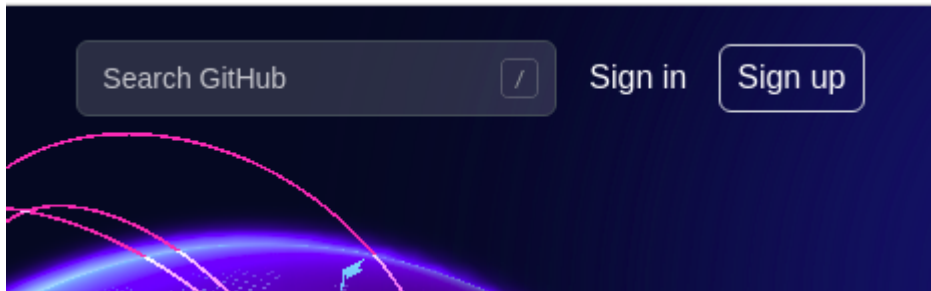


Jenkins Model Project

1.Create GitHub Account:

Github is a code hosting platform and mainly used for Git simplifies the process of working with other people and makes it easy to collaborate on projects

a)goto the browser then search github.com and click **Sign up**




b)Enter All **credentials** :


[Join GitHub](#)

Create your account


Username *



Email address *



Password *



Make sure it's at least 15 characters OR at least 8 characters including a number and a lowercase letter. [Learn more.](#)

Email preferences

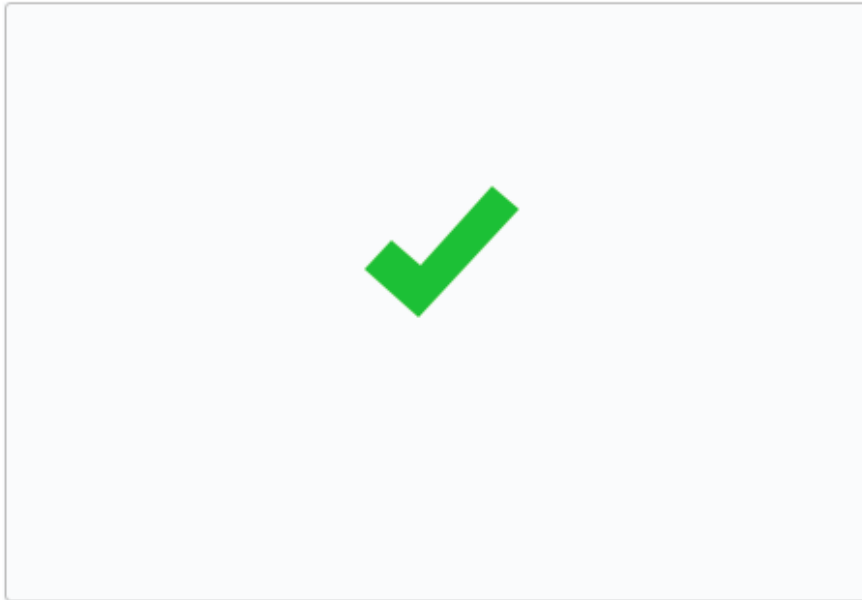
☒ Send me occasional product updates, announcements, and offers.

c) Then click **create account**

Email preferences

☒ Send me occasional product updates, announcements, and offers.

Verify your account



Create account

d)Then click **Complete setup**

Welcome to GitHub

Woohoo! You've joined millions of developers who are doing their best work on GitHub. Tell us what you're interested in. We'll help you get there.

What kind of work do you do, mainly?

— — —

Complete setup

e) Then goto the **email** Click **Verify email address**



Almost done, **@Dhanaskv1!**

To complete your GitHub sign up, we just need to verify your email address:

ghanasekark243@gmail.com.

Verify email address

f) Then finally below image will appear



Sign in to GitHub

Username or email address

Dhanaskv1

Password

[Forgot password?](#)

.....

Sign in



Dhanaskv1

Your personal account

Account settings

Emails



2.Simple Java Project

Link: <https://github.com/ValaxyTech/hello-w...>

3.Create AWS Account

4.Jenkins Installation and configuration

a) Launch RHEL linux in EC2 Instance

<input checked="" type="checkbox"/>	Name ▾	Instance ID	Instance state ▾	Instance type ▾
<input checked="" type="checkbox"/>	jenkins-server	i-072d6599b163f2836	 Running 	t2.micro

b) Install Java and Set path

We will be using open java

```
yum install java-1.8*
```

```
[root@ip-172-31-91-105 ec2-user]# yum install java-1.8* -y
```

c) Confirm Java Version

```
[root@ip-172-31-91-105 ec2-user]# java -version
openjdk version "1.8.0_282"
OpenJDK Runtime Environment (build 1.8.0_282-b08)
OpenJDK 64-Bit Server VM (build 25.282-b08, mixed mode)
[root@ip-172-31-91-105 ec2-user]#
```

d) We will Set Path in Permanent

So will go the **.bash_profile** hidden file

```
[root@ip-172-31-91-105 ~]# vi .bash_profile
```

Put the below line

```
JAVA_HOME=/usr/lib/jvm/java-1.8.0-openjdk-1.8.0.191.b12-1
.el7_6.x86_64
export JAVA_HOME
PATH=$PATH:$JAVA_HOME
```

```
# .bash_profile

# Get the aliases and functions
if [ -f ~/.bashrc ]; then
    . ~/.bashrc
fi

# User specific environment and startup programs
JAVA_HOME=/usr/lib/jvm/java-1.8.0-openjdk-1.8.0.191.b12-1.el7_6.x86_64
PATH=$PATH:$JAVA_HOME

export PATH
```

e) Set it permanently then update it so execute below file

Source ~/.bash_profile

```
[root@ip-172-31-91-105 ~]# source ~/.bash_profile
[root@ip-172-31-91-105 ~]#
```

f) Enter Below Command it will display a java path

echo \$PATH

```
[root@ip-172-31-91-105 ~]# echo $PATH
/sbin:/bin:/usr/sbin:/usr/bin:/usr/lib/jvm/java-1.8.0-openjdk-1.8.0.191.b12-1.el
7_6.x86_64
[root@ip-172-31-91-105 ~]#
```

g) Install Jenkins

Install wget command

Wget command download files from internet

```
[root@ip-172-31-91-105 ~]# yum install wget -y
```

Download jenkins file in specific name

```
wget -O /etc/yum.repos.d/jenkins.repo  
https://pkg.jenkins.io/redhat-stable/jenkins.repo
```

```
[root@ip-172-31-91-105 ~]# wget -O /etc/yum.repos.d/jenkins.repo https://pkg.jenkins.io/redhat-stable/jenkins.repo
```

Import rpm

```
rpm --import  
https://pkg.jenkins.io/redhat-stable/jenkins.io.key
```

```
[root@ip-172-31-91-105 ec2-user]# rpm --import https://pkg.jenkins.io/redhat-stable/jenkins.io.key
```

yum install jenkins -y

```
[root@ip-172-31-91-105 ec2-user]# yum install jenkins -y
```

h) start and enable jenkins service

systemctl start jenkins

systemctl enable jenkins

```
[root@ip-172-31-91-105 ec2-user]# systemctl start jenkins  
[root@ip-172-31-91-105 ec2-user]#
```


```
[root@ip-172-31-91-105 ec2-user]# systemctl enable jenkins  
jenkins.service is not a native service, redirecting to systemd-sysv-install.  
Executing: /usr/lib/systemd/systemd-sysv-install enable jenkins  
[root@ip-172-31-91-105 ec2-user]#
```

i) check if security group port 8080 open

Type	Protocol	Port range	Source
Custom TCP	TCP	8080	0.0.0.0/0
SSH	TCP	22	103.139.34.0/24

j) Accessing Jenkins

Enter EC2 instance public ip and port 8080 in web browser

 54.84.158.68:8080

Then below image will appear and go to the specified directory and got jenkins password

Unlock Jenkins

To ensure Jenkins is securely set up by the administrator, a password has been written to the log ([not sure where to find it?](#)) and this file on the server:

`/var/lib/jenkins/secrets/initialAdminPassword`

Please copy the password from either location and paste it below.

Administrator password

Continue

Open vi editor and get jenkins password

```
[root@ip-172-31-91-105 ec2-user]# vi /var/lib/jenkins/secrets/initialAdminPassword
```

k) skip plugins installation (we do it later)

l) Change admin password

SO goto admin --> configure --> enter password

Password

Password:

Confirm Password:

SSH Public Keys

SSH Public Keys

Save

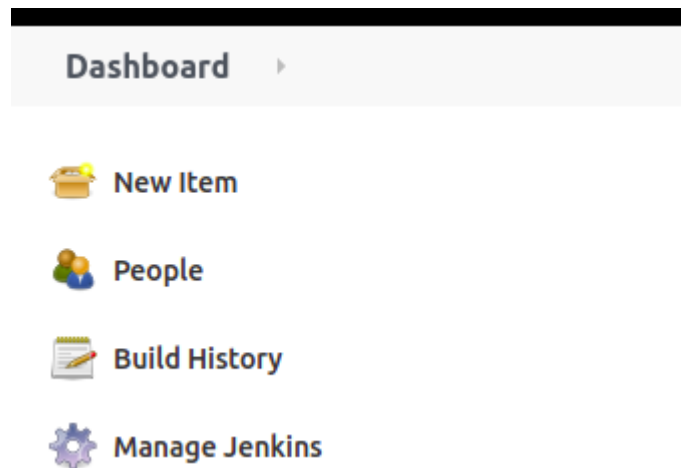
Apply

m) Configure Java Path

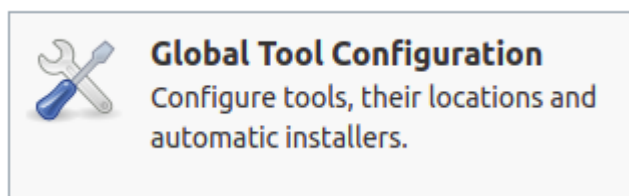
Click Dashboard

Dashboard ▶ admin

Click Manage jenkins



n)Then Click Global tool configuration



Enter the JAVA_HOME

JDK

JDK installations

[Add JDK](#)

JDK
<div><div>Name</div><div>Java</div></div> <div><div>JAVA_HOME</div><div><u>/usr/lib/jvm/java-1.8.0-openjdk-1.8.0.282.b08-2.el8_3.x86_64</u></div></div> <div><div><input type="checkbox"/> Install automatically</div><div>?</div></div> <div><div>Delete JDK</div></div>

[Save](#) [Apply](#)

Run Test Job

o) Click new item and Enter item name then click Freestyleproject
Click Build then enter execute shell

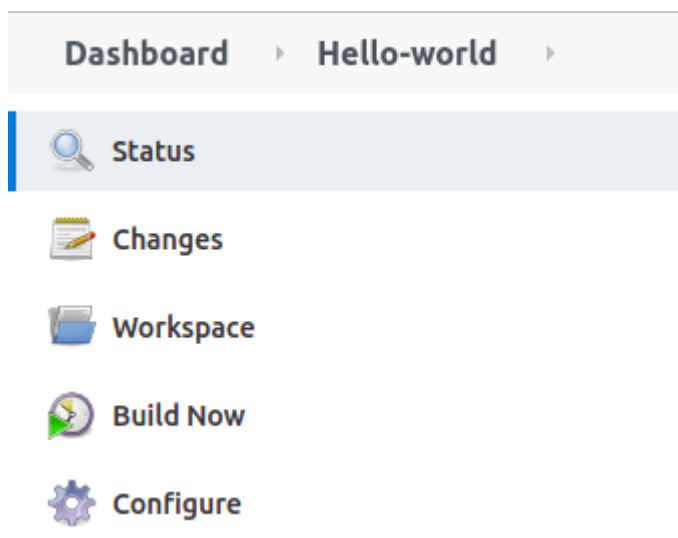


Apply and Save then below image will appear

[add description](#)

All						
S	W	Name	Last Success	Last Failure	Last Duration	
		Hello-world	N/A	N/A	N/A	

Click hello-world icon and Click Build now



Finally console output

Console Output

```
Started by user admin
Running as SYSTEM
Building in workspace /var/lib/jenkins/workspace/Hello-world
[Hello-world] $ /bin/sh -xe /tmp/jenkins6846667865072450195.sh
+ echo 'Welcome TrueHoch'
Welcome TrueHoch
Finished: SUCCESS
```

5.Maven & Git Installation and Configuration

A maven is a build tool designed to manage dependencies and the software lifecycle. ... It checks code out of a repository, builds and packages it, and sends it out to a server for testing – automatically. Jenkins can use Maven as its build tool.

1.Copy url in maven website

Maven developers.

Link

Binary tar.gz archive

[apache-maven-3.8.1-bin.tar.gz](https://mirrors.apache.org/maven/apache/maven/3.8.1/bin/apache-maven-3.8.1-bin.tar.gz)

2.SSH login in jenkins server then goto /opt directory

3.create directory name as “maven”

3.Download maven file in linux cli using wget command

```
[ec2-user@ip-172-31-91-105 maven]$ wget https://mirrors.estointernet.in/apache/maven/maven-3/3.8.1/binaries/apache-maven-3.8.1-bin.tar.gz
```

4.extract the maven zip file

```
[ec2-user@ip-172-31-91-105 maven]$ tar -xvf apache-maven-3.8.1-bin.tar.gz
```

5.goto the home directory and open .bash_profile

6.put the below path that file

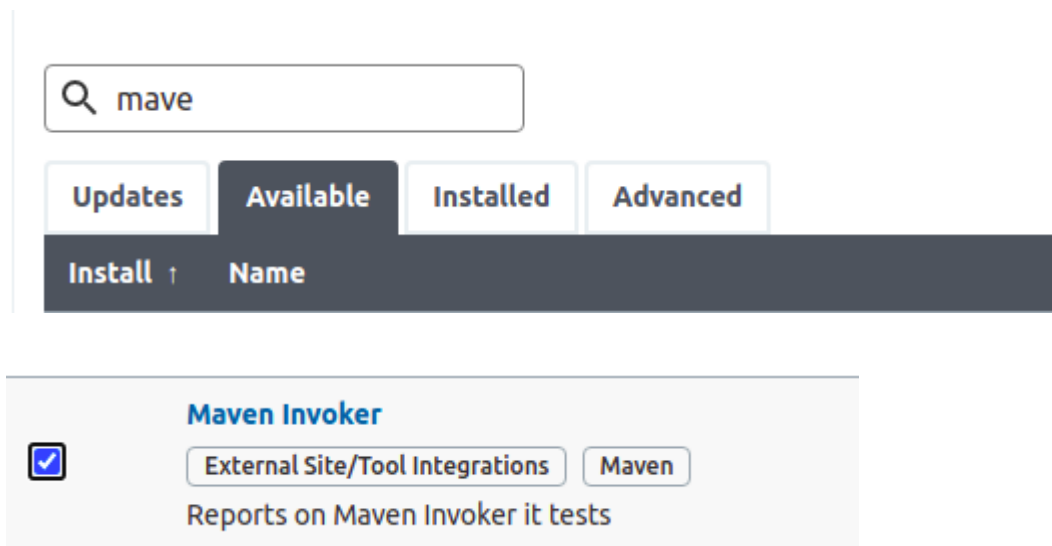
```
M2_HOME=/opt/maven/apache-maven-3.8.1
```

```
M2=$M2_HOME/bin
```

```
M2_HOME=/opt/maven/apache-maven-3.8.1
M2=$M2_HOME/bin
```

7.goto the jenkins web page and click Manage plugins

8.Click manage plugins and select maven invoker



9.Click without restart

10.Click Manage Jenkins and Click Global configuration tool

11.add maven path and apply & Save

Maven

Maven installations

Add Maven

Maven

Name

mave

MAVEN_HOME

/opt/maven/apache-maven-3.8.1

☐ Install automatically

12.Install git

yum install git

```
[root@ip-172-31-91-105 ec2-user]# yum install git -y
```

13.Click Manage Plugins and Click Available

Dashboard
>
Plugin Manager

Back to Dashboard

Manage Jenkins

Update Center

search

Updates
Available
Installed
Advanced

Install
Name

Credentials

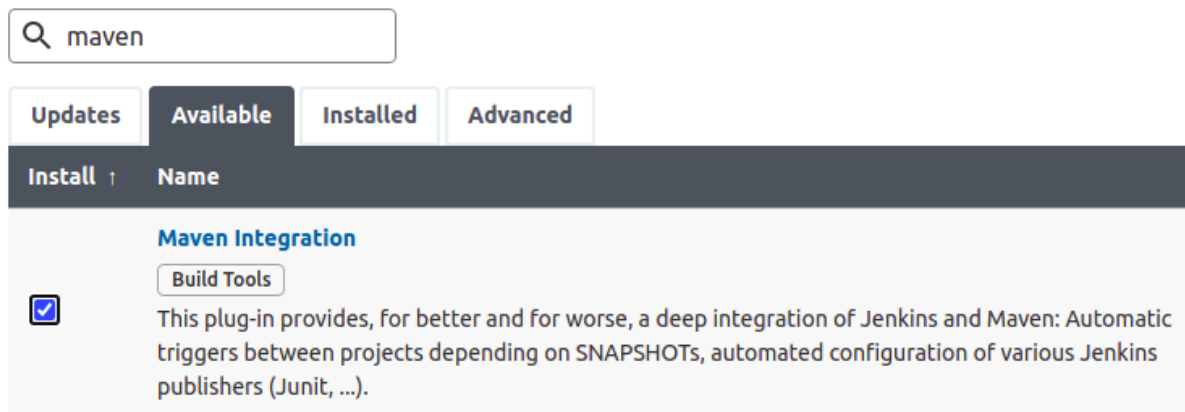
☐

api-plugin

This plugin allows you to store credentials in Jenkins.

14.Search & click “github” and click without restart

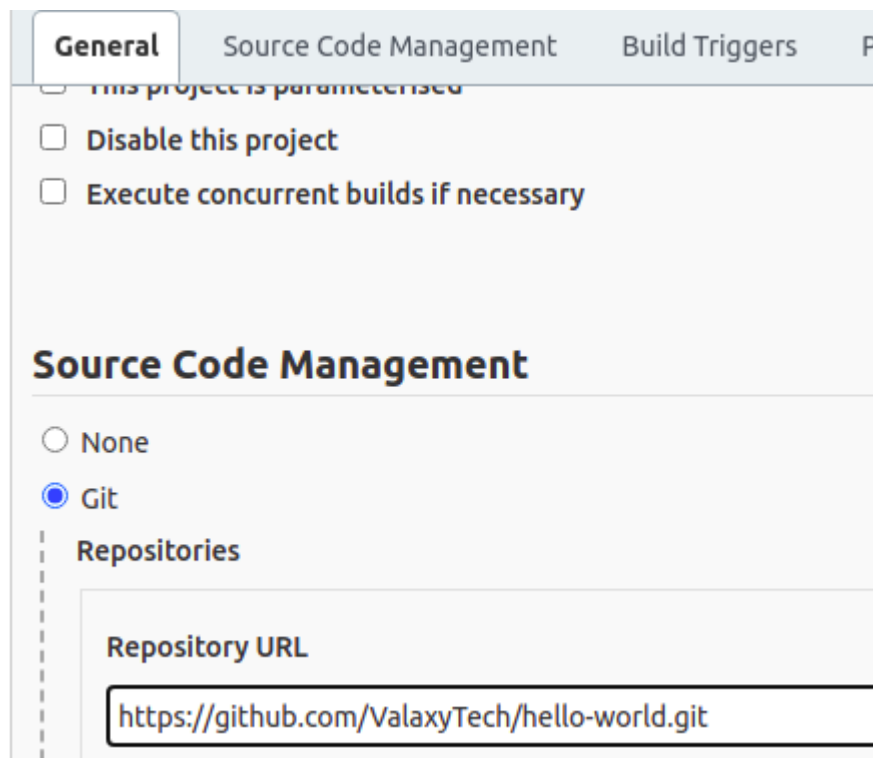
15.Click Manage jenkins and select maven integration



16.go to dashboard and click new item

17.then enter project name and click “Maven project” and click ok

18. Then enter git repository url



19.click build and Enter “install package”

General Source Code Management Build Triggers Pre Steps **Build**

Root POM

pom.xml





Goals and options

install package

20. Then click and save





21. click build now and will show the blue colour icon

22. finally build runs success

All			
S	W	Name	
		Hello-world	
		maven-hello-world	

6. Setup and Configure Tomcat Server

a) I have launched EC2 instance

	Name	Instance ID	Instance state	Instance type
	Tomcat-server	i-04aaaaee3cdf3e9769	 Running 	t2.micro

b) install java in command line

yum install java-1.8*

```
[root@ip-172-31-84-45 ec2-user]# yum install java-1.8*
```

c) Goto browser and copy the tomcat8 url

- Core:
 - [zip](#) ([pgp](#), [sha512](#))
 - [tar.gz](#) ([pgp](#), [sha512](#))
 - [32-bit Windows zip](#) ([pgp](#), [sha512](#))
 - [64-bit Windows zip](#) ([pgp](#), [sha512](#))
 - [32-bit/64-bit Windows Service Installer](#) ([pgp](#), [sha512](#))

d) Change directory to /opt and First install wget command
Yum install wget -y

e) download tomcat8 in cli

```
[root@ip-172-31-84-45 opt]# wget https://mirrors.estointernet.in/apache/tomcat/tomcat-8/v8.5.65/bin/apache-tomcat-8.5.65.tar.gz
```

f)extract the file using tar command

tar -xvf apache-tomcat-8.5.65.tar.gz

```
[root@ip-172-31-84-45 opt]# tar -xvf apache-tomcat-8.5.65.tar.gz
```

g)change the directory

cd /opt/apache-tomcat-8.5.65/bin

change file permissions

chmod +x startup.sh

Chmod +x shutdown.sh

```
[root@ip-172-31-84-45 bin]# chmod +x startup.sh
[root@ip-172-31-84-45 bin]# chmod +x shutdown.sh
[root@ip-172-31-84-45 bin]#
```


h) create softlink on "startup.sh" and "shutdown.sh" in /usr/local/bin

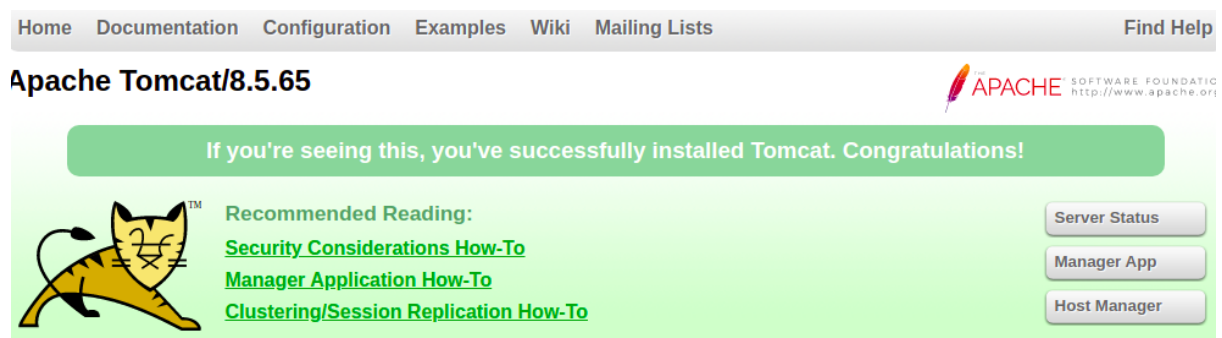
```
ln -s /opt/apache-tomcat-8.5.65/bin/startup.sh /usr/local/bin/tomcatup
```

```
ln -s /opt/apache-tomcat-8.5.65/bin/shutdown.sh  
/usr/local/bin/tomcatdown
```

```
[root@ip-172-31-84-45 bin]# ln -s /opt/apache-tomcat-8.5.65/bin/startup.sh /usr/local/bin/tomcatup  
[root@ip-172-31-84-45 bin]# ln -s /opt/apache-tomcat-8.5.65/bin/shutdown.sh /usr/local/bin/tomcatdown
```

i) then tomcat service is started

j) enter the public ip and port:8080 in web browser then default page will appear



k) Then goto "/opt/apache-tomcat--8.5.65" directory and goto the "config" directory

```
/opt/apache-tomcat-8.5.65/conf
```

```
[root@ip-172-31-84-45 conf]# pwd  
/opt/apache-tomcat-8.5.65/conf
```

l) using vi editor to open the "server.xml"

Change the port 8090 wherever display and open the port 8090 in AWS Security group

Type	Protocol	Port range	Source
HTTP	TCP	80	0.0.0.0/0
Custom TCP	TCP	8080	0.0.0.0/0
SSH	TCP	22	103.139.34.0/24
Custom TCP	TCP	8090	0.0.0.0/0

m)then then stop and start tomcat server

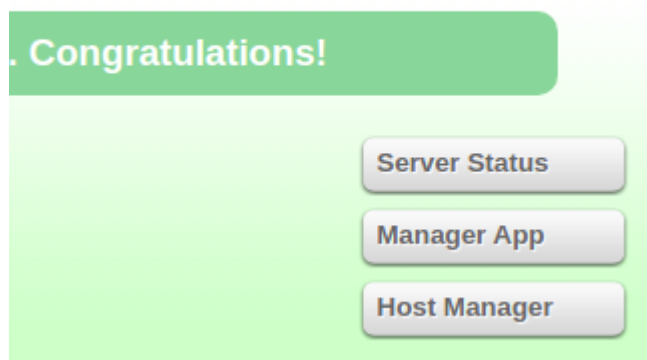
tomcatup

tomcatdown

```
[root@ip-172-31-84-45 conf]# tomcatdown
Using CATALINA_BASE:   /opt/apache-tomcat-8.5.65
Using CATALINA_HOME:   /opt/apache-tomcat-8.5.65
Using CATALINA_TMPDIR: /opt/apache-tomcat-8.5.65/temp
Using JRE_HOME:        /
Using CLASSPATH:       /opt/apache-tomcat-8.5.65/bin/bootstrap.jar:/opt/apache-tomcat-8.5.65/bin/tomcat-juli.jar
Using CATALINA_OPTS:
[root@ip-172-31-84-45 conf]# tomcatup
Using CATALINA_BASE:   /opt/apache-tomcat-8.5.65
Using CATALINA_HOME:   /opt/apache-tomcat-8.5.65
Using CATALINA_TMPDIR: /opt/apache-tomcat-8.5.65/temp
Using JRE_HOME:        /
Using CLASSPATH:       /opt/apache-tomcat-8.5.65/bin/bootstrap.jar:/opt/apache-tomcat-8.5.65/bin/tomcat-juli.jar
Using CATALINA_OPTS:
Tomcat started.
```

n) finally tomcat default page will appear

o) Click “Manager App”



P) by default the Manager is only accessible from a browser running on the same machine as Tomcat

403 Access Denied

You are not authorized to view this page.

By default the Manager is only accessible from a browser running on the same machine as Tomcat. If you wish to modify this restriction, you'll need to edit the Manager's `context.xml` file.

q) using vi editor to open below files

Put the syntax

<!--

-->

```
sameSiteCookies="strict" />
<!-- <Valve className="org.apache.catalina.valves.RemoteAddrValve"
allow="127\.\d+\.\d+\.\d+|::1|0:0:0:0:0:0:0:1" /> -->
```

/opt/apache-tomcat-8.5.65/webapps/host-manager/META-INF/context.xml

/opt/apache-tomcat-8.5.65/webapps/manager/META-INF/context.xml

```
[root@ip-172-31-84-45 conf]# vi /opt/apache-tomcat-8.5.65/webapps/host-manager/META-INF/context.xml
[root@ip-172-31-84-45 conf]# vi /opt/apache-tomcat-8.5.65/webapps/manager/META-INF/context.xml
[root@ip-172-31-84-45 conf]#
```

r) then stop and start the tomcat server

```
[root@ip-172-31-84-45 conf]# tomcatdown
Using CATALINA_BASE:   /opt/apache-tomcat-8.5.65
Using CATALINA_HOME:   /opt/apache-tomcat-8.5.65
Using CATALINA_TMPDIR: /opt/apache-tomcat-8.5.65/temp
Using JRE_HOME:        /
Using CLASSPATH:       /opt/apache-tomcat-8.5.65/bin/bootstrap.jar:/opt/apache-tomcat-8.5.65/bin/tomcat-juli.jar
[root@ip-172-31-84-45 conf]# tomcatup
Using CATALINA_BASE:   /opt/apache-tomcat-8.5.65
Using CATALINA_HOME:   /opt/apache-tomcat-8.5.65
Using CATALINA_TMPDIR: /opt/apache-tomcat-8.5.65/temp
Using JRE_HOME:        /
Using CLASSPATH:       /opt/apache-tomcat-8.5.65/bin/bootstrap.jar:/opt/apache-tomcat-8.5.65/bin/tomcat-juli.jar
Using CATALINA_OPTS:
Tomcat started.
[root@ip-172-31-84-45 conf]#
```

s) click "Manager App" and below image will appear

Sign in

http://52.87.189.211:8090

Your connection to this site is not private

Username

Password

t) then goto the “/opt/apache-tomcat-8.5.65/conf” then edit the “tomcat-users.xml” using vi editor

```
[root@ip-172-31-84-45 conf]# ls
Catalina                  jaspic-providers.xml  tomcat-users.xml
catalina.policy           jaspic-providers.xsd  tomcat-users.xsd
catalina.properties      logging.properties    web.xml
context.xml              server.xml
```

u) put the below output in “tomcat-users.xml” and restart the tomcat server

```
<role rolename="manager-gui"/>
  <role rolename="manager-script"/>
  <role rolename="manager-jmx"/>
  <role rolename="manager-status"/>
  <user username="admin" password="admin" roles="manager-gui,
manager-script, manager-jmx, manager-status"/>
  <user username="deployer" password="deployer" roles="manager-script"/>
  <user username="tomcat" password="s3cret" roles="manager-gui"/>
```

```
-->
<role rolename="manager-gui"/>
  <role rolename="manager-script"/>
  <role rolename="manager-jmx"/>
  <role rolename="manager-status"/>
  <user username="admin" password="admin" roles="manager-gui, manager-script, manager-jmx, manager-status"/>
  <user username="deployer" password="deployer" roles="manager-script"/>
  <user username="tomcat" password="s3cret" roles="manager-gui"/>
<!--
  <role rolename="tomcat"/>
  <role rolename="role1"/>
  <user username="tomcat" password="<must-be-changed>" roles="tomcat"/>
  <user username="both" password="<must-be-changed>" roles="tomcat,role1"/>
  <user username="role1" password="<must-be-changed>" roles="role1"/>
-->
</tomcat-users>
```

```
[root@ip-172-31-84-45 conf]# tomcatdown
Using CATALINA_BASE:   /opt/apache-tomcat-8.5.65
Using CATALINA_HOME:   /opt/apache-tomcat-8.5.65
Using CATALINA_TMPDIR: /opt/apache-tomcat-8.5.65/temp
Using JRE_HOME:        /
Using CLASSPATH:        /opt/apache-tomcat-8.5.65/bin/bootstrap.jar:/opt/apache-tomcat-8.5.65/bin/tomcat-juli.jar
Using CATALINA_OPTS:
[root@ip-172-31-84-45 conf]# tomcatup
Using CATALINA_BASE:   /opt/apache-tomcat-8.5.65
Using CATALINA_HOME:   /opt/apache-tomcat-8.5.65
Using CATALINA_TMPDIR: /opt/apache-tomcat-8.5.65/temp
Using JRE_HOME:        /
Using CLASSPATH:        /opt/apache-tomcat-8.5.65/bin/bootstrap.jar:/opt/apache-tomcat-8.5.65/bin/tomcat-juli.jar
Using CATALINA_OPTS:
Tomcat started.
```

v) Enter username and password in “tomcat Manager app”

Sign in

http://52.87.189.211:8090

Your connection to this site is not private

Username

Password

w) finally below image will appear



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 <input type="button" value="Stop"/> <input type="button" value="Reload"/> <input type="button" value="Undeploy"/> <input type="button" value="Expire sessions"/> with idle ≥ <input type="text" value="30"/> minutes	
/docs	None specified	Tomcat Documentation	true	0	Start <input type="button" value="Stop"/> <input type="button" value="Reload"/> <input type="button" value="Undeploy"/> <input type="button" value="Expire sessions"/> with idle ≥ <input type="text" value="30"/> minutes	

Create CI/CD Pipeline

We have already created the Jenkins-server and Tomcat-server


<input type="checkbox"/>	jenkins-server	i-072d6599b163f2836	✓ Running	🔍	t2.micro
<input type="checkbox"/>	Tomcat-server	i-04aaaaee3cdf3e9769	✓ Running	🔍	t2.micro

1. Enter the name and click "Maven project" then click ok


Enter an item name

Hello-world-maven

» Required field




Freestyle project
This is the central feature of Jenkins. Jenkins will build your project, combining a build step with a post-build action, and can be used for something other than software build.



Maven project
Build a maven project. Jenkins takes advantage of your POM files and drastically

If you want to create a new item from other existing, you can use this option:



Copy from

OK

2.Put “git repository url” and put “build goal and options” then apply and save

Source Code Management

☐ None

☒ Git

Repositories

Repository URL

`https://github.com/ValaxyTech/hello-world.git`

Build

Root POM

`pom.xml`

Goals and options

`clean install package`

3.Click build now

 workspace

 Build Now

 Configure

 Build with

4.Then console display build is successful

```
waiting for Jenkins to finish collecting data
[JENKINS] Archiving /var/lib/jenkins/workspace/Hello-world-maven/webapp/pom.xml to com.example.maven-project/webapp/1.0-SNAPSHOT/webapp-1.0-SNAPSHOT.pom
[JENKINS] Archiving /var/lib/jenkins/workspace/Hello-world-maven/webapp/target/webapp.war to com.example.maven-project/webapp/1.0-SNAPSHOT/webapp-1.0-SNAPSHOT.war
[JENKINS] Archiving /var/lib/jenkins/workspace/Hello-world-maven/server/pom.xml to com.example.maven-project/server/1.0-SNAPSHOT/server-1.0-SNAPSHOT.pom
[JENKINS] Archiving /var/lib/jenkins/workspace/Hello-world-maven/server/target/server.jar to com.example.maven-project/server/1.0-SNAPSHOT/server-1.0-SNAPSHOT.jar
[JENKINS] Archiving /var/lib/jenkins/workspace/Hello-world-maven/pom.xml to com.example.maven-project/maven-project/1.0-SNAPSHOT/maven-project-1.0-SNAPSHOT.pom
channel stopped
Finished: SUCCESS
```

5.using SSH to login tomcat server and restart the tomcat

tomcatup

```
[root@ip-172-31-84-45 apache-tomcat-8.5.65]# tomcatup
Using CATALINA_BASE:   /opt/apache-tomcat-8.5.65
Using CATALINA_HOME:   /opt/apache-tomcat-8.5.65
Using CATALINA_TMPDIR: /opt/apache-tomcat-8.5.65/temp
Using JRE_HOME:        /
Using CLASSPATH:        /opt/apache-tomcat-8.5.65/bin/bootstrap.jar:/opt/a
apache-tomcat-8.5.65/bin/tomcat-juli.jar
Using CATALINA_OPTS:
Tomcat started.
```

6.Click “Manage jenkins” and click “Manage plugins” then Install “Deploy-plugins” in “jenkins server”

System Configuration



Configure System

Configure global settings and paths.



Global Tool Configuration

Configure tools, their locations and automatic installers.



Manage Plugins


Add, remove, disable or enable plugins that can extend the functionality of Jenkins.

Installing Plugins/Upgrades


Preparation

- Checking internet connectivity
- Checking update center connectivity
- Success

Deploy to container

 Success

Loading plugin extensions

 Success

7)click credential option and Click jenkins icon and Click Global credentials (unrestricted)



Global credentials (unrestricted)

Credentials that should be available irrespective of domain specification to requirements matching.

ID	Name	Kind	Description
----	------	------	-------------

This credential domain is empty. How about [adding some credentials?](#)

Icon: [S](#) [M](#) [L](#)

8)click add credentials and put tomcat-server credentials

Username with password

Scope

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

Username

deployer

Password

.....

ID


Tomcat_credentials


Description

Tomcat_credentials

OK


9)click **dashboard** and click **configure**


 Build Now

 Configure

Tomcat 8.x Remote

Credentials

deployer/***** (Tomcat_credentials) ▼ 

Tomcat URL 

http://52.87.189.211:8090

Add Container ▼

☐ Deploy on failure

Add post-build action ▼

Save

Apply

10) check file changed in tomcat-server Then Using SSH to login then and Change the directory to

/opt/apache-tomcat-8.5.65/webapps

```
[root@ip-172-31-84-45 webapps]# ls -lt
total 8
drwxr-x---.  4 root root   54 Apr 14 17:57 webapp
-rw-r-----.  1 root root 2444 Apr 14 17:57 webapp.war
drwxr-x---.  6 root root  114 Apr 14 13:23 manager
drwxr-x---.  6 root root   79 Apr 14 13:23 host-manager
drwxr-x---.  7 root root   99 Apr 14 13:23 examples
drwxr-x---. 15 root root 4096 Apr 14 13:23 docs
drwxr-x---.  3 root root  223 Apr 14 13:23 ROOT
```

11.) Click build now and then automatically deployed in tomcat server

