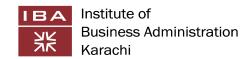
Introduction to DevOps (96112) Mid-Term Exam - Spring 2024

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Instructions

- This Exam consists of **two** parts. An Objective section is followed by a subjective part.
- Return the objective part after completion.
- Write your name and ERP number in ALL CAPS in the provided space.
- Please clearly circle the correct choice. Do not overwrite.
- Unless otherwise written, all choices have one correct answer.
- Total Marks: 20, Total time: 2 hours. Manage the time yourself between two sections.

NAME	ERP ID	

SECTION 1 of 2 (10 marks) - Attempt any 10

1. Which statement best describes the goal of DevOps

- a. DevOps aims to give developers complete control over application releases, creating a siloed environment.
- b. DevOps strives to enable faster and more frequent releases of reliable applications. This is achieved through automation, collaboration, and streamlined processes.
- c. DevOps promotes a model where developers handle all operational tasks, eliminating the need for a separate operations team.

2. Release Velocity is defined by

- a. A measure of the speed and efficiency of software delivery.
- b. The time it takes to fix bugs in production.
- c. The number of features included in a release.
- d. The cost of developing and deploying software.

3. When a docker container stops, all persistent data is lost.

- a. True
- b. False

4. What is the primary function of Services in Kubernetes?

- a. To define the desired state of containerized applications and manage their lifecycle.
- b. To provide a stable and discoverable endpoint for accessing pods within a cluster.
- c. To define what container to run in a Pod.

5. What is the purpose of the docker-compose.yml file?

- a. To define the build process for a Docker image.
- b. To document the dependencies and libraries required by an application.
- c. To configure a multi-container application using Docker Compose.

6. What are some potential benefits of using the sidecar pattern in Docker?

- a. Increased isolation and separation of concerns between application logic and supporting functionalities.
- b. Reduced code complexity within the main application container.
- c. Simplified deployment and management of complex applications.
- d. All of the above

7. What are some common tools used to implement GitOps?

- a. Argo CD, Flux, and K8 Kustomize
- b. Docker Compose, Kubernetes, Helm Charts
- c. GitHub Actions & Terraform

8. What is the core principle behind GitOps?

- a. Managing infrastructure and applications through configuration files stored in a Git repository.
- b. Use Git as the source of truth for the current state of infrastructure. Any manual change to infrastructure should auto-revert.
- c. All of the above.

9. How does GitOps ensure the desired state of the infrastructure is reflected in the actual running environment?

- a. Automated reconciliation continuously compares the current state with the desired state in Git and makes necessary adjustments.
- b. Git Hooks are triggered on changes in the Git repository to deploy and configure the infrastructure.

10. What is the primary benefit of using IaC compared to manually configuring infrastructure?

- a. Improved scalability for handling large and complex deployments.
- b. Reduced cost of infrastructure management due to automation.
- c. All of the above.

11. What is the purpose of Namespaces in Kubernetes? Select All that apply.

- a. To isolate resources like pods, services, and deployments for different teams or projects within a single cluster.
- b. To define resource quotas and limit the usage of cluster resources by different users.
- c. To group pods based on their functionality or application roles.

12. How can you expose a service running in a Kubernetes cluster to the outside world?

- a. By directly accessing individual pods hosting the application.
- b. Utilizing NodePort Services, which map ports on individual nodes to the service port.
- c. Implementing LoadBalancer Services, which balance traffic across pods and provide a single external endpoint.