

# Module - 8

## Continuous Integration Using Jenkins Assignment

Date of submission - 16/01/2025

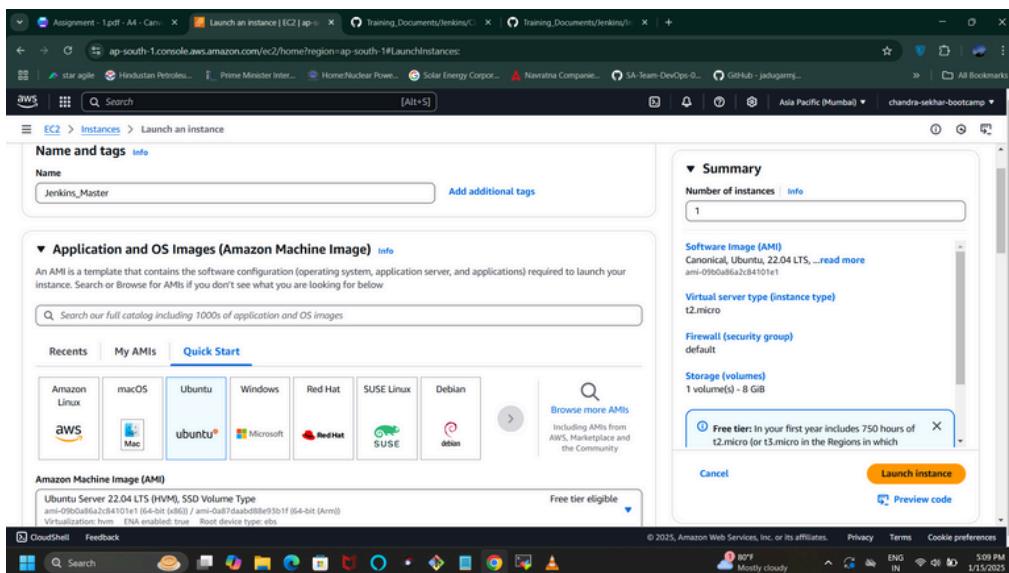
Submitted by - Chandra Sekhar

L1-

Create Jenkins Master-Slave Configurations and Create a workspace in Jenkins Slave Node using Jenkins Free-style project

### Step - 1

Launching Jenkins master and slave node and installing jenkins and other installations process in master node and configuring the basic installation in slave node and then connecting the slave node to the master node



Screenshot of the AWS CloudShell interface showing the termination of an EC2 instance.

**Instances (1/2) Info**

Instance ID: i-0134b5a146974c470  
Instance state: Running  
Instance type: t2.micro  
Status check: Initializing  
Alarm status: View alarms  
Availability Zone: ap-south-1b  
Public IP: ec2-13-2...

**i-0134b5a146974c470 (jenkins\_master)**

**Details** Status and alarms Monitoring Security Networking Storage Tags

**Instance summary**

Instance ID: i-0134b5a146974c470  
IPv6 address: -  
Instance state: Terminated  
Public IPv4 address: -  
Private IPv4 addresses: -  
Public IPv4 DNS: -

Screenshot of the AWS CloudShell interface showing the Jenkins service status and configuration.

```
root@ip-172-31-6-57:~# jenkins --version
2.479
root@ip-172-31-6-57:~# systemctl status jenkins
● jenkins.service - Jenkins Continuous Integration Server
   Loaded: loaded (/lib/systemd/system/jenkins.service; enabled; vendor preset: enabled)
   Active: active (running) since Wed 2025-01-15 11:46:45 UTC; 29s ago
     Main PID: 5276 (java)
       Tasks: 43 (limit: 1138)
      Memory: 16.067s
         CPU: 16.067s
        CGroup: /system.slice/jenkins.service
              └─ 5276 /usr/bin/java -Djava.awt.headless=true -jar /usr/share/java/jenkins.war --webroot=/var/cache/jenkins/war --httpPort=8080

Jan 15 11:46:37 ip-172-31-6-57 jenkins[5276]: 245bc39a77324c4b8e39e7714746016
Jan 15 11:46:37 ip-172-31-6-57 jenkins[5276]: This may also be found at: /var/lib/jenkins/secrets/initialAdminPassword
Jan 15 11:46:37 ip-172-31-6-57 jenkins[5276]: ****
Jan 15 11:46:37 ip-172-31-6-57 jenkins[5276]: 2025-01-15 11:46:45.532+0000 [id:23] INFO jenkins.InitReactorRunner@1#onAttained: Completed initialization
Jan 15 11:46:45 ip-172-31-6-57 systemd[1]: Started Jenkins Continuous Integration Server.
Jan 15 11:46:45 ip-172-31-6-57 jenkins[5276]: 2025-01-15 11:46:47.313+0000 [id:46] INFO hudson.lifecycle.Lifecycle#onReady: Jenkins is fully up and running
Jan 15 11:46:47 ip-172-31-6-57 jenkins[5276]: 2025-01-15 11:46:47.315+0000 [id:46] INFO hudson.util.Retry@start: Performed the action check
Lines: +20/20 (END)
```

Screenshot of the AWS CloudShell interface showing the creation of an inbound rule for a security group.

**Edit inbound rules**

Inbound rules control the incoming traffic that's allowed to reach the instance.

**Inbound rules**

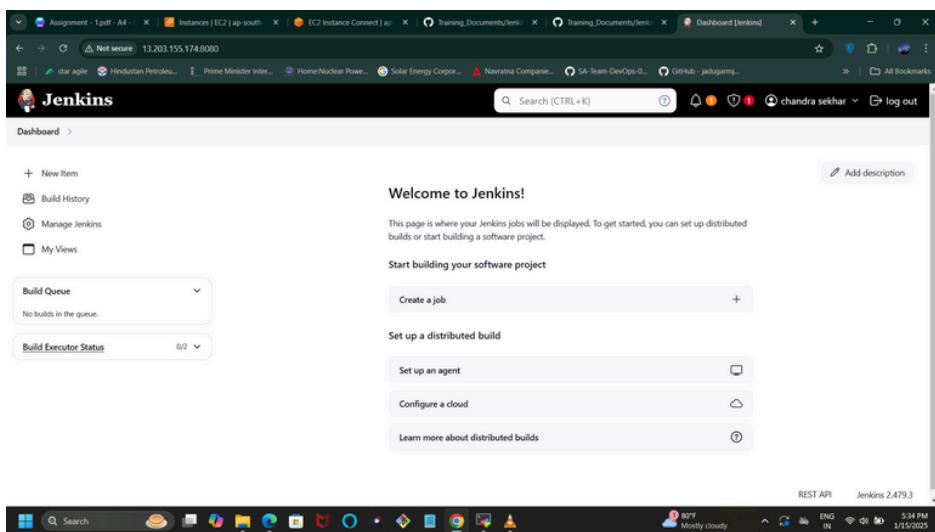
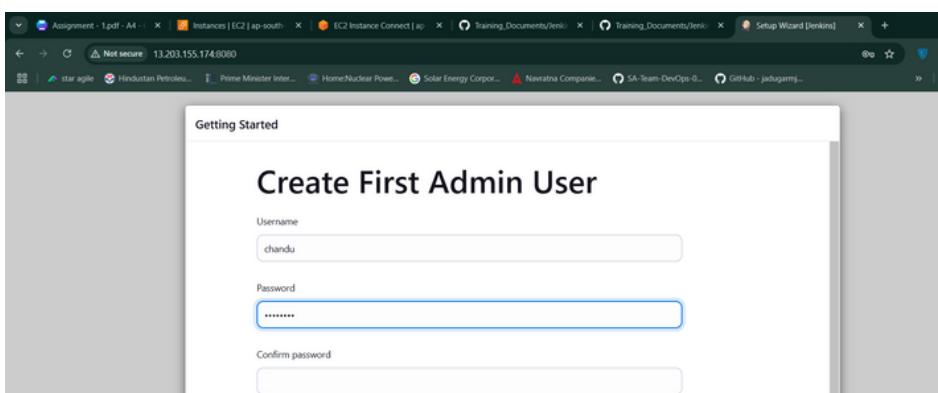
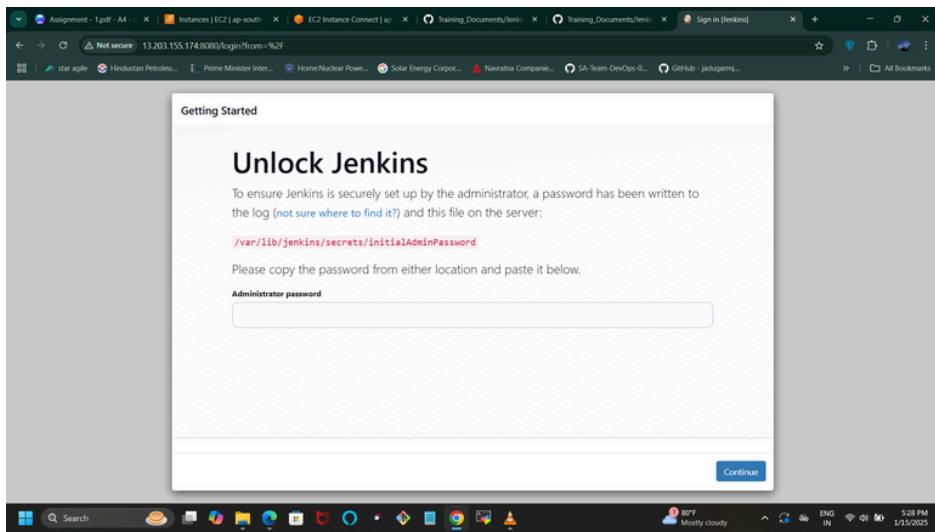
Security group rule ID	Type	Protocol	Port range	Source	Description - optional
sgr-0df517f21b9ec7d8a	Custom TCP	TCP	8080	Custom	jenkins

**Rules with source of 0.0.0.0 or ::/0 allow all IP addresses to access your instance. We recommend setting security group rules to allow access from known IP addresses only.**

Cancel Preview changes Save rules

Screenshot of the AWS CloudShell interface showing the Jenkins password change command.

```
ubuntu@ip-172-31-6-57:~# sudo -i
[sudo] password for ubuntu:
root@ip-172-31-6-57:~# /usr/lib/jenkins/secrets/initialAdminPassword
245bc39a77324c4b8e39e7714746016
root@ip-172-31-6-57:~#
```



# Launching the slave node and configuring it

The screenshot shows the 'Launch an instance' wizard on the AWS EC2 console. The 'Name and tags' section has 'Name' set to 'Jenkins\_slave'. The 'Application and OS Images (Amazon Machine Image)' section shows a search bar and a list of AMIs including Amazon Linux, macOS, Ubuntu, Windows, Red Hat, SUSE Linux, and Debian. The 'Summary' section indicates 1 instance will be launched, using the Canonical, Ubuntu 22.04 LTS AMI. The 'Virtual server type (instance type)' is set to t2.micro. The 'Firewall (security group)' is set to 'default'. The 'Storage (volumes)' section shows 1 volume(s) - 8 GiB. A note about the free tier is displayed. The 'Launch instance' button is highlighted.

The screenshot shows the 'Instances' page on the AWS EC2 console. The left sidebar shows 'Instances' selected. The main table lists two instances: 'Jenkins\_Master' (running, t2.micro, 2/2 checks passed) and 'Jenkins\_slave' (running, t2.micro, initializing). The 'Actions' dropdown for the slave instance is open, showing options like 'Stop', 'Terminate', and 'Launch instances'. The 'i-0eda60d3decf8ad88 (Jenkins\_slave)' details panel is expanded, showing the instance ID, public and private IP addresses, and DNS names.

The screenshot shows a terminal session in MobaXterm connected to the Jenkins\_slave instance. The session title is '13.232.41.221 (ubuntu)'. The terminal window displays the MobaXterm Personal Edition welcome screen, followed by system information, security maintenance notices, and a log of the last login. The terminal interface includes tabs for sessions, servers, tools, and games, and various system status indicators at the bottom.

13.232.41.221 (ubuntu)

Terminal Sessions View X server Tools Games Settings Macros Help

Session Servers Tools Games Sessions View Split MultiTerm Tunneling Packages Settings Help

Quick connect...

root@ip-172-31-4-41:~# java --version  
openjdk 17.0.13 2024-10-15  
OpenJDK Java Platform, Standard Edition (build 17.0.13+11-Ubuntu-2ubuntu22.04)  
OpenJDK 64-Bit Server VM (build 17.0.13+11-Ubuntu-2ubuntu22.04, mixed mode, sharing)  
root@ip-172-31-4-41:~# git --version  
git version 2.34.1  
root@ip-172-31-4-41:~# mvn --version  
Apache Maven 3.8.3  
Maven home: /usr/share/maven  
Java version: 17.0.13, vendor: Ubuntu, runtime: /usr/lib/jvm/java-17-openjdk-amd64  
Default locale: en, platform encoding: UTF-8  
OS name: "linux", version: "5.6.0-1055-aws", arch: "amd64", family: "unix"  
root@ip-172-31-4-41:~# useradd devopsadm -s /bin/bash -d /home/devopsadm  
root@ip-172-31-4-41:~# su - devopsadm  
devopsadm@ip-172-31-4-41:~\$ ssh-keygen -t ecdsa -b 521  
Generating public/private ecdsa key pair.  
Enter file in which to save the key (/home/devopsadm/.ssh/id\_ecdsa):  
Created directory '/home/devopsadm/.ssh'.  
Enter passphrase (empty for no passphrase):  
Enter same passphrase again:  
Your identification has been saved in /home/devopsadm/.ssh/id\_ecdsa  
Your public key has been saved in /home/devopsadm/.ssh/id\_ecdsa.pub  
The key fingerprint is:  
SHA256:0999999999999999999999999999999999999999  
The key's randomart image is:  
+---[ECDSA 521]---+  
| .+ . |  
| . + . |  
| . . + + |  
| o o o o + = |  
| . S + . + |  
| o o = . . o |  
| o . = . o o |  
| E o + . o o |  
+---[SHA256]---+  
devopsadm@ip-172-31-4-41:~\$ ls -a  
.. .bash\_logout .bashrc .profile .ssh  
devopsadm@ip-172-31-4-41:~\$ cd .ssh/  
devopsadm@ip-172-31-4-41:~/ssh\$ ls  
id\_ecdsa id\_ecdsa.pub  
devopsadm@ip-172-31-4-41:~/ssh\$ clear

Remote monitoring

Follow terminal folder

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The screenshot shows a MobaXterm window titled '13.232.41.221 (ubuntu)'. The terminal session is running on port 172.31.4.41. The user has run several commands to manage SSH keys:

```
devopsadmin@ip-172-31-4-41:~/.ssh$ ls
id_ecdsa id_ecdsa.pub
devopsadmin@ip-172-31-4-41:~/.ssh$ cat id_ecdsa.pub > authorized_keys
devopsadmin@ip-172-31-4-41:~/.ssh$ ll
total 20
drwx----- 2 devopsadmin devopsadmin 4096 Jan 15 12:19 .
drwxr-x--- 3 devopsadmin devopsadmin 4096 Jan 15 12:18 /
-rw-r--r-- 1 devopsadmin devopsadmin 798 Jan 15 12:18 authorized_keys
-rw-r--r-- 1 devopsadmin devopsadmin 748 Jan 15 12:18 id_ecdsa
-rw-r--r-- 1 devopsadmin devopsadmin 288 Jan 15 12:18 id_ecdsa.pub
devopsadmin@ip-172-31-4-41:~/.ssh$ chmod 600 /home/devopsadmin/.ssh/*
devopsadmin@ip-172-31-4-41:~/.ssh$ ll
total 20
drwx----- 2 devopsadmin devopsadmin 4096 Jan 15 12:19 .
drwxr-x--- 3 devopsadmin devopsadmin 4096 Jan 15 12:18 /
-rw-r--r-- 1 devopsadmin devopsadmin 289 Jan 15 12:19 authorized_keys
-rw-r--r-- 1 devopsadmin devopsadmin 748 Jan 15 12:18 id_ecdsa
-rw-r--r-- 1 devopsadmin devopsadmin 289 Jan 15 12:18 id_ecdsa.pub
devopsadmin@ip-172-31-4-41:~/.ssh$
```

connecting the slave node to the master node

Assignment -1.pdf - A4 - Cam - Instances | EC2 | ap-south-1 - Training\_Documents/jenkins/ - Training\_Documents/Jenkins/ Jenkins

Net secure 13.203.155.174.0.800/manage/computer/createlnem

star agile Hindustan Petroleo... Prime Minister Inter... Home/Nuclear Power... Solar Energy Corpor... Navratna Companie... SA-Team-DevOps-0... GitHub - jatugarmj... All Bookmarks

Search (CTRL+K)

chandra sekhar log out

# Jenkins

Dashboard > Manage Jenkins > Nodes >

Name ?

slave\_node

Description ?

this node is to build java applications

Plain text: [Preview](#)

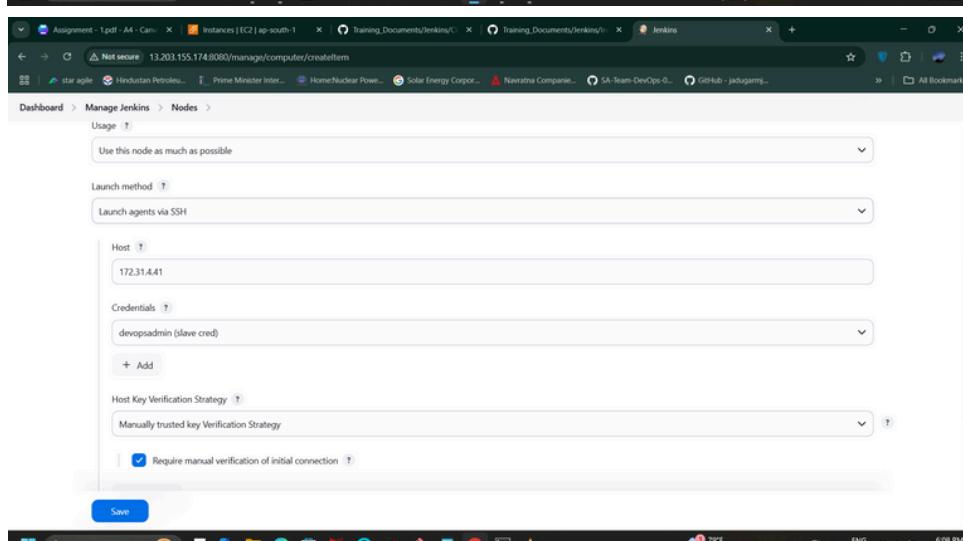
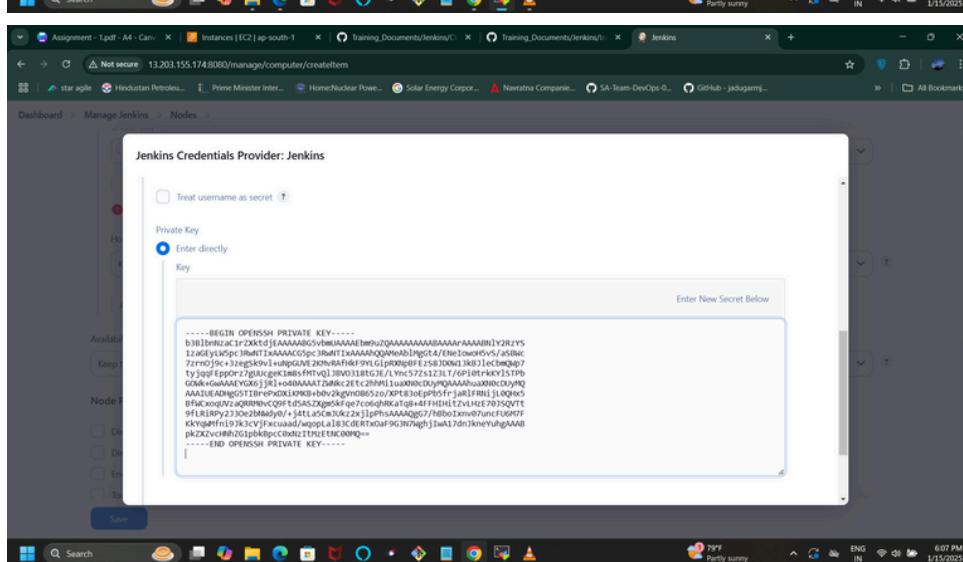
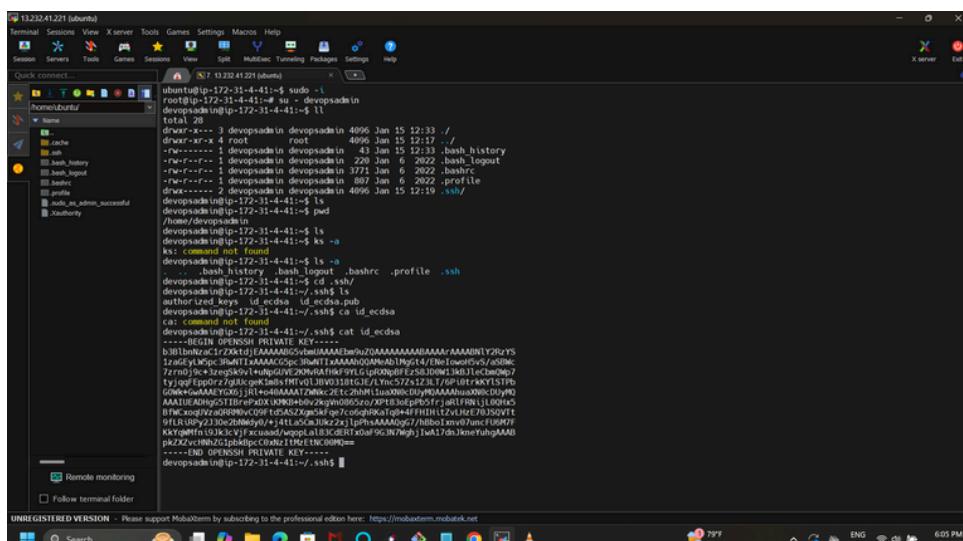
Number of executors ?

3

Remote root directory ?

/home/devopsadmin

[Save](#)



# launching the freestyle project

New Item

Enter an item name  
slave\_project1

Select an item type

**Freestyle project**  
Classic, general-purpose job type that checks out from up to one SCM, executes build steps serially, followed by post-build steps like archiving artifacts and sending email notifications.

**Pipeline**  
Orchestrates long-running activities that can span multiple build agents. Suitable for building pipelines (formerly known as workflows) and/or organizing complex activities that do not easily fit in free-style job type.

**Multi-configuration project**  
Suitable for projects that need a large number of different configurations, such as testing on multiple environments, platform-specific builds, etc.

**Folder**

OK

Do you want to trust the SSH Host Key with fingerprint 77:1c:9b:55:7e:e6:fc:40:c5:2a:fc:38:d9:32:83:98 for future connections to this host? Yes No

Status  
Delete Agent  
Configure  
Build History  
Load Statistics  
Log  
Trust SSH Host Key

Build Executor Status 0/3  
slave\_node (launching...)

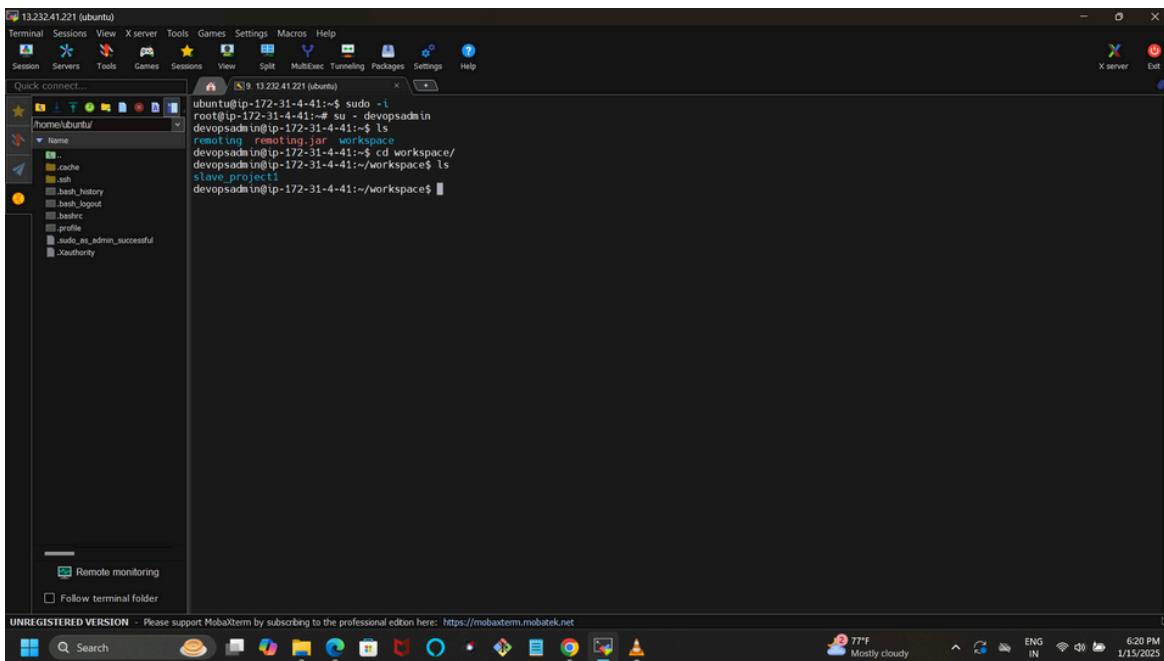
Console Output

Started by user chandra sekar  
Running as SYSTEM  
Building remotely on slave\_node (slave1) in workspace /home/devopsadmin/workspace/slave\_project1  
Finished: SUCCESS

Status  
Changes  
Console Output  
Edit Build Information  
Delete build '#1'  
Timings

REST API Jenkins 2.479.3

we can see the project folder in the workspace

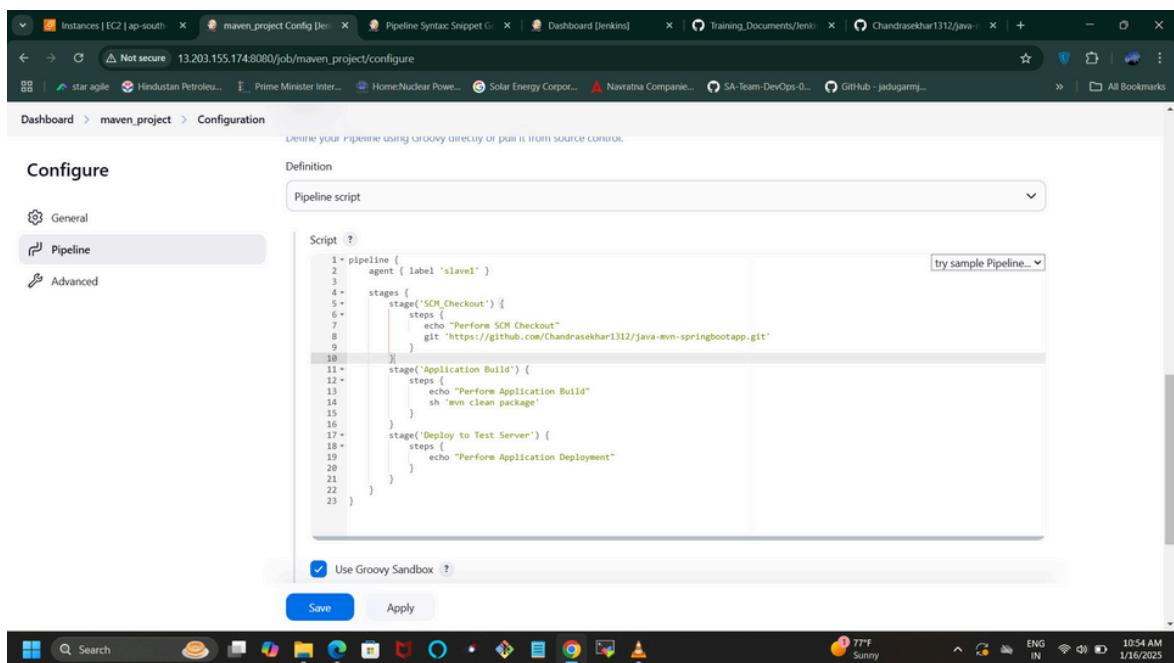
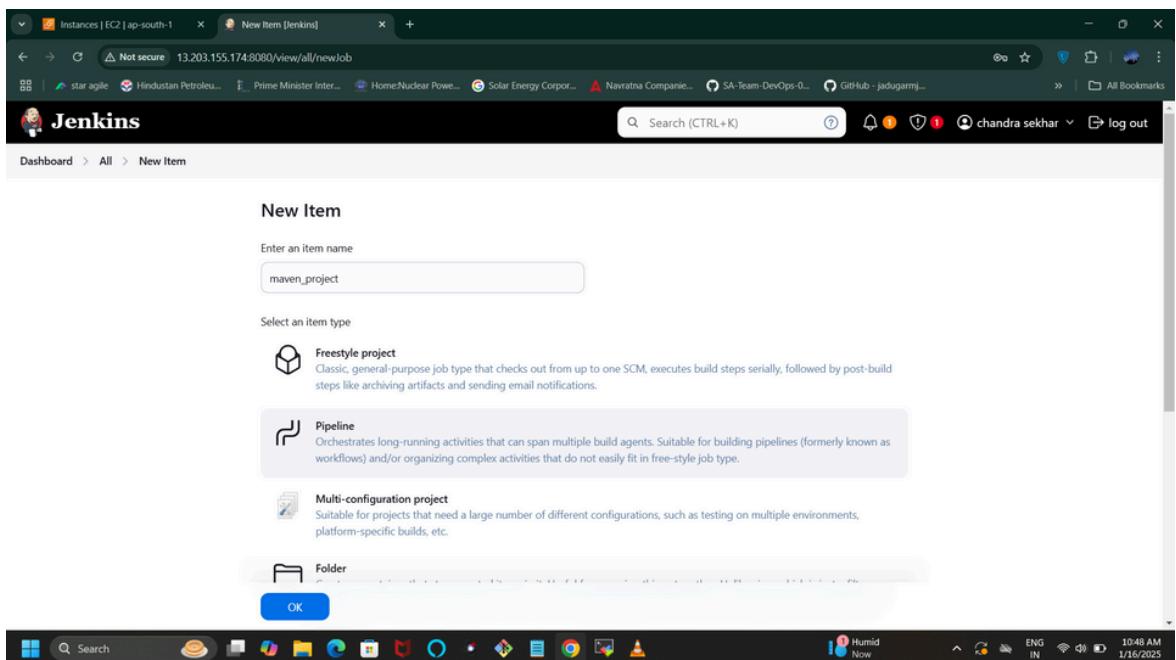


L2-

# Create CICD Pipeline to Clone and Build Java Maven Web Application

## Step - 1

Launching a pipeline project, and configuring it by writing a pipeline script saying to clone a git repository and launch the maven application on slave node and perform maven clean.



Instances | EC2 | ap-south-1 | Not secure | 13.203.155.174:8080/job/maven\_project/1/consoleFull

Dashboard > maven\_project > #1

## Console Output

- Status
- Changes
- Console Output
- Edit Build Information
- Delete build '#1'
- Timings
- Git Build Data
- Pipeline Overview
- Pipeline Console
- Restart from Stage
- Replay
- Pipeline Steps
- Workspaces

```

Started by user chandra sekhar
[Pipeline] Start of Pipeline
[Pipeline] node
Running on slave_node in /home/devopsadmin/workspace/maven_project
[Pipeline] {
[Pipeline] stage
[Pipeline] { (SCM_Checkout)
[Pipeline] echo
Perform SCM Checkout
[Pipeline] git
The recommended git tool is: NONE
No credentials specified
Cloning the remote Git repository
Cloning repository https://github.com/Chandrasekhar1312/java-mvn-springbootapp.git
> git init /home/devopsadmin/workspace/maven_project # timeout=10
Fetching upstream changes from https://github.com/Chandrasekhar1312/java-mvn-springbootapp.git
> git --version # timeout=10
> git fetch --tags --force --progress -- https://github.com/Chandrasekhar1312/java-mvn-springbootapp.git +refs/heads/*:refs/remotes/origin/*
# timeout=10
Avoid second fetch
Checking out Revision 695b0d4c0e4b5c3bbdefdb224a336c083a6c7cae (refs/remotes/origin/master)
> git config remote.origin.url https://github.com/Chandrasekhar1312/java-mvn-springbootapp.git # timeout=10
> git config --add remote.origin.fetch +refs/heads/*:refs/remotes/origin/* # timeout=10

```

77°F Sunny 10:59 AM 1/16/2025

Instances | EC2 | ap-south-1 | Not secure | 13.203.155.174:8080/job/maven\_project/1/consoleFull

Dashboard > maven\_project > #1

```

> git checkout -f 695b0d4c0e4b5c3bbdefdb224a336c083a6c7cae # timeout=10
> git branch -a -v --no-abbrev # timeout=10
> git checkout -b master 695b0d4c0e4b5c3bbdefdb224a336c083a6c7cae # timeout=10
Commit message: "Update index.html"
First time build. Skipping changelog.
[Pipeline]
[Pipeline] // stage
[Pipeline] stage
[Pipeline] { (Application Build)
[Pipeline] echo
Perform Application Build
[Pipeline] sh
+ mvn clean package
[0|1:34mINFO|0|m] Scanning for projects...
Downloading from central: https://repo.maven.apache.org/maven2/org/springframework/boot/spring-boot-starter-parent/3.2.3/spring-boot-starter-parent-3.2.3.pom
Progress (1): 2.8/13 kB
Progress (1): 5.5/13 kB
Progress (1): 8.3/13 kB
Progress (1): 11/13 kB
Progress (1): 13 kB

Downloaded from central: https://repo.maven.apache.org/maven2/org/springframework/boot/spring-boot-starter-parent/3.2.3/spring-boot-starter-parent-3.2.3.pom (13 kB at 22 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/springframework/boot/spring-boot-dependencies/3.2.3/spring-boot-dependencies-3.2.3.pom
Progress (1): 2.8/111 kB
Progress (1): 5.5/111 kB

```

77°F Sunny 10:58 AM 1/16/2025

Instances | EC2 | ap-south-1 | Not secure | 13.203.155.174:8080/job/maven\_project/1/consoleFull

Dashboard > maven\_project > #1

```

Progress (1): 745/752 kB
Progress (1): 750/752 kB
Progress (1): 752 kB

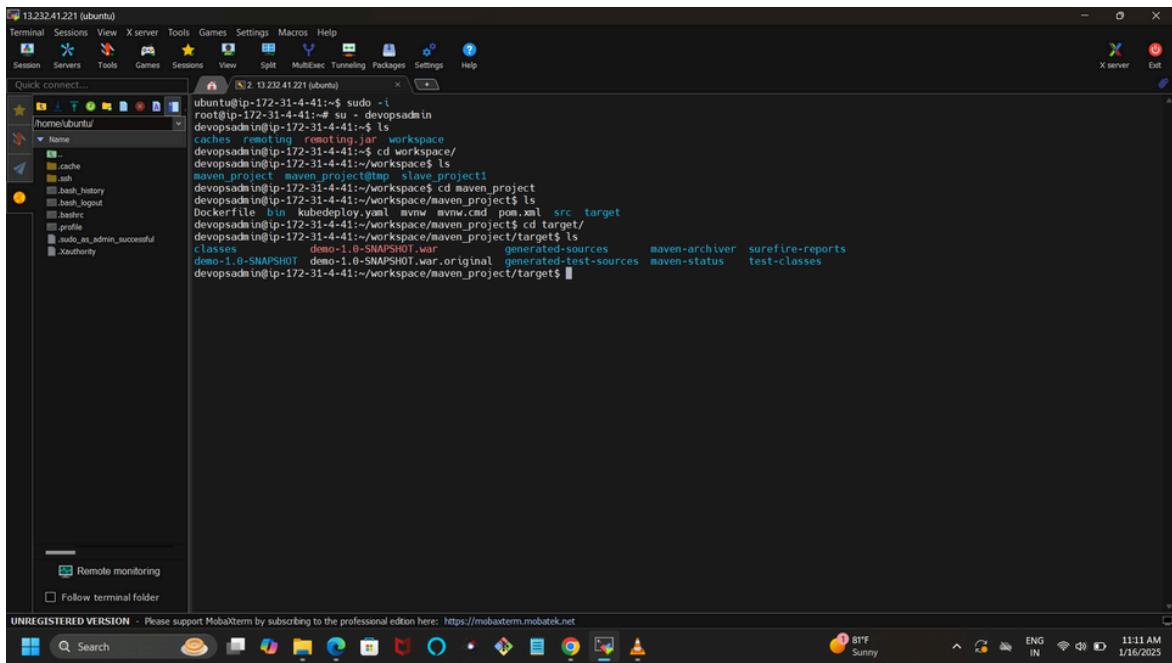
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/commons/commons-collections4/4.4/commons-collections4-4.4.jar (752 kB at 1.2 MB/s)
[0|1:34mINFO|0|m] Replacing main artifact /home/devopsadmin/workspace/maven_project/target/demo-1.0-SNAPSHOT.war with repackaged archive, adding nested dependencies in BOOT-INF/.
[0|1:34mINFO|0|m] The original artifact has been renamed to /home/devopsadmin/workspace/maven_project/target/demo-1.0-SNAPSHOT.war.original
[0|1:34mINFO|0|m] [1m-----[0|m
[0|1:34mINFO|0|m] [1|32mBUILD SUCCESS|[0|m
[0|1:34mINFO|0|m] [1|m-----[0|m
[0|1:34mINFO|0|m] Total time: 27.273 s
[0|1:34mINFO|0|m] Finished at: 2025-01-16T05:25:01Z
[0|1:34mINFO|0|m] [1|m-----[0|m
[Pipeline]
[Pipeline] // stage
[Pipeline] stage
[Pipeline] { (Deploy to Test Server)
[Pipeline] echo
Perform Application Deployment
[Pipeline]
[Pipeline] // stage
[Pipeline] node
[Pipeline] End of Pipeline

```

Finished: SUCCESS

77°F Sunny 10:59 AM 1/16/2025

we can see the war file in the target environment



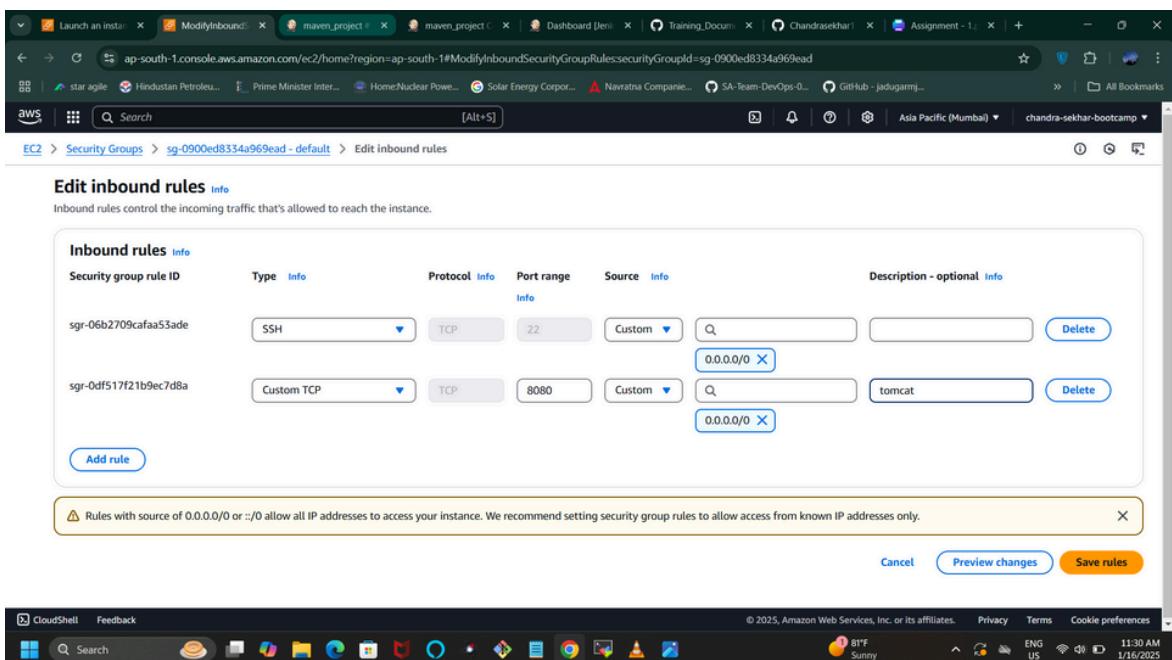
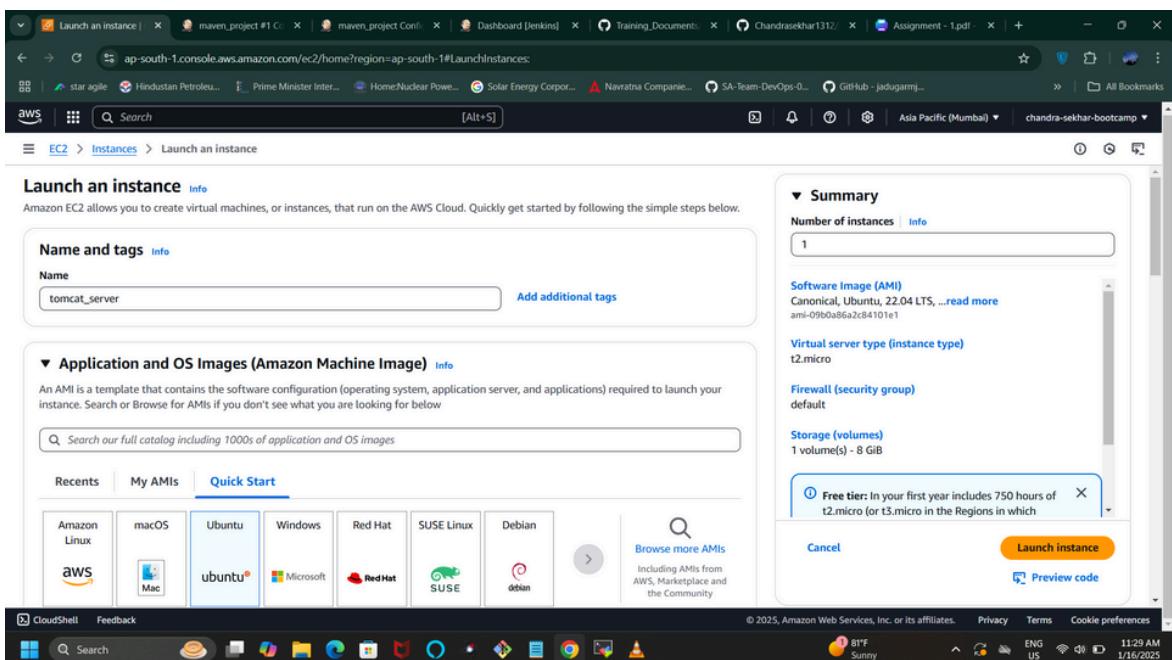
```
ubuntu@ip-172-31-4-41:~$ sudo -i
root@ip-172-31-4-41:~# su - devopsadmin
devopsadmin@ip-172-31-4-41:~$ ls
caches  remoting  remoting.jar
devopsadmin@ip-172-31-4-41:~$ cd workspace/
devopsadmin@ip-172-31-4-41:~/workspace$ ls
maven_project  maven_project@tmp  slave_project1
devopsadmin@ip-172-31-4-41:~/workspace$ cd maven_project
devopsadmin@ip-172-31-4-41:~/workspace/maven_project$ ls
Dockerfile  bin  kubedeploy.yaml  env  mvnw  pom.xml  src  target
devopsadmin@ip-172-31-4-41:~/workspace/maven_project$ cd target/
devopsadmin@ip-172-31-4-41:~/workspace/maven_project/target$ ls
classes      demo-1.0-SNAPSHOT.war  generated-sources  maven-archiver  surefire-reports
demo-1.0-SNAPSHOT  demo-1.0-SNAPSHOT.war.original  generated-test-sources  maven-status  test-classes
devopsadmin@ip-172-31-4-41:~/workspace/maven_project/target$
```

L3-

# Create CICD Pipeline to Deploy the Maven Web Application in Tomcat Server

## Step - 1

Launching a tomcat server configuring the port 8080 in the inbound rules and installing all the required prerequisites and creating a new devopsadmin user with private keys for connecting the tomcat node to the master node.



```

apache-tomcat-8.5.99/webapps/manager/WEB-INF/jsp/connectorTrustedCerts.jsp
apache-tomcat-8.5.99/webapps/manager/WEB-INF/jsp/sessionDetail.jsp
apache-tomcat-8.5.99/webapps/manager/WEB-INF/jsp/sessionList.jsp
apache-tomcat-8.5.99/webapps/manager/WEB-INF/web.xml
apache-tomcat-8.5.99/webapps/manager/css/manager.css
apache-tomcat-8.5.99/webapps/manager/images/af-logo.svg
apache-tomcat-8.5.99/webapps/manager/images/tomcat.svg
apache-tomcat-8.5.99/webapps/manager/images/favicon.ico
apache-tomcat-8.5.99/webapps/manager/status/xform.xsl
apache-tomcat-8.5.99/in/catalina.sh
apache-tomcat-8.5.99/in/ciphers.sh
apache-tomcat-8.5.99/in/configtest.sh
apache-tomcat-8.5.99/in/daemon.sh
apache-tomcat-8.5.99/in/daemon.sh
apache-tomcat-8.5.99/in/stopup.sh
apache-tomcat-8.5.99/in/setclasspath.sh
apache-tomcat-8.5.99/in/shutdown.sh
apache-tomcat-8.5.99/in/startup.sh
apache-tomcat-8.5.99/in/tool-wrapper.sh
apache-tomcat-8.5.99/bin/versn.sh
root@ip-172-31-0-238:~# ./apache-tomcat-8.5.99 tomcat
root@ip-172-31-0-238:~/opt/tomcat/bin/
root@ip-172-31-0-238:~/opt/tomcat/bin# ls
bootstrap.jar           configtest.sh    startup.sh
catalina-tasks.xml      daemon.sh       tomcat-juli.jar
catalina.bat            digest.bat     tomcat-native.tar.gz
catalina.sh             digest.sh      tomcat-native-win32.exe
ciphers.bat             setclasspath.bat tool-wrapper.sh
ciphers.sh              setclasspath.sh version.bat
commons-daemon-native.tar.gz shutdown.bat  version.sh
commons-daemon.jar     shutdown.sh
commons-daemon.sh       shutdown.bat
commons-tester.sh       shutdown.sh
root@ip-172-31-0-238:~/opt/tomcat/bin# ./startup.sh
Using CATALINA_BASE:   /opt/tomcat
Using CATALINA_HOME:   /opt/tomcat
Using CATALINA_TMPDIR: /opt/tomcat/temp
Using JRE_HOME:        /usr
Using CLASSPATH:       /opt/tomcat/bin/bootstrap.jar:/opt/tomcat/bin/tomcat-juli.jar
Using CATALINA_OPTS:
Tomcat started.
root@ip-172-31-0-238:~/opt/tomcat/bin#

```

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## Apache Tomcat/8.5.99

If you're seeing this, you've successfully installed Tomcat. Congratulations!

 APACHE SOFTWARE FOUNDATION <http://www.apache.org>

**Developer Quick Start**

- Tomcat Setup
- First Web Application
- Realms & AAA
- JDBC DataSources
- Examples
- Servlet Specifications
- Tomcat Versions

**Managing Tomcat**  
For security, access to the `manager.webapp` is restricted. Users are defined in: `$CATALINA_HOME/conf/tomcat-users.xml`. In Tomcat 8.5 access to the manager application is split between different users. [Read more...](#)

**Release Notes**  
[Changelog](#)  
[Migration Guide](#)  
[Security Notices](#)

**Documentation**  
[Tomcat 8.5 Documentation](#)  
[Tomcat 8.5 Configuration](#)  
[Tomcat Wiki](#)  
Find additional important configuration information in: `$CATALINA_HOME/running.txt`. Developers may be interested in:  
[Tomcat 8.5 Bug Database](#)  
[Tomcat 8.5 JavaDocs](#)  
[Tomcat 8.5 Git Repository at GitHub](#)

**Getting Help**  
**FAQ and Mailing Lists**  
The following mailing lists are available:  
`tomcat-announce`: Important announcements, releases, security vulnerability notifications. (Low volume).  
`tomcat-users`: User support and discussion.  
`taglibs-user`: User support and discussion for [Apache Taglibs](#).  
`tomcat-dev`: Development mailing list, including commit messages.

```

root@ip-172-31-0-238:~# useradd devopsadmin -s /bin/bash -m /home/devopsadmin
root@ip-172-31-0-238:~# su - devopsadmin
devopsadmin@ip-172-31-0-238:~$ ssh-keygen -t ecdsa -b 521
Generating public/private ecdsa key pair.
Your identification has been saved in /home/devopsadmin/.ssh/id_ecdsa.
The key fingerprint is:
SHA256:9uXtarcCFEU4rJGshZBq4PMq2h/vwFlppYem8E devopsadmin@ip-172-31-0-238
The key's randomart image:
+---[ECDSA 521]---+
|          . |
|          o + . |
|          o = . |
|          + + = . |
|          + * = . |
|          + *+So .. |
|          .++o,+o .. |
|          .+o o .. |
|          B o o .. |
|          o o .. |
+---[SHA256]---+
devopsadmin@ip-172-31-0-238:~$ ls
devopsadmin@ip-172-31-0-238:~$ ls
devopsadmin@ip-172-31-0-238:~$ ll
total 20
drwxr-xr-x 3 devopsadmin devopsadmin 4096 Jan 16 06:21 ./
drwxr-xr-x 4 root      root      4096 Jan 16 06:21 ../
-rw-r--r--  1 devopsadmin devopsadmin 220 Jan  6 2022 .bash_logout
-rw-r--r--  1 devopsadmin devopsadmin 3771 Jan  6 2022 .bashrc
-rw-r--r--  1 devopsadmin devopsadmin  807 Jan  6 2022 .profile
drwxr-xr-x 2 devopsadmin devopsadmin 4096 Jan 16 06:21 .ssh/
devopsadmin@ip-172-31-0-238:~$ cd .ssh/
devopsadmin@ip-172-31-0-238:~/ssh$ ls
id_ecdsa id_ecdsa.pub
devopsadmin@ip-172-31-0-238:~/ssh$ 

```

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```
13.232.169.125 (ubuntu)
Terminal Sessions View X server Tools Games Settings Macros Help
Session Servers Tools Games Sessions View Split MultiTerm Tunneling Packages Settings Help
X server Exit
Quick connect...
Created directory '/home/devopsadmin/.ssh'.
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
Your identity key has been saved in /home/devopsadmin/.ssh/id_ecdsa
Your public key has been saved in /home/devopsadmin/.ssh/id_ecdsa.pub
The key fingerprint is:
SHA256:9uXtarcCFdU4rjJ6sB94pM6q2h/vuFhpWYem8E devopsadmin@ip-172-31-0-238
The key's randomart image is:
+---[ECDSA 521]---+
|          o       |
|         + .      |
|        + + .     |
|       + + = .    |
|      + *+ $o ..  |
|     .+o+.-.o.   |
|    Eo . -..o.   |
|   B... . .o.    |
|  .oo . .o.    |
+---[SHA256]---+
devopsadmin@ip-172-31-0-238:~$ devopsadmin@ip-172-31-0-238:~$ ls
devopsadmin@ip-172-31-0-238:~$ ll
total 24
drwxr-xr-x  3 devopsadmin devopsadmin 4996 Jan 16 06:21 ./
drwxr-xr-x  4 root      root      4996 Jan 16 06:21 ../
-rw-r--r--  1 devopsadmin devopsadmin 220 Jan  6 2022 .bash_logout
-rw-r--r--  1 devopsadmin devopsadmin 3771 Jan  6 2022 .bashrc
-rw-r--r--  1 devopsadmin devopsadmin 807 Jan  6 2022 .profile
drwxr----- 2 devopsadmin devopsadmin 4996 Jan 16 06:21 .ssh/
devopsadmin@ip-172-31-0-238:~$ cd .ssh/
devopsadmin@ip-172-31-0-238:~/ssh$ ls
id_ecdsa id_ecdsa.pub
devopsadmin@ip-172-31-0-238:~/ssh$ cat id_ecdsa.pub > authorized_keys
devopsadmin@ip-172-31-0-238:~/ssh$ chmod 600 /home/devopsadmin/.ssh/*
devopsadmin@ip-172-31-0-238:~/ssh$ ll
total 20
drwxr-x---  2 devopsadmin devopsadmin 4996 Jan 16 06:22 ./
drwxr-x---  3 devopsadmin devopsadmin 4996 Jan 16 06:21 ../
-rw-r-----  1 devopsadmin devopsadmin 281 Jan 16 06:22 authorized_keys
-rw-r-----  1 devopsadmin devopsadmin 748 Jan 16 06:21 id_ecdsa
-rw-r-----  1 devopsadmin devopsadmin 281 Jan 16 06:21 id_ecdsa.pub
devopsadmin@ip-172-31-0-238:~/ssh$ ll
Remote monitoring
Follow terminal folder
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84°F Sunny
ENG US
11:51 AM
1/16/2024
```

13.232.169.125 (ubuntu)

Terminal Sessions View X server Tools Games Settings Macros Help

Session Servers Tools Games Sessions View Split MultiExec Tunneling Packages Settings Help

Quick connect...

14. 13.232.169.125 (ubuntu) 4. 13.232.169.125 (ubuntu)

/home/ubuntu/

```
devopsadmin@ip-172-31-0-238:/opt/tomcat$ ll
total 160
drwxr-xr-x  3 root root 4966 Jan 16 06:04 .
drwxr-xr-x  3 root root 4966 Jan 16 06:04 ..
-rw-r--r--  1 root root 20913 Feb 14 2024 BUILDING.txt
-rw-r--r--  1 root root 6210 Feb 14 2024 CONTRIBUTING.md
-rw-r--r--  1 root root 57011 Feb 14 2024 LICENSE
-rw-r--r--  1 root root 1726 Feb 14 2024 NOTICE
-rw-r--r--  1 root root 1099 Feb 14 2024 RELEASE-NOTES
-rw-r--r--  1 root root 7139 Feb 14 2024 RUNNING.txt
drwxr-xr-x  2 root root 4966 Jan 16 06:04 bin/
drwxr-xr-x  3 root root 4966 Jan 16 06:05 conf/
drwxr-xr-x  2 root root 4966 Jan 16 06:04 lib/
drwxr-xr-x  2 root root 4966 Jan 16 06:05 logs/
drwxr-xr-x  2 root root 4966 Jan 16 06:04 temp/
drwxr-xr-x  2 root root 4966 Feb 14 2024 webapps/
drwxr-xr-x  3 root root 4966 Jan 16 06:05 work/
devopsadmin@ip-172-31-0-238:/opt/tomcat$ exit
logout
root@ip-172-31-0-238:~# chown -R devopsadmin /opt/tomcat
root@ip-172-31-0-238:~# su - devopsadmin
devopsadmin@ip-172-31-0-238:~$ cd /opt/tomcat
devopsadmin@ip-172-31-0-238:/opt/tomcat$ ll
total 160
drwxr-xr-x  9 devopsadmin root 4966 Jan 16 06:04 .
drwxr-xr-x  3 root root 4966 Jan 16 06:04 ..
-rw-r--r--  1 devopsadmin root 20913 Feb 14 2024 BUILDING.txt
-rw-r--r--  1 devopsadmin root 6210 Feb 14 2024 CONTRIBUTING.md
-rw-r--r--  1 devopsadmin root 57011 Feb 14 2024 LICENSE
-rw-r--r--  1 devopsadmin root 1726 Feb 14 2024 NOTICE
-rw-r--r--  1 devopsadmin root 3342 Feb 14 2024 RELEASE-NOTES
-rw-r--r--  1 devopsadmin root 7139 Feb 14 2024 RUNNING.txt
drwxr-xr-x  2 devopsadmin root 4966 Jan 16 06:04 bin/
drwxr-xr-x  3 devopsadmin root 4966 Jan 16 06:05 conf/
drwxr-xr-x  2 devopsadmin root 4966 Jan 16 06:04 lib/
drwxr-xr-x  2 devopsadmin root 4966 Jan 16 06:04 logs/
drwxr-xr-x  2 devopsadmin root 4966 Feb 14 2024 webapps/
drwxr-xr-x  3 devopsadmin root 4966 Jan 16 06:05 work/
devopsadmin@ip-172-31-0-238:/opt/tomcat$
```

Remote monitoring

Follow terminal folder

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84°F Sunny

ENG US

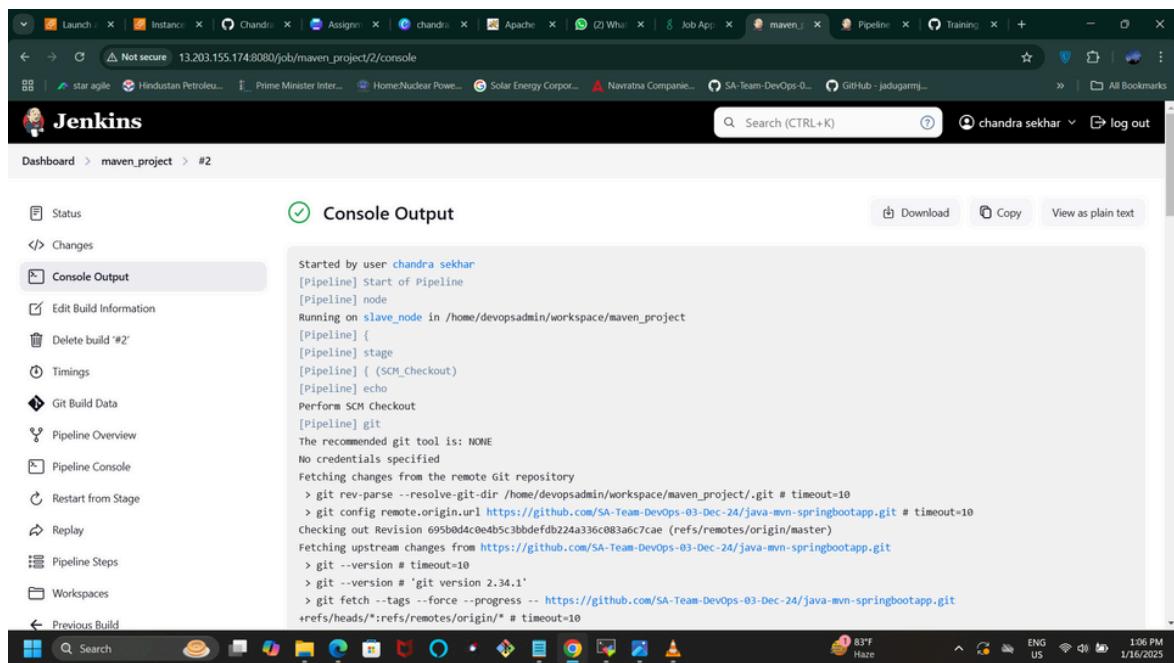
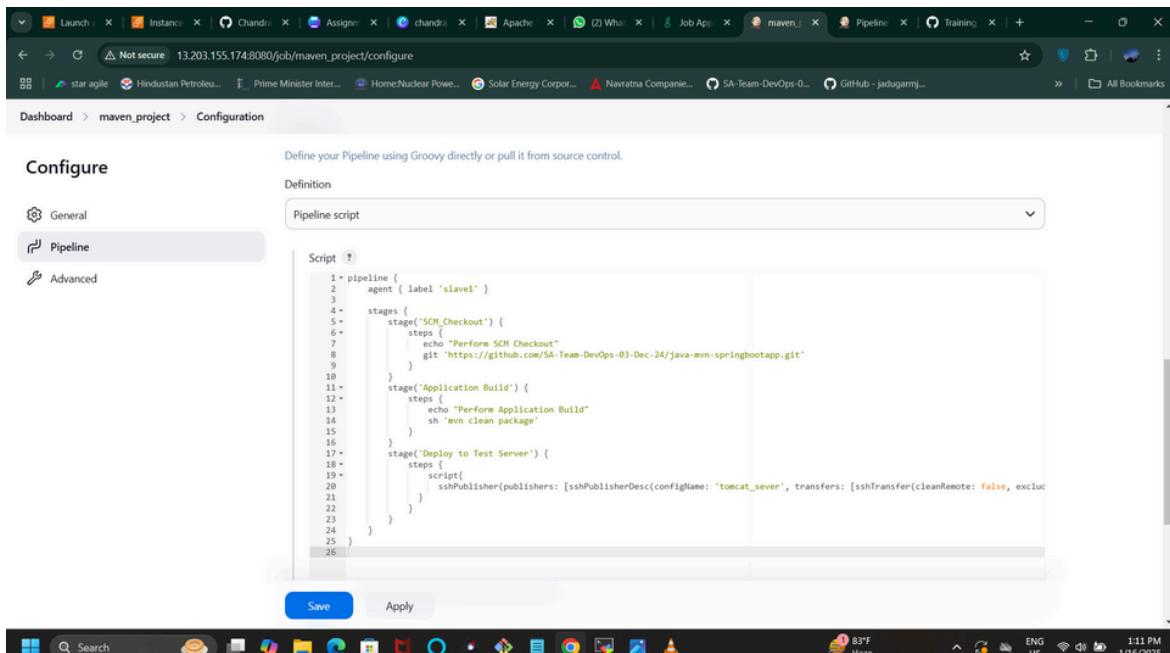
11:58/2025 1/16/2025

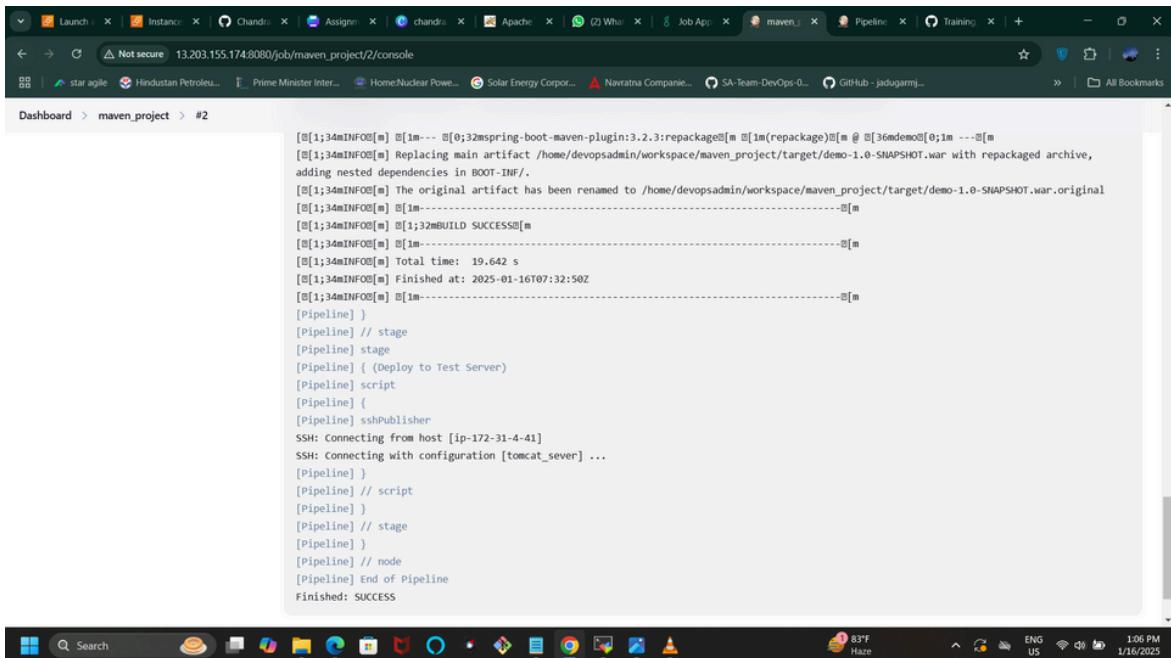
# Installing the publish over ssh plugin and connecting the tomact server with maste node using ssh connection

The screenshot shows the Jenkins Manage Plugins interface. The search bar at the top contains the text "publish over ssh". A single result is listed: "Publish Over SSH 383.v4eb\_4c44da\_2dd". The status is "Enabled" with a green toggle switch. The left sidebar has tabs for "Updates", "Available plugins", "Installed plugins" (which is selected), and "Advanced settings". The bottom right corner shows "Jenkins 2.479.3".

The screenshot shows the Jenkins System configuration page under "Manage Jenkins > System". It displays the "SSH Servers" section. A new server configuration is being edited for "tomcat\_sever". The fields are: Name (tomcat\_sever), Hostname (172.31.0.238), Username (devopsadmin), and Remote Directory (/opt/tomcat/webapps). There is a checkbox for "Avoid sending files that have not changed" which is unchecked. At the bottom are "Save" and "Apply" buttons. The bottom right corner shows "Jenkins 2.479.3".

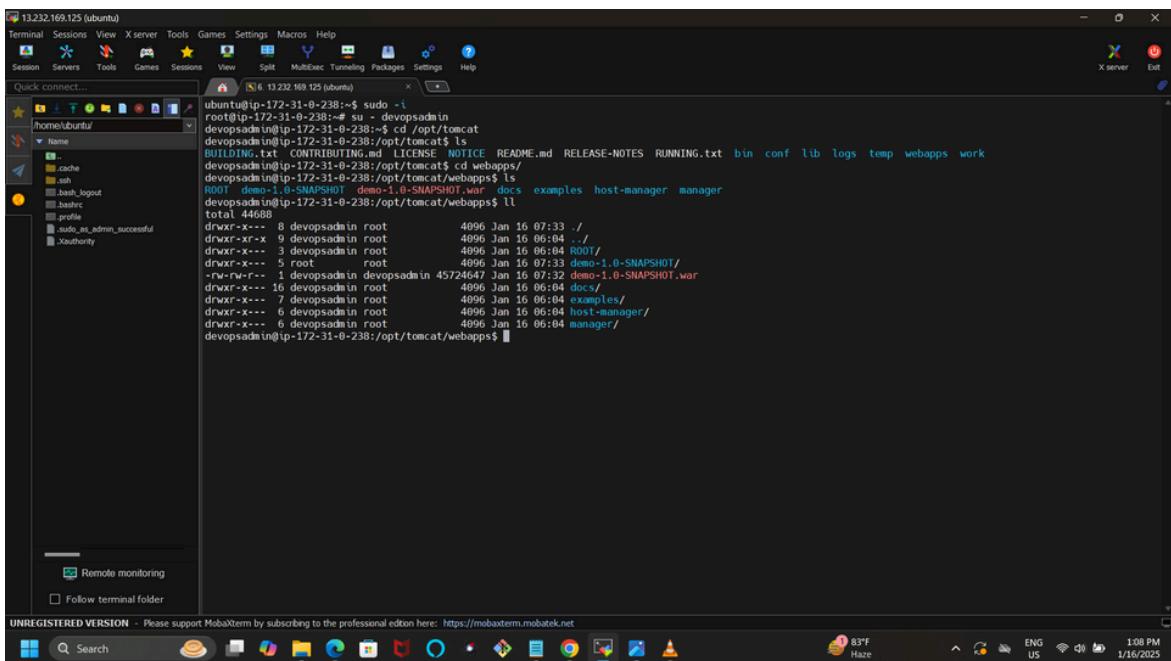
# modifying the pipeline script and starting the build





```
[B[1;34mINFO[m] @[1m--- @[0;32mspring-boot-maven-plugin:3.2.3:repackage@[m @[@[36mdemo@[0;1m ---@[m
@[1;34mINFO[m] Replacing main artifact /home/devopsadmin/workspace/maven_project/target/demo-1.0-SNAPSHOT.war with repackaged archive,
adding nested dependencies in BOOT-INF/.
@[1;34mINFO[m] The original artifact has been renamed to /home/devopsadmin/workspace/maven_project/target/demo-1.0-SNAPSHOT.war.original
@[1;34mINFO[m] @[1m-----@[m
@[1;34mINFO[m] @[1m-----@[m
@[1;34mINFO[m] Total time: 19.642 s
@[1;34mINFO[m] Finished at: 2025-01-16T07:32:50Z
@[1;34mINFO[m] @[1m-----@[m
[Pipeline]
[Pipeline] // stage
[Pipeline] stage
[Pipeline] { (Deploy to Test Server)
[Pipeline] script
[Pipeline] {
[Pipeline] sshPublisher
SSH: Connecting from host [ip-172-31-4-41]
SSH: Connecting with configuration [tomcat_sever] ...
[Pipeline]
[Pipeline] // script
[Pipeline]
[Pipeline] // stage
[Pipeline]
[Pipeline] // node
[Pipeline] End of Pipeline
Finished: SUCCESS
```

we can see demo snapshot has been added to the webapps folder of tomcat node



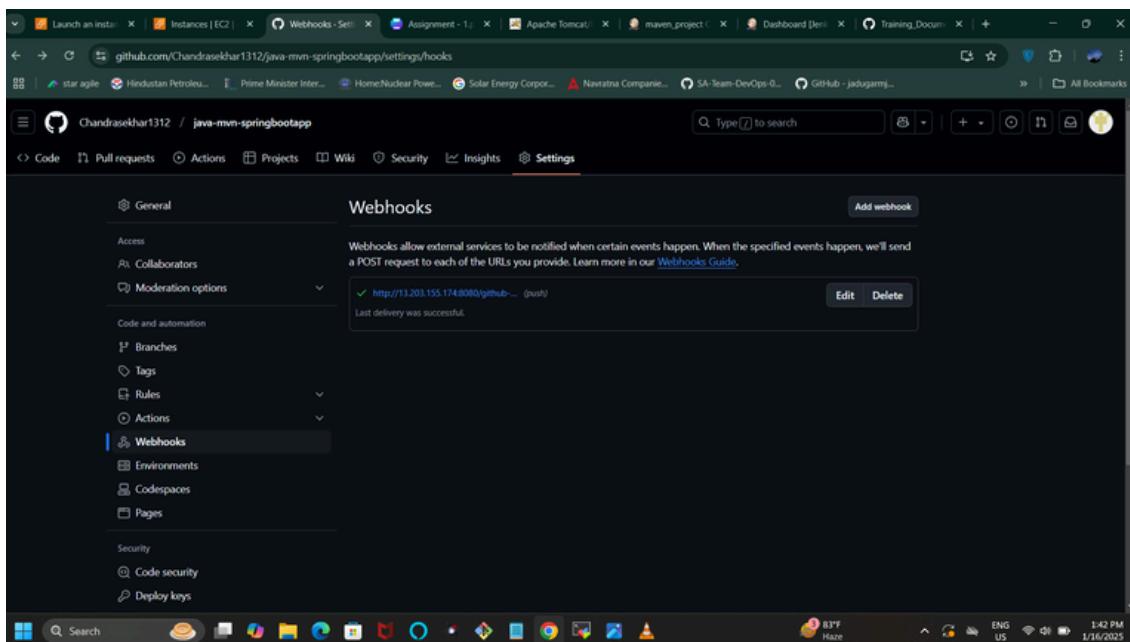
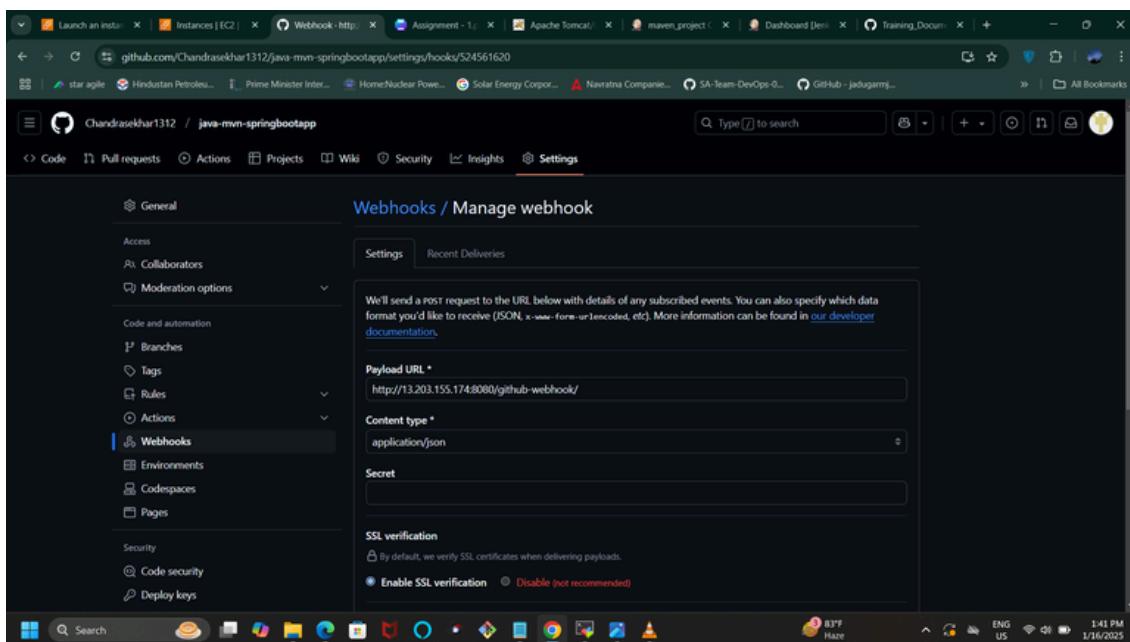
```
13.232.169.125 (ubuntu)
Terminal Sessions View X server Tools Games Settings Macros Help
Session Servers Tools Games Sessions View Split MultiDoc Tunneling Packages Settings Help
Quick connect...
/home/ubuntu
Name
.. .code .ssh .bash .bash_logout .profile .sudo_as_admin_successful .authorized
ubuntut@ip-172-31-0-238:~$ sudo -l
root@ip-172-31-0-238:~# su - devopsadmin
devopsadmin@ip-172-31-0-238:~$ cd /opt/tomcat
devopsadmin@ip-172-31-0-238:~/opt/tomcat$ ls
BUILDING.txt CONTRIBUTE.txt LICENSE NOTICE README.md RELEASE-NOTES RUNNING.txt bin conf lib logs temp webapps work
devopsadmin@ip-172-31-0-238:~/opt/tomcat$ cd webapps/
devopsadmin@ip-172-31-0-238:~/opt/tomcat/webapps$ ls
ROOT demo-1.0-SNAPSHOT demo-1.0-SNAPSHOT.war docs examples host-manager manager
devopsadmin@ip-172-31-0-238:~/opt/tomcat/webapps$ ll
total 44688
drwxr-x--  8 devopsadmin root      4996 Jan 16 07:33 /
drwxr-x--x  3 devopsadmin root      4996 Jan 16 06:04 ../
drwxr-x--x  3 devopsadmin root      4996 Jan 16 06:04 ROOT/
drwxr-x--x  5 root      root      4996 Jan 16 07:33 demo-1.0-SNAPSHOT/
-rw-rw-r--  1 devopsadmin devopsadmin 45724047 Jan 16 07:32 demo-1.0-SNAPSHOT.war
drwxr-x--x 16 devopsadmin root      4996 Jan 16 06:04 docs/
drwxr-x--x  7 devopsadmin root      4996 Jan 16 06:04 examples/
drwxr-x--x  6 devopsadmin root      4996 Jan 16 06:04 host-manager/
drwxr-x--x  6 devopsadmin root      4996 Jan 16 06:04 manager/
devopsadmin@ip-172-31-0-238:~/opt/tomcat/webapps$
```

L4-

# Automate the CICD Pipeline using GitHub webhook and Poll-SCM

## Step - 1

### Setting up git webhook in git repository and setting up poll-scm



The screenshot shows the Jenkins Pipeline configuration for a project named 'maven\_project'. The 'General' tab is selected. Under 'General', there are several checkboxes: 'Do not allow the pipeline to resume if the controller restarts' (unchecked), 'GitHub project' (unchecked), 'Pipeline speed/durability override' (unchecked), 'Preserve stashes from completed builds' (unchecked), 'This project is parameterized' (unchecked), and 'Throttle builds' (unchecked). Under 'Triggers', the 'GitHub hook trigger for GITScm polling' checkbox is checked. At the bottom, there are 'Save' and 'Apply' buttons.

The screenshot shows a GitHub code editor for a file named 'index.html' in the 'src/main/webapp' directory of a repository. The code is as follows:

```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <title>www.loksaieta.com</title>
    <link rel="stylesheet" href="https://maxcdn.bootstrapcdn.com/bootstrap/3.3.6/css/bootstrap.min.css">
</head>
<body>
    <div class="jumbotron" style="background-color:white">
        
        <h2 class="text-center">Hello Team</h2>
        <p class="text-center">Spring Boot Web Application - CI/CD - SA DevOps - PollSON </p>
    </div>
</body>
</html>
```

At the top right, there are 'Cancel changes' and 'Commit changes...' buttons. The status bar at the bottom indicates it's 1:44 PM on 1/16/2025.

The screenshot shows the Jenkins pipeline status for the 'maven\_project'. The left sidebar has options like 'Changes', 'Build Now', 'Configure', 'Delete Pipeline', 'Stages', 'Rename', 'Pipeline Syntax', and 'GitHub Hook Log'. The main area shows the pipeline name 'maven\_project' and a 'Permalinks' section with links to the last four builds. Below is a 'Builds' table with the following data:

#	Build Time	Status
#4	8:30 AM	Success
#3	8:28 AM	Success
#2	7:32 AM	Success
#1	5:24 AM	Success

The status bar at the bottom indicates it's 2:00 PM on 1/16/2025.

# We can see the build triggered by github webhook

The screenshot shows a Jenkins console output for a build triggered by a GitHub push. The log starts with "Started by GitHub push by Chandrasekhar1312" and proceeds through various Jenkins pipeline stages like Start of Pipeline, node selection, SCM checkout, and git fetch. It also shows the GitHub URL used for the poll.

```
Started by GitHub push by Chandrasekhar1312
[Pipeline] Start of Pipeline
[Pipeline] node
Running on slave_node in /home/devopsadmin/workspace/maven_project
[Pipeline]
[Pipeline] stage
[Pipeline] { (SCM_checkout)
[Pipeline] echo
Perform SCM Checkout
[Pipeline] git
The recommended git tool is: NONE
No credentials specified
Fetching changes from the remote Git repository
> git rev-parse --resolve-git-dir /home/devopsadmin/workspace/maven_project/.git # timeout=10
> git config remote.origin.url https://github.com/Chandrasekhar1312/java-mvn-springbootapp.git # timeout=10
Fetching upstream changes from https://github.com/Chandrasekhar1312/java-mvn-springbootapp.git
> git --version # timeout=10
> git --version # 'git version 2.34.1'
> git fetch --tags --force --progress -- https://github.com/Chandrasekhar1312/java-mvn-springbootapp.git +refs/heads/*:refs/remotes/origin/*
# timeout=10
Checking out Revision 6fd0ec919bf70dd86b7ce68367dcf1b3e1b21e8 (refs/remotes/origin/master)
```

## setting up poll-scm

The screenshot shows the Jenkins configuration page for a job named "maven\_project". Under the "Triggers" section, the "Poll SCM" option is selected. A warning message indicates that the current schedule ("\*\*\*\*") means every minute, which is likely a mistake. The "Schedule" field is empty, and the "Save" and "Apply" buttons are visible at the bottom.

**Configure**

**Triggers**

**General**

- Build after other projects are built
- Build periodically
- GitHub hook trigger for GITScm polling
- Poll SCM

Schedule: \*\*\*\*

**Warning:** Do you really mean "every minute" when you say "\*\*\*\*"? Perhaps you meant "H \* \* \* \*" to poll once per hour  
Would last have run at Thursday, January 16, 2025 at 8:35:24 AM Coordinated Universal Time; would next run at Thursday, January 16, 2025 at 8:35:24 AM Coordinated Universal Time.

Ignore post-commit hook

Trigger builds remotely (e.g., from scripts)

**Save**   **Apply**