CS-4085 MLOps (Section A)

Friday, April 5^{th}, 2024

Sessional 2
Total Time: 1 Hour
Total Marks: 30

Course Instructor(s)

Hammad Majeed

Student Name	Roll No	Section	Signature

*Please verify that you have **1** different printed pages excluding the cover page. There are total of **3** questions.*

- Read the question carefully, understand the question, and then attempt it.
- Calculator sharing is strictly prohibited.
- Use permanent ink pens only. Any part done using soft pencil will not be marked and cannot be claimed for rechecking.

Question 1 ..... (15 Marks)

(a) **(2 Marks)** How to use docker for multiple application environments?

(b) **(4 Marks)** Docker-compose does not wait for any container to be "ready" before going ahead with the next containers. How will you ensure that a container 1 runs before container 2 while using docker compose? Provide a sample yaml code.

(c) **(2 Marks)** What is the difference between CMD and ENTRYPOINT?

(d) **(3 Marks)** On what circumstances will you lose data stored in a container? How can this be resolved? Explain with an example.

(e) **(4 Marks)** Differentiate between virtualization and containerization with the help of a diagram.

Question 2 ..... (5 Marks)

You are tasked with setting up a Jenkins pipeline for deploying a web application to multiple environments: development, staging, and production. Each environment requires different configuration parameters such as database credentials, API endpoints, and environment-specific settings. As part of the pipeline, you need to prompt the user to input these parameters dynamically during the build process.

How you would utilize Jenkins to dynamically configure the deployment process for each environment. Provide a step-by-step explanation of how you would achieve this?

Question 3 ..... (10 Marks)

(a) **(3 Marks)** Explain the importance of Ingress in Kubernetes by using diagram.

(b) **(3 Marks)** Explain different parts of the Kubernetes configuration file.

(c) **(4 Marks)** Briefly explain how Kubernetes maintains the status of the cluster according to configuration file? Mention different scenrios and how they will be handled by Kubernetes?