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## CI/CD Pipeline: Jenkins + Docker + Nginx Web Server Deployment

### Overview

Automated pipeline that builds Docker images from GitHub code and deploys Nginx web containers to AWS EC2.

### Step 1 – Jenkins Server Setup (CI)

1. Install Jenkins
2. Install Docker + Git on Jenkins server
3. Add jenkins user to docker group: ``sudo usermod -aG docker jenkins``
4. Install plugins: Git, Docker, Pipeline, SSH Agent
5. Configure credentials:
  - DockerHub: 'dockerhub-user-pass'
  - Deployment server SSH: 'deploy-server-ssh'
6. Restart Jenkins
7. Create Pipeline job pointing to GitHub repo

### Step 2 – Deployment Server Setup (CD)

1. Install Docker on Ubuntu EC2 (54.226.161.122)
2. Add ubuntu user to docker group: ``sudo usermod -aG docker ubuntu``
3. Ensure SSH access from Jenkins server
4. Open port 80 for web traffic

## Step 3 – GitHub Repository Setup

1. Create repo: farhaz1449/simple-webpage-in-Docker-Container
2. Add: index.html + Dockerfile
3. Push to main branch
4. Add Jenkinsfile (below)
5. Create GitHub webhook → Jenkins

## Jenkinsfile (Complete Pipeline)

```
pipeline {
    agent any

    environment {
        DOCKERHUB_CREDENTIALS = credentials('dockerhub-user-pass')
        IMAGE_NAME = "farhaz1449/nginx-web"
        USER = "ubuntu"
        PORT = "22"
        SERVER_IP = "54.226.161.122"
        APP_NAME = "nginx-web"
        VERSION = "${BUILD_NUMBER}"
    }

    stages {
        stage('Clone Code') {
            steps {
                git branch: 'main',
                    url: 'https://github.com/farhaz1449/simple-webpage-in-Docker-Container'
            }
        }
        stage('Build Docker Image') {
            steps {
                script {
                    sh "docker build -t ${IMAGE_NAME}:${VERSION} ."
                }
            }
        }
        stage('Push to DockerHub') {
            steps {
                script {
                    sh 'echo $DOCKERHUB_CREDENTIALS_PSW | docker login -u $DOCKERHUB_CREDENTIALS_ID --password-stdin'
                    sh "docker push ${IMAGE_NAME}:${VERSION}"
                }
            }
        }
        stage('Deploy') {
            steps {
                sshagent(credentials: ['deploy-server-ssh']) {
                    sh '''
                        ssh -o StrictHostKeyChecking=no $USER@$SERVER_IP \
                        "docker pull $IMAGE_NAME:${VERSION} && \
                        docker rm -f $APP_NAME || true && \
                    '''
                }
            }
        }
    }
}
```

```

        docker run -d --name $APP_NAME -p 80:80 $IMAGE_NAME:${VERSION}"
    ...
    }
}
}

post {
    always { echo "Pipeline completed. Build #${BUILD_NUMBER}" }
    failure { echo 'Deployment failed - check logs above.' }
    success { echo "Deployment successful! Check http://${SERVER_IP}" }
}
}

```

## Pipeline Flow

Git Push → Webhook → Jenkins → Build → DockerHub → SSH → Deploy EC2:80

**Live URL after success:** <http://54.226.161.122>

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