

GIT Repo Used:

<https://github.com/Vagish619/Edureka-DevOps-Assignments.git>

Branch Name:

Assignment3-Git_And_Jenkins

Problem Statement:

Module 3: Git And Jenkins

Problem Statement

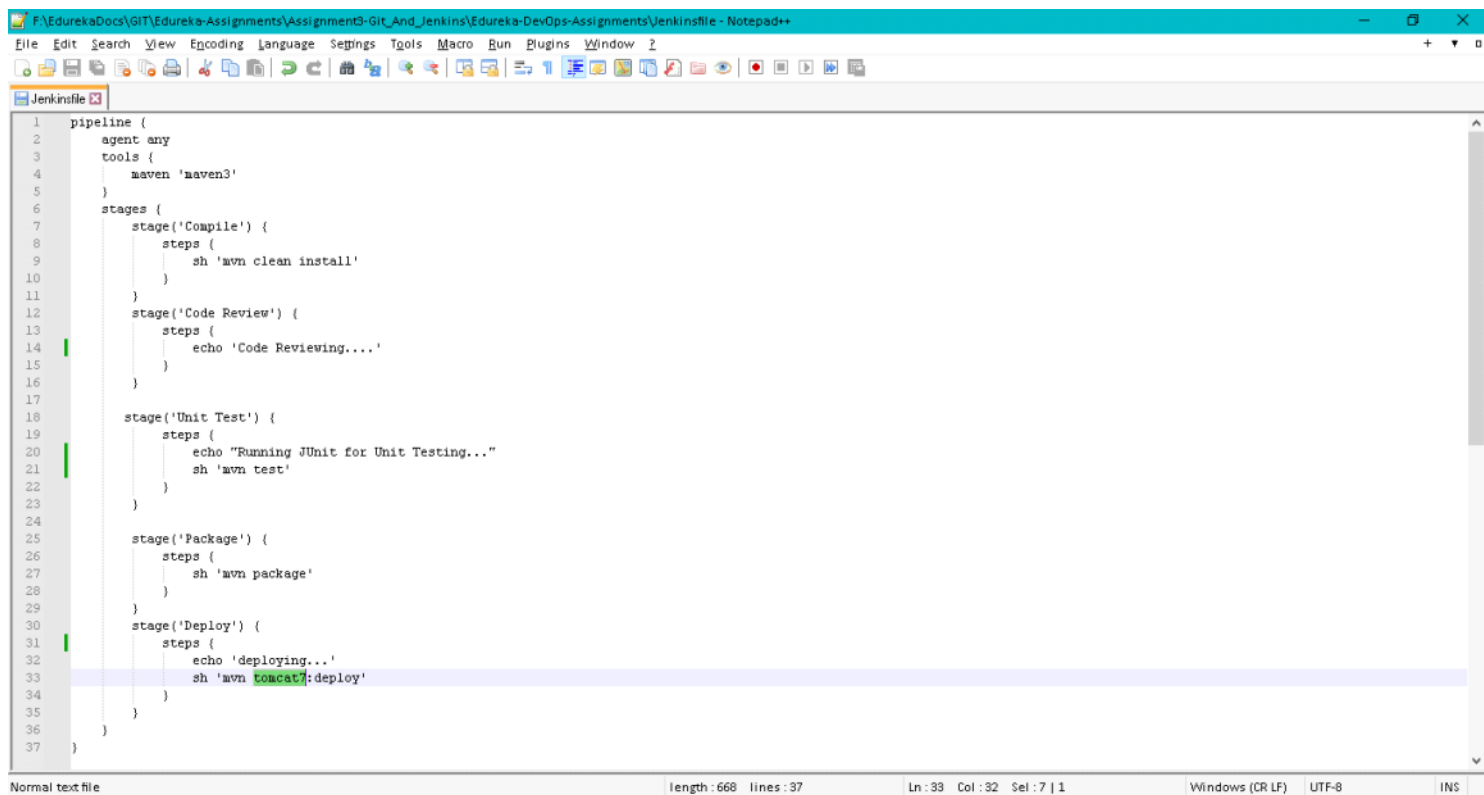
You are working as a DevOps Engineer in a company named Sanders & Fresco Pvt Ltd. You have been asked by your manager to create a Maven Project using Jenkins and build a war file of that project. As a proof of concept, you have been given a web application to build. And once done with building the war file, deploy it over the tomcat server.

Steps to solve:

- Open Jenkins and create a Maven project using it.
- You will have to create the following jobs, which are as follow:
 - Compile
 - Code Review
 - Unit test
 - Package
 - Deploy

You have to complete your job within the given time frame.

Creating Jenkinsfile for creating Pipeline for the mentioned stages:

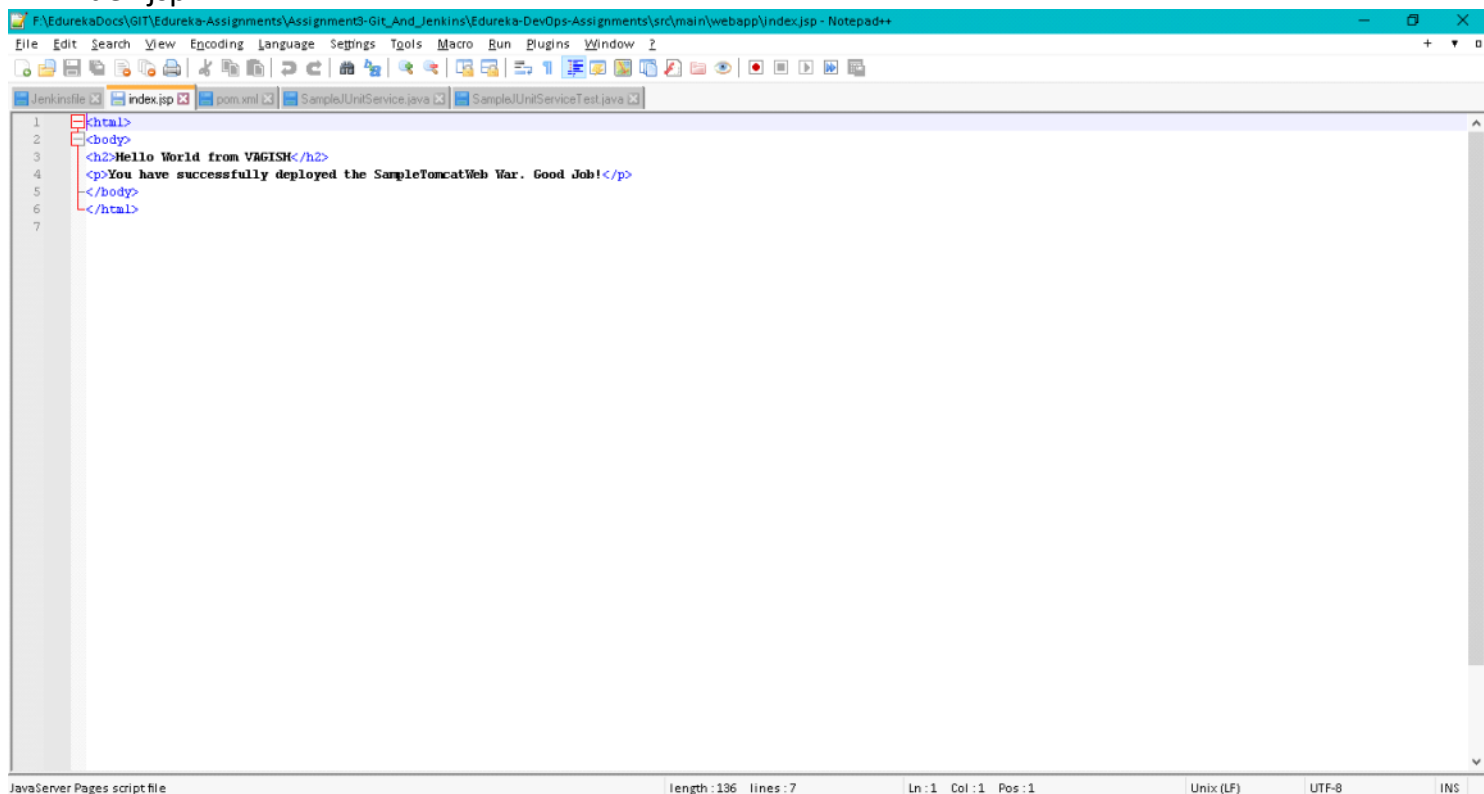


```
1 pipeline {
2   agent any
3   tools {
4     maven 'maven3'
5   }
6   stages {
7     stage('Compile') {
8       steps {
9         sh 'mvn clean install'
10      }
11    }
12    stage('Code Review') {
13      steps {
14        echo 'Code Reviewing....'
15      }
16    }
17    stage('Unit Test') {
18      steps {
19        echo "Running JUnit for Unit Testing..."
20        sh 'mvn test'
21      }
22    }
23    stage('Package') {
24      steps {
25        sh 'mvn package'
26      }
27    }
28    stage('Deploy') {
29      steps {
30        echo 'deploying...'
31        sh 'mvn tomcat:deploy'
32      }
33    }
34  }
35 }
36
37 }
```

Normal text file length: 668 lines: 37 Ln: 33 Col: 32 Sel: 7 | 1 Windows (CR LF) UTF-8 INS

Creating sample Maven Project to be used via Jenkinsfile from SCM:

1-> Index.jsp



```
1 <html>
2 <body>
3   <h2>Hello World from VAGISH</h2>
4   <p>You have successfully deployed the SampleTomcatWeb War. Good Job!</p>
5 </body>
6 </html>
7
```

JavaServer Pages script file length: 136 lines: 7 Ln: 1 Col: 1 Pos: 1 Unix (LF) UTF-8 INS

2-> pom.xml

```
F:\EdurekaDocs\GIT\Edureka-Assignments\Assignment3-Git_And_Jenkins\Edureka-DevOps-Assignments\pom.xml - Notepad++
File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window 2
Jenkinsfile index.jsp pom.xml SampleJUnitService.java SampleJUnitServiceTest.java
1 <?xml version="1.0" encoding="UTF-8"?>
2 <project xmlns="http://maven.apache.org/POM/4.0.0" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:schemaLocation="http://maven.apache.org/POM/4.0.0 http://maven.apache.org/maven-v4.0.0.xsd">
3   <modelVersion>4.0.0</modelVersion>
4   <groupId>com.vagish.app</groupId>
5   <artifactId>SimpleTomcatWebApp</artifactId>
6   <packaging>war</packaging>
7   <version>1.0-SNAPSHOT</version>
8   <name>SimpleTomcatWebApp Maven Webapp</name>
9   <url>http://maven.apache.org</url>
10
11   <properties>
12     <maven.compiler.target>1.8</maven.compiler.target>
13     <maven.compiler.source>1.8</maven.compiler.source>
14   </properties>
15
16   <dependencies>
17     <!-- JUnit -->
18     <dependency>
19       <groupId>junit</groupId>
20       <artifactId>junit</artifactId>
21       <version>4.13.2</version>
22       <scope>test</scope>
23     </dependency>
24   </dependencies>
25
26   <build>
27     <finalName>SimpleTomcatWebApp</finalName>
28     <plugins>
29       <!-- Tomcat plugin -->
30       <plugin>
31         <groupId>org.apache.tomcat.maven</groupId>
32         <artifactId>tomcat7-maven-plugin</artifactId>
33         <version>2.0</version>
34         <configuration>
35           <url>http://18.183.160.60:8080/manager/text</url>
36           <server>18.183.160.60</server>
37           <path>/${project.build.finalName}</path>
38         </configuration>
39       </plugin>
40     </plugins>
41   </build>
42 </project>
```

Extensible Markup Language file length: 1,861 lines: 66 Ln: 1 Col: 1 Pos: 1 Unix (LF) UTF-8 INS

3-> Service Class

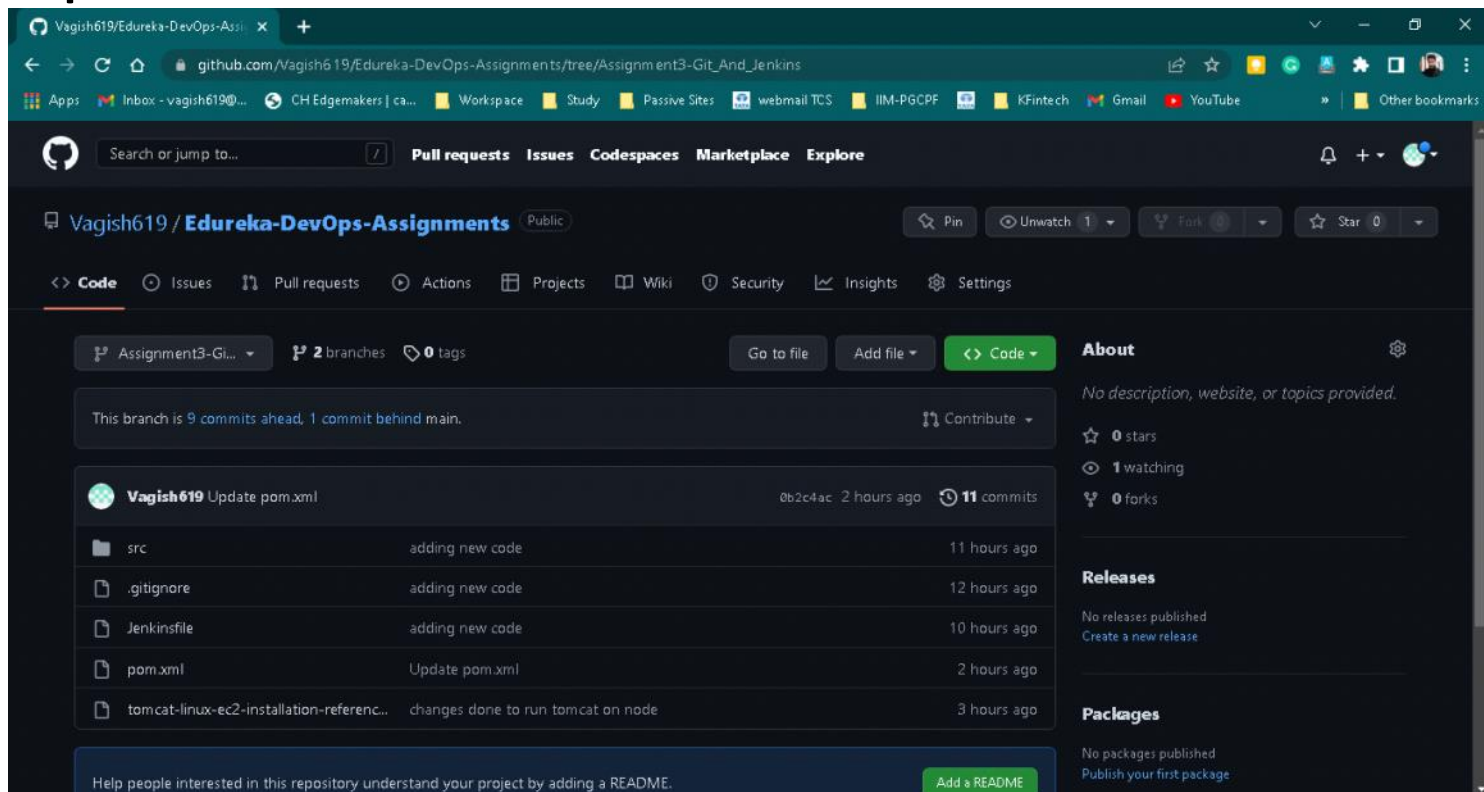
```
F:\EdurekaDocs\GIT\Edureka-Assignments\Assignment3-Git_And_Jenkins\Edureka-DevOps-Assignments\src\main\java\com\vagish\app\SampleJUnitService.java - Notepad++
File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window 2
Jenkinsfile index.jsp pom.xml SampleJUnitService.java SampleJUnitServiceTest.java
1 package com.vagish.app;
2
3 public class SampleJUnitService implements SampleJUnitManager {
4
5     public int getValueFromService(int a) {
6         return a+9;
7     }
8
9 }
10
```

Java source file length: 180 lines: 10 Ln: 10 Col: 1 Pos: 181 Windows (CR LF) UTF-8 INS

4-> Junit of Service class

```
F:\EdurekaDocs\GIT\Edureka-Assignments\Assignment3-Git_And_Jenkins\Edureka-DevOps-Assignments\src\test\java\com\vagish\app\SampleJUnitServiceTest.java - Notepad++
File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window 2
Jenkinsfile index.jsp pom.xml SampleJUnitService.java SampleJUnitServiceTest.java
1 package com.vagish.app;
2
3 import static org.junit.Assert.assertEquals;
4 import org.junit.Test;
5
6
7 public class SampleJUnitServiceTest {
8     SampleJUnitService sampleJUnitService = new SampleJUnitService();
9
10
11     @Test
12     public void getValueFromServiceTest() {
13         assertEquals("JUnit Passed", 14, this.sampleJUnitService.getValueFromService(5));
14     }
15 }
16
17
Java source file length: 363 lines: 17 Ln: 1 Col: 1 Pos: 1 Windows (CR LF) UTF-8 INS
```

Adding code in SCM GIT Repo:



Creating Jenkins Pipeline to perform all the mentioned tasks:

Dashboard > Edureka-Assignment3-Git-Jenkins > Configuration

Configure

General

Enabled

General

Advanced Project Options

Pipeline

Description

This pipeline is created to:
1. fetch the code
2. compile
3. code review
4. run Unit Testing
5. package into a distributable WAR
6. deploy it on a EC2 instance - Apache Tomcat server.

[Plain text] [Preview](#)

☐ Run the build inside Docker containers

☐ Discard old builds ?

☐ Do not allow concurrent builds

Save

Apply

Dashboard > Edureka-Assignment3-Git-Jenkins > Configuration

Configure

Pipeline

Definition

Pipeline script from SCM

SCM ?

Git

Repositories ?

Repository URL ?

https://github.com/Vagish619/Edureka-DevOps-Assignments.git

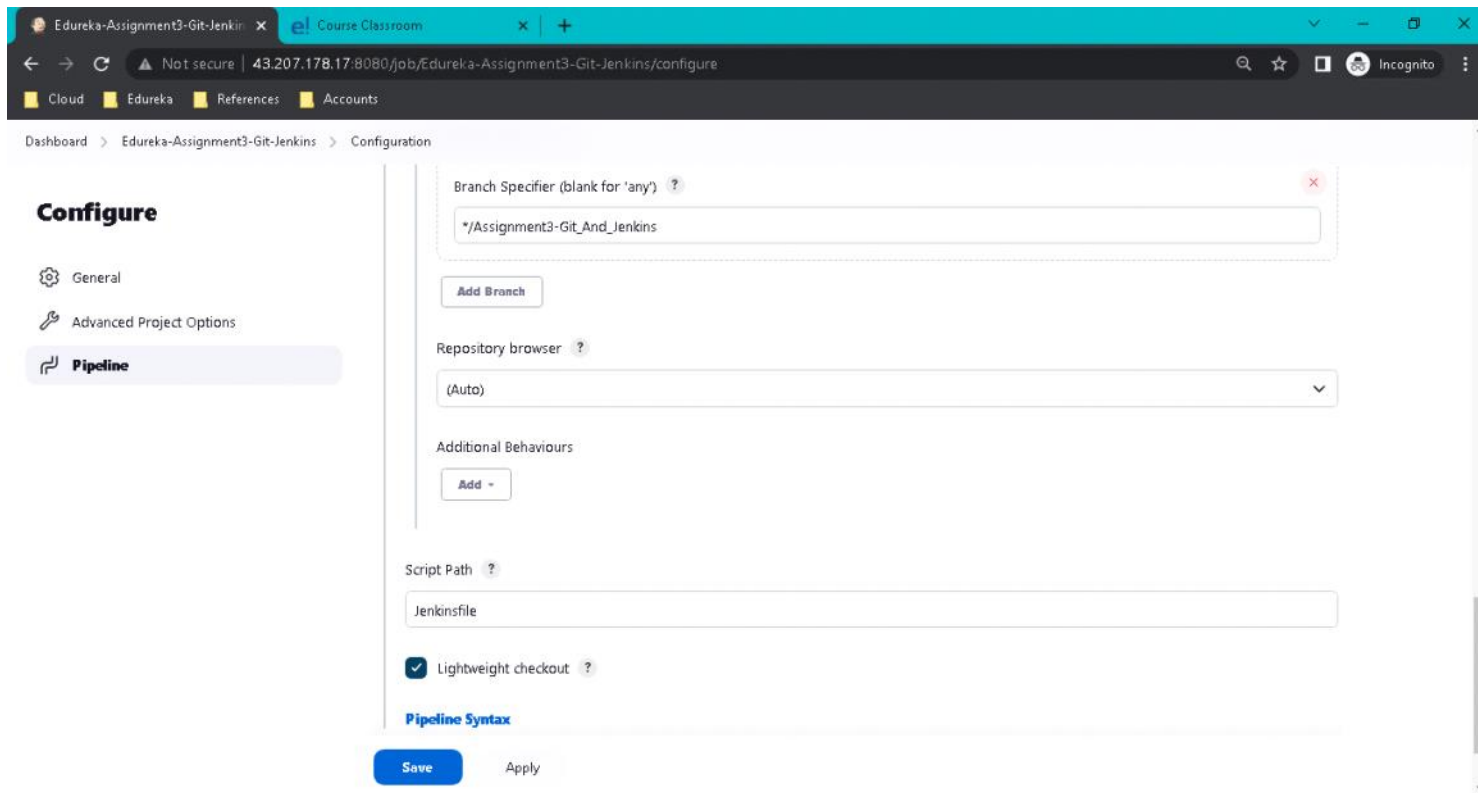
Credentials ?

- none -

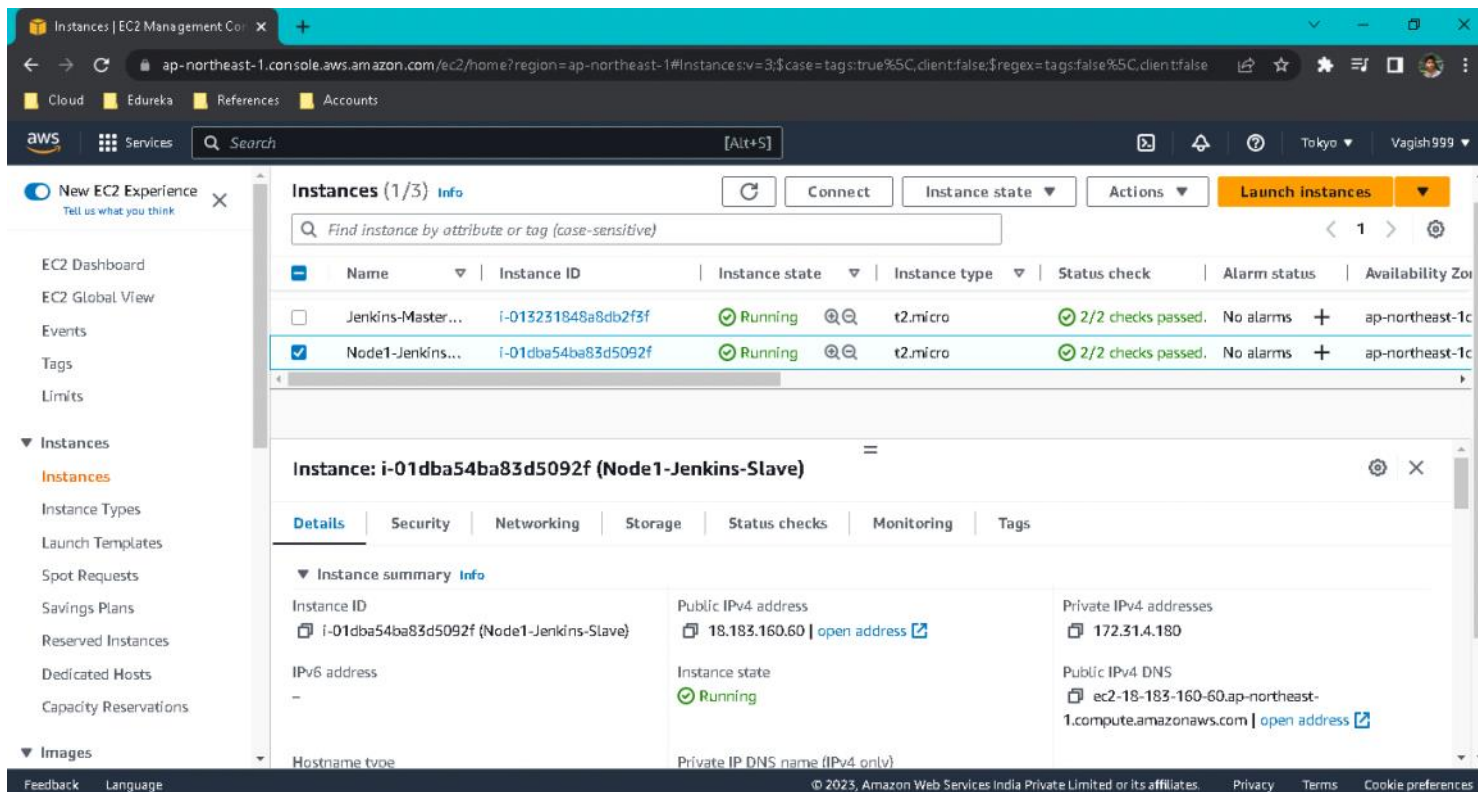
+ Add

Save

Apply





Installing tomcat on Slave Instance of EC2:




```
Node-Agent1-Jenkins-Slave
Terminal Sessions View X server Tools Games Settings Macros Help
Session Servers Tools Games Sessions View Split MultiExec Tunneling Packages Settings Help
Quick connect... 5. Node-Agent1-Jenkins-Slave
root@ip-172-31-4-180:~# history
1 apt update -y
2 cd /
3 pwd
4 wget https://downloads.apache.org/tomcat/tomcat-9/v9.0.41/bin/apache-tomcat-9.0.41.tar.gz
5 ll
6 wget https://d1cdn.apache.org/tomcat/tomcat-9/v9.0.73/bin/apache-tomcat-9.0.73.tar.gz
7 tar -xvf /root/apache-tomcat-9.0.73.tar.gz
8 mv apache-tomcat-9.0.73 tomcat9
9 mv tomcat9 /usr/local/tomcat9
10 useradd -r tomcat
11 chown -R tomcat:tomcat /usr/local/tomcat9
12 cd /etc/
13 cd systemd/systemd/
14 ll
15 ls -lrt
16 vi tomcat.service
17 sudo systemctl daemon-reload
18 sudo systemctl start tomcat
19 systemctl status tomcat.service
20 cd /usr/local/tomcat9/
21 find -name context.xml
22 vi ./conf/context.xml
23 vi ./webapps/manager/META-INF/context.xml
24 vi ./webapps/host-manager/META-INF/context.xml
25 vi ./webapps/docs/META-INF/context.xml
26 vi ./webapps/examples/META-INF/context.xml
27 cd conf/
28 vi tomcat-users.xml
29 service tomcat stop
30 service tomcat status
31 service tomcat start
32 service tomcat status
33 cat tomcat-users.xml
34 vi tomcat-users.xml
35 service tomcat stop
36 service tomcat start
37 apt install -y openjdk-8-jdk
```

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Checking tomcat server status:



Tomcat Web Application Manager

Message: OK - Undeployed application at context path [/SimpleTomcatWebApp]

Manager
[List Applications](#) [HTML Manager Help](#) [Manager Help](#) [Server Status](#)

Applications					
Path	Version	Display Name	Running	Sessions	Commands
/	None specified	Welcome to Tomcat	true	0	Start Stop Reload Undeploy Expire sessions with idle ≥ 30 minutes
/docs	None specified	Tomcat Documentation	true	0	Start Stop Reload Undeploy Expire sessions with idle ≥ 30 minutes
/examples	None specified	Servlet and JSP Examples	true	0	Start Stop Reload Undeploy Expire sessions with idle ≥ 30 minutes
/host-manager	None specified	Tomcat Host Manager Application	true	0	Start Stop Reload Undeploy Expire sessions with idle ≥ 30 minutes

Running Pipeline:

Dashboard > Eureka-Assignment3-Git-Jenkins >

Status

- <> Changes
- ▶ Build Now
- ⚙️ Configure
- 🗑️ Delete Pipeline
- 🔍 Full Stage View
- ✎️ Rename
- ❓ Pipeline Syntax

Build History

trend v

Filter builds...

- ✓ #22 Mar 11, 2023, 9:41 AM
- ✓ #21 Mar 11, 2023, 8:00 AM

Pipeline Eureka-Assignment3-Git-Jenkins

Add description

Disable Project

Stage View

	Declarative: Checkout SCM	Declarative: Tool Install	Compile	Code Review	Unit Test	Package	Deploy
Average stage times: (Average full run time: ~46s)	1s	165ms	1min 37s	217ms	4s	5s	6s
#22 Mar 11 15:11 No Changes	1s	170ms	11s	254ms	7s	7s	9s
#21 Mar 11 13:30 No Changes	843ms	126ms	11s	215ms	7s	7s	9s

Dashboard > Eureka-Assignment3-Git-Jenkins > #22

Status

<> Changes

Console Output

- 📄 View as plain text
- ✎️ Edit Build Information
- 🗑️ Delete build #22
- 🕒 Timings
- 🔗 Git Build Data
- 🔄 Restart from Stage
- 🔄 Replay
- 📋 Pipeline Steps
- 📁 Workspaces
- ⬅️ Previous Build

Console Output

```
Started by user Vagish Jaiswal
Obtained Jenkinsfile from git https://github.com/Vagish619/Eureka-DevOps-Assignments.git
[Pipeline] Start of Pipeline
[Pipeline] node
Running on Jenkins in /var/lib/jenkins/workspace/Eureka-Assignment3-Git-Jenkins
[Pipeline] {
[Pipeline] stage
[Pipeline] { (Declarative: Checkout SCM)
[Pipeline] checkout
Selected Git installation does not exist. Using Default
The recommended git tool is: NONE
No credentials specified
> git rev-parse --resolve-git-dir /var/lib/jenkins/workspace/Eureka-Assignment3-Git-Jenkins/.git # timeout=10
Fetching changes from the remote Git repository
> git config remote.origin.url https://github.com/Vagish619/Eureka-DevOps-Assignments.git # timeout=10
Fetching upstream changes from https://github.com/Vagish619/Eureka-DevOps-Assignments.git
> git --version # timeout=10
> git --version # 'git version 2.34.1'
> git fetch --tags --force --progress -- https://github.com/Vagish619/Eureka-DevOps-Assignments.git
+refs/heads/*:refs/remotes/origin/* # timeout=10
> git rev-parse refs/remotes/origin/Assignment3-Git_And_Jenkins^{} # timeout=10
```


Edureka-Assignment3-Git-Jenkin
Course Classroom

Not secure | 43.207.178.17:8080/job/Edureka-Assignment3-Git-Jenkins/22/console

Cloud
Edureka
References
Accounts

Dashboard > Edureka-Assignment3-Git-Jenkins > #22

4/4 KB
Uploaded: http://18.183.160.60:8080/manager/text/deploy?path=%2FSimpleTomcatWebApp (4 KB)

```

[01;34mINFO[0m] tomcatManager status code:200, ReasonPhrase:
[01;34mINFO[0m] OK - Deployed application at context path [/SimpleTomcatWebApp]
[01;34mINFO[0m] @[1m-----@[m
[01;34mINFO[0m] @[1;32mBUILD SUCCESS[0m
[01;34mINFO[0m] @[1m-----@[m
[01;34mINFO[0m] Total time: 5.785 s
[01;34mINFO[0m] Finished at: 2023-03-11T09:42:36Z
[01;34mINFO[0m] @[1m-----@[m
[Pipeline] }
[Pipeline] // withEnv
[Pipeline] }
[Pipeline] // stage
[Pipeline] }
[Pipeline] // withEnv
[Pipeline] }
[Pipeline] // withEnv
[Pipeline] }
[Pipeline] // node
[Pipeline] End of Pipeline
Finished: SUCCESS

```

REST API
Jenkins 2.387.1



End Result:

1-> Tomcat Admin Page

/manager

Not secure | 18.183.160.60:8080/manager/html

Cloud
Edureka
References
Accounts

Tomcat Web Application Manager

Message: OK

Manager

[List Applications](#)
[HTML Manager Help](#)
[Manager Help](#)
[Server Status](#)

Applications

Path	Version	Display Name	Running	Sessions	Commands
/	None specified	Welcome to Tomcat	true	0	Start Stop Reload Undeploy Expire sessions with idle ≥ 30 minutes
/SimpleTomcatWebApp	None specified	Archetype Created Web Application	true	2	Start Stop Reload Undeploy Expire sessions with idle ≥ 30 minutes
/docs	None specified	Tomcat Documentation	true	0	Start Stop Reload Undeploy Expire sessions with idle ≥ 30 minutes
/examples	None specified	Servlet and JSP Examples	true	0	Start Stop Reload Undeploy Expire sessions with idle ≥ 30 minutes

2-> Web page from deployed WAR



Hello World from VAGISH

You have successfully deployed the SampleTomcatWeb War. Good Job!