inPress Devops Engineer assignment

Assignment Title: Building and Deploying Dockerized Applications on Kubernetes

Assignment Overview:

In this assignment, you will be tasked with setting up a CI/CD pipeline, deploying a Dockerized application on Kubernetes, and ensuring its successful operation on a cloud provider of your choice. You will be assessed based on your ability to effectively utilize DevOps practices, automate processes, and troubleshoot issues.

Requirements:

- **Set up a Kubernetes cluster**

   Provision a Kubernetes cluster on a cloud provider of your choice (e.g., AWS, Google Cloud, Azure).
   Configure the cluster with a minimum of three worker nodes.
   Ensure proper security and access control measures are in place.

- **Dockerize the application:**
   Select a simple application or service of your choice (e.g., a web server, a database) that can be containerized using Docker.
   Write a Dockerfile to build a Docker image for the chosen application/service.
   Ensure the Docker image is built with the necessary dependencies and configurations.

- **CI/CD Pipeline:**

   Implement a CI/CD pipeline using a tool of your choice (e.g., Jenkins, GitLab CI/CD).
   Set up a repository for your Dockerized application and configure the pipeline to trigger on code changes or image updates.
   Automate the building of the Docker image and push it to a container registry.
   Automate the deployment of the Dockerized application to the Kubernetes cluster.

- **Infrastructure as Code (IaC):**

   Use a tool like Terraform or CloudFormation to define the infrastructure required for the Kubernetes cluster.
   Automate the provisioning and configuration of the cluster using IaC practices.

- **Monitoring and Logging:**

    Set up monitoring and logging solutions for your application and infrastructure.
    Configure appropriate metrics and alerts for key performance indicators and critical
    issues.
    Demonstrate your ability to monitor the health and performance of the Dockerized
    application and the Kubernetes cluster.

Deliverables:

Please provide the following deliverables as part of your solution:

- A README document describing the architecture, deployment steps, and any additional
  instructions or considerations.

- The Dockerfile and any necessary configuration files or scripts required for building and
  deploying the Dockerized application.

- The configuration files/scripts for setting up the CI/CD pipeline and infrastructure as code
  (if applicable).

- Any additional documentation or logs that would help evaluate your solution.