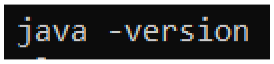
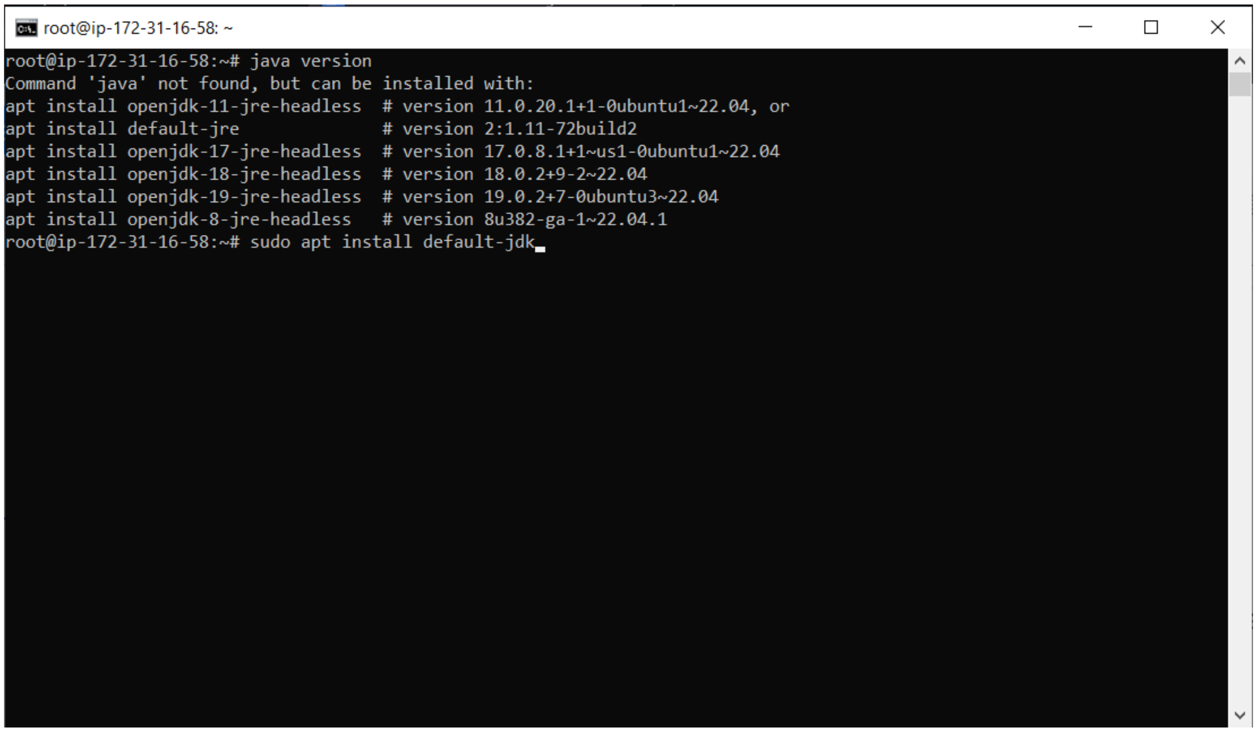
TOMCAT SERVER SETUP AND HOSTING A WEB-APPLICATION

Step 1 : Install Java

To set up the tomcat server we first need to install java on our machine. Check if java is installed on the machine using the following command.



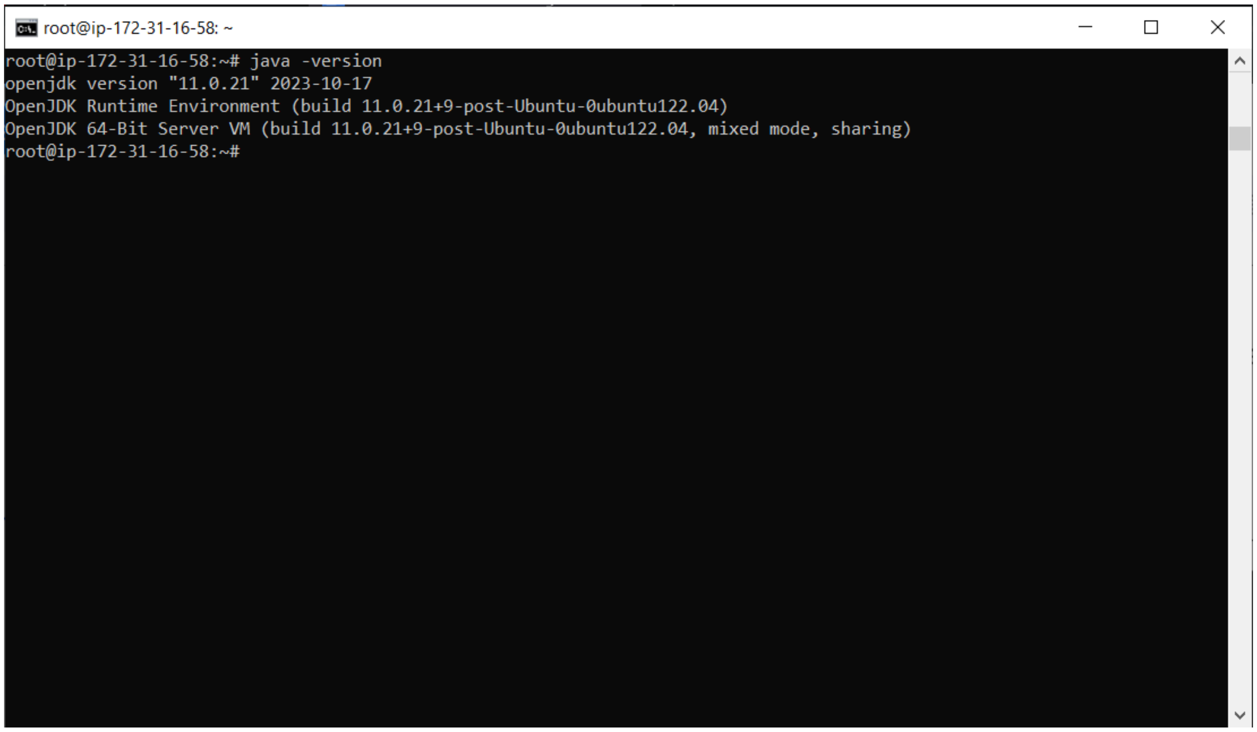
```
java -version
```



```
root@ip-172-31-16-58:~# java version
Command 'java' not found, but can be installed with:
apt install openjdk-11-jre-headless  # version 11.0.20.1+1-0ubuntu1~22.04, or
apt install default-jre              # version 2:1.11-72build2
apt install openjdk-17-jre-headless  # version 17.0.8.1+1~us1-0ubuntu1~22.04
apt install openjdk-18-jre-headless  # version 18.0.2+9-2~22.04
apt install openjdk-19-jre-headless  # version 19.0.2+7-0ubuntu3~22.04
apt install openjdk-8-jre-headless   # version 8u382-ga-1~22.04.1
root@ip-172-31-16-58:~# sudo apt install default-jdk
```

If java is not installed, run the following command in the terminal to install the default-jdk package.

```
apt-get install java* -y
```



```
root@ip-172-31-16-58:~# java -version
openjdk version "11.0.21" 2023-10-17
OpenJDK Runtime Environment (build 11.0.21+9-post-Ubuntu-0ubuntu122.04)
OpenJDK 64-Bit Server VM (build 11.0.21+9-post-Ubuntu-0ubuntu122.04, mixed mode, sharing)
root@ip-172-31-16-58:~#
```

Step 2 : Install Tomcat server

Run following command to download Tomcat archive from internet

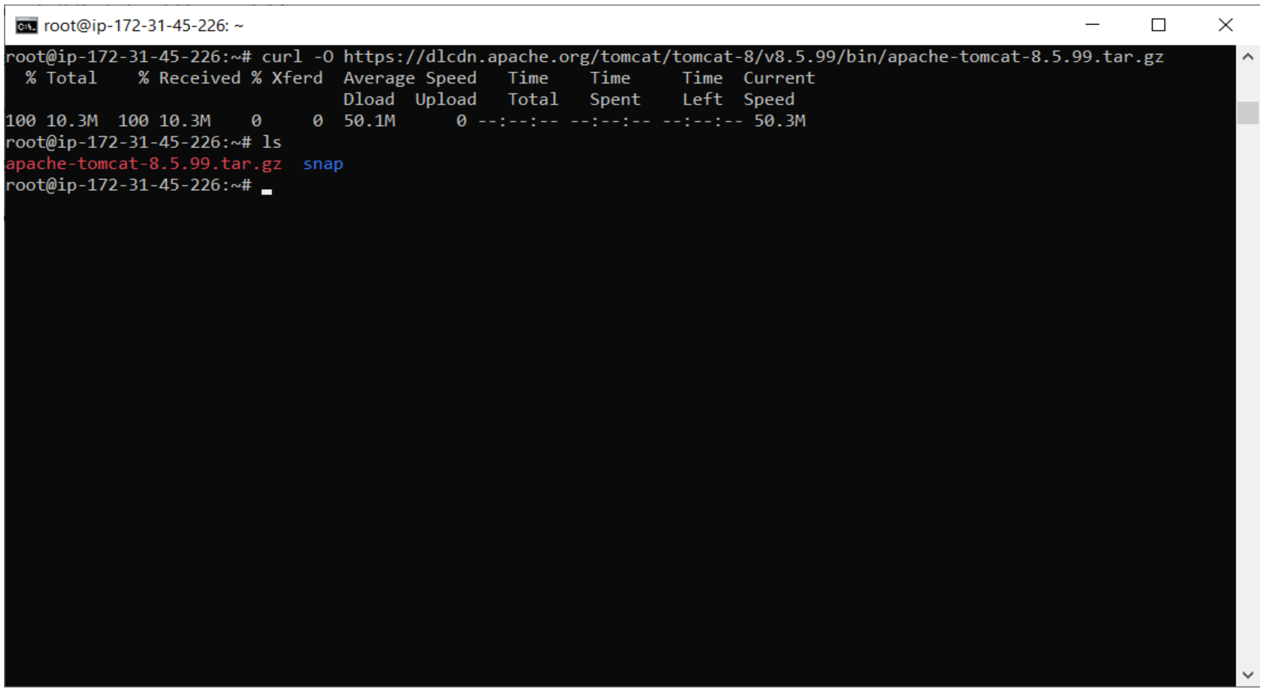
```
curl -O https://dlcdn.apache.org/tomcat/tomcat-8/v8.5.99/bin/apache-tomcat-8.5.99.tar.gz
```

Now extract the downloaded .tar.gz file using following command

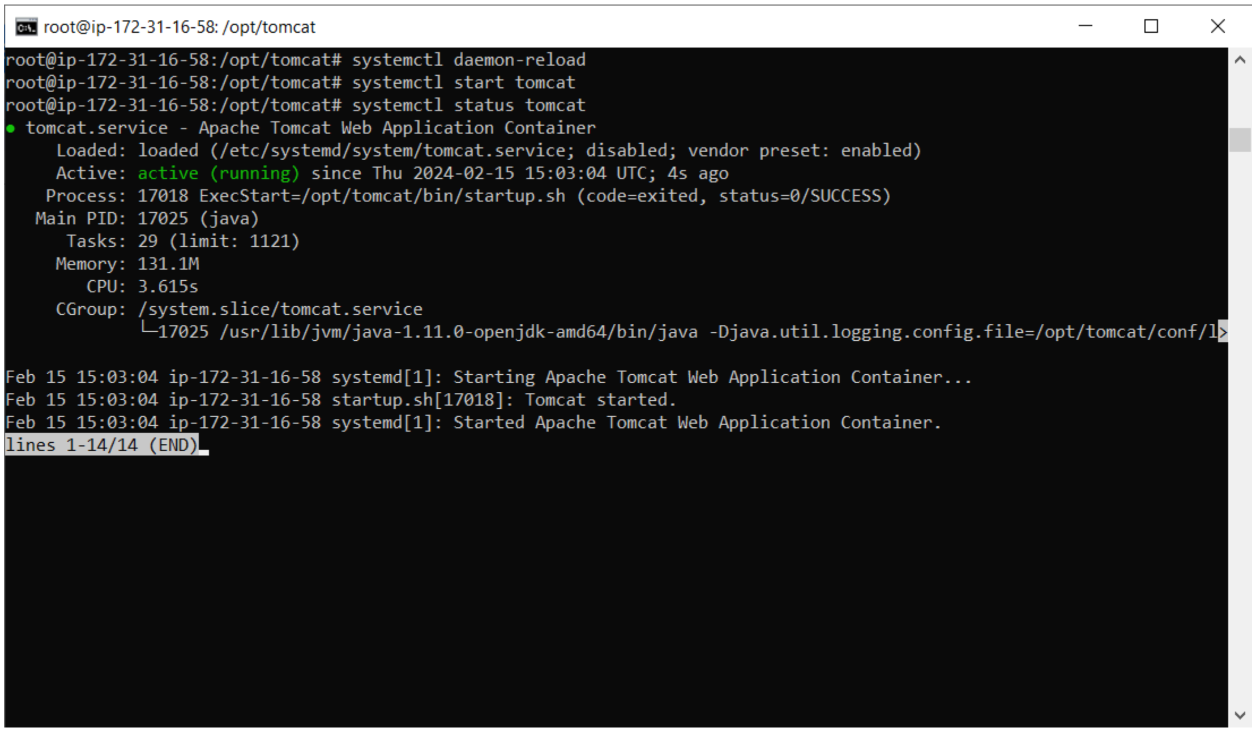
```
tar -xvzf apache-tomcat-8.5.99.tar.gz -C /opt/
```

Use the following command to start Tomcat service in bin folder of the apache-tomcat directory.

```
./catalina.sh start
```



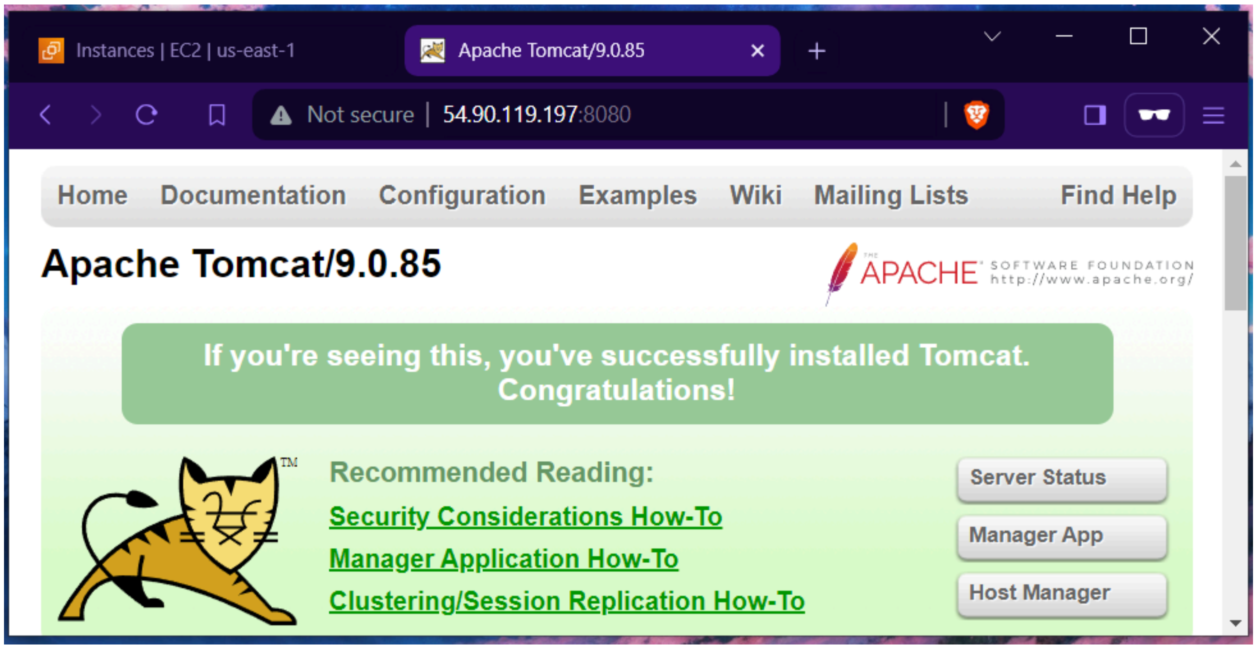
```
root@ip-172-31-45-226:~# curl -O https://dlcdn.apache.org/tomcat/tomcat-8/v8.5.99/bin/apache-tomcat-8.5.99.tar.gz
  % Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
                                 Dload  Upload   Total   Spent    Left  Speed
100 10.3M  100 10.3M    0     0  50.1M      0 --:--:-- --:--:-- --:--:-- 50.3M
root@ip-172-31-45-226:~# ls
apache-tomcat-8.5.99.tar.gz  snap
root@ip-172-31-45-226:~#
```



```
root@ip-172-31-16-58:/opt/tomcat# systemctl daemon-reload
root@ip-172-31-16-58:/opt/tomcat# systemctl start tomcat
root@ip-172-31-16-58:/opt/tomcat# systemctl status tomcat
● tomcat.service - Apache Tomcat Web Application Container
     Loaded: loaded (/etc/systemd/system/tomcat.service; disabled; vendor preset: enabled)
     Active: active (running) since Thu 2024-02-15 15:03:04 UTC; 4s ago
    Process: 17018 ExecStart=/opt/tomcat/bin/startup.sh (code=exited, status=0/SUCCESS)
   Main PID: 17025 (java)
      Tasks: 29 (limit: 1121)
     Memory: 131.1M
        CPU: 3.615s
     CGroup: /system.slice/tomcat.service
             └─17025 /usr/lib/jvm/java-1.11.0-openjdk-amd64/bin/java -Djava.util.logging.config.file=/opt/tomcat/conf/l>

Feb 15 15:03:04 ip-172-31-16-58 systemd[1]: Starting Apache Tomcat Web Application Container...
Feb 15 15:03:04 ip-172-31-16-58 startup.sh[17018]: Tomcat started.
Feb 15 15:03:04 ip-172-31-16-58 systemd[1]: Started Apache Tomcat Web Application Container.
lines 1-14/14 (END)
```

Now hit the tomcat server using the public IP of the instance.

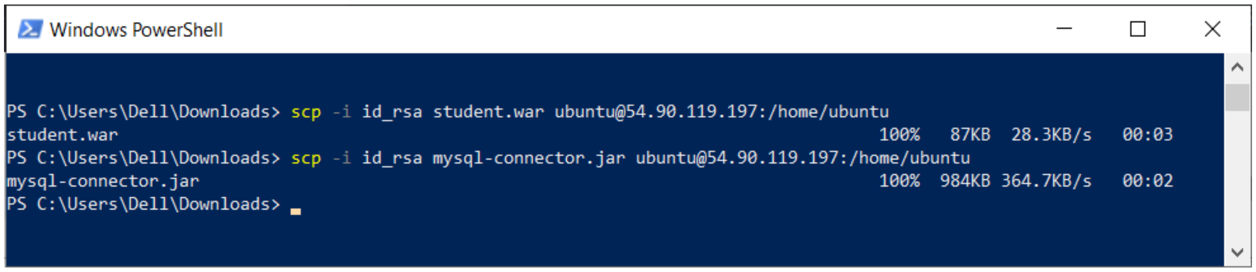

Instances | EC2 | us-east-1
Apache Tomcat/9.0.85
Not secure | 54.90.119.197:8080
Home Documentation Configuration Examples Wiki Mailing Lists Find Help
Apache Tomcat/9.0.85
APACHE SOFTWARE FOUNDATION http://www.apache.org/
If you're seeing this, you've successfully installed Tomcat. Congratulations!
Recommended Reading:
Security Considerations How-To
Manager Application How-To
Clustering/Session Replication How-To
Server Status
Manager App
Host Manager

Step 3 : Hosting the web-application

There are certain conditions to host the web-application on the tomcat server. We need to put all files in their respective environment on tomcat server to successfully host the application.

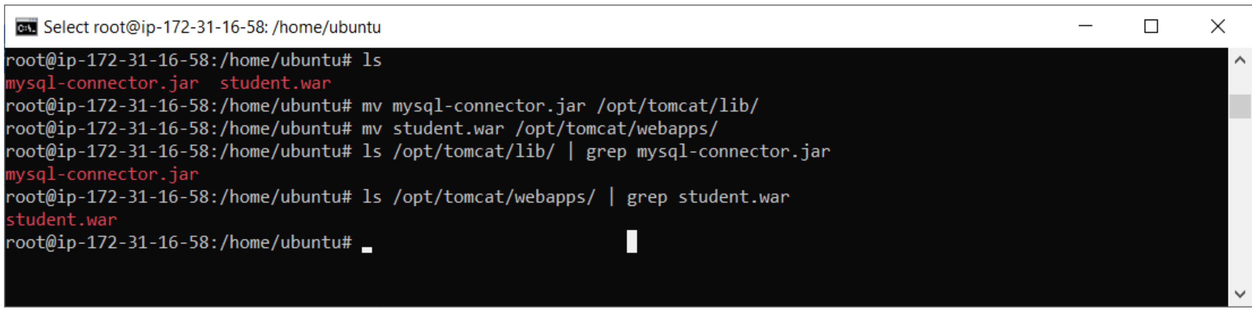
According to the tomcat server environment all .jar files goes in *lib* directory and all .war files goes in *webapps* directory. We have the files with names student.war and mysql-connector.jar.

To put these files in their respective locations we first need those files on our EC2 instance. This can be done by running following commands in the terminal of our local system.



```
PS C:\Users\Dell\Downloads> scp -i id_rsa student.war ubuntu@54.90.119.197:/home/ubuntu
student.war                                                                      100%   87KB  28.3KB/s   00:03
PS C:\Users\Dell\Downloads> scp -i id_rsa mysql-connector.jar ubuntu@54.90.119.197:/home/ubuntu
mysql-connector.jar                                                              100%  984KB 364.7KB/s   00:02
PS C:\Users\Dell\Downloads>
```

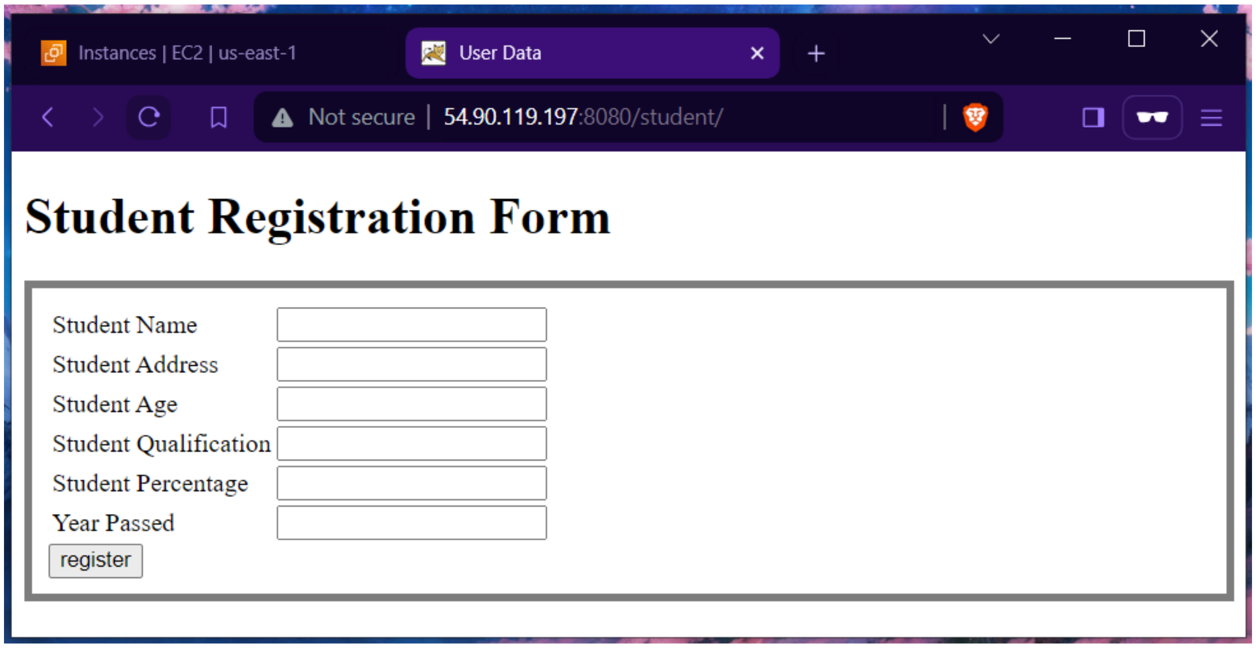
Now that we have required files on our EC2 instance, we can copy them to their desired locations.



Select root@ip-172-31-16-58: /home/ubuntu

```
root@ip-172-31-16-58:/home/ubuntu# ls
mysql-connector.jar  student.war
root@ip-172-31-16-58:/home/ubuntu# mv mysql-connector.jar /opt/tomcat/lib/
root@ip-172-31-16-58:/home/ubuntu# mv student.war /opt/tomcat/webapps/
root@ip-172-31-16-58:/home/ubuntu# ls /opt/tomcat/lib/ | grep mysql-connector.jar
mysql-connector.jar
root@ip-172-31-16-58:/home/ubuntu# ls /opt/tomcat/webapps/ | grep student.war
student.war
root@ip-172-31-16-58:/home/ubuntu# _
```

After completing the entire process we can access our web-application using the public IP of our EC2 instance.



Instances | EC2 | us-east-1

User Data

Not secure | 54.90.119.197:8080/student/

Student Registration Form

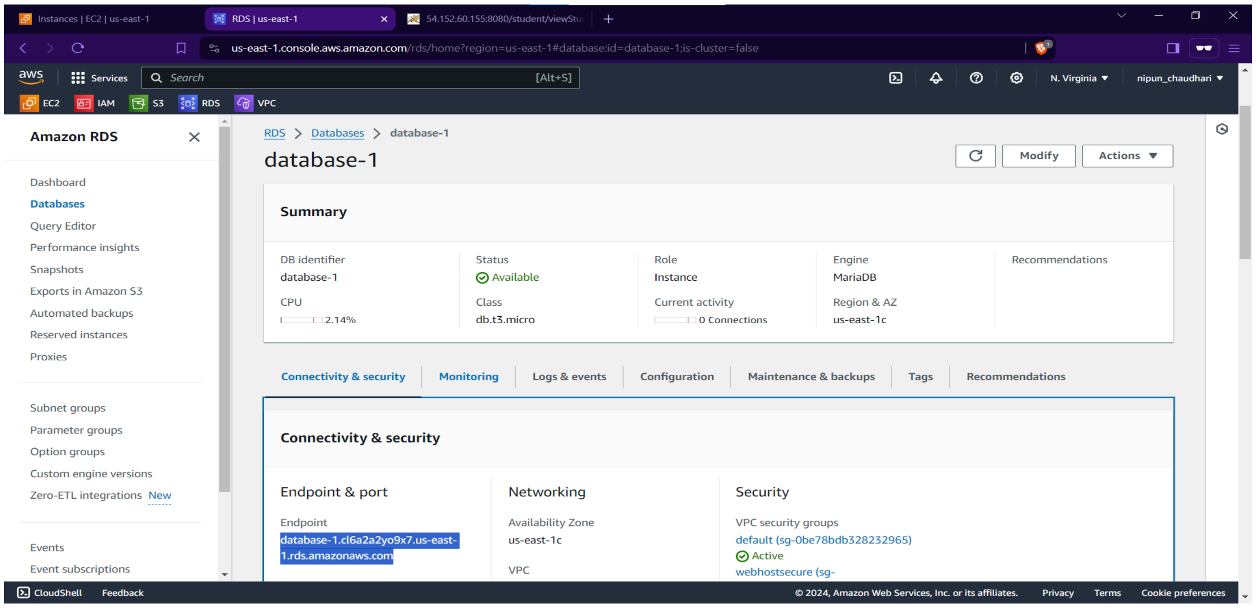
Student Name	
Student Address	
Student Age	
Student Qualification	
Student Percentage	
Year Passed	

register

This is the entire process of hosting the web-application on the tomcat server.

Step 4 : Setting connection with database.

First create a database in Amazon RDS(Relational Database Service).



database-1

Summary

DB identifier: database-1
CPU: 2.14%
Status: Available
Class: db.t3.micro
Role: Instance
Current activity: 0 Connections
Engine: MariaDB
Region & AZ: us-east-1c
Recommendations

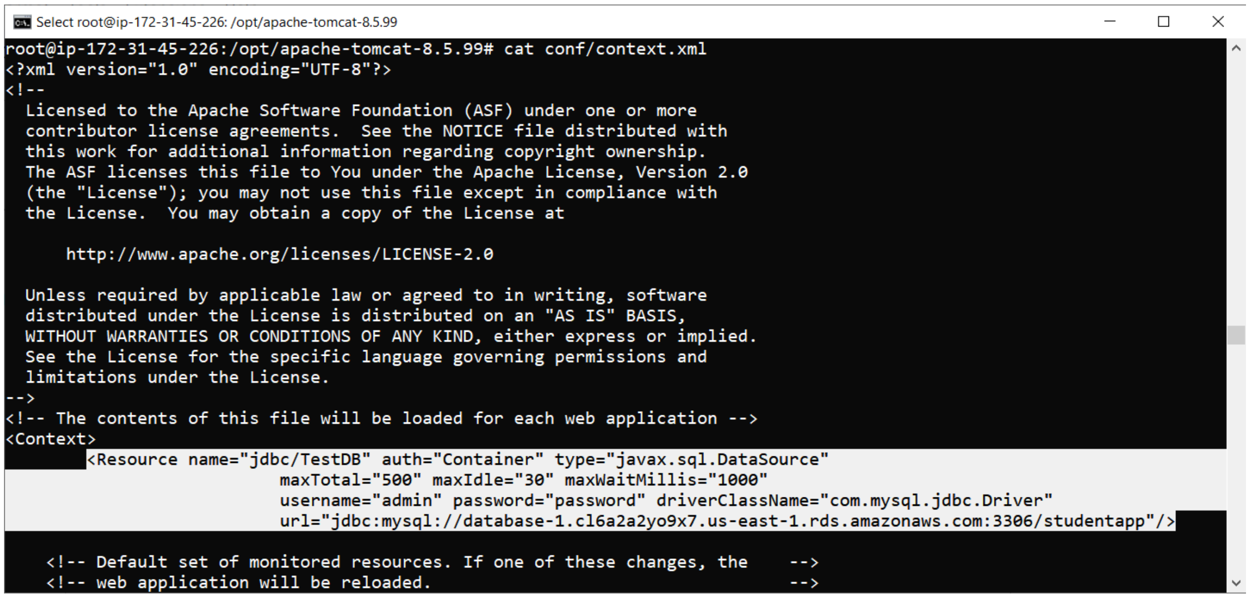
Connectivity & security

Endpoint & port
Endpoint: database-1.cl6a2a2yo9x7.us-east-1.rds.amazonaws.com

Networking
Availability Zone: us-east-1c
VPC

Security
VPC security groups: default (sg-0be78bdb328232965) Active
webhostsecure (sg-

Copy the highlighted endpoint, and paste the following content in /opt/apache-tomcat-8.5.99/conf/context.xml file. Change the endpoint with your database endpoint.



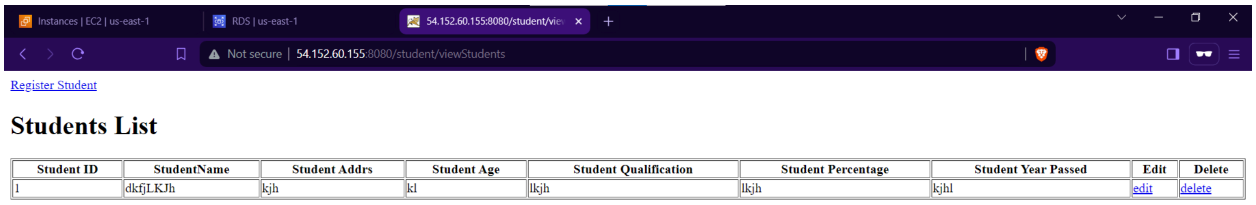
```
root@ip-172-31-45-226:/opt/apache-tomcat-8.5.99# cat conf/context.xml
<?xml version="1.0" encoding="UTF-8"?>
<!--
  Licensed to the Apache Software Foundation (ASF) under one or more
  contributor license agreements.  See the NOTICE file distributed with
  this work for additional information regarding 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.
-->
<!-- The contents of this file will be loaded for each web application -->
<Context>
        <Resource name="jdbc/TestDB" auth="Container" type="javax.sql.DataSource"
                           maxTotal="500" maxIdle="30" maxWaitMillis="1000"
                           username="admin" password="password" driverClassName="com.mysql.jdbc.Driver"
                           url="jdbc:mysql://database-1.cl6a2a2yo9x7.us-east-1.rds.amazonaws.com:3306/studentapp"/>

    <!-- Default set of monitored resources. If one of these changes, the    -->
    <!-- web application will be reloaded.                                   -->
```

Now, after setting up the database connection, restart the tomcat server using catalina.sh file. And check whether your application is hosted properly or not.


Instances | EC2 | us-east-1
RDS | us-east-1
54.152.60.155:8080/student/view
Not secure
54.152.60.155:8080/student/viewStudents

Register Student

Students List

Student ID	StudentName	Student Addrs	Student Age	Student Qualification	Student Percentage	Student Year Passed	Edit	Delete
1	dkfjLKJh	kjh	kl	lkjh	lkjh	kjhl	edit	delete