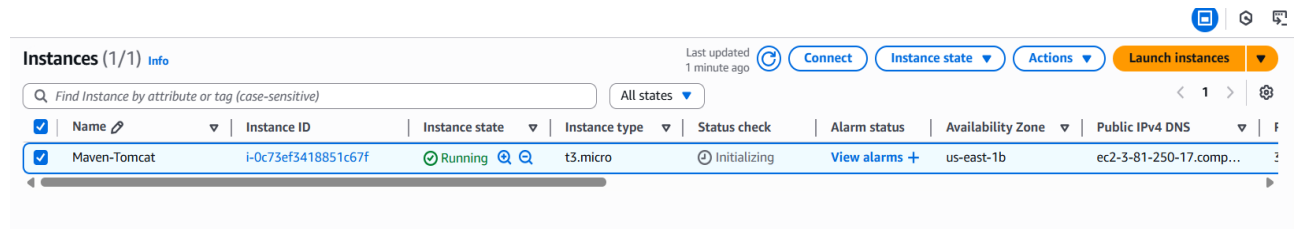


Deploying a Basic Java based application using Apachen Maven & Tomcat

Step1: Create a Ec2-Instance with port ssh & HTTP-8080



Step2: Update the server and Install required Packages.

- java -v
- sudo apt install openjdk-17-jre-headless
- java -version

```
ubuntu@ip-172-31-36-253:~$  
ubuntu@ip-172-31-36-253:~$ java -v  
Command 'java' not found, but can be installed with:  
sudo apt install default-jre # version 2:1.17-75, or  
sudo apt install openjdk-17-jre-headless # version 17.0.14+7-1~24.04  
sudo apt install openjdk-21-jre-headless # version 21.0.6+7-1~24.04.1  
sudo apt install openjdk-11-jre-headless # version 11.0.26+4-1ubuntu1~24.04  
sudo apt install openjdk-8-jre-headless # version 8u442-b06~us1-0ubuntu1~24.04  
sudo apt install openjdk-19-jre-headless # version 19.0.2+7-4  
sudo apt install openjdk-20-jre-headless # version 20.0.2+9-1  
sudo apt install openjdk-22-jre-headless # version 22~22ea-1  
ubuntu@ip-172-31-36-253:~$  
ubuntu@ip-172-31-36-253:~$ sudo apt install openjdk-17-jre-headless  
Reading package lists... Done  
Building dependency tree... Done  
Reading state information... Done  
The following additional packages will be installed:  
  alsa-topology-conf alsa-ucm-conf ca-certificates-java fontconfig-config  
  fonts-dejavu-core fonts-dejavu-mono java-common libasound2-data  
  libasound2t64 libavahi-client3 libavahi-common-data libavahi-common3  
  libcups2t64 libfontconfig1 libgraphite2-3 libharfbuzz0b libjpeg-turbo8  
  libjpeg8 liblcms2-2 libpcsc-lite1
```

- sudo apt install maven -y
- mvn -v

```
ubuntu@ip-172-31-36-253:~$  
ubuntu@ip-172-31-36-253:~$ java -version  
openjdk version "17.0.15" 2025-04-15  
OpenJDK Runtime Environment (build 17.0.15+6-Ubuntu-0ubuntu124.04)  
OpenJDK 64-Bit Server VM (build 17.0.15+6-Ubuntu-0ubuntu124.04, mixed mode, shar  
ing)  
ubuntu@ip-172-31-36-253:~$  
ubuntu@ip-172-31-36-253:~$ sudo apt install maven -y  
Reading package lists... Done  
Building dependency tree... Done  
Reading state information... Done  
The following additional packages will be installed:  
  libaopalliance-java libapache-pom-java libatinject-jsr330-api-java  
  libcdi-api-java libcommons-cli-java libcommons-io-java libcommons-lang3-java
```

- wget <https://dlcdn.apache.org/tomcat/tomcat-11/v11.0.9/bin/apache-tomcat-11.0.9.zip>
- sudo apt install unzip
- unzip apache-tomcat-11.0.9.zip
- sudo mv apache-tomcat-11.0.9 /opt/tomcat
- cd /opt/tomcat/

```
ubuntu@ip-172-31-36-253:~$
ubuntu@ip-172-31-36-253:~$ wget https://dlcdn.apache.org/tomcat/tomcat-11/v11.0.9/bin/apache-tomcat-11.0.9.zip
--2025-08-04 15:17:00-- https://dlcdn.apache.org/tomcat/tomcat-11/v11.0.9/bin/apache-tomcat-11.0.9.zip
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: 14657140 (14M) [application/zip]
Saving to: 'apache-tomcat-11.0.9.zip'

apache-tomcat-11.0.9.zip      100%[=====] 13.98M  --.-KB/s  in 0.05s

2025-08-04 15:17:00 (299 MB/s) - 'apache-tomcat-11.0.9.zip' saved [14657140/14657140]

ubuntu@ip-172-31-36-253:~$ ls
apache-tomcat-11.0.9.zip
ubuntu@ip-172-31-36-253:~$
ubuntu@ip-172-31-36-253:~$ unzip apache-tomcat-11.0.9.zip
Command 'unzip' not found, but can be installed with:
sudo apt install unzip
ubuntu@ip-172-31-36-253:~$
ubuntu@ip-172-31-36-253:~$ sudo apt install unzip
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
```

```
ubuntu@ip-172-31-36-253:~$ ls
apache-tomcat-11.0.9  apache-tomcat-11.0.9.zip
ubuntu@ip-172-31-36-253:~$
ubuntu@ip-172-31-36-253:~$ sudo mv apache-tomcat-11.0.9 /opt/tomcat
ubuntu@ip-172-31-36-253:~$
ubuntu@ip-172-31-36-253:~$ cd /opt/tomcat/
ubuntu@ip-172-31-36-253:/opt/tomcat$ ls
BUILDING.txt  CONTRIBUTING.md  LICENSE  NOTICE  README.md  RELEASE-NOTES  RUNNING.txt  bin  conf  lib  logs  temp  webapps  work
ubuntu@ip-172-31-36-253:/opt/tomcat$
```

- cd bin/
- sudo chmod 755 startup.sh shutdown.sh catalina.sh
- ls
- ./startup.sh


```
ubuntu@ip-172-31-36-253:~$ cd /opt/tomcat/
ubuntu@ip-172-31-36-253:/opt/tomcat$ ls
BUILDING.txt  CONTRIBUTING.md  LICENSE  NOTICE  README.md  RELEASE-NOTES  RUNNING.txt  bin  conf  lib  logs  temp  webapps  work
ubuntu@ip-172-31-36-253:/opt/tomcat$ cd bin/
ubuntu@ip-172-31-36-253:/opt/tomcat/bin$ ls
bootstrap.jar      ciphers.bat      configtest.bat   digest.sh        migrate.sh       shutdown.sh      tomcat-native.tar.gz  version.sh
catalina-tasks.xml ciphers.sh       configtest.sh    makebase.bat     setclasspath.bat startup.bat      tool-wrapper.bat
catalina.bat       commons-daemon-native.tar.gz daemon.sh         makebase.sh      setclasspath.sh  startup.sh       tool-wrapper.sh
catalina.sh        commons-daemon.jar digest.bat        migrate.bat      shutdown.bat     tomcat-juli.jar  version.bat
ubuntu@ip-172-31-36-253:/opt/tomcat/bin$
ubuntu@ip-172-31-36-253:/opt/tomcat/bin$ sudo chmod 755 startup.sh shutdown.sh catalina.sh
ubuntu@ip-172-31-36-253:/opt/tomcat/bin$ ls
bootstrap.jar      ciphers.bat      configtest.bat   digest.sh        migrate.sh       shutdown.sh      tomcat-native.tar.gz  version.sh
catalina-tasks.xml ciphers.sh       configtest.sh    makebase.bat     setclasspath.bat startup.bat      tool-wrapper.bat
catalina.bat       commons-daemon-native.tar.gz daemon.sh         makebase.sh      setclasspath.sh  startup.sh       tool-wrapper.sh
catalina.sh        commons-daemon.jar digest.bat        migrate.bat      shutdown.bat     tomcat-juli.jar  version.bat
ubuntu@ip-172-31-36-253:/opt/tomcat/bin$
ubuntu@ip-172-31-36-253:/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.
ubuntu@ip-172-31-36-253:/opt/tomcat/bin$
```

Not secure 3.81.250.17:8080

Home Documentation Configuration Examples Wiki Mailing Lists Find Help

Apache Tomcat/11.0.9

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

 Recommended Reading:

- [Security Considerations How-To](#)
- [Manager Application How-To](#)
- [Clustering/Session Replication How-To](#)

Server Status
Manager App
Host Manager

Developer Quick Start

Tomcat Setup First Web Application	Realms & AAA JDBC Data Sources	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 11.0 access to the manager application is split between different users.
[Read more...](#)

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

Documentation

[Tomcat 11.0 Documentation](#)
[Tomcat 11.0 Configuration](#)
[Tomcat Wiki](#)

Find additional important configuration information in:

```
$CATALINA_HOME/RUNNING.txt
```

Developers may be interested in:

- [Tomcat 11.0 Bug Database](#)
- [Tomcat 11.0 JavaDocs](#)
- [Tomcat 11.0 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

Step3: Ensure the credentials to login

- `cd conf/`
- `ls`
- `vi tomcat-users.xml`

```
ubuntu@ip-172-31-36-253:/opt/tomcat$ ls
BUILDING.txt  CONTRIBUTING.md  LICENSE  NOTICE  README.md  RELEASE-NOTES  RUNNING.txt  bin  conf  lib  logs  temp  webapps  work
ubuntu@ip-172-31-36-253:/opt/tomcat$ cd conf/
ubuntu@ip-172-31-36-253:/opt/tomcat/conf$ ls
Catalina  catalina.properties  context.xml  jaspic-providers.xml  jaspic-providers.xsd  logging.properties  server.xml  tomcat-users.xml  tomcat-users.xsd  web.xml
ubuntu@ip-172-31-36-253:/opt/tomcat/conf$
ubuntu@ip-172-31-36-253:/opt/tomcat/conf$ vi tomcat-users.xml
```

```
<?xml version="1.0" encoding="UTF-8"?>
<!--
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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.
-->
<tomcat-users xmlns="http://tomcat.apache.org/xml"
              xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
              xsi:schemaLocation="http://tomcat.apache.org/xml tomcat-users.xsd"
              version="1.0">
  <!--
  By default, no user is included in the "manager-gui" role required
  to operate the "/manager/html" web application. If you wish to use this app,
  you must define such a user - the username and password are arbitrary.

  Built-in Tomcat manager roles:
  - 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="robot" 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.
  -->
  -- INSERT --
```

- cd /opt/tomcat/webapps/
- cd host-manager/
- cd META-INF/
- vi context.xml

```
ubuntu@ip-172-31-36-253:/opt/tomcat$ ls
BUILDING.txt CONTRIBUTING.md LICENSE NOTICE README.md RELEASE-NOTES RUNNING.txt bin conf lib logs temp webapps work
ubuntu@ip-172-31-36-253:/opt/tomcat$ cd
ubuntu@ip-172-31-36-253:~$ cd /opt/tomcat/webapps/
ubuntu@ip-172-31-36-253:/opt/tomcat/webapps$ ls
ROOT docs examples host-manager manager
ubuntu@ip-172-31-36-253:/opt/tomcat/webapps$ cd host-manager/
ubuntu@ip-172-31-36-253:/opt/tomcat/webapps/host-manager$ ls
META-INF WEB-INF css images index.jsp
ubuntu@ip-172-31-36-253:/opt/tomcat/webapps/host-manager$
ubuntu@ip-172-31-36-253:/opt/tomcat/webapps/host-manager$ cd META-INF/
ubuntu@ip-172-31-36-253:/opt/tomcat/webapps/host-manager/META-INF$ ls
context.xml
ubuntu@ip-172-31-36-253:/opt/tomcat/webapps/host-manager/META-INF$ vi context.xml |
```

- Here change the allow="127.0.0.0" to ".*"

```

<?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" ignoreAnnotations="true">
  <CookieProcessor className="org.apache.tomcat.util.http.Rfc6265CookieProcessor"
    sameSiteCookies="strict" />
  <Valve className="org.apache.catalina.valves.RemoteAddrValve"
    allow=".*" />
  <Manager sessionAttributeValueClassNameFilter="java\\.lang\\. (?:(Boolean|Integer|Long|Number|string)|org\\.apache\\.catalina\\.filters\\.CsrfPreventionFilter|SLurp
    ace(?:\\$1)?|java\\.util\\. (?:(Linked)?HashMap)" />
</Context>
~
~

```

- cd manager/
- cd META-INF/
- vi context.xml

```

ubuntu@ip-172-31-36-253:/opt/tomcat/webapps$
ubuntu@ip-172-31-36-253:/opt/tomcat/webapps$ cd manager/
ubuntu@ip-172-31-36-253:/opt/tomcat/webapps/manager$ ls
META-INF  WEB-INF  css  images  index.jsp  status.xsd  xform.xml
ubuntu@ip-172-31-36-253:/opt/tomcat/webapps/manager$ cd META-INF/
ubuntu@ip-172-31-36-253:/opt/tomcat/webapps/manager/META-INF$
ubuntu@ip-172-31-36-253:/opt/tomcat/webapps/manager/META-INF$ ls
context.xml
ubuntu@ip-172-31-36-253:/opt/tomcat/webapps/manager/META-INF$ vi context.xml |

```

```

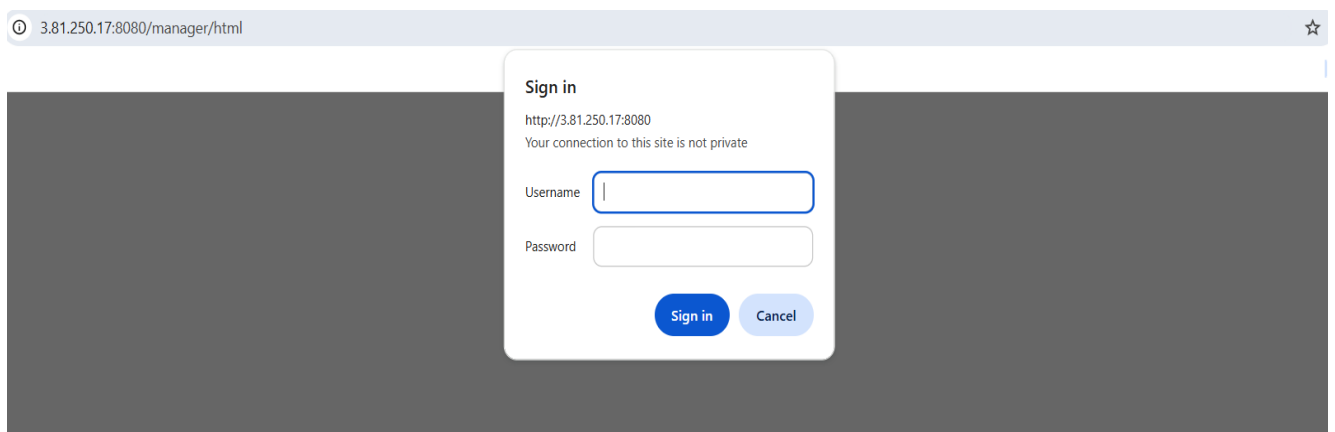
<?xml version="1.0" encoding="UTF-8"?>
<!--
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contributor license agreements. See the NOTICE file distributed with
this work for additional information regarding copyright ownership.
The ASF licenses this file to You under the Apache License, Version 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" ignoreAnnotations="true">
  <CookieProcessor className="org.apache.tomcat.util.http.Rfc6265CookieProcessor"
    sameSiteCookies="strict" />
  <Valve className="org.apache.catalina.valves.RemoteAddrValve"
    allow="*" />
  <Manager sessionAttributeValueClassNameFilter="java\.lang\.(?:Boolean|Integer|Long|Number|string)|org\.apache\.catalina\.filters\.CsrfPreventionFilter|$Luc
ava\.util\.(?:Linked)?HashMap"/>
</Context>
~
~

```

- Same changes as Host-manager file in Manager file.





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

Deploy	
Deploy directory or WAR file located on server	
Context Path: <input type="text"/>	
Version (for parallel deployment): <input type="text"/>	

Step4: Clone the code as Build the code

- git clone <https://github.com/shashirajraja/Train-Ticket-Reservation-System.git>
- cd Train-Ticket-Reservation-System/

```
ubuntu@ip-172-31-36-253:~$  
ubuntu@ip-172-31-36-253:~$ git clone https://github.com/shashirajraja/Train-Ticket-Reservation-System.git  
Cloning into 'Train-Ticket-Reservation-System'...  
remote: Enumerating objects: 571, done.  
remote: Counting objects: 100% (215/215), done.  
remote: Compressing objects: 100% (80/80), done.  
remote: Total 571 (delta 175), reused 135 (delta 135), pack-reused 356 (from 1)  
Receiving objects: 100% (571/571), 19.58 MiB | 46.73 MiB/s, done.  
Resolving deltas: 100% (343/343), done.  
ubuntu@ip-172-31-36-253:~$  
ubuntu@ip-172-31-36-253:~$ ls  
Train-Ticket-Reservation-System  apache-tomcat-11.0.9.zip  
ubuntu@ip-172-31-36-253:~$ cd Train-Ticket-Reservation-System/  
ubuntu@ip-172-31-36-253:~/Train-Ticket-Reservation-System$ ls  
Dummy-Database.md  README.md  Screenshots  WebContent  pom.xml  src  
ubuntu@ip-172-31-36-253:~/Train-Ticket-Reservation-System$ |
```

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- Mvn validate
- Mvn test


```

downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/maven-
[INFO] No tests to run.
[INFO] -----
[INFO] BUILD SUCCESS
[INFO] -----
[INFO] Total time: 7.225 s
[INFO] Finished at: 2025-08-04T15:39:35Z
[INFO] -----
ubuntu@ip-172-31-36-253:~/Train-Ticket-Reservation-System$
ubuntu@ip-172-31-36-253:~/Train-Ticket-Reservation-System$
ubuntu@ip-172-31-36-253:~/Train-Ticket-Reservation-System$ ls
Dummy-Database.md README.md Screenshots WebContent pom.xml src target
ubuntu@ip-172-31-36-253:~/Train-Ticket-Reservation-System$ cd target/
ubuntu@ip-172-31-36-253:~/Train-Ticket-Reservation-System/target$ ls
classes generated-sources maven-status
ubuntu@ip-172-31-36-253:~/Train-Ticket-Reservation-System/target$ |

```

- After Test phase maven will create the Target without the war file.
- Mvn compile
- Mvn package

```

[INFO] Copying webapp-runner-8.0.30.2.jar to /home/ubuntu/Train-Ticket-Reservation-System/target/dependency/webapp-runner.jar
[INFO] -----
[INFO] BUILD SUCCESS
[INFO] -----
[INFO] Total time: 6.681 s
[INFO] Finished at: 2025-08-04T15:40:47Z
[INFO] -----
ubuntu@ip-172-31-36-253:~/Train-Ticket-Reservation-System$
ubuntu@ip-172-31-36-253:~/Train-Ticket-Reservation-System$ ls
Dummy-Database.md README.md Screenshots WebContent pom.xml src target
ubuntu@ip-172-31-36-253:~/Train-Ticket-Reservation-System$ cd target/
ubuntu@ip-172-31-36-253:~/Train-Ticket-Reservation-System/target$ ls
TrainBook-1.0.0-SNAPSHOT TrainBook-1.0.0-SNAPSHOT.war classes dependency generated-sources maven-archiver maven-status
ubuntu@ip-172-31-36-253:~/Train-Ticket-Reservation-System/target$ |

```

➤ Now the Build is successfully completed.

Step5: Now deploy the war into the Tomcat webapps

- pwd
- cp /home/ubuntu/Train-Ticket-Reservation-System/target/*.war /opt/tomcat/webapps/

```

ubuntu@ip-172-31-36-253:~/Train-Ticket-Reservation-System$ ls
Dummy-Database.md README.md Screenshots WebContent pom.xml src target
ubuntu@ip-172-31-36-253:~/Train-Ticket-Reservation-System$ pwd
/home/ubuntu/Train-Ticket-Reservation-System
ubuntu@ip-172-31-36-253:~/Train-Ticket-Reservation-System$
ubuntu@ip-172-31-36-253:~/Train-Ticket-Reservation-System$ cp /home/ubuntu/Train-Ticket-Reservation-System/target/*.war /opt/tomcat/webapps/
ubuntu@ip-172-31-36-253:~/Train-Ticket-Reservation-System$
ubuntu@ip-172-31-36-253:~/Train-Ticket-Reservation-System$ |

```

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- Check the application whether the application is deploy in **Tomcat** or not.!



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
/TrainBook-1.0.0-SNAPSHOT	None specified		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

Deploy	
Deploy directory or WAR file located on server	

← → ↻ ⚠ Not secure 3.81.250.17:8080/TrainBook-1.0.0-SNAPSHOT/ 🔍 ☆ ⬇️ 🌐 ⋮ All Bookmarks

