Java Web Application Build Documentation

Step-by-Step Process

1. System Update

sudo apt update -y

2. Java Verification

java --version

Output:

```
ubuntu@ip-172-31-24-177:~$ java --version
openjdk 21.0.8 2025-07-15
OpenJDK Runtime Environment (build 21.0.8+9-Ubuntu-0ubuntu124.04.1)
OpenJDK 64-Bit Server VM (build 21.0.8+9-Ubuntu-0ubuntu124.04.1, mixed mode, sharing)
```

3. Maven Installation

sudo apt install maven

```
ubuntu@ip-172-31-24-177:~$ mvn --version
Apache Maven 3.8.7
Maven home: /usr/share/maven
Java version: 21.0.8, vendor: Ubuntu, runtime: /usr/lib/jvm/java-21-openjdk-amd64
Default locale: en, platform encoding: UTF-8
OS name: "linux", version: "6.14.0-1014-aws", arch: "amd64", family: "unix"
```

4. Clone the code from GitHub

git clone https://github.com/akracad/JavaWebCal.git

```
ubuntu@ip-172-31-24-177:~$ git clone https://github.com/akracad/JavaWebCal.git
Cloning into 'JavaWebCal'...
remote: Enumerating objects: 29, done.
remote: Counting objects: 100% (29/29), done.
remote: Compressing objects: 100% (20/20), done.
remote: Total 29 (delta 3), reused 29 (delta 3), pack-reused 0 (from 0)
Receiving objects: 100% (29/29), 5.78 KiB | 1.45 MiB/s, done.
Resolving deltas: 100% (3/3), done.
```

5.List the files with the command ls

```
ubuntu@ip-172-31-24-177:~$ ls
JavaWebCal   indu
```

6. Change the directory JavaWebCal

```
ubuntu@ip-172-31-24-177:~$ cd JavaWebCal/
ubuntu@ip-172-31-24-177:~/JavaWebCal$ ls
pom.xml   src
```

7.Build the artifact by using the command mvn package

Output:

```
Downloaded from central: https://repo.maven.apache.org/maven2/org/sonatype/sisu/sisu-guice/3.1
B/s)
Downloaded from central: https://repo.maven.apache.org/maven2/com/google/guava/guava/10.0.1/gu
[INFO] Packaging webapp
[INFO] Assembling webapp [webapp] in [/home/ubuntu/JavaWebCal/target/webapp-0.2]
[INFO] Processing war project
[INFO] Copying webapp resources [/home/ubuntu/JavaWebCal/src/main/webapp]
[INFO] Building war: /home/ubuntu/JavaWebCal/target/webapp-0.2.war
[INFO] ------------------------------------------------------------
[INFO] BUILD SUCCESS
[INFO] ------------------------------------------------------------
[INFO] Total time:  11.658 s
[INFO] Finished at: 2025-10-07T06:23:33Z
[INFO] ------------------------------------------------------------
ubuntu@ip-172-31-24-177:~/JavaWebCal$ ^C
ubuntu@ip-172-31-24-177:~/JavaWebCal$ cd
ubuntu@ip-172-31-24-177:~$ mvn --version
Apache Maven 3.8.7
Maven home: /usr/share/maven
Java version: 21.0.8, vendor: Ubuntu, runtime: /usr/lib/jvm/java-21-openjdk-amd64
Default locale: en, platform encoding: UTF-8
OS name: "linux", version: "6.14.0-1014-aws", arch: "amd64", family: "unix"
ubuntu@ip-172-31-24-177:~$
```

After build success we will get target folder now go to target folder.

```
ubuntu@ip-172-31-24-177:~$ cd JavaWebCal/
ubuntu@ip-172-31-24-177:~/JavaWebCal$ ls
pom.xml  src  target
```

Now go to target folder we will get .war file

```
ubuntu@ip-172-31-24-177:~/JavaWebCal$ cd target/
ubuntu@ip-172-31-24-177:~/JavaWebCal/target$ ls
classes  generated-sources  generated-test-sources  maven-archiver  maven-status  surefire-reports  test-classes  webapp-0.2  webapp-0.2.war
```

Now go to another server and install java and apache tomcat in that server.

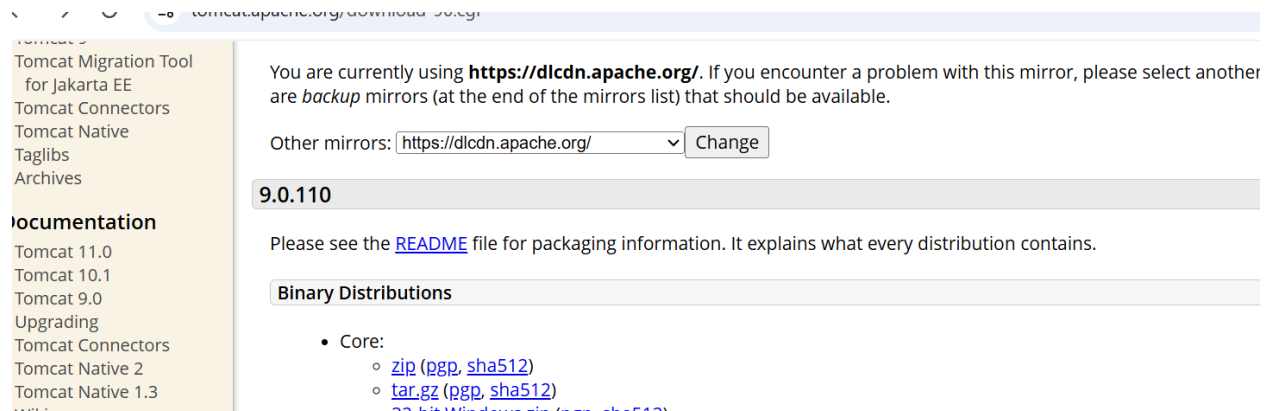**1. System Update**

sudo apt update -y

2. Java Verification

java --version

Output:

```
ubuntu@ip-172-31-24-177:~$ java --version
openjdk 21.0.8 2025-07-15
OpenJDK Runtime Environment (build 21.0.8+9-Ubuntu-0ubuntu124.04.1)
OpenJDK 64-Bit Server VM (build 21.0.8+9-Ubuntu-0ubuntu124.04.1, mixed mode, sharing)
```

3. Now install Apache Tomcat

You are currently using **https://dlcdn.apache.org/**. If you encounter a problem with this mirror, please select another are *backup* mirrors (at the end of the mirrors list) that should be available.

Other mirrors: https://dlcdn.apache.org/ [Change]

9.0.110

Please see the README file for packaging information. It explains what every distribution contains.

Binary Distributions

- Core:
  - zip (pgp, sha512)
  - tar.gz (pgp, sha512)

Now go to terminal and paste the tomcat url by using the command wget.

```
ubuntu@ip-172-31-16-197:~$ wget https://dlcdn.apache.org/tomcat/tomcat-9/v9.0.110/bin/apache-tomcat-9.0.110.tar.gz
--2025-10-07 06:55:27--  https://dlcdn.apache.org/tomcat/tomcat-9/v9.0.110/bin/apache-tomcat-9.0.110.tar.gz
Resolving dlcdn.apache.org (dlcdn.apache.org)... 151.101.2.132, 2a04:4e42::644
Connecting to dlcdn.apache.org (dlcdn.apache.org)|151.101.2.132|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 13036068 (12M) [application/x-gzip]
Saving to: 'apache-tomcat-9.0.110.tar.gz'

apache-tomcat-9.0.110.tar.gz          100%[=================================================================================>]  12.43M  --.-KB/s    in 0.03s

2025-10-07 06:55:27 (422 MB/s) - 'apache-tomcat-9.0.110.tar.gz' saved [13036068/13036068]

ubuntu@ip-172-31-16-197:~$ ls
apache-tomcat-9.0.110.tar.gz
```

Next Extract the apache-tomcat by usin the command tar -xvf apache-tomcat-9.0.110.tar.gz.

```
apache-tomcat-9.0.110.tar.gz
ubuntu@ip-172-31-16-197:~$ tar -xvf apache-tomcat-9.0.110.tar.gz
apache-tomcat-9.0.110/conf/
apache-tomcat-9.0.110/conf/catalina.policy
apache-tomcat-9.0.110/conf/catalina.properties
apache-tomcat-9.0.110/conf/context.xml
apache-tomcat-9.0.110/conf/jaspic-providers.xml
```

Next go to the blue colour folder(extracted folder) with command cd.

```
ubuntu@ip-172-31-16-197:~$ ls
apache-tomcat-9.0.110   apache-tomcat-9.0.110.tar.gz
ubuntu@ip-172-31-16-197:~$ cd apache-tomcat-9.0.110/
ubuntu@ip-172-31-16-197:~/apache-tomcat-9.0.110$
```

Now start the tomcat server

1. Go to bin folder
2. Ls
3. With ./startup.sh command start the server

```
ubuntu@ip-172-31-16-197:~/apache-tomcat-9.0.110$ cd bin/
ubuntu@ip-172-31-16-197:~/apache-tomcat-9.0.110/bin$ ls
bootstrap.jar          ciphers.bat               configtest.bat  digest.sh        setclasspath.sh  startup.sh          tool-wrapper.sh
catalina-tasks.xml  ciphers.sh                configtest.sh   makebase.bat     shutdown.bat     tomcat-juli.jar     version.bat
catalina.bat          commons-daemon-native.tar.gz  daemon.sh       makebase.sh      shutdown.sh      tomcat-native.tar.gz  version.sh
catalina.sh           commons-daemon.jar        digest.bat      setclasspath.bat  startup.bat      tool-wrapper.bat
ubuntu@ip-172-31-16-197:~/apache-tomcat-9.0.110/bin$ ./ startup.sh
-bash: ./: Is a directory
ubuntu@ip-172-31-16-197:~/apache-tomcat-9.0.110/bin$ ./startup.sh
Using CATALINA_BASE:   /home/ubuntu/apache-tomcat-9.0.110
Using CATALINA_HOME:   /home/ubuntu/apache-tomcat-9.0.110
Using CATALINA_TMPDIR: /home/ubuntu/apache-tomcat-9.0.110/temp
Using JRE_HOME:        /usr
Using CLASSPATH:       /home/ubuntu/apache-tomcat-9.0.110/bin/bootstrap.jar:/home/ubuntu/apache-tomcat-9.0.110/bin/tomcat-juli.jar
Using CATALINA_OPTS:
Tomcat started.
ubuntu@ip-172-31-16-197:~/apache-tomcat-9.0.110/bin$
```

See, the tomcat server is running now.

Now we have to edit security of that server instance in aws,

Instance

|

Security

|

Security groups

|

Edit inbound rules

|

Add rule

|

Port number 8080

|

Now click on save rules, take the apache tomcat server public ip address then go to browser and check weather the server is running or not.

Next click on manager app, we will get error

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.

If you have already configured the Manager application to allow access and you have used your browsers back button, used a saved book-mark or similar then you may have triggered the cross-site request forgery (CSRF) has been enabled for the HTML interface of the Manager application. You will need to reset this protection by returning to the main Manager page. Once you return to this page, you will be able to continue using the Mana HTML interface normally. If you continue to see this access denied message, check that you have the necessary permissions to access this application.

If you have not changed any configuration files, please examine the file `conf/tomcat-users.xml` in your installation. That file must contain the credentials to let you use this webapp.

For example, to add the `manager-gui` role to a user named `tomcat` with a password of `s3cret`, add the following to the config file listed above.

```
<role rolename="manager-gui"/>
<user username="tomcat" password="s3cret" roles="manager-gui"/>
```

Note that for Tomcat 7 onwards, the roles required to use the manager application were changed from the single `manager` role to the following four roles. You will need to assign the role(s) required for the functionality yo

- `manager-gui` - allows access to the HTML GUI and the status pages
- `manager-script` - allows access to the text interface and the status pages
- `manager-jmx` - allows access to the JMX proxy and the status pages
- `manager-status` - allows access to the status pages only

The HTML interface is protected against CSRF but the text and JMX interfaces are not. To maintain the CSRF protection:

- Users with the `manager-gui` role should not be granted either the `manager-script` or `manager-jmx` roles.
- If the text or jmx interfaces are accessed through a browser (e.g. for testing since these interfaces are intended for tools not humans) then the browser must be closed afterwards to terminate the session.

For more information - please see the Manager App How-To.

For these error we have to modify some changes in apache instance, got to webapps in webapps go manager in manager go to META-INF in META -INF edit vi context.xml file

```
ubuntu@ip-172-31-16-197:~/apache-tomcat-9.0.110$ cd webapps/
ubuntu@ip-172-31-16-197:~/apache-tomcat-9.0.110/webapps$ ls
ROOT  docs  examples  host-manager  manager
ubuntu@ip-172-31-16-197:~/apache-tomcat-9.0.110/webapps$ cd host-manager/
ubuntu@ip-172-31-16-197:~/apache-tomcat-9.0.110/webapps/host-manager$ cd ..
ubuntu@ip-172-31-16-197:~/apache-tomcat-9.0.110/webapps$ cd manager/
ubuntu@ip-172-31-16-197:~/apache-tomcat-9.0.110/webapps/manager$ ls
META-INF  WEB-INF  css  images  index.jsp  status.xsd  xform.xsl
ubuntu@ip-172-31-16-197:~/apache-tomcat-9.0.110/webapps/manager$ cd META-INF/
ubuntu@ip-172-31-16-197:~/apache-tomcat-9.0.110/webapps/manager/META-INF$
```

```
<!--
  Licensed to the Apache Software Foundation (ASF) under one or more
  contributor license agreements.  See the NOTICE file distributed with
  this work for additional information regarding copyright ownership.
  The ASF licenses this file to You under the Apache License, Version 2.0
  (the "License"); you may not use this file except in compliance with
  the License.  You may obtain a copy of the License at

      http://www.apache.org/licenses/LICENSE-2.0

  Unless required by applicable law or agreed to in writing, software
  distributed under the License is distributed on an "AS IS" BASIS,
  WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
  See the License for the specific language governing permissions and
  limitations under the License.
-->
<Context antiResourceLocking="false" privileged="true" >
  <CookieProcessor className="org.apache.tomcat.util.http.Rfc6265CookieProcessor"
                   sameSiteCookies="strict" />
  <Valve className="org.apache.catalina.valves.RemoteAddrValve"
         allow="127\.\d+\.\d+\.\d+|::1|0:0:0:0:0:0:0:1" />
  <Manager sessionAttributeValueClassNameFilter="java\.lang\.(?:Boolean|Integer|Long|Number|String)|org\.apache\.catalina\.filters\.CsrfPreven
$LruCache(?:\$1)?|java\.util\.(?:Linked)?HashMap"/>
</Context>
```

```
<?xml version="1.0" encoding="UTF-8"?>
<!--
  Licensed to the Apache Software Foundation (ASF) under one or more
  contributor license agreements.  See the NOTICE file distributed with
  this work for additional information regarding copyright ownership.
  The ASF licenses this file to You under the Apache License, Version 2.0
  (the "License"); you may not use this file except in compliance with
  the License.  You may obtain a copy of the License at

      http://www.apache.org/licenses/LICENSE-2.0

  Unless required by applicable law or agreed to in writing, software
  distributed under the License is distributed on an "AS IS" BASIS,
  WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
  See the License for the specific language governing permissions and
  limitations under the License.
-->
<Context antiResourceLocking="false" privileged="true" >
  <CookieProcessor className="org.apache.tomcat.util.http.Rfc6265CookieProcessor"
                   sameSiteCookies="strict" />
  <!--  <Valve className="org.apache.catalina.valves.RemoteAddrValve"
       allow="127\.\d+\.\d+\.\d+|::1|0:0:0:0:0:0:0:1" /> -->
  <Manager  sessionAttributeValueClassNameFilter="java\.lang\.(?:Boolean|Integer|Long|Number|String)|org\.apache\.catalina\.filters\.CsrfPreventionFilter\
$LruCache(?:\$1)?|java\.util\.(?:Linked)?HashMap"/>
</Context>
~
~
~
~
~
~
```

Next got host-manager in that go to META – INF go to context.xml and edit the file.

```
ubuntu@ip-172-31-16-197:~/apache-tomcat-9.0.110$ cd webapps/
ubuntu@ip-172-31-16-197:~/apache-tomcat-9.0.110/webapps$ cd host-manager/
ubuntu@ip-172-31-16-197:~/apache-tomcat-9.0.110/webapps/host-manager$ cd META-INF/
ubuntu@ip-172-31-16-197:~/apache-tomcat-9.0.110/webapps/host-manager/META-INF$ ls
context.xml
ubuntu@ip-172-31-16-197:~/apache-tomcat-9.0.110/webapps/host-manager/META-INF$ vi context.xml
ubuntu@ip-172-31-16-197:~/apache-tomcat-9.0.110/webapps/host-manager/META-INF$
```

```
<!--
  Licensed to the Apache Software Foundation (ASF) under one or more
  contributor license agreements.  See the NOTICE file distributed with
  this work for additional information regarding copyright ownership.
  The ASF licenses this file to You under the Apache License, Version 2.0
  (the "License"); you may not use this file except in compliance with
  the License.  You may obtain a copy of the License at

      http://www.apache.org/licenses/LICENSE-2.0

  Unless required by applicable law or agreed to in writing, software
  distributed under the License is distributed on an "AS IS" BASIS,
  WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
  See the License for the specific language governing permissions and
  limitations under the License.
-->
<Context antiResourceLocking="false" privileged="true" >
  <CookieProcessor className="org.apache.tomcat.util.http.Rfc6265CookieProcessor"
                   sameSiteCookies="strict" />
  <Valve className="org.apache.catalina.valves.RemoteAddrValve"
       allow="127\.\d+\.\d+\.\d+|::1|0:0:0:0:0:0:0:1" />
  <Manager  sessionAttributeValueClassNameFilter="java\.lang\.(?:Boolean|Integer|Long|Number|String)|org\.apache\.catalina\.filters\.CsrfPreven
$LruCache(?:\$1)?|java\.util\.(?:Linked)?HashMap"/>
</Context>
```

no

Now go to browser and refresh it, it will ask the user name and password

we have to edit the tomcat-users.xml to give the username and password go to conf in conf go to tomcat-users.xml and edit this

403 Access Denied

You are not authorized to view this page.

By default the Host 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 Host Manager's `context.xml` file.

If you have already configured the Host Manager application to allow access and you have used your browsers back button, used a saved book-mark or similar then you may have triggered the cross-site request forgery that has been enabled for the HTML interface of the Host Manager application. You will need to reset this protection by returning to the main Host Manager page. Once you return to this page, you will be able to continue Manager application's HTML interface normally. If you continue to see this access denied message, check that you have the necessary permissions to access this application.

If you have not changed any configuration files, please examine the file `conf/tomcat-users.xml` in your installation. That file must contain the credentials to let you use this webapp.

For example, to add the `admin-gui` role to a user named `tomcat` with a password of `s3cret`, add the following to the config file listed above.

```
<role rolename="admin-gui"/>
<user username="tomcat" password="s3cret" roles="admin-gui"/>
```

Note that for Tomcat 7 onwards, the roles required to use the host manager application were changed from the single `admin` role to the following two roles. You will need to assign the role(s) required for the functionality access.

- `admin-gui` - allows access to the HTML GUI
- `admin-script` - allows access to the text interface

The HTML interface is protected against CSRF but the text interface is not. To maintain the CSRF protection:

- Users with the `admin-gui` role should not be granted the `admin-script` role.
- If the text interface is accessed through a browser (e.g. for testing since this interface is intended for tools not humans) then the browser must be closed afterwards to terminate the session.

Take the above mark line and paste it in the tomcat-user.xml

```
    - manager-gui      - allows access to the HTML GUI and the status pages
    - manager-script - allows access to the HTTP API and the status pages
    - manager-jmx      - allows access to the JMX proxy and the status pages
    - manager-status - allows access to the status pages only

  The users below are wrapped in a comment and are therefore ignored. If you
  wish to configure one or more of these users for use with the manager web
  application, do not forget to remove the <!.. ..> that surrounds them. You
  will also need to set the passwords to something appropriate.
->

<user username="admin" password="admin" roles="manager-gui"/>
<user username="admin" password="admin" roles="manager-script"/>


  --
  The sample user and role entries below are intended for use with the
  examples web application. They are wrapped in a comment and thus are ignored
  when reading this file. If you wish to configure these users for use with the
  examples web application, do not forget to remove the <!.. ..> that surrounds
  them. You will also need to set the passwords to something appropriate.
->
  --
<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"/>
->

<role rolename="manager-gui"/>
ser username="tomcat" password="indhu" roles="manager-gui"/>
/tomcat-users>
tomcat-users.xml" 59L, 2822B
```

Next to browser mangaer app and type the username and password

Output:

Manager			
List Applications	HTML Manager Help	Manager Help	Server Sta

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

Now go to build server and generate ssh keys in build server.


```
ubuntu@ip-172-31-24-177:~$ ssh-keygen
Generating public/private ed25519 key pair.
Enter file in which to save the key (/home/ubuntu/.ssh/id_ed25519):
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in /home/ubuntu/.ssh/id_ed25519
Your public key has been saved in /home/ubuntu/.ssh/id_ed25519.pub
The key fingerprint is:
SHA256:zL8JZZHpJV2rhvbi0kzEEr/YQ5DjwmZB2cN9H8TfAFc ubuntu@ip-172-31-24-177
The key's randomart image is:
+--[ED25519 256]--+
|    ..+ o  .++.E|
|     o O .+.o+. |
|    . o B=.o..+.|
|     =oo.== .. o|
|    o .S**.o    |
|       .==o     |
|       .+o..    |
|       .oo+     |
|        .+      |
+----[SHA256]-----+
ubuntu@ip-172-31-24-177:~$ ls
JavaWebCal  indu
ubuntu@ip-172-31-24-177:~$ cd .ssh/
ubuntu@ip-172-31-24-177:~/.ssh$ ls
authorized_keys  id_ed25519  id_ed25519.pub
ubuntu@ip-172-31-24-177:~/.ssh$
ubuntu@ip-172-31-24-177:~/.ssh$ cat id_ed25519.pub
ssh-ed25519 AAAAC3NzaC1lZDI1NTE5AAAAID62i/xemQTR92PFRpoRtgW9uyHfHMs7LcAE55E0jc6H ubuntu@ip-172-31-24-177
```

Now take the public key and paste it in apache server. Go to cd ..ssh in that go to authorized keys and paste the public key in apache server.

```
ssh-rsa AAAAB3NzaC1yc2EAAAADAQABAAABAQCuNFgF4sSbChf+HKSbLZT57D+cIrRfdaVfkJUnp0YKKO16ikb4CokQdlPGxt2TTAswAK8haz3HsekoT8hFqS1ZinUaioi7YSC5ZMUMkPKWtdTS
fI84Gm52OIkuxxEyqTBQwOWVtcfhWDXuoJFQafikC+NiO+zZY3QY4iofjLIigDoDve7CT5Ltyfv5gULHdPLlqzWje/wADZUt5yOLzr9ZtUTswJapA79gbb5OOUsE3ODE+UOqiW4TSM+jyy6StM6i
fyMLqq7oZ5cERIKJ4lFunIhyyBhHM+gmADxyax1ei4whjzltfANK3dW/0QrKOv0nhpWADcN1kn indu2

ssh-ed25519 AAAAC3NzaC1lZDI1NTE5AAAAID62i/xemQTR92PFRpoRtgW9uyHfHMs7LcAE55EOjc6H ubuntu@ip-172-31-24-17
~
~
~
~
~
~
```

Step:4(Deploy server)

*Go to .ssh

*vi authorized keys paste the keys generated in Bulid server.

Step:5

*Copying the War file from Build server to Deploy server.

(scp /home/ubuntu/Javawebcal/target/*.war ubuntu@deploy-public-ip:/home/ubuntu/tomcat/webapps).


```
ubuntu@ip-172-31-26-7:~/tomcat/webapps$ ls
ROOT   docs   examples   host-manager   manager   webapp   webapp.war
```



```
ubuntu@ip-172-31-27-0:~$ scp /home/ubuntu/JavaWebCal/target/*.war ubuntu@13.62.48.74:/home/u
buntu/tomcat/webapps
webapp.war                                          100% 3901       8.1MB/s   00:00
```


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
/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
/manager	None specified	Tomcat Manager Application	true	1	Start Stop Reload Undeploy Expire sessions with idle ≥ 30 minutes
/webapp	None specified	Servlet	true	0	Start Stop Reload Undeploy Expire sessions with idle ≥ 30 minutes

Addition

70

Calculator

first number: [   ]

Second number : [   ]

○ addition
○ subtraction
○ product

[submit]