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22ISR023

Overview

This project demonstrates the implementation of a DevOps pipeline using Docker, Kubernetes, and Jenkins. It automates the build, testing, and deployment of an application.

Technologies Used

- **Docker**: Containerization of the application
- **Jenkins**: CI/CD automation
- **Kubernetes**: Deployment and management of containers
- **Shell Scripting**: Automating deployment tasks
- **YAML**: Configuration management for Kubernetes

Setup Instructions

Prerequisites

Ensure the following tools are installed:

- Docker
- Kubernetes (Minikube or a cluster)
- Jenkins Git

Dockerization

Build and run the application using Docker:

```
docker build -t devopstask04 . docker
run -p 80:80 devopstask04
```

CI/CD Pipeline

The **Jenkinsfile** automates:

1. **Cloning the repository** 2. **Building the Docker image** 3. **Pushing the image to Docker Hub** 4. **Deploying to Kubernetes**

Kubernetes Deployment

Apply the Kubernetes configurations:

kubectl apply -f deployment.yaml

kubectl apply -f service.yaml Check

running pods and services:

kubectl get pods kubectl
get services

YAML File Usage

The .yaml files define Kubernetes configurations:

- **deployment.yaml**: Describes the deployment, including the number of replicas, container specifications, and update strategies.
- **service.yaml**: Defines how the application is exposed, including the type of service (e.g., ClusterIP, NodePort, or LoadBalancer).

Deployment Script

The deploy.sh script automates the Kubernetes deployment:

chmod +x deploy.sh ./deploy.sh

Accessing the Application

Find the service IP using:

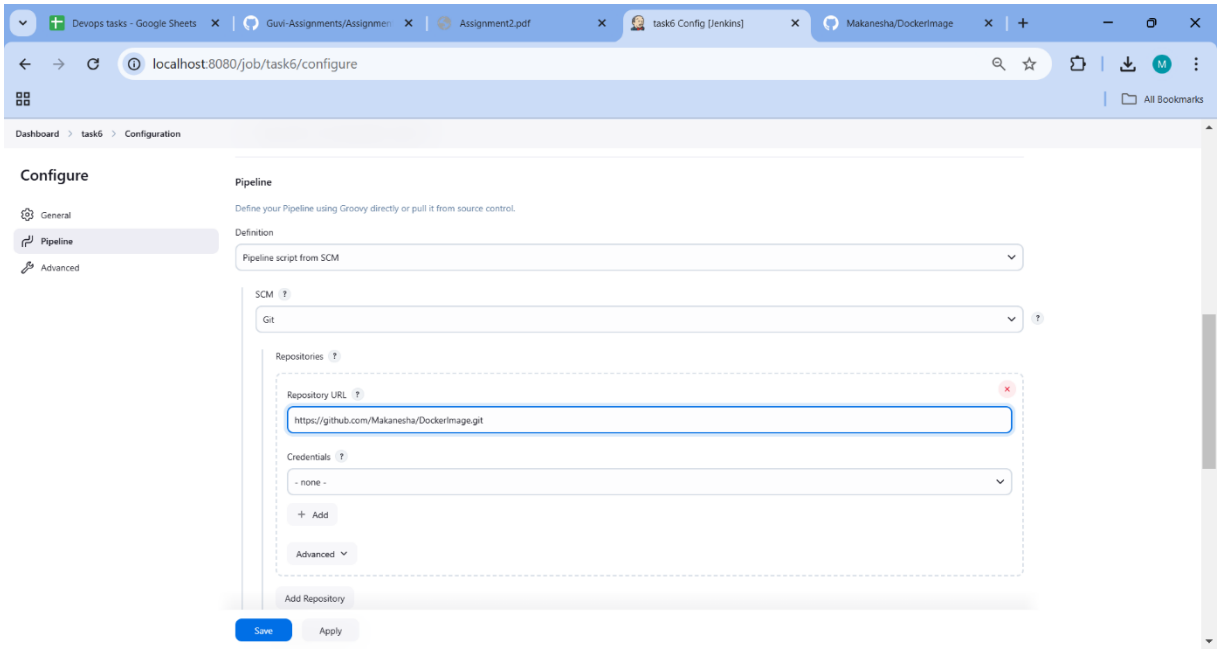
kubectl get svc

Then access the application in the browser or via curl:

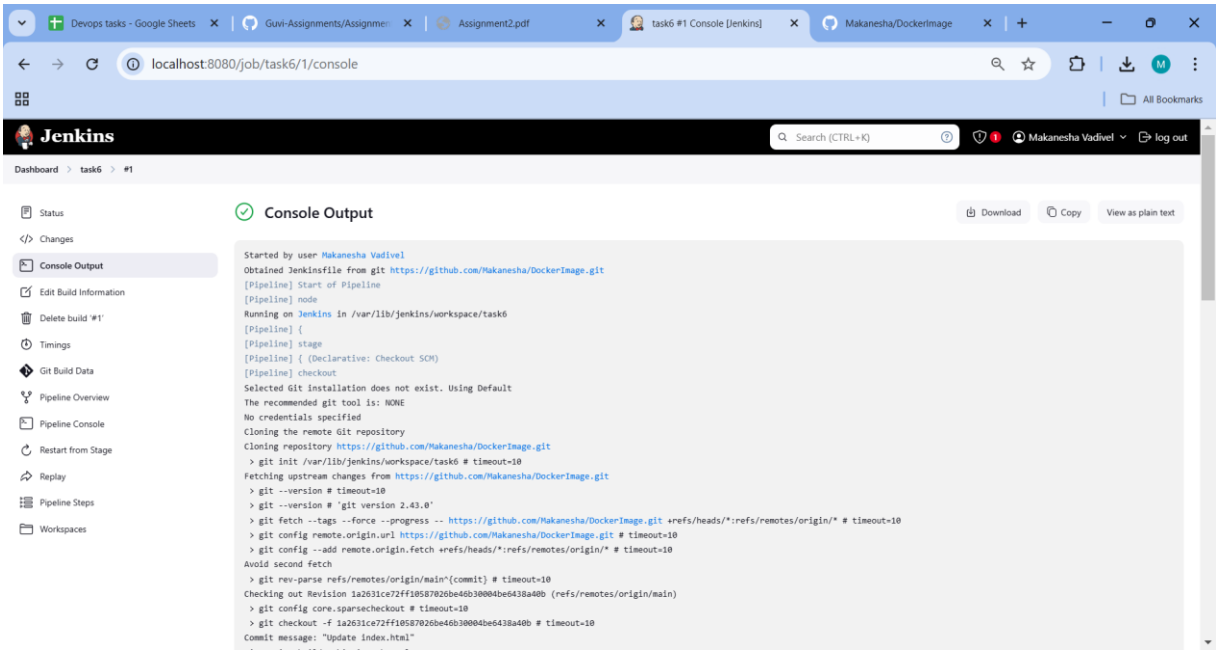
http://<EXTERNAL-IP>:80

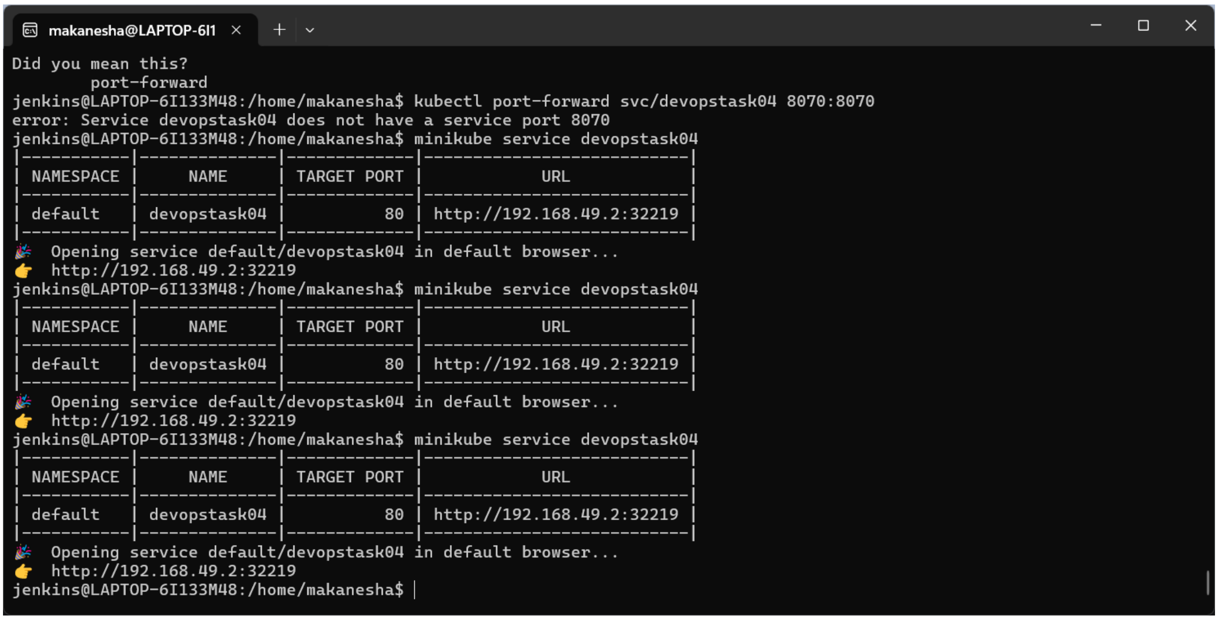
Conclusion

This DevOps pipeline ensures continuous integration and delivery, allowing automated testing and seamless deployment.



Console Output




makanesha@LAPTOP-6I1
Did you mean this?
port-forward
jenkins@LAPTOP-6I133M48:/home/makanesha$ kubectl port-forward svc/devopstask04 8070:8070
error: Service devopstask04 does not have a service port 8070
jenkins@LAPTOP-6I133M48:/home/makanesha$ minikube service devopstask04
| NAMESPACE | NAME | TARGET PORT | URL |
| default | devopstask04 | 80 | http://192.168.49.2:32219 |
Opening service default/devopstask04 in default browser...
http://192.168.49.2:32219
jenkins@LAPTOP-6I133M48:/home/makanesha$ minikube service devopstask04
| NAMESPACE | NAME | TARGET PORT | URL |
| default | devopstask04 | 80 | http://192.168.49.2:32219 |
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jenkins@LAPTOP-6I133M48:/home/makanesha$ minikube service devopstask04
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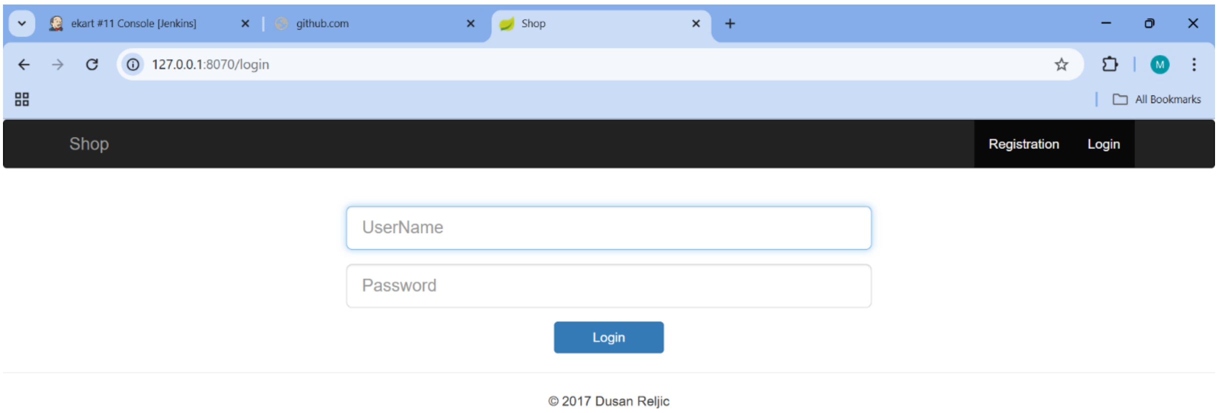
http://192.168.49.2:32219
jenkins@LAPTOP-6I133M48:/home/makanesha$


ekart #11 Console [Jenkins]
github.com
Shop
127.0.0.1:8070/login
All Bookmarks
Shop
Registration
Login
UserName
Password
Login
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