SIT323/SIT737- Cloud Native Application Development Creating a Kubernetes Cluster for a containerized application

Overview

In this task you will create a Kubernetes cluster and deploy the container to it. Kubernetes is a computing platform for managing container-based applications. They can be considered as a platform for microservices as they can manage and automate the deployment and scaling of our containers. It also known as a container orchestration platform which means the automation of much of the operational effort required to run containerized microservices. In this task, you will deploy a containerized Node.js application which you have already done in task 5.1P, onto a Kubernetes cluster and interact with the deployed application using Kubernetes commands.

The required tools for doing this task are as follows:

- Git (https://github.com)
- Visual Studio code (https://code.visualstudio.com/)
- Node.js (https://nodejs.org/en/download/)
- Docker
- Kubernetes // a computing platform to host your microservice
- Kubernetes CLI (kubectl) //You will use the Kubernetes command-line interface (kubectl) to deploy and manage your application on the Kubernetes cluster.
- Docker CLI// You will use the Docker command-line interface (CLI) to build, tag, and push the Docker image for your application to a Docker registry

Requirements:

- Basic knowledge of Kubernetes concepts and command-line interface (CLI)
- Familiarity with Docker and containerization concepts
- Access to a Kubernetes cluster, either locally or remotely

Instructions:

- Setup the Kubernetes Cluster
- Create the Docker Image
- Create the Kubernetes Deployment
- Create the Kubernetes Service

Submission Details

- You can share your deliverables for this task through a GitHub repository, which can include the Dockerfile, Kubernetes deployment and service configuration files, and

any other necessary files (https://github.com/username/ sit323-2025-prac6p). You can also provide clear instructions on how to access and interact with the deployed application, as well as any screenshots or videos demonstrating the successful deployment and interaction.

- Ensure that detailed documentation is included with your code, offering step-by-step instructions that explain the process undertaken for this task. Failure to provide this documentation will result in an incomplete mark for the task.