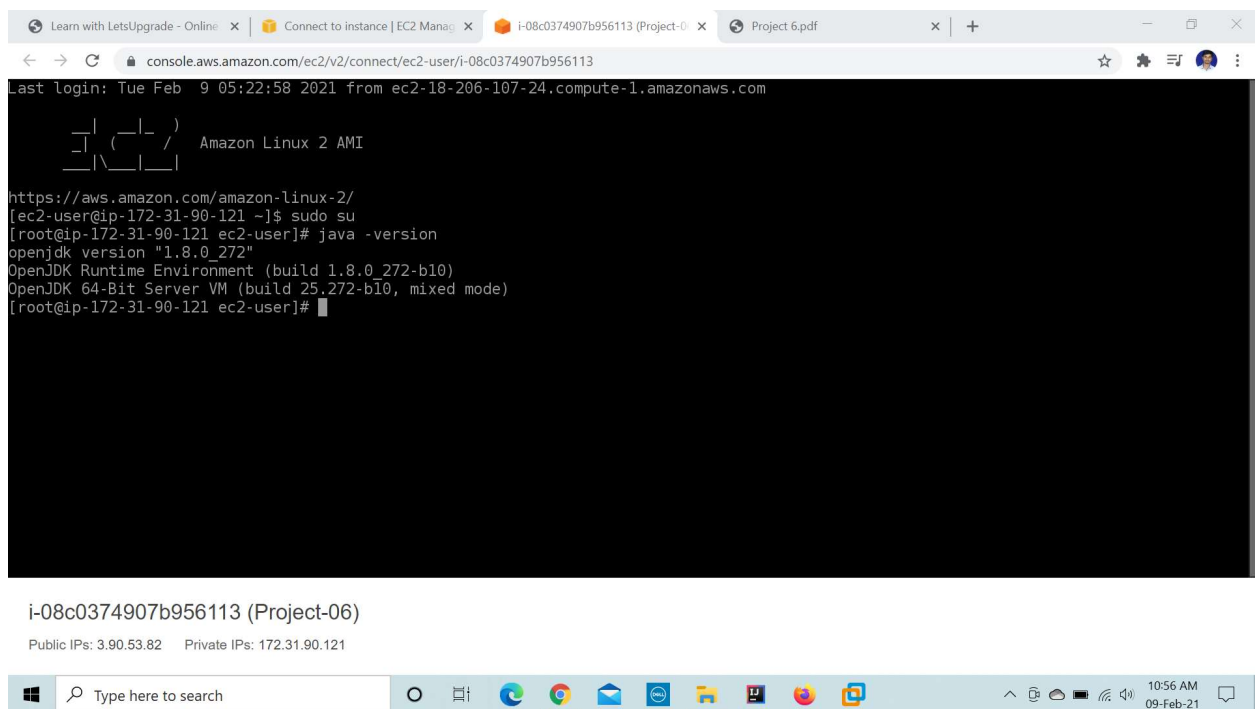


# Project 6 | Advance AWS

## Project Name: Installing and Configuring Apache tomcat server on Linux

- Install java
  - cmd: yum install java-1.8\*



The screenshot shows a terminal window within the AWS Management Console. The browser tabs at the top include 'Learn with LetsUpgrade - Online', 'Connect to instance | EC2 Manag...', 'i-08c0374907b956113 (Project-06)', and 'Project 6.pdf'. The terminal URL is 'console.aws.amazon.com/ec2/v2/connect/ec2-user/i-08c0374907b956113'. The terminal output shows the login time as 'Tue Feb 9 05:22:58 2021' from 'ec2-18-206-107-24.compute-1.amazonaws.com'. It displays the 'Amazon Linux 2 AMI' logo and the command 'https://aws.amazon.com/amazon-linux-2/'. The user 'ec2-user' runs 'sudo su' to become root. Then, 'java -version' is executed, showing 'openjdk version "1.8.0\_272"', 'OpenJDK Runtime Environment (build 1.8.0\_272-b10)', and 'OpenJDK 64-Bit Server VM (build 25.272-b10, mixed mode)'. The prompt returns to '[root@ip-172-31-90-121 ec2-user]#'. Below the terminal, the instance ID 'i-08c0374907b956113 (Project-06)' is shown, along with 'Public IPs: 3.90.53.82' and 'Private IPs: 172.31.90.121'. The Windows taskbar at the bottom shows the search bar and various application icons, with the system clock indicating '10:56 AM 09-Feb-21'.

```
Last login: Tue Feb 9 05:22:58 2021 from ec2-18-206-107-24.compute-1.amazonaws.com

  _ _ _ _ _
 _/ ( _ _ _/
 _/_/_/_/_/  Amazon Linux 2 AMI

https://aws.amazon.com/amazon-linux-2/
[ec2-user@ip-172-31-90-121 ~]$ sudo su
[root@ip-172-31-90-121 ec2-user]# java -version
openjdk version "1.8.0_272"
OpenJDK Runtime Environment (build 1.8.0_272-b10)
OpenJDK 64-Bit Server VM (build 25.272-b10, mixed mode)
[root@ip-172-31-90-121 ec2-user]#
```

i-08c0374907b956113 (Project-06)  
Public IPs: 3.90.53.82 Private IPs: 172.31.90.121

- Install tomcat
  - cmd: cd /opt
  - cmd: wget [https://mirrors.estointernet.in/apache/tomcat/tomcat-8/v8.5.61/bin/apache-tomcat-8.5.61.tar .gz](https://mirrors.estointernet.in/apache/tomcat/tomcat-8/v8.5.61/bin/apache-tomcat-8.5.61.tar.gz)

```
Learn with LetsUpgrade - Online x i-08c0374907b956113 (Project-0) x Project 6.pdf x +
console.aws.amazon.com/ec2/v2/connect/ec2-user/i-08c0374907b956113
Last login: Tue Feb 9 05:25:01 2021 from ec2-18-206-107-25.compute-1.amazonaws.com

 _ _ | _ _ | _ _ |
|_| ( _ _ | _ _ | /
|_| \ _ _ | _ _ |

Amazon Linux 2 AMI

https://aws.amazon.com/amazon-linux-2/
[ec2-user@ip-172-31-90-121 ~]$ sudo su
[root@ip-172-31-90-121 ec2-user]# java -version
openjdk version "1.8.0_272"
OpenJDK Runtime Environment (build 1.8.0_272-b10)
OpenJDK 64-Bit Server VM (build 25.272-b10, mixed mode)
[root@ip-172-31-90-121 ec2-user]# cd /opt
[root@ip-172-31-90-121 opt]# wget https://mirrors.estointernet.in/apache/tomcat/tomcat-8/v8.5.61/bin/apache-tomcat-8.5.61.tar.gz
--2021-02-09 05:29:45-- https://mirrors.estointernet.in/apache/tomcat/tomcat-8/v8.5.61/bin/apache-tomcat-8.5.61.tar.gz
Resolving mirrors.estointernet.in (mirrors.estointernet.in)... 43.255.166.254, 2403:8940:3:1::f
Connecting to mirrors.estointernet.in (mirrors.estointernet.in)|43.255.166.254|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 10492067 (10M) [application/octet-stream]
Saving to: 'apache-tomcat-8.5.61.tar.gz'

100%[=====] 10,492,067 3.70MB/s in 2.7s

2021-02-09 05:29:49 (3.70 MB/s) - 'apache-tomcat-8.5.61.tar.gz' saved [10492067/10492067]

[root@ip-172-31-90-121 opt]#
```

i-08c0374907b956113 (Project-06)

Public IPs: 3.90.53.82 Private IPs: 172.31.90.121



## o cmd: tar -zxvf apache-tomcat-8.5.61.tar.gz

```
Learn with LetsUpgrade - Online x i-08c0374907b956113 (Project-0) x Project 6.pdf x +
console.aws.amazon.com/ec2/v2/connect/ec2-user/i-08c0374907b956113
openjdk version "1.8.0_272"
OpenJDK Runtime Environment (build 1.8.0_272-b10)
OpenJDK 64-Bit Server VM (build 25.272-b10, mixed mode)
[root@ip-172-31-90-121 ec2-user]# cd /opt
[root@ip-172-31-90-121 opt]# wget https://mirrors.estointernet.in/apache/tomcat/tomcat-8/v8.5.61/bin/apache-tomcat-8.5.61.tar.gz
--2021-02-09 05:29:45-- https://mirrors.estointernet.in/apache/tomcat/tomcat-8/v8.5.61/bin/apache-tomcat-8.5.61.tar.gz
Resolving mirrors.estointernet.in (mirrors.estointernet.in)... 43.255.166.254, 2403:8940:3:1::f
Connecting to mirrors.estointernet.in (mirrors.estointernet.in)|43.255.166.254|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 10492067 (10M) [application/octet-stream]
Saving to: 'apache-tomcat-8.5.61.tar.gz'

100%[=====] 10,492,067 3.70MB/s in 2.7s

2021-02-09 05:29:49 (3.70 MB/s) - 'apache-tomcat-8.5.61.tar.gz' saved [10492067/10492067]

[root@ip-172-31-90-121 opt]# ls
apache-tomcat-8.5.61.tar.gz aws rh
[root@ip-172-31-90-121 opt]# tar -zxvf apache-tomcat-8.5.61.tar.gz
apache-tomcat-8.5.61/conf/
apache-tomcat-8.5.61/conf/catalina.policy
apache-tomcat-8.5.61/conf/catalina.properties
apache-tomcat-8.5.61/conf/context.xml
apache-tomcat-8.5.61/conf/jaspic-providers.xml
apache-tomcat-8.5.61/conf/jaspic-providers.xsd
apache-tomcat-8.5.61/conf/logging.properties
apache-tomcat-8.5.61/conf/server.xml
```

i-08c0374907b956113 (Project-06)

Public IPs: 3.90.53.82 Private IPs: 172.31.90.121



- o Modify permissions for startup.sh and shutdown.sh
- o cmd: chmod +x startup.sh

- cmd: chmod +x shutdown.sh

```
Learn with LetsUpgrade - Online x i-08c0374907b956113 (Project-06) x Project 6.pdf x +
console.aws.amazon.com/ec2/v2/connect/ec2-user/i-08c0374907b956113
apache-tomcat-8.5.61/webapps/manager/xform.xml
apache-tomcat-8.5.61/bin/catalina.sh
apache-tomcat-8.5.61/bin/ciphers.sh
apache-tomcat-8.5.61/bin/configtest.sh
apache-tomcat-8.5.61/bin/daemon.sh
apache-tomcat-8.5.61/bin/digest.sh
apache-tomcat-8.5.61/bin/setclasspath.sh
apache-tomcat-8.5.61/bin/shutdown.sh
apache-tomcat-8.5.61/bin/startup.sh
apache-tomcat-8.5.61/bin/tool-wrapper.sh
apache-tomcat-8.5.61/bin/version.sh
[root@ip-172-31-90-121 opt]# chmod +x startup.sh
chmod: cannot access 'startup.sh': No such file or directory
[root@ip-172-31-90-121 opt]# ls
apache-tomcat-8.5.61  apache-tomcat-8.5.61.tar.gz  aws  rh
[root@ip-172-31-90-121 opt]# cd apache-tomcat-8.5.61
[root@ip-172-31-90-121 apache-tomcat-8.5.61]# ls
bin  BUILDING.txt  conf  CONTRIBUTING.md  lib  LICENSE  logs  NOTICE  README.md  RELEASE-NOTES  RUNNING.txt  temp  webapps  work
[root@ip-172-31-90-121 apache-tomcat-8.5.61]# cd bin
[root@ip-172-31-90-121 bin]# ls
bootstrap.jar  ciphers.bat  configtest.bat  digest.sh  shutdown.sh  tomcat-native.tar.gz  version.sh
catalina.bat  ciphers.sh  configtest.sh  setclasspath.bat  startup.bat  tool-wrapper.bat
catalina.sh  commons-daemon.jar  daemon.sh  setclasspath.sh  startup.sh  tool-wrapper.sh
catalina-tasks.xml  commons-daemon-native.tar.gz  digest.bat  shutdown.bat  tomcat-juli.jar  version.bat
[root@ip-172-31-90-121 bin]# chmod +x startup.sh
[root@ip-172-31-90-121 bin]# chmod +x shutdown.sh
[root@ip-172-31-90-121 bin]#
```

i-08c0374907b956113 (Project-06)

Public IPs: 3.90.53.82 Private IPs: 172.31.90.121



- Create a softlink
- cmd: ln -s path /usr/bin/tomcatup
- cmd: ln -s path /usr/bin/tomcatdown

```
Learn with LetsUpgrade - Online x i-08c0374907b956113 (Project-06) x Project 6.pdf x +
console.aws.amazon.com/ec2/v2/connect/ec2-user/i-08c0374907b956113
[root@ip-172-31-90-121 bin]# ls
bootstrap.jar  ciphers.bat  configtest.bat  digest.sh  shutdown.sh  tomcat-native.tar.gz  version.sh
catalina.bat  ciphers.sh  configtest.sh  setclasspath.bat  startup.bat  tool-wrapper.bat
catalina.sh  commons-daemon.jar  daemon.sh  setclasspath.sh  startup.sh  tool-wrapper.sh
catalina-tasks.xml  commons-daemon-native.tar.gz  digest.bat  shutdown.bat  tomcat-juli.jar  version.bat
[root@ip-172-31-90-121 bin]# chmod +x startup.sh
[root@ip-172-31-90-121 bin]# chmod +x shutdown.sh
[root@ip-172-31-90-121 bin]# echo $PATH
/sbin:/bin:/usr/sbin:/usr/bin
[root@ip-172-31-90-121 bin]# find / -name startup.sh
/opt/apache-tomcat-8.5.61/bin/startup.sh
[root@ip-172-31-90-121 bin]# find / -name shutdown.sh
/usr/lib/dracut/modules.d/99shutdown/shutdown.sh
/opt/apache-tomcat-8.5.61/bin/shutdown.sh
[root@ip-172-31-90-121 bin]# ln -s /opt/apache-tomcat-8.5.61/bin/startup.sh /usr/bin/tomcatup
[root@ip-172-31-90-121 bin]# ln -s /opt/apache-tomcat-8.5.61/bin/shutdown.sh /usr/bin/tomcatdown
[root@ip-172-31-90-121 bin]# ps -ef | grep tomcat
root      5155  4858  0 05:45 pts/0    00:00:00 grep --color=auto tomcat
[root@ip-172-31-90-121 bin]# tomcatup
Using CATALINA_BASE:   /opt/apache-tomcat-8.5.61
Using CATALINA_HOME:   /opt/apache-tomcat-8.5.61
Using CATALINA_TMPDIR: /opt/apache-tomcat-8.5.61/temp
Using JRE_HOME:         /
Using CLASSPATH:        /opt/apache-tomcat-8.5.61/bin/bootstrap.jar:/opt/apache-tomcat-8.5.61/bin/tomcat-juli.jar
Using CATALINA_OPTS:
Tomcat started.
[root@ip-172-31-90-121 bin]#
```

i-08c0374907b956113 (Project-06)

Public IPs: 3.90.53.82 Private IPs: 172.31.90.121



The screenshot shows the AWS Management Console for an EC2 instance. The instance is named 'Project-06' and is in the 'running' state. The instance type is 't2.micro'. The console displays various details including Instance ID, Public IPv4 address, Private IPv4 addresses, and DNS information.

Name	Instance ID	Instance state	Instance type	Status check	Alarm status
Project-06	i-08c0374907b956113	Running	t2.micro	2/2 checks ...	No alarms

Instance details:

- Instance ID: i-08c0374907b956113 (Project-06)
- Instance state: Running
- Instance type: t2.micro
- Public IPv4 address: 3.90.53.82 | open address
- Public IPv4 DNS: ec2-3-90-53-82.compute-1.amazonaws.com | open address
- Private IPv4 addresses: 172.31.90.121
- Private IPv4 DNS: ip-172-31-90-121.ec2.internal
- Elastic IP addresses
- VPC ID

The screenshot shows the Apache Tomcat/8.5.61 web interface. The page displays a congratulatory message for successful installation and provides links for recommended reading, developer quick start, and getting help.

**Apache Tomcat/8.5.61**

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](#)

**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...](#)

**Documentation**

- [Tomcat 8.5 Documentation](#)
- [Tomcat 8.5 Configuration](#)
- [Tomcat Wiki](#)

Find additional important configuration information in:

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

**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
- [tomcat-dev](#): Tomcat development

- Change the port to 8090
- edit server.xml

## ○ cmd: vi server.xml

```
Learn with LetsUpgrade - C x i-08c0374907b956113 (Pro) x Instances | EC2 Manage... x Project 6.pdf x Apache Tomcat/8.5.61 x + - - - - -
console.aws.amazon.com/ec2/v2/connect/ec2-user/i-08c0374907b956113
<Service name="Catalina">
  <!--The connectors can use a shared executor, you can define one or more named thread pools-->
  <!--
  <Executor name="tomcatThreadPool" namePrefix="catalina-exec-"
    maxThreads="150" minSpareThreads="4"/>
  -->

  <!-- A "Connector" represents an endpoint by which requests are received
    and responses are returned. Documentation at :
    Java HTTP Connector: /docs/config/http.html
    Java AJP Connector: /docs/config/ajp.html
    APR (HTTP/AJP) Connector: /docs/apr.html
    Define a non-SSL/TLS HTTP/1.1 Connector on port 8080
  -->
  <Connector port="8090" protocol="HTTP/1.1"
    connectionTimeout="20000"
    redirectPort="8443" />
  <!-- A "Connector" using the shared thread pool-->
  <!--
  <Connector executor="tomcatThreadPool"
    port="8080" protocol="HTTP/1.1"
    connectionTimeout="20000"
    redirectPort="8443" />
  <!--

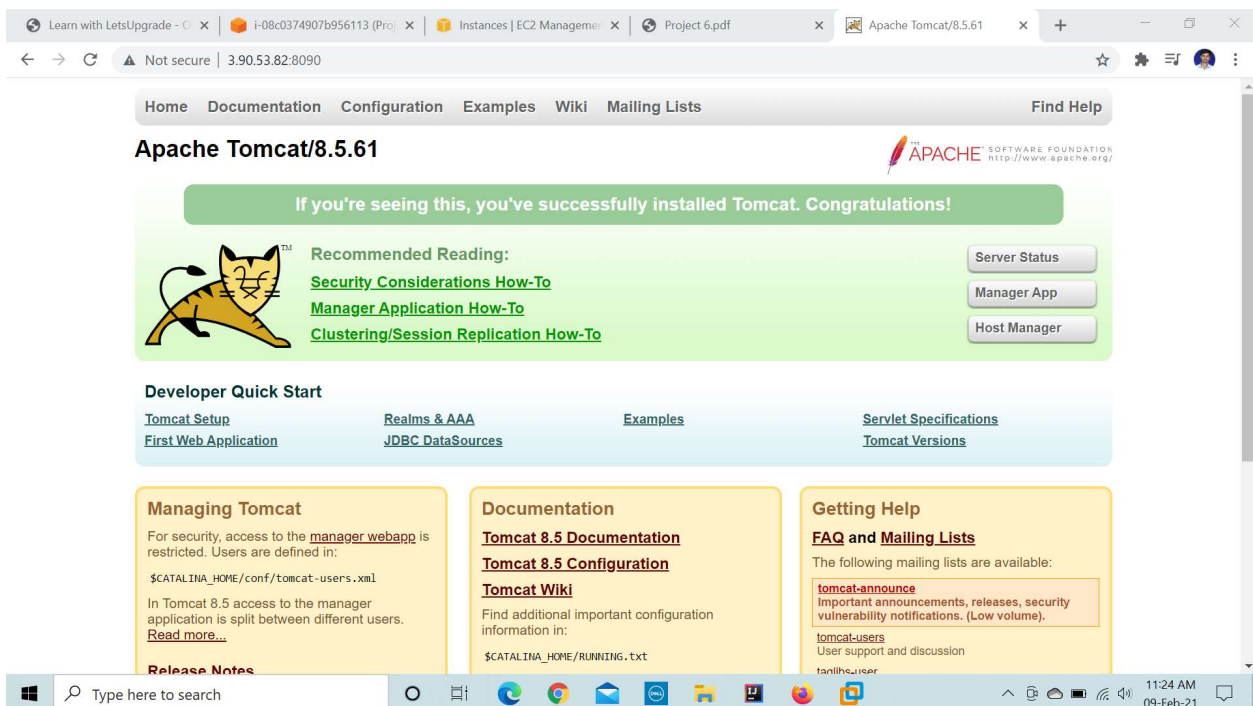
"server.xml" 171L, 7588C written
[root@ip-172-31-90-121 conf]#
```

i-08c0374907b956113 (Project-06)

Public IPs: 3.90.53.82 Private IPs: 172.31.90.121



## ○ check configuration in 8090



## ○ edit context.xml to allow manager apps access

## ○ cmd: vi context.xml



- comment Value tag

```
<!--  
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|0:0:0:0:0:0:1" /> -->  
  <Manager sessionAttributeValueClassNameFilter="java\.lang\.(?:Boolean|Integer|Long|Number|string)|org\.apache\.catalina\.filters\.Csrf  
PreventionFilter\$LruCache(?:\$1)?|java\.util\.(?:Linked)?HashMap"/>  
</Context>  
"/opt/apache-tomcat-8.5.61/webapps/manager/META-INF/context.xml" 24L, 1360C written  
[root@ip-172-31-90-121 conf]#
```

i-08c0374907b956113 (Project-06)

Public IPs: 3.90.53.82 Private IPs: 172.31.90.121

- Add users and roles to tomcat-users.xml
- cmd: vi tomcat-users.xml

- Add the following roles:  
 <role rolename="manager-gui"/>  
 <role rolename="manager-script"/>  
 <role rolename="manager-jmx"/>  
 <role rolename="manager-status"/>

```

<user username="admin" password="vino123"
roles="manager-gui,manager-script,manager-jmx
,manager-status"/>
<user username="deployer" password="vino123"
roles="manager-script"/>
<user username="tomcat"
password="<vino123>" roles="manager-gui"/>

```

The screenshot shows a terminal window within the AWS Management Console. The terminal displays the configuration of Tomcat users and roles. The configuration includes roles for manager-gui, manager-script, manager-jmx, and manager-status, and users for admin, deployer, and tomcat. The password for the tomcat user is set to a placeholder value. The terminal also shows the output of the 'cat' command, displaying the contents of the tomcat-users.xml file.

```

you must define such a user - the username and password are arbitrary. It is
strongly recommended that you do NOT use one of the users in the commented out
section below since they are intended for use with the examples web
application.
--
<!--
NOTE: 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="manager-gui"/>
<role rolename="manager-script"/>
<role rolename="manager-jmx"/>
<role rolename="manager-status"/>
<user username="admin" password="1135" roles="manager-gui,manager-script,manager-jmx,manager-status"/>
<user username="deployer" password="1135" roles="manager-script"/>
<user username="tomcat" password="1135" 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.xml" 51L, 2526C written
[root@ip-172-31-90-121 conf]#

```

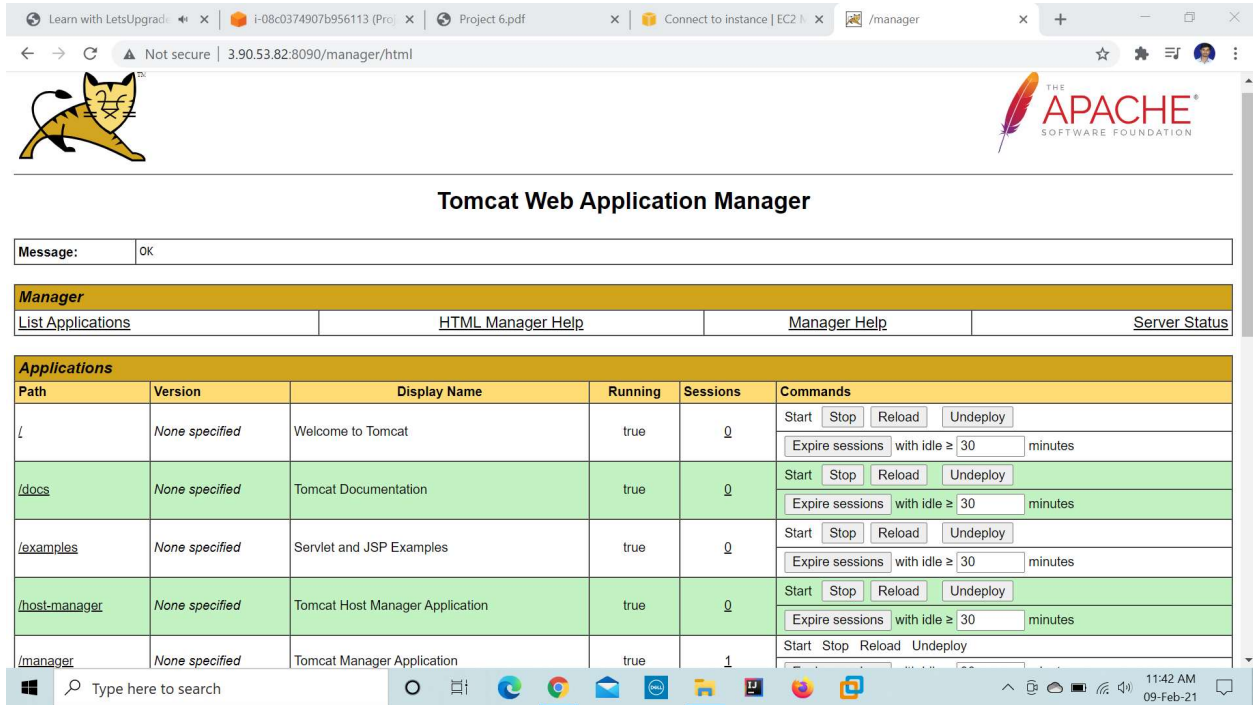
i-08c0374907b956113 (Project-06)

Public IPs: 3.90.53.82 Private IPs: 172.31.90.121

Type here to search

11:42 AM 09-Feb-21

- Give a restart and check for web application manager



The screenshot shows the Tomcat Web Application Manager interface in a web browser. The browser's address bar shows the URL `3.90.53.82:8090/manager/html`. The page features the Tomcat logo on the left and the Apache Software Foundation logo on the right. The main heading is "Tomcat Web Application Manager". Below this, there is a message box that says "Message: OK". A navigation bar contains links for "List Applications", "HTML Manager Help", "Manager Help", and "Server Status". The main content area is titled "Applications" and displays a table of running web 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