

AltSchool of Cloud Engineering Tinyuka 2023 Capstone Project

**Overview:**

A microservices-based architecture application is deployed on Kubernetes and there’s a need to create a clear IaaC (Infrastructure as Code) deployment to be able to deploy the services in a fast manner.

**Setup Details:**

Provision the Socks Shop example microservice application -

<https://github.com/microservices-demo/microservices-demo.github.io>

https://github.com/microservices-demo/microservices-demo/tree/master

**Task Instructions:**

● All deliverables need to be deployed using an Infrastructure as Code approach.

● In your solution please emphasize readability and maintainability (make yor application deployment clear)

● We expect a clear way to recreate your setup and will evaluate the project decisions based on:

* Deploy pipeline
* Metrics (Alertmanager)
* Monitoring (Grafana)
* Logging (Prometheus)

● Use Prometheus as a monitoring tool

● Use Ansible or Terraform as the configuration management tool.

● You can use an IaaS provider of your choice.

● The application should run on Kubernetes

**Extra Project Requirements:**

● The application should run on HTTPS with a Let’s Encrypt certificate

● Bonus points for securing the infrastructure with network perimeter security access rules

● Bonus points if you use Ansible Vault for encrypting sensitive information

### **Project Overview:**

**Objective:** We aim to deploy a microservices-based application, specifically the Socks Shop, using a modern approach that emphasizes automation and efficiency. The goal is to use Infrastructure as Code (IaaC) for rapid and reliable deployment on Kubernetes.

### **Setup Details Explained:**

**What You'll Do:** Your main task is to set up the Socks Shop application, a demonstration of a microservices architecture, available on GitHub. You'll be using tools and technologies that automate the setup process, ensuring that the application can be deployed quickly and consistently.

**Resources:**

* Socks Shop Microservices Demo: [GitHub Repository](https://github.com/microservices-demo/microservices-demo.github.io)
* Detailed Implementation Guide: [GitHub Repository](https://github.com/microservices-demo/microservices-demo/tree/master)

### **Task Instructions:**

1. **Use Infrastructure as Code:** Automate the deployment process. This means all the steps to get the application running on Kubernetes should be scripted and easily executable.
2. **Focus on Clarity and Maintenance:** Your deployment scripts and configurations should be easy to understand and maintain. Think of someone else (or yourself in the future) needing to update or replicate your setup.
3. **Key Evaluation Criteria:**
   * **Deployment Pipeline:** How the application moves from code to a running environment.
   * **Monitoring and Alerts:** Implement Prometheus for monitoring and set up Alertmanager for alerts.
   * **Logging:** Ensure the application's operations can be tracked and analyzed through logs.
   * **Tools for Setup:** Use either Ansible or Terraform for managing configurations. Choose an Infrastructure as a Service (IaaS) provider where your Kubernetes cluster will live.
4. **Security and HTTPS:** Make sure the application is accessible over HTTPS by using Let’s Encrypt for certificates. Consider implementing network security measures and use Ansible Vault for handling sensitive information securely.

### **Extra Project Requirements for Bonus Points:**

* **HTTPS Requirement:** The application must be securely accessible over HTTPS.
* **Infrastructure Security:** Enhance security by setting up network perimeter security rules.
* **Sensitive Information:** Use Ansible Vault to encrypt sensitive data, adding an extra layer of security.

### **Project Goals Summarized:**

This project is about deploying a microservices-based application using automated tools to ensure quick, reliable, and secure deployment on Kubernetes. By focusing on Infrastructure as Code, you'll create a reproducible and maintainable deployment process that leverages modern DevOps practices and tools.

**Submission**

Push your code to a public repository. Make sure your code is well documented

Submit: [AltSchool of Cloud Engineering Tinyuka 2023 Capstone Project](https://docs.google.com/forms/d/e/1FAIpQLSdl3MRJTZIA8CKlRkHyN7_D08_cdN1ETz-htSZy8yP0W_7GRw/viewform?usp=sf_link)