Text Case Converter Application Deployment Documentation

This documentation covers the complete setup, deployment, and troubleshooting of the Text Case Converter application using Docker, Jenkins, and Kubernetes (Minikube).

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1. Application Overview

Text Case Converter is a web application that transforms text into various case formats:

Uppercase, Lowercase, CamelCase, Title Case, Alt Case, Pascal Case, Sentence case, Initial Case, Swap case

The application provides a simple UI with text input field and conversion buttons, allowing users to copy results to clipboard or download as text files.

2. Development Environment

Prerequisites

- JDK 21
- Git
- Docker
- Jenkins
- Kubernetes (Minikube)
- kubectl CLI

Local Development

For local development and testing:

Clone the repository

git clone https://github.com/GiridharanS1729/text-case-converter.git

cd text-case-converter

index.html

3. Docker Configuration

Dockerfile

FROM nginx:alpine

COPY . /usr/share/nginx/html

EXPOSE 80

Building and Testing Docker Image Locally

Build the Docker image

docker build -t giridharans1729/text-case-converter:latest .

Run the container locally

docker run -d -p 8080:80 giridharans1729/text-case-converter:latest

Verify the application is working

Visit http://localhost:8080 in a browser

4. CI/CD Pipeline with Jenkins

Jenkins Setup

1. Install required Jenkins plugins:
    - Git plugin
    - Docker plugin
    - Pipeline plugin
    - Credentials plugin
2. Configure credentials in Jenkins:
    - github_seccred: GitHub credentials
    - docker: Docker Hub credentials

Jenkinsfile (Pipeline Definition)

```
pipeline {
    agent any
    tools { jdk 'jdk21' }
    stages {
        stage('Clean Workspace') {
            steps {
                script {
                    echo "Cleaning workspace..."
                    deleteDir()
                }
            }
        }
        stage('Git Checkout') {
            steps {
                script {
                    git branch: 'main',
                        credentialsId: 'github_seccred',
                        url: 'https://github.com/GiridharanS1729/text-case-converter.git'
                }
            }
        }
        stage('Docker Build & Push') {
            steps {
                script {
                    withDockerRegistry(credentialsId: 'docker', toolName: 'docker') {
                        def imageName = "giridharans1729/text-case-converter"
                        def tag = "latest"
                        sh "docker build -t ${imageName} ."
                        sh "docker tag ${imageName} ${imageName}:${tag}"
                        sh "docker push ${imageName}:${tag}"
```

```
            }
          }
        }
      }
    }
}
```

Setting Up Jenkins Job

1. Create a new Pipeline job
2. Configure it to use SCM for pipeline definition
3. Point to your repository and specify the Jenkinsfile path
4. Set up webhook triggers for automatic builds

5. Kubernetes Deployment

Minikube Setup

```
# Start Minikube
minikube start

# Enable ingress addon (optional)
minikube addons enable ingress
```

Deployment YAML (deployment.yaml)

```
apiVersion: apps/v1
kind: Deployment
metadata:
  name: static-website
spec:
  replicas: 1
  selector:
    matchLabels:
      app: static-website
  template:
    metadata:
      labels:
```

```
      app: static-website
  spec:
    containers:
    - name: static-website
      image: giridharans1729/text-case-converter:latest
      imagePullPolicy: Always
      ports:
      - containerPort: 80
---
apiVersion: v1
kind: Service
metadata:
  name: static-website-service
spec:
  selector:
    app: static-website
  ports:
    - protocol: TCP
      port: 80
      targetPort: 80
  type: LoadBalancer
```

Deploy to Kubernetes

```
# Apply the deployment configuration
kubectl apply -f deployment.yaml

# Verify deployment
kubectl get deployments
kubectl get pods
kubectl get services
```

Access the application

minikube service static-website-service –url

6. Troubleshooting Common Issues

Service Unreachable Error

If you encounter "SVC_UNREACHABLE: service not available: no running pod for service" error:

1. Check pod status:
2. kubectl get pods -l app=static-website
3. Check pod logs for errors:
4. kubectl logs <pod-name>
5. Verify image pull status:
6. kubectl describe pod <pod-name>
7. Check service configuration:
8. kubectl describe service static-website-service
9. Get detailed logs:
10. minikube logs --file=logs.txt

Pod Crashes

If pods are crashing after starting:

1. Check application logs:
2. kubectl logs <pod-name> --previous
3. Verify container port configuration in both Dockerfile and deployment YAML
4. Test the Docker image locally before deployment

LoadBalancer Pending State

If the LoadBalancer stays in pending state:

1. Remember that Minikube doesn't support LoadBalancer by default:
2. # Use minikube tunnel in a separate terminal
3. minikube tunnel
4. Or access through NodePort:
5. # Change service type to NodePort
6. kubectl patch svc static-website-service -p '{"spec": {"type": "NodePort"}}'
7. minikube service static-website-service

7. Maintenance Guidelines

Updating the Application

1. Make changes to application code
2. Commit and push to GitHub
3. Jenkins pipeline will automatically trigger a new build and Docker image
4. Update Kubernetes deployment:
5. kubectl rollout restart deployment static-website

Scaling

```
# Scale the deployment
kubectl scale deployment static-website --replicas=3
```

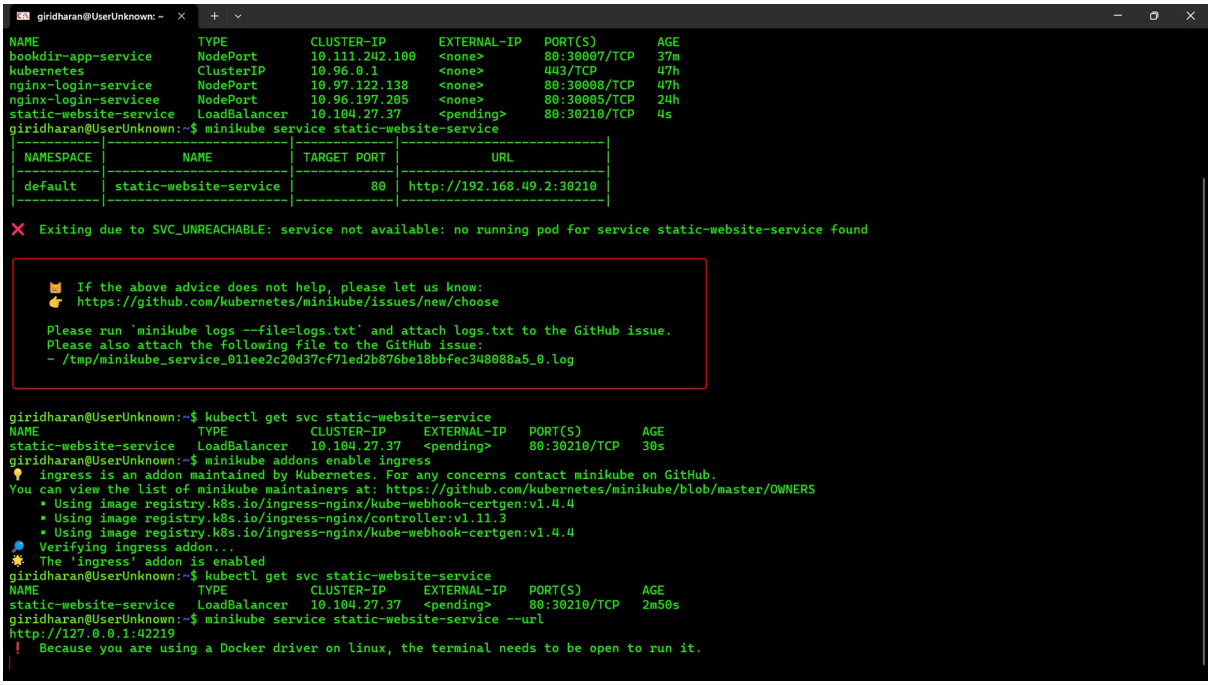
Health Monitoring

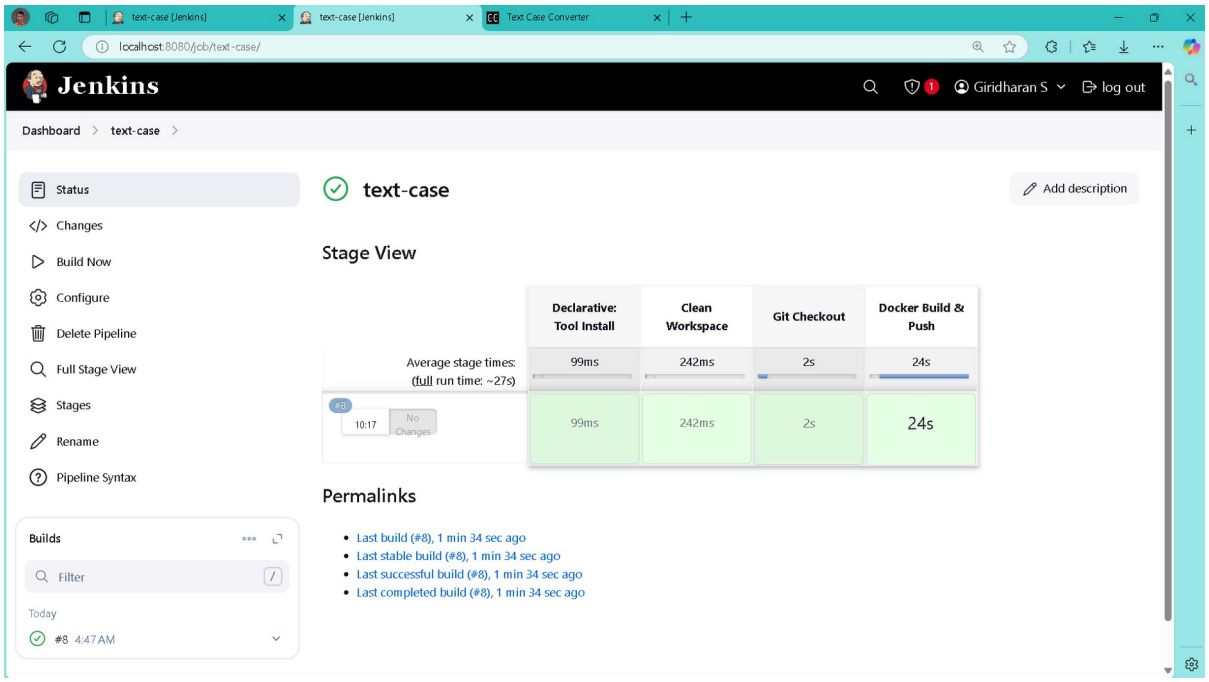
Consider adding health checks to the deployment:

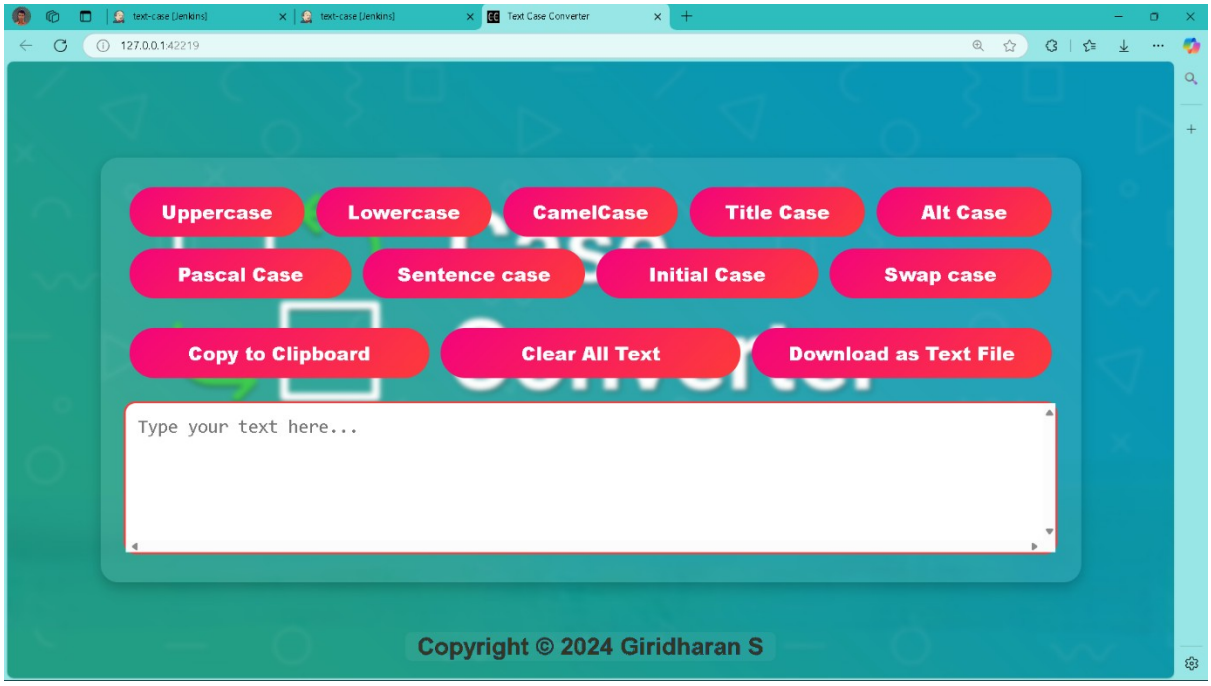
```
spec:
  containers:
  - name: static-website
    livenessProbe:
      httpGet:
        path: /
        port: 80
      initialDelaySeconds: 30
      periodSeconds: 10
    readinessProbe:
      httpGet:
        path: /
        port: 80
      initialDelaySeconds: 5
      periodSeconds: 5
```

This documentation provides a comprehensive guide for deploying and maintaining the Text Case Converter application. For specific issues not covered here, refer to the official documentation for Docker, Jenkins, and Kubernetes.

SCREENSHOTS






text-case [Jenkins]
text-case [Jenkins]
Text Case Converter
127.0.0.1:42219
Uppercase
Lowercase
CamelCase
Title Case
Alt Case
Pascal Case
Sentence case
Initial Case
Swap case
Copy to Clipboard
Clear All Text
Download as Text File
Type your text here...
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