8

* Q: What is Continuous Deployment?
* A: Releasing code to production automatically after it passes all stages of the pipeline.

## Flashcard 9

* Q: What are the benefits of CI/CD?
* A: Faster releases, fewer bugs, reduced manual errors, and quicker feedback.

## Flashcard 10

* Q: What tools are commonly used for CI/CD?
* A: Jenkins, GitHub Actions, GitLab CI/CD, CircleCI.

## Flashcard 11

* Q: What does a CI/CD pipeline typically include?
* A: Stages like build, test, package, deploy, and monitor.

## Flashcard 12

* Q: What is the function of a build stage?
* A: Compiles code and creates an executable or Docker image.

## Flashcard 13

* Q: What is automated testing?
* A: Running test scripts automatically to validate the software.

## Flashcard 14

* Q: What happens in the deploy stage?
* A: The code or image is released to an environment (test, staging, or production).

## Flashcard 15

* Q: What is rollback in CI/CD?
* A: Reverting to a previous stable version in case of failure.

## Flashcard 16

* Q: What is Docker?
* A: A platform for building, shipping, and running applications in containers.

## Flashcard 17

* Q: What is a Docker container?
* A: A lightweight, standalone, executable package that includes everything needed to run an app.

## Flashcard 18

* Q: What is a Docker image?
* A: A read-only template used to create containers.

## Flashcard 19

* Q: What is a Dockerfile?
* A: A text file containing instructions to build a Docker image.

## Flashcard 20

* Q: What is Docker Hub?
* A: A cloud-based registry for storing and sharing Docker images.

## Flashcard 21

* Q: What does 'docker build' do?
* A: Creates a Docker image from a Dockerfile.

## Flashcard 22

* Q: What does 'docker run' do?
* A: Starts a new container from a Docker image.

## Flashcard 23

* Q: What is 'docker ps' used for?
* A: Lists running containers.

## Flashcard 24

* Q: What is the purpose of Docker layers?
* A: Improves build efficiency by caching unchanged layers.

## Flashcard 25

* Q: What is 'docker-compose'?
* A: A tool to run multi-container applications using a YAML configuration file.

## Flashcard 26

* Q: What is Kubernetes?
* A: An open-source platform for managing containerized applications at scale.

## Flashcard 27

* Q: What is a Pod in Kubernetes?
* A: The smallest deployable unit consisting of one or more containers.

## Flashcard 28

* Q: What is a Deployment in Kubernetes?
* A: Defines how to create and manage replicas of pods.

## Flashcard 29

* Q: What is a Service in Kubernetes?
* A: Provides networking to expose pods internally or externally.

## Flashcard 30

* Q: What is kubectl?
* A: The CLI tool to interact with Kubernetes clusters.

## Flashcard 31

* Q: What is a ReplicaSet?
* A: Ensures a specified number of pod replicas are running at any time.

## Flashcard 32

* Q: What is a ConfigMap?
* A: Allows you to inject configuration data into pods.

## Flashcard 33

* Q: What is a Secret in Kubernetes?
* A: Used to store sensitive information like passwords or API keys.

## Flashcard 34

* Q: What is Horizontal Pod Autoscaling?
* A: Automatically scales the number of pods based on CPU or memory usage.

## Flashcard 35

* Q: What are Namespaces in Kubernetes?
* A: Virtual clusters to isolate resources within a physical cluster.

## Flashcard 36

* Q: What is a YAML file in Kubernetes?
* A: A configuration file used to declare resources like Pods, Services, and Deployments.

## Flashcard 37

* Q: What is Monitoring in DevOps?
* A: Tracking performance, usage, and health of applications and infrastructure.

## Flashcard 38

* Q: Which tools are used for monitoring?
* A: Prometheus, Grafana, ELK Stack.

## Flashcard 39

* Q: What is meant by feedback loop in DevOps?
* A: Rapid feedback from users and systems helps improve development.

## Flashcard 40

* Q: Why is observability important in CI/CD?
* A: Helps detect failures, analyze root causes, and maintain system health.