DAY 33 — Daily Assessment

Theme: Cloud Deployment + Kubernetes + Auto Scale + KEDA + Code Quality + Deployment Strategies + Cloud Concepts

Time: 120 minutes
Marks: 50**

Deploy & Scale MetroRide API on Cloud

MetroRide wants to deploy the Java API to a cloud environment with modern infrastructure capabilities.
You will implement:

- Kubernetes deployment
- Autoscaling
- KEDA-based scaling
- Code quality automation
- Deployment strategies (rolling, blue/green)
- Cloud VM/Storage basics

User Stories & Tasks

User Story 1 — Code Quality Automation with SonarQube

As a DevOps engineer, I want automated code scanning to maintain high-quality code.

Task 1 (7 Marks)

- Run a local SonarQube server (Docker allowed)

Analyze your Java project locally using:

sonar-scanner -Dsonar.projectKey=metro -Dsonar.sources=src

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- Provide:
    - Screenshot of dashboard
    - sonar-project.properties

User Story 2 — Kubernetes Deployment

As a platform engineer, I want the containerized application deployed on Kubernetes.

Task 2 (10 Marks)

Create YAML files:

- Deployment (3 replicas)
- Service (NodePort)

Apply to a local Minikube or cluster
Provide:

- kubectl get pods
- kubectl get svc

User Story 3 — Autoscaling

As a platform architect, I want the app to scale automatically.

Task 3 (7 Marks)

- Configure an HPA (Horizontal Pod Autoscaler)
- Target CPU 50%
- Provide:
    - HPA YAML
    - Screenshot of HPA

User Story 4 — KEDA Event-based Scaling

As a cloud-native engineer, I want event-driven autoscaling.

Task 4 (8 Marks)

- Install KEDA locally (instructions provided in class)
- Create a ScaledObject for scaling based on queue length (mock YAML acceptable)
- Provide YAML + screenshot

User Story 5 — Deployment Strategies Simulation

As a release engineer, I want safe deployments.

Task 5 (8 Marks)

Prepare YAML examples for:

- Rolling update strategy
- Blue/Green (separate deployments)
  Include explanation

User Story 6 — Cloud Essentials (VM/Storage/Networking)(Optional)

As a cloud engineer, I want to demonstrate basic deployment in a cloud environment.

Task 6 (10 Marks)

Perform any **one** of the following:

1. Create a VM and deploy your JAR
2. Create a Storage bucket and upload artifact
3. Create a VPN or VPC (AWS/GCP/Azure)
   Provide screenshots

Rubrics (50 Marks)

Section	Criteria	Marks
SonarQube Quality Scan	Setup + Report	7
Kubernetes Deployment	Deploy + Service	10
HPA Autoscaling	Scales Based on CPU	7
KEDA Scaling	ScaledObject YAML	8
Deployment Strategies	Rolling + Blue/Green	8
Cloud Deployment Task	VM / Storage / VPC	10
Total		**50**