Jenkins + Docker Pipeline Project Documentation

Objective

Automate the build, test, and deployment of a Dockerized web application using Jenkins Pipeline.

Prerequisites

Ensure the following are installed on your Jenkins server:

✅ Jenkins (Latest version)
✅ Docker (For containerization)
✅ Git (For version control)
✅ SSH (For remote deployments)
✅ Jenkins Plugins:

- Pipeline Plugin
- Docker Pipeline Plugin
- Git Plugin

Step 1: Install Docker on Jenkins Server

1. **Update system packages and install Docker:**

   sudo apt update

   sudo apt install docker.io -y

2. **Start and enable Docker:**

   sudo systemctl start docker

   sudo systemctl enable docker

3. **Add Jenkins user to Docker group (to allow Jenkins to run Docker commands):**

   sudo usermod -aG docker jenkins

4. **Restart Jenkins to apply changes:**

   sudo systemctl restart jenkins

5. **Verify Docker installation:**

   docker --version

Step 2: Enable Password Authentication (If Needed)

If SSH key authentication is not set up, enable password login:

1. **Connect to the remote server and edit the SSH configuration file:**

   sudo nano /etc/ssh/sshd_config
2. **Modify these lines:**

   PasswordAuthentication yes

   PermitRootLogin yes
3. **Save the file and restart SSH:**

   sudo systemctl restart ssh
4. **Test SSH login:**

   ssh master@192.168.203.128

Step 3: Create a Simple Web Application

1. **Clone the sample app repository:**

   git clone https://github.com/KyathamRohith/jenkins-docker.git

   cd jenkins-docker
2. **Create a Dockerfile in the project directory:**

   FROM nginx:latest – to run static web application

   COPY index.html /usr/share/nginx/html/

   EXPOSE 80

   CMD ["nginx", "-g", "daemon off;"]
3. **Create an index.html file:**

   <!DOCTYPE html>

   <html>

   <head>

   <title>Jenkins + Docker Pipeline</title>

   </head>

   <body>

   <h1>Deployment Successful with Jenkins and Docker!</h1>

   </body>

   </html>

Step 4: Create a Jenkins Pipeline

1. **Open Jenkins → New Item → Pipeline → OK**
2. **Copy and paste the following Jenkinsfile:**

```
pipeline {
  agent any
  environment {
    DOCKER_IMAGE = "app-image"
    DOCKER_TAG = "latest"
    DOCKER_REPO = "default-repo/app-image"
    DOCKER_CREDENTIALS_ID = "docker-credentials-id"
    CONTAINER_NAME = "local-container"
    CONTAINER_NAME1 = "server-container"
  }
  stages {
    stage('Clone Repository') {
      steps {
        git 'https://github.com/default-user/repo.git'
      }
    }
    stage('Docker Login') {
      steps {
        script {
          docker.withRegistry('https://index.docker.io/v1/', DOCKER_CREDENTIALS_ID) {
            echo "Logged into Docker Hub"
          }
        }
      }
    }
    stage('Build Docker Image') {
      steps {
        script {
          sh "docker build -t ${DOCKER_IMAGE}:${DOCKER_TAG} ."
```

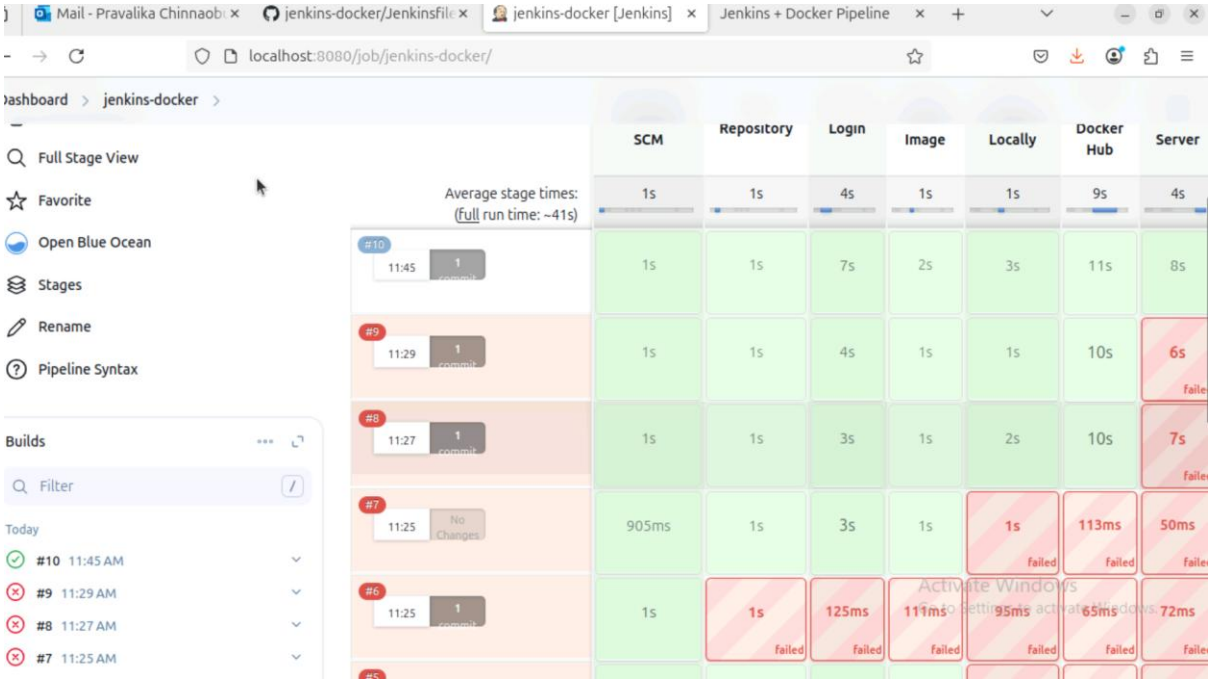
```
        }
      }
    }
    stage('Run Container Locally') {
      steps {
        script {
          sh """
            docker ps -a -q --filter name=${CONTAINER_NAME} | xargs -r docker stop || true
            docker ps -a -q --filter name=${CONTAINER_NAME} | xargs -r docker rm || true
            docker run -d -p 8093:80 --name ${CONTAINER_NAME}
${DOCKER_IMAGE}:${DOCKER_TAG}
          """
        }
      }
    }
    stage('Push to Docker Hub') {
      steps {
        script {
          docker.withRegistry('https://index.docker.io/v1/', DOCKER_CREDENTIALS_ID) {
            sh "docker tag ${DOCKER_IMAGE}:${DOCKER_TAG}
${DOCKER_REPO}:${DOCKER_TAG}"
            sh "docker push ${DOCKER_REPO}:${DOCKER_TAG}"
          }
        }
      }
    }
    stage('Deploy to Server') {
      steps {
        script {
          sh """
            sshpass -p "password" ssh -o StrictHostKeyChecking=no user@server-ip '
            docker pull ${DOCKER_REPO}:${DOCKER_TAG} &&
```

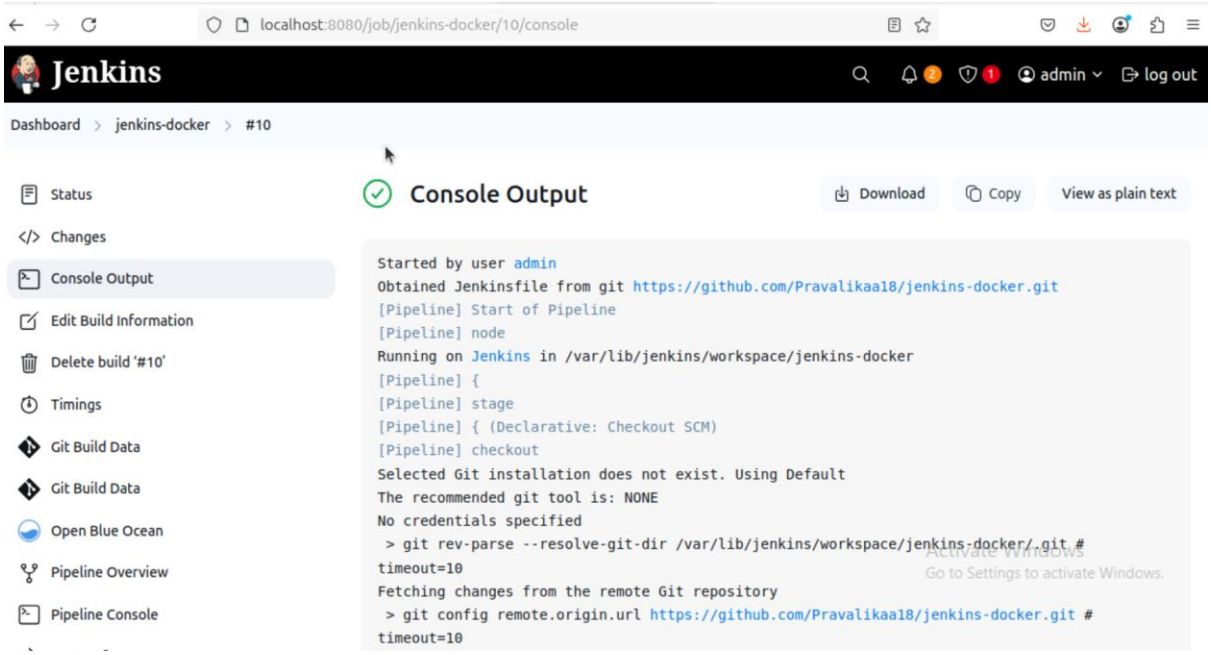
```
                docker ps -a -q --filter name=${CONTAINER_NAME1} | xargs -r docker stop || true &&
                docker ps -a -q --filter name=${CONTAINER_NAME1} | xargs -r docker rm || true &&
                docker run -d -p 80:80 --name ${CONTAINER_NAME1}
${DOCKER_REPO}:${DOCKER_TAG}'
            """
        }
    }
  }
}
```

Step 5: Run the Jenkins Pipeline

1. **Go to Jenkins Dashboard → Click on your pipeline job**
2. **Click "Build Now"**
3. **Check console output to verify the build process**

OUTPUT





Localhost with portn0.