**JENKINS ASSIGNMENT 4**

**Docker-based Jenkins CI/CD Pipeline**

**Steps:**

1. **Use Docker for containerized deployments**.
2. **Build a Docker image inside Jenkins**.
3. **Push the image to Docker Hub**.
4. **Deploy it to a Kubernetes cluster**.

**Jenkins Pipeline Script (Jenkinsfile)**

groovy

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pipeline {

agent any

environment {

DOCKER\_IMAGE = 'yourdockerhub/python-app:latest'

}

stages {

stage('Clone Repository') {

steps {

git 'https://github.com/your-repo/python-docker-app.git'

}

}

stage('Build Docker Image') {

steps {

sh 'docker build -t $DOCKER\_IMAGE .'

}

}

stage('Push Docker Image') {

steps {

withDockerRegistry([credentialsId: 'docker-hub-credentials', url: '']) {

sh 'docker push $DOCKER\_IMAGE'

}

}

}

stage('Deploy to Kubernetes') {

steps {

sh 'kubectl apply -f k8s/deployment.yaml'

}

}

}

}

**Solution:**

* Automates building and pushing Docker images.
* Deploys updates to a Kubernetes cluster.