Lab 1 – Jenkins intro

Task – Install and setup Jenkins

Prerequisite – EC2 (t2.micro) with ports 22, 80, 8080 open to the internet.

1. SSH connect to your EC2 you have generated
2. Run the following commands within the EC2

sudo apt update

sudo apt install openjdk-11-jre

curl <https://get.docker.com> | sudo bash

sudo usermod -aG docker $(whoami) curl -fsSL https://pkg.jenkins.io/debian-stable/jenkins.io.key | sudo tee \

  /usr/share/keyrings/jenkins-keyring.asc > /dev/null

echo deb [signed-by=/usr/share/keyrings/jenkins-keyring.asc] \

  https://pkg.jenkins.io/debian-stable binary/ | sudo tee \

  /etc/apt/sources.list.d/jenkins.list > /dev/null

sudo apt-get update

sudo apt-get install jenkins

1. Using your web browser go to <public IP>:8080 which is the Jenkins GUI
2. Copy the initial admin password which is accessed via below and enter it in the GUI

sudo cat /var/lib/jenkins/secrets/initialAdminPassword

1. Install the suggested plugins and create an admin user (no need to use actual email, purpose is to recover account if you forget password)

Lab 2 – Jenkins Builds

Task – Basic Jenkins commands

Using a Jenkins freestyle project create a build which does the following:

* Prints out all files in location (including hidden ones)
* Creates a file called "coolScript.sh"
* Add an echo command to the coolScript.sh
* Get Jenkins to run the coolScript.sh
* Archive the coolScript.sh using a post build action

Find your artefact in the jobs directory within the EC2 Jenkins files.

Lab 3 – Jenkins Pipeline Basic

Task – Create Jenkins Pipeline with basic stages

Prerequisites – EC2 with Jenkins installed

Using a JenkinsFile create a Pipeline through the Jenkins GUI that simulates the standard Build, Test, Deploy stages using echo, ls, pwd, touch, mv commands.

A basic Jenkinsfile configuration can be found below:

pipeline {

    agent any

    stages {

        stage('Pipeline Stages'){

            steps {

                sh "ls"

            }

        }

stage(‘second stage’){

steps {

sh “pwd”

}

}

The Jenkinsfile should be stored in a public repo connected to the pipeline.

Stretch goal – Use Jenkins to deploy the project from Task 1 <https://gitlab.com/Reece-Elder/dockerfileexercise>

Lab 4 – Jenkins Project

Task – Deploy a Node Project using Jenkins

Prerequisites – EC2 (at least of size t2.small) with Jenkins and Docker installed (or a 2nd EC2 that the Jenkins EC2 can ssh to that has Docker installed)

Create a pipeline that Builds and deploys the app at this repo <https://gitlab.com/Reece-Elder/devops-m5-nodeproject>. You will need to create the Dockerfile and use stages to build and deploy the app. You will likely need to research how to build a NodeJS application

Lab 5 – Jenkins Credentials

Task – Add credentials to Jenkins for security

Prerequisite – EC2 (t2.small) with ports 22 and 80 open to the internet with Jenkins installed.

1. Create a new repo on GitHub / GitLab that is private and keep note of the credentials to access the repo (username, password, SSH key, Personal Access Token etc.)
2. Create a JenkinsFile within the private repo that builds an nginx container with a custom nginx.conf that returns “Hello Jenkins!” and at some point prints out an env variable `echo $SECRET\_VAR`
3. Through the Jenkins GUI go to ‘Credentials’ and add your Git Username and password as a ‘username with password’ credential.
4. Create a Secret Text credential with any value through the Jenkins GUI
5. Create a new Pipeline that pulls the project from the private repo and runs (Building the nginx container).
6. Configure the JenkinsFile to create the SECRET\_VAR variable from the secret text credential uploaded to the GUI

environment {

    SECRET\_VAR = credentials('secret\_text')

}

Stretch goal – Push your docker image up to Docker Hub (Hint: will require Docker login credentials)

Lab 6 – Jenkins Webhook

Task – Use Webhook to connect Source Control to a pipeline

Prerequisite – Same machine as Jenkins installation

1. Create a new Git Repo (Public) with a basic JenkinsFile that echoes out “Hello World” via a shell command
2. Create a new Pipeline on Jenkins GUI adding the public Repo. On this configuration under ‘Polling SCM’ check Git Webhook
3. Go back to GitHub / <Your repo> / settings / webhooks / add webhook and set the PayLoad URL to `<jenkins-ip-address>/github-webhook/` ensuring the final / is added
4. Check the webhook is accepted (should show a green tick via the GitHub GUI) and make a change to the repo
5. Check the Jenkins pipeline has been triggered with a change made to the repo

Stretch goal – Create or use existing Git Repos for Task 1 and 2 of the repo <https://gitlab.com/Reece-Elder/dockerfileexercise>, use webhooks and make Jenkins pipeline builds to connect up. Add stages to build, deploy and push images to DockerHub, using the webhooks to test the pipeline