

ASSIGNMENT 1

CI/CD JENKINS PIPELINE FOR KUBERNETES

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Workflow :

1. Push the code into Github.
2. Pull the code from Github into the Jenkins server.
3. Using any building tool for artifacts.
4. Create Docker image.
5. Push the latest Docker image to DockerHub.
6. Pull the latest image from DockerHub intjenkins.
7. Using Kuberentes to deploy the application.

Prerequisites steps :

1. Installing Jenkins to the jenkins server.
2. Log in to the vagrant box.
3. Update ubuntu repositories.
4. Install java.
5. Install jenkins.
6. Jenkins install SSH-Pipeline.
7. Install Docker on jenkins server.
8. Application - return “Hello-World” webservice using spring boot .

Docker File for the application :

```
1 FROM openjdk:11
2 ARG JAR_FILE=build/libs/*.jar
3 COPY ${JAR_FILE} app.jar
4 ENTRYPOINT ["java","-jar","/app.jar"]
```

1. Creating Jenkins Pipeline:

Name - Jhooq-SpringBoot

2. Clone the Github repository:

```
1 node {  
2     stage("Git Clone"){  
3         git credentialsId: 'GIT_HUB_CREDENTIALS', url: 'https://github.com/Jhooq-SpringBoot/Jhooq-SpringBoot.git'  
4     }  
5 }
```

3. Building the Pipeline to verify:

Configure

Delete Pipeline

Full Stage View

Rename

Stage View

Average stage times:
(Average full run time: ~1s)

Success
Git Clone

Logs

4. Building the Spring Boot Application:

```
1 node {  
2     stage("Git Clone"){  
3         git credentialsId: 'GIT_HUB_CREDENTIALS', url: 'https://github.com/Jhooq-SpringBoot/Jhooq-SpringBoot.git'  
4     }  
5     stage('Gradle Build') {  
6         sh './gradlew build'  
7     }  
8 }
```

5. Building Docker image and tagging it:

Pipeline

Definition Pipeline script

Script

```

3 -      stage("Git Clone"){
4 -          git credentialsId: 'GIT_HUB_CREDE
5 -      }
6 -
7 -      stage('Gradle Build') {
8 -          sh './gradlew build'
9 -      }
10 -
11 -
12 -      stage("Docker build"){
13 -          sh 'docker version'
14 -          sh 'docker build -t jhooq-docker-de
15 -          sh 'docker image list'
16 -          sh 'docker tag jhooq-docker-demo jh
17 -      }
18 -  }
19 - }
20 -

```

6. Jenkins Store DockerHub Credentials:

Secret - Password
Id - DockerHub Password
Description - Docker Hub Password

Back to credential domains

Add Credentials

Kind: Secret text

Scope: Global (Jenkins, nodes, items, all child items, etc)

Secret:

ID: DOCKER_HUB_PASSWORD

Description: Docker hub password

OK

7. Push image to DockerHub:

Pipeline

Definition Pipeline script

Script

```

14 -      stage("Docker build"){
15 -          sh 'docker version'
16 -          sh 'docker build -t jhooq-docker-de
17 -          sh 'docker image list'
18 -          sh 'docker tag jhooq-docker-demo jh
19 -      }
20 -
21 -      stage("Docker Login"){
22 -          withCredentials([s
23 -          sh 'docker login'
24 -      })
25 -
26 -      stage("Push Image to D
27 -          sh 'docker push jhooq-docker-demo:1.0
28 -      }
29 -
30 -
31 -
32 -

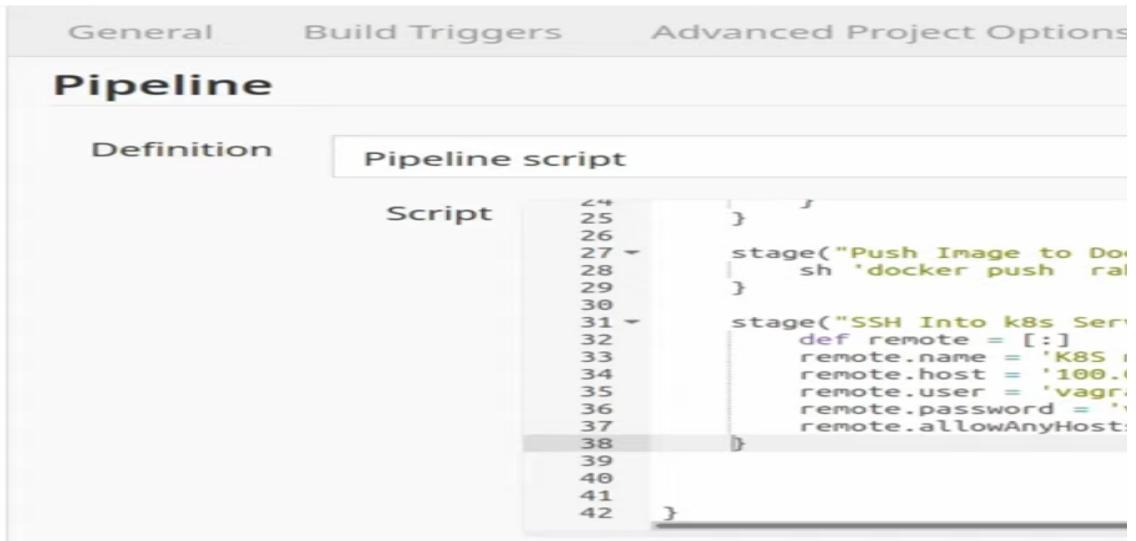
```

Command:

```
stage (" Push Image to DockerHub "){  
    sh ' docker push  
ankithamadanbhavi/jhooq--docker-demo:jhooq-docker-demo'
```

8. SSH into kubernetes master server:

Jenkins -> Manage Jenkins -> Manage Plugins -> SSH Pipeline installed



The screenshot shows the Jenkins Pipeline configuration page. The 'Pipeline' section is selected. Under 'Definition', the 'Pipeline script' tab is active, showing the following Groovy code:

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```

General Build Triggers Advanced Project Options Pipeline

Definition Pipeline script

```
Script
  29
  31    stage("SSH Into k8s Server") {
  32      def remote = [:]
  33      remote.name = 'K8S master'
  34      remote.host = '100.0.0.2'
  35      remote.user = 'vagrant'
  36      remote.password = 'vagrant'
  37      remote.allowAnyHosts = true
  38
  39      stage('Put k8s-spring-boot-deployment.yml onto k8smaster') {
  40        sshPut remote: remote, from: 'k8s-spring-boot-deployment.yml', into:
  41      }
  42
  43      stage('Deploy spring boot') {
  44        sshCommand remote: remote, command: "kubectl apply -f k8s-spring-boot-deployment.yml"
  45      }
  46
  47
  48
  49 }
```

11. Verifying the Deployment:

Command - kubectl get deployments

```
vagrant@k8smaster: ~ $ kubectl get deployments
NAME          READY   UP-TO-DATE   AVAILABLE   AGE
jhooc-springboot   3/3      3           3          34s
```

12. Verifying Service:

Command - kubectl get service

```
vagrant@k8smaster: ~ $ kubectl get service
NAME        TYPE      CLUSTER-IP      EXTERNAL-IP      PORT(S)      AGE
jhooc-springboot  NodePort  10.233.13.194  <none>        80:32442/TCP  48s
kubernetes  ClusterIP  10.233.0.1    <none>        443/TCP     2d22h
```

13. Accessing the spring boot application :

Hello - Jhooq-k8s I have deployed inside k8s