# Assignment Tasks:

## 1. Cloud Infrastructure & Deployment (Azure)

**Task:** Set up a simple web application (Node.js/Python) and deploy it on Azure App

Service or an Azure Virtual Machine. Ensure that the application is accessible via a public

URL.

**Deliverables:**

* Architecture diagram of your setup
* Steps to deploy the application
* Azure configurations used (Resource Groups, Networking, etc.)
* Screenshots of a successful deployment

## 2. CI/CD Pipeline Implementation

**Task:** Create a CI/CD pipeline using GitHub Actions/Jenkins/GitLab CI to automate the

deployment of the above web application.

**Deliverables:**

* CI/CD pipeline YAML or Jenkinsfile
* Explanation of different pipeline stages (Build, Test, Deploy)
* How environment variables/secrets are managed

## 3. Security & Compliance (ISO, GDPR, SOC 2)

**Task:** Identify three security risks in DevOps workflows and propose mitigation strategies

that align with ISO 27001, GDPR, or SOC 2 compliance.

**Deliverables:**

* A document outlining the risks and mitigation strategies
* Explanation of security best practices in cloud deployments

## 4. Monitoring & Logging

**Task:** Set up a monitoring & logging system using Prometheus & Grafana OR ELK

Stack to track application performance & errors.

**Deliverables:**

* Steps to configure monitoring/logging tools
* Dashboard screenshots showing application metrics
* Alert setup for critical issues

## 5. Database & Storage Optimization

**Task:** Optimize a PostgreSQL or MongoDB database for performance. Suggest indexing,

query optimization, or data partitioning strategies.

**Deliverables:**

* Explanation of optimization techniques
* Example queries before and after optimization

## 6. Automation & Scripting

**Task:** Write a Bash or Python script to automate server setup or log analysis.

**Deliverables:**

* Script file (.sh or .py)
* Explanation of what the script does

## 7. Disaster Recovery & High Availability

**Task:** Explain how you would implement backup & disaster recovery strategies for an

enterprise application in the cloud.

**Deliverables:**

* DR strategy document (including RTO & RPO)
* Example of setting up automated backups in Azure

## 8. AI Model Deployment & MLOps

**Task:** Deploy a sample AI model using Docker & Kubernetes and expose it via an API

endpoint.

**Deliverables:**

* Dockerfile & Kubernetes YAML files
* Steps to deploy the model
* Screenshot of the model running on Kubernetes