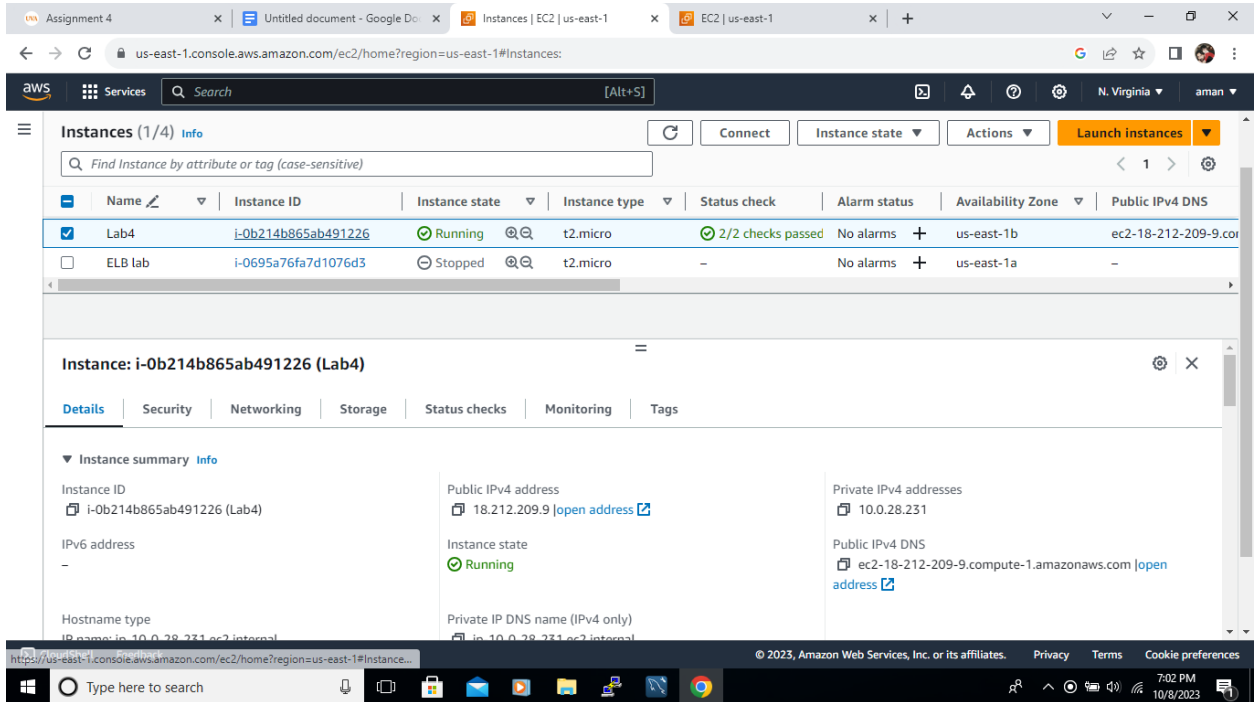
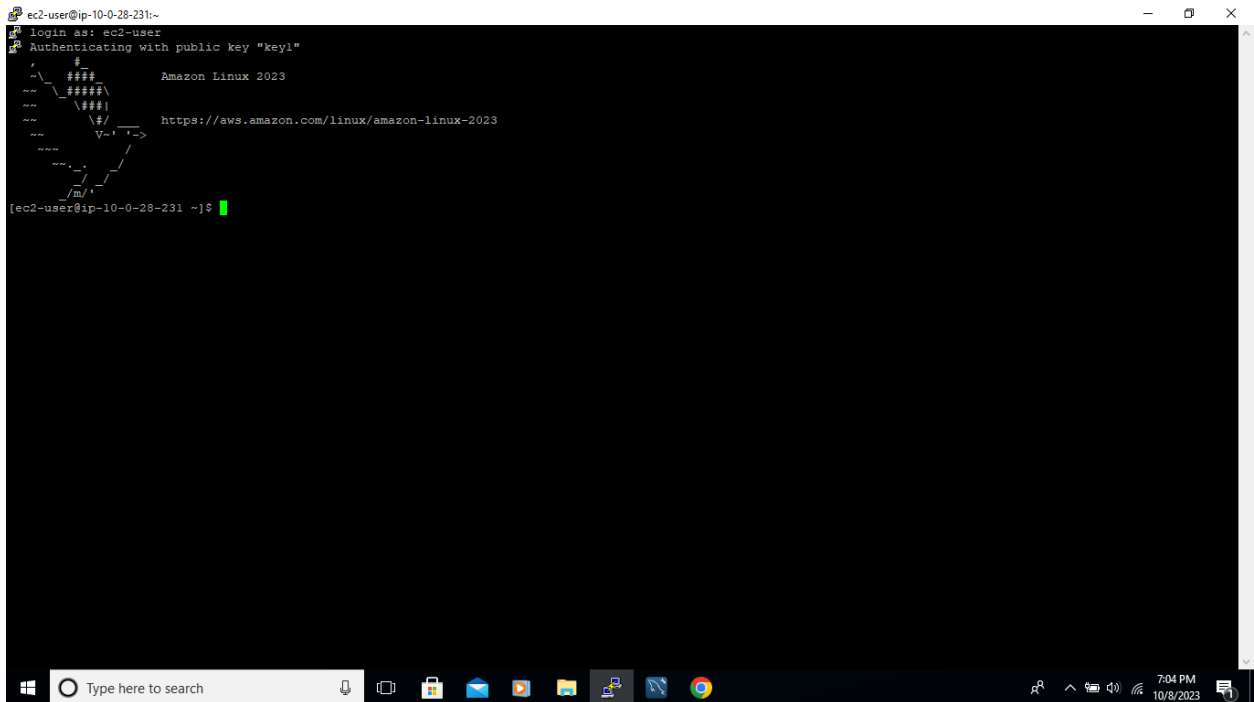


Auto Scaling Group

Follow the steps to create an AMI. Submit a screenshot of step 10



Follow the steps to access the instance remotely using PuTTY. Submit a screenshot of step 6.



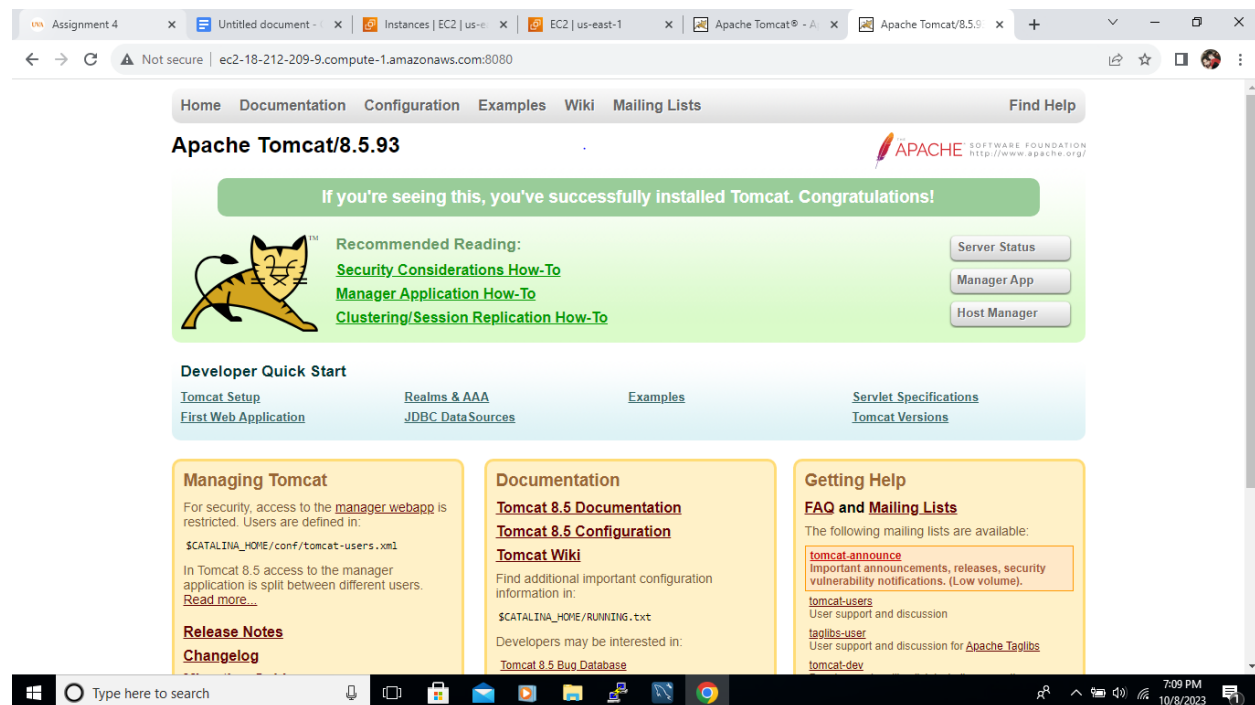
Follow the steps to install Tomcat. Submit a screenshot of step 7.

```
root@ip-10-0-28-231:/home/ec2-user/apache-tomcat-8.5.93/bin
Verifying : dejavu-serif-fonts-2.37-16.amzn2023.0.2.noarch 31/35
Verifying : libX11-common-1.7.2-3.amzn2023.0.3.noarch 32/35
Verifying : google-noto-sans-vf-fonts-20201206-2.amzn2023.0.2.noarch 33/35
Verifying : fonts-filesystem-1:2.0.5-12.amzn2023.0.2.noarch 34/35
Verifying : google-noto-fonts-common-20201206-2.amzn2023.0.2.noarch 35/35

Installed:
alsa-lib-1.2.7.2-1.amzn2023.0.2.x86_64
dejavu-sans-fonts-2.37-16.amzn2023.0.2.noarch
dejavu-serif-fonts-2.37-16.amzn2023.0.2.noarch
fonts-filesystem-1:2.0.5-12.amzn2023.0.2.noarch
glib-5.2.1-9.amzn2023.0.2.x86_64
google-noto-sans-vf-fonts-20201206-2.amzn2023.0.2.noarch
harfbuzz-7.0.0-2.amzn2023.0.1.x86_64
java-21-amazon-corretto-headless-1:21.0.0+35-1.amzn2023.1.x86_64
langpacks-core-font-en-3.0-21.amzn2023.0.4.noarch
libSM-1.2.3-8.amzn2023.0.2.x86_64
libX11-common-1.7.2-3.amzn2023.0.3.noarch
libXext-1.3.4-6.amzn2023.0.2.x86_64
libXinerama-1.1.4-8.amzn2023.0.2.x86_64
libXrender-0.9.10-14.amzn2023.0.2.x86_64
libXtst-1.2.3-14.amzn2023.0.2.x86_64
libjpeg-turbo-2.1.4-2.amzn2023.0.5.x86_64
libxkb-1.13.1-7.amzn2023.0.2.x86_64
xml-common-0.6.3-56.amzn2023.0.2.noarch
cairo-1.17.6-2.amzn2023.0.1.x86_64
dejavu-sans-mono-fonts-2.37-16.amzn2023.0.2.noarch
fontconfig-2.13.94-2.amzn2023.0.2.x86_64
freetype-2.13.0-2.amzn2023.0.1.x86_64
google-noto-fonts-common-20201206-2.amzn2023.0.2.noarch
graphite2-1.3.14-7.amzn2023.0.2.x86_64
java-21-amazon-corretto-1:21.0.0+35-1.amzn2023.1.x86_64
javapackages-filesystem-6.0.0-7.amzn2023.0.6.noarch
libICE-1.0.10-6.amzn2023.0.2.x86_64
libX11-1.7.2-3.amzn2023.0.3.x86_64
libXau-1.0.9-6.amzn2023.0.2.x86_64
libXi-1.7.10-6.amzn2023.0.2.x86_64
libXrandr-1.5.2-6.amzn2023.0.2.x86_64
libXt-1.2.0-4.amzn2023.0.2.x86_64
libbrotil-1.0.9-4.amzn2023.0.2.x86_64
libpng-2:1.6.37-10.amzn2023.0.6.x86_64
pixman-0.40.0-3.amzn2023.0.3.x86_64

Complete!
[root@ip-10-0-28-231 ec2-user]# cd apache-tomcat-8.5.93
[root@ip-10-0-28-231 apache-tomcat-8.5.93]# ls
BUILDING.txt CONTRIBUTING.md LICENSE NOTICE README.md RELEASE-NOTES RUNNING.txt bin conf lib logs temp webapps work
[root@ip-10-0-28-231 apache-tomcat-8.5.93]# cd bin/
[root@ip-10-0-28-231 bin]# ls
bootstrap.jar catalina.sh commons-daemon-native.tar.gz configtest.sh digest.sh shutdown.bat startup.sh tool-wrapper.bat version.sh
catalina-tasks.xml ciphers.bat commons-daemon.jar daemon.sh setclasspath.bat shutdown.sh tomcat-juli.jar tool-wrapper.sh
catalina.bat ciphers.sh configtest.bat digest.bat setclasspath.sh startup.bat tomcat-native.tar.gz version.bat
[root@ip-10-0-28-231 bin]# ./startup.sh
Using CATALINA_BASE: /home/ec2-user/apache-tomcat-8.5.93
Using CATALINA_HOME: /home/ec2-user/apache-tomcat-8.5.93
Using CATALINA_TMPDIR: /home/ec2-user/apache-tomcat-8.5.93/temp
Using JRE_HOME: /usr
Using CLASSPATH: /home/ec2-user/apache-tomcat-8.5.93/bin/bootstrap.jar:/home/ec2-user/apache-tomcat-8.5.93/bin/tomcat-juli.jar
Using CATALINA_OPTS:
Tomcat started.
[root@ip-10-0-28-231 bin]#
```

Follow the steps to configure port 8080 for access. Submit a screenshot of step 2, accessing the Tomcat instance.



Follow the steps to transfer the WAR, and create the AMI. Submit a screenshot of step 9, once the image is available.

The screenshot shows the AWS Management Console for the 'us-east-1' region. The 'Amazon Machine Images (AMIs) (1/2)' page is active. A table lists two AMIs: 'Lab Image' (ami-08347941dd896b440) and 'DemolImage' (ami-0277b41013802f540). The 'Lab Image' is selected, and its details are shown below. The details include: AMI ID, AMI name, Root device name, Image type, Owner account ID, Status, Platform details, Architecture, Source, Root device type, Usage operation, and Virtualization type.

Name	AMI ID	AMI name	Source	Owner	Visibility
Lab Image	ami-08347941dd896b440	Lab Image	692215778807/Lab Image	692215778807	Private
DemolImage	ami-0277b41013802f540	DemolImage	692215778807/DemolImage	692215778807	Private

AMI ID: ami-08347941dd896b440 (Lab Image)

Details	
AMI ID	ami-08347941dd896b440 (Lab Image)
AMI name	Lab Image
Root device name	/dev/xvda
Image type	machine
Owner account ID	692215778807
Status	Available
Platform details	Linux/UNIX
Architecture	x86_64
Source	692215778807/Lab Image
Root device type	EBS
Usage operation	RunInstances
Virtualization type	hvm

Follow the steps to manage the EC2 instances automatically. Submit a screenshot of step 16 in which you create the launch configuration.

The screenshot shows the AWS Management Console for the 'us-east-1' region. The 'Launch Templates (1/1)' page is active. A table lists one launch template: 'Lab4' (lt-0a2ec29a32eebeb5a). The 'Lab4' launch template is selected, and its details are shown below. The details include: Launch Template ID, Launch Template Name, Default Version, Latest Version, Create Time, Created By, Instance details, Storage, Resource tags, Network interfaces, and Advanced details.

Launch Template ID	Launch Template Name	Default Version	Latest Version	Create Time	Created By
lt-0a2ec29a32eebeb5a	Lab4	1	1	2023-10-08T23:34:03.000Z	arn:aws:iam::6922...

Lab4 (lt-0a2ec29a32eebeb5a)

Instance details	
AMI ID	ami-067d1e60475437da2
Instance type	t2.micro
Availability Zone	-
Key pair name	key1
Security groups	-
Security group IDs	sg-001c6f690a32a5cf6

Follow the steps to configure the Auto Scaling group. Submit a screenshot of step 16 in which you review the configurations and create the group.

The screenshot shows the AWS Management Console interface for configuring an Auto Scaling group. The browser tabs include "Assignment 4", "Untitled document - Google", "Auto Scaling groups | EC2", "Create Auto Scaling group", and "VPC Console". The URL is "us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#CreateAutoScalingGroup:". The console header shows the AWS logo, "Services", a search bar, and the region "N. Virginia".

Step 4: Configure group size and scaling policies [Edit]

Group size

Desired capacity	Minimum capacity	Maximum capacity
1	1	3

Scaling policy

Target tracking scaling	Scaling policy name	Execute policy when
Policy type Target tracking scaling	Target Tracking Policy	As required to maintain Average CPU utilization at 75
Take the action Add or remove capacity units as required	Instances need 300 seconds to warm up before including in metric	Scale in Enabled

The bottom of the screenshot shows the Windows taskbar with the search bar and various application icons. The system tray displays the date and time as 8:08 PM on 10/8/2023.

The screenshot shows the AWS Management Console interface displaying the Auto Scaling groups list and the configuration details for a specific group. The browser tabs include "Assignment 4", "Untitled document - Google", "Auto Scaling groups | EC2", "Auto Scaling groups | EC2", and "VPC Console". The URL is "us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#AutoScalingGroups:sid=Scaling%2520Grp:view=scaling". The console header shows the AWS logo, "Services", a search bar, and the region "N. Virginia".

Scaling Grp, 1 Scaling policy created successfully

Auto Scaling groups (1/2) [Info] [Refresh] [Launch configurations] [Launch templates] [Actions] [Create Auto Scaling group]

Search your Auto Scaling groups

Name	Launch template/configuration	Instances	Status	Desired capacity	Min	Max
Scaling Grp	Lab4 Version Default	1	-	1	1	3

Auto Scaling group: Scaling Grp [Settings] [Close]

Target Tracking Policy

- Target tracking scaling
- Enabled
- As required to maintain Average CPU utilization at 75
- Add or remove capacity units as required
- 300 seconds to warm up before including in metric
- Enabled

The bottom of the screenshot shows the Windows taskbar with the search bar and various application icons. The system tray displays the date and time as 8:21 PM on 10/8/2023.