Weather App

This repository contains the necessary files and configuration for deploying the Weather App, including Docker, Jenkins CI/CD pipeline, and Kubernetes deployment configurations.

Features

- **WeatherApp**: weather application with html,css and javascript to view weather of any country
- **Dockerfile**: Build the application's Docker image.
- **Jenkinsfile**: Automates the process of building, testing, and deploying the application using Jenkins.
- **Kubernetes Configurations**: YAML files for deployment, service, and namespace setup in a Kubernetes cluster.

Requirements

- Docker installed locally.
- Jenkins server set up with access to the GitHub repository.
- Kubernetes cluster available for deployment.
- Access to a Docker registry (e.g., Docker Hub, AWS ECR).

Project Structure

A simple weather application built with HTML, CSS, and JavaScript by making API calls to fetch weather data.

```
Dockerfile
Jenkinsfile
k8s/
    deployment.yaml
    service.yaml
    namespace.yaml
index.html
styles.css
app.js
```

Docker

Building the Docker Image

To build the Docker image for the Weather App:

1. Clone this repository: `bash git clone https://github.com/SalmHossam/Weather-App.git cd Weather-App`

2. Build the Docker image and push it to a public Docker registry: `bash docker build -t weather-app:latest . docker tag weather-app:latest your-docker-repo/weather-app:latest docker push your-docker-repo/weather-app:latest`

Jenkins

Jenkinsfile Configuration

The `Jenkinsfile` automates the CI/CD pipeline. Here's an outline of the steps:

1. **Clone the Repository**: Jenkins pulls the latest code from GitHub.
2. **Jenkins Stages**: Jenkins build , test and deploy project
3. **Deploy Docker Container**: Jenkins pulls the image from the Docker registry and creates a container from it.

Setup Instructions for Jenkins

1. Ensure your Jenkins server has the following plugins installed:
   - **Git Plugin**: To clone the repository.
   - **Docker Pipeline Plugin**: To build and push Docker images.
2. Configure the Jenkins pipeline:
   - Create a new Jenkins pipeline job.
   - Use the `Jenkinsfile` from the repository for the pipeline configuration.
   - Build the job to start the process.

Kubernetes

The `k8s` folder contains the necessary Kubernetes configuration files to deploy the Weather App.

Deployment YAML

- `deployment.yaml`: Defines the pod specification and the desired number of replicas for the application.

Service YAML

- `service.yaml`: Exposes the application as a service, allowing external access via a LoadBalancer or NodePort.

Namespace YAML

- `namespace.yaml`: Defines the namespace where the application will run in the Kubernetes cluster.

Kubernetes Deployment Commands

To deploy the Weather App to a Kubernetes cluster:

1. **Create the namespace**: `bash kubectl apply -f k8s/namespace.yaml`
2. **Deploy the application**: `bash kubectl apply -f k8s/deployment.yaml`
3. **Expose the service**: `bash kubectl apply -f k8s/service.yaml`
4. **Verify the pods and services are running**: `bash kubectl get pods -n weather-app-namespace kubectl get services -n weather-app-namespace`