Deploying Spring Boot Application on Kubernetes with Minikube

This document provides step-by-step instructions to deploy a Spring Boot application using Kubernetes (Minikube) and expose it using a NodePort service.

Step 1: Install Minikube & Kubectl

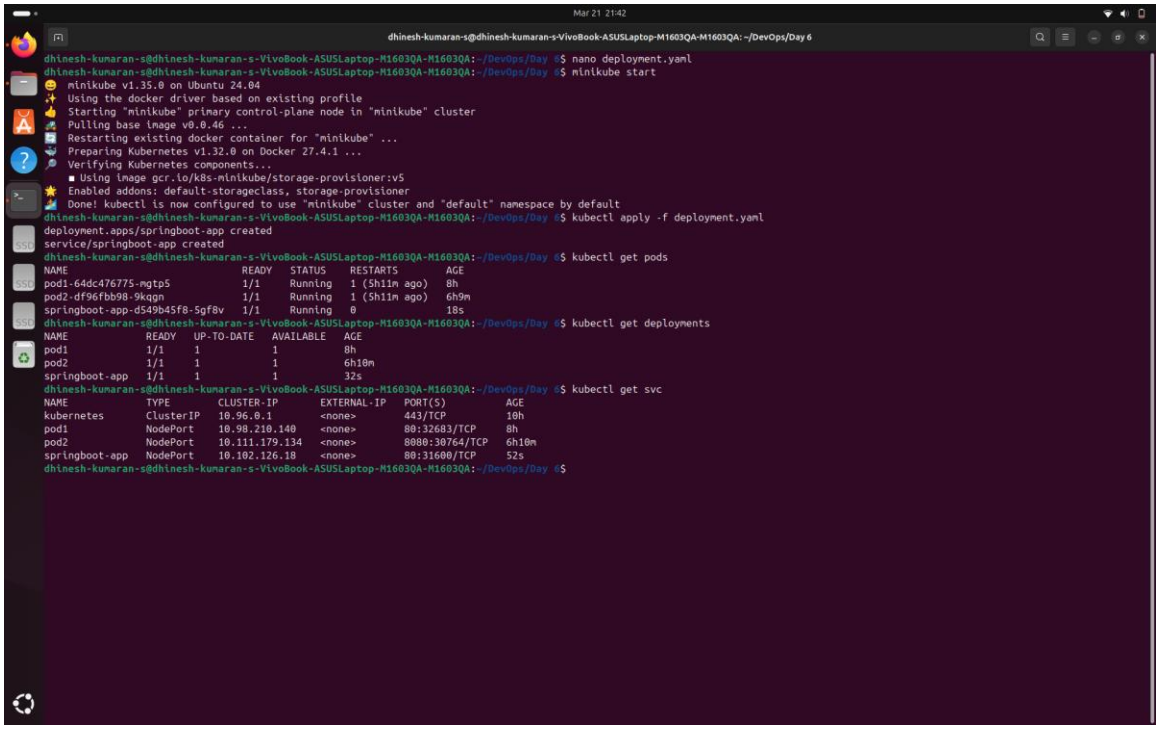
Ensure Minikube and kubectl are installed on your system. Run the following commands:

- Install Minikube:

```
curl -LO https://storage.googleapis.com/minikube/releases/latest/minikube-linux-amd64
sudo install minikube-linux-amd64 /usr/local/bin/minikube
```

- Install kubectl:

```
curl -LO "https://dl.k8s.io/release/$(curl -L -s
https://dl.k8s.io/release/stable.txt)/bin/linux/amd64/kubectl"
chmod +x kubectl
sudo mv kubectl /usr/local/bin/
```



Step 2: Start Minikube

Start a Kubernetes cluster using Minikube with Docker as the driver.

- Command:

```
minikube start --driver=docker
```

Step 3: Deploy the Application

Save the following YAML configuration as deployment.yaml and apply it using kubectl.

```yaml
apiVersion: apps/v1
kind: Deployment
metadata:
  labels:
    app: springboot-app
  name: springboot-app
spec:
  replicas: 1
  selector:
    matchLabels:
      app: springboot-app
  template:
    metadata:
      labels:
        app: springboot-app
    spec:
      containers:
      - name: my-springboot-app
        image: ar8888/ar
        imagePullPolicy: Always
        ports:
        - containerPort: 80
          name: http
          protocol: TCP
---
apiVersion: v1
kind: Service
metadata:
  labels:
    app: springboot-app
    k8s-app: springboot-app
  name: springboot-app
spec:
```

```
  ports:
  - name: http
    port: 80
    protocol: TCP
    targetPort: 80
  type: NodePort
  selector:
    app: springboot-app
```

- Apply the configuration using:

kubectl apply -f deployment.yaml

Step 4: Verify Deployment

- Check if the pods are running:

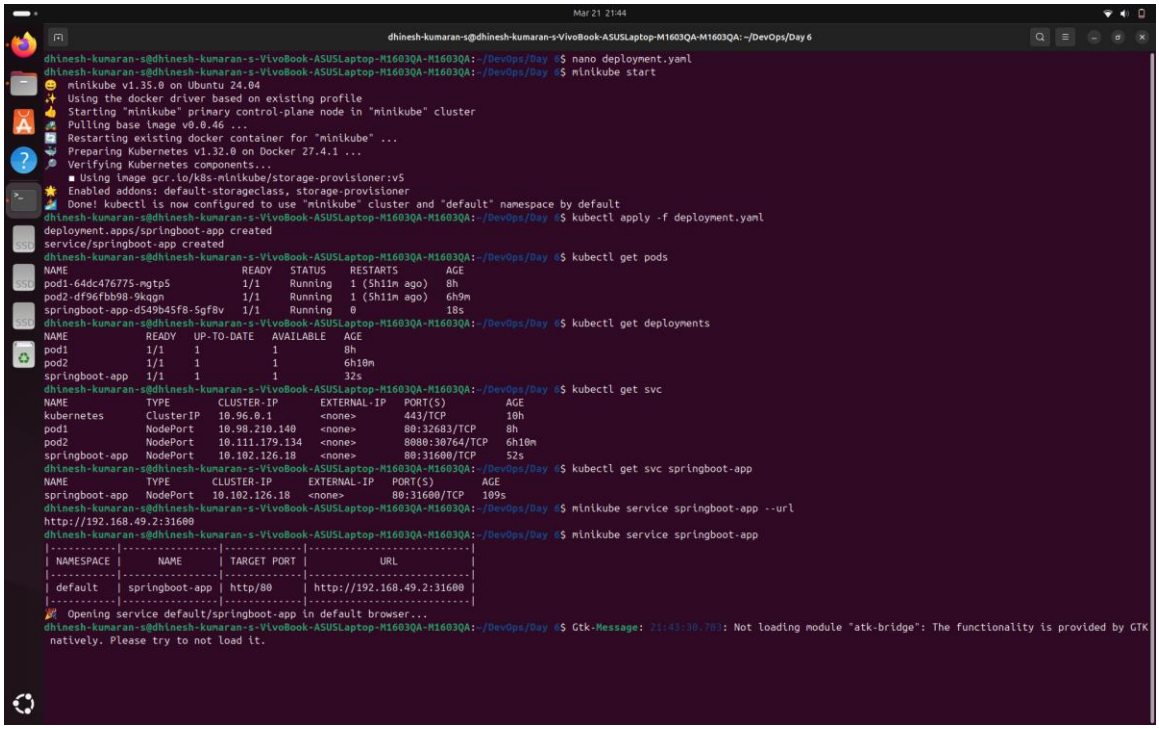
kubectl get pods

- Check deployment status:

kubectl get deployments

- Check service details:

kubectl get svc



Step 5: Access the Application

- Get the assigned NodePort:

kubectl get svc springboot-app

- Get the Minikube service URL:

minikube service springboot-app --url

Debugging Commands

- View pod logs:

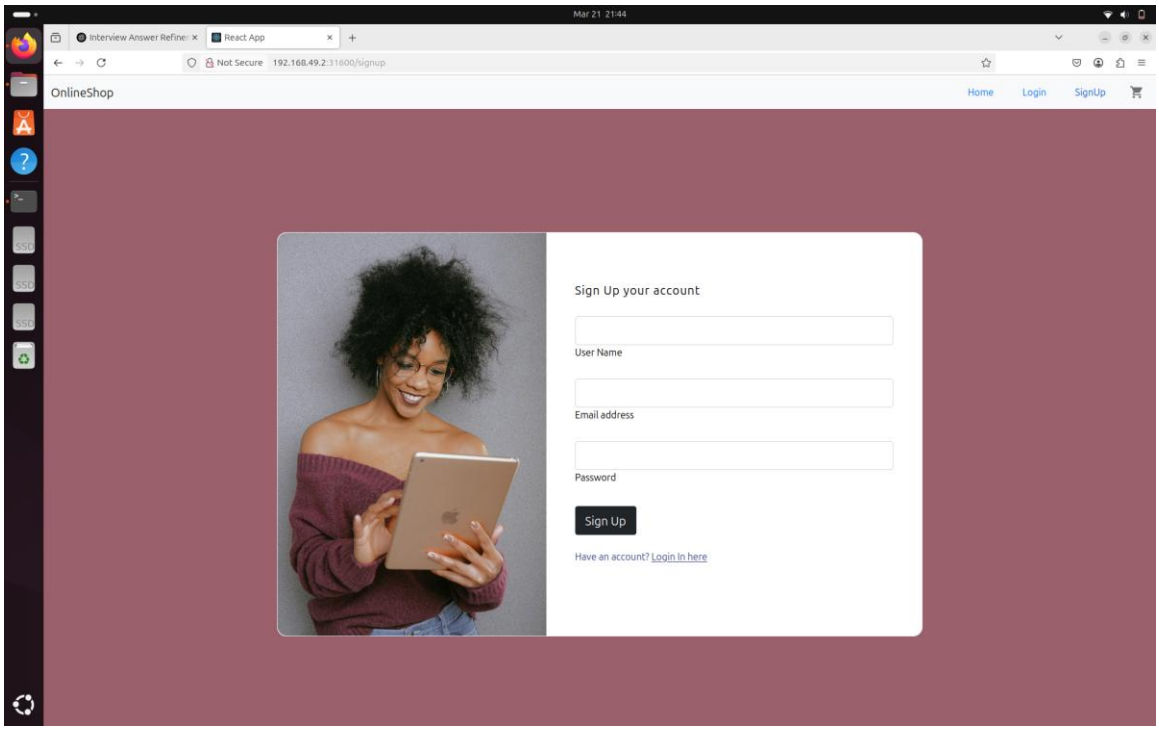
kubectl logs -f <pod-name>

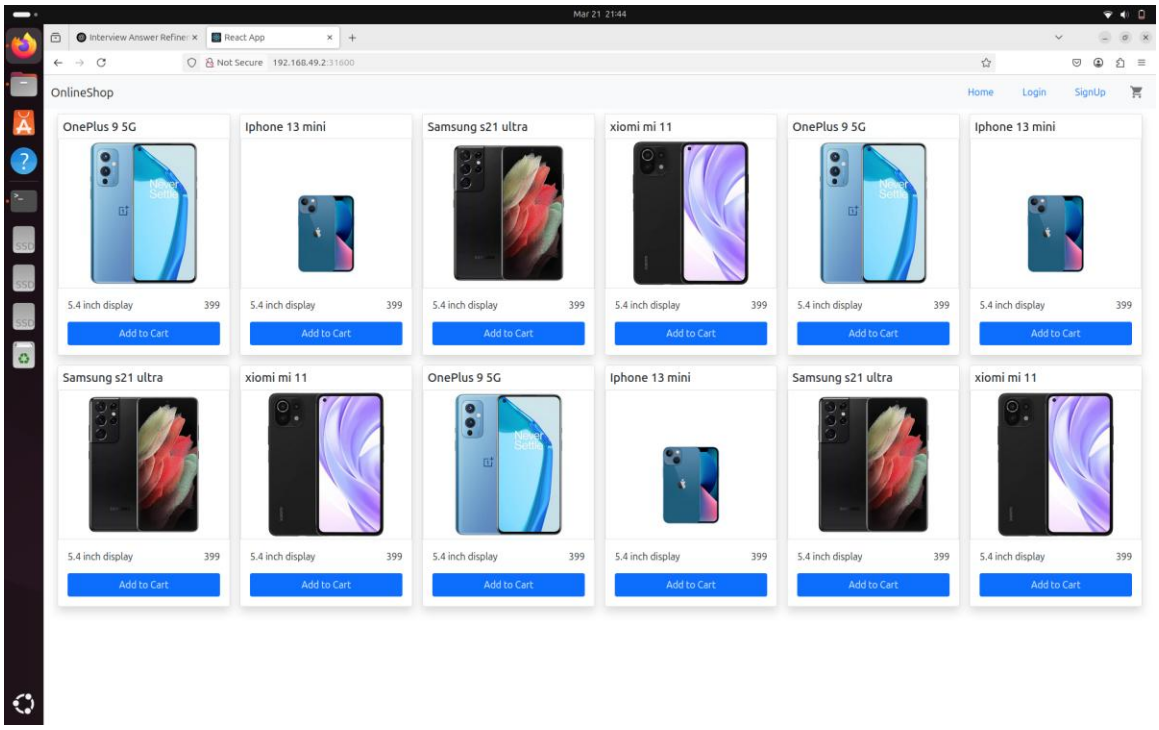
- Delete deployment:

kubectl delete deployment springboot-app

- Delete service:

kubectl delete svc springboot-app

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