

Assignment–2

Module-2 LINUX

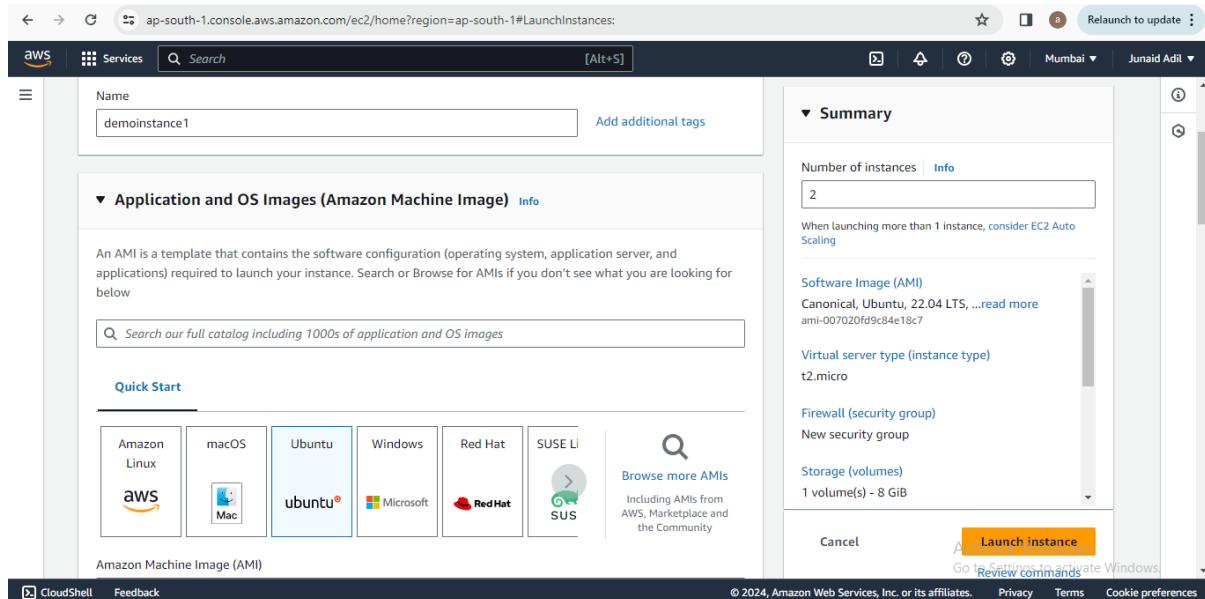
Submitted by : Shaik Junaid Adil

Date of Submission: 26-04-2024

Submitted to: Vikul

L1 - In EC2 Ubuntu Instance Create a new user and SSH Key pair with an authorized key.

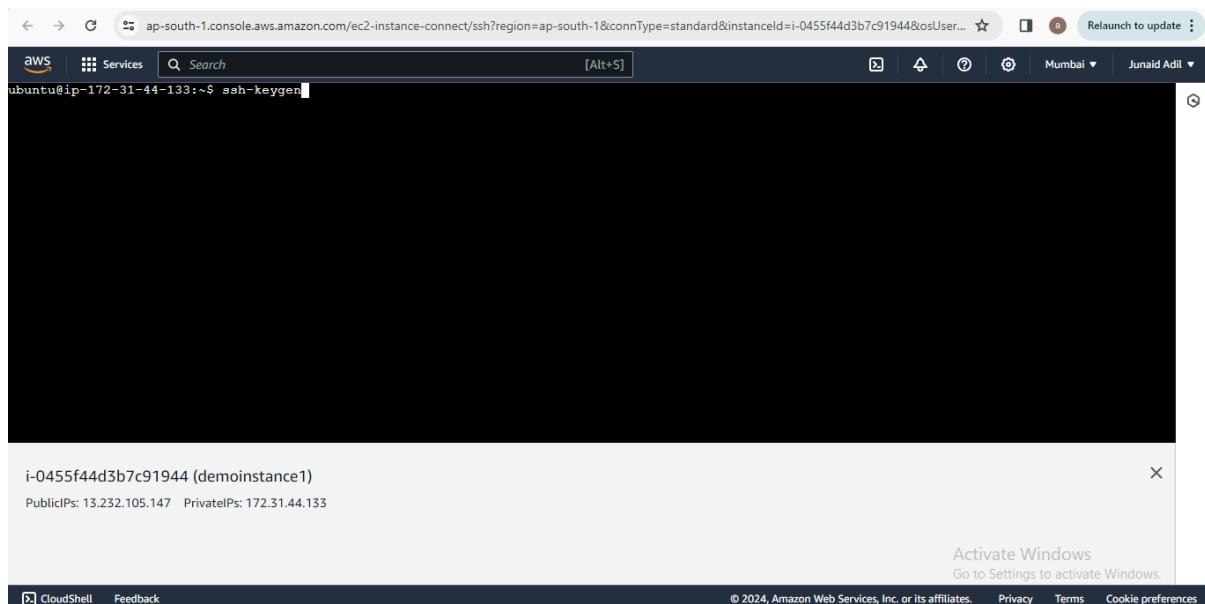
Step 1: Login to the AWS Console and create an EC2 Instance with the name "demoinstance1" and "demoinstance2", in Amazon Machine Image (AMI) select Ubuntu. Then Launch Instnace.



The screenshot shows the AWS EC2 Instances creation interface. The instance name is 'demoinstance1'. Under 'Application and OS Images (Amazon Machine Image)', the 'Software Image (AMI)' dropdown shows 'Canonical, Ubuntu, 22.04 LTS,...read more ami-007020fd9c84e18c7'. The 'Virtual server type (instance type)' is set to 't2.micro'. The 'Launch instance' button is highlighted in orange at the bottom right.

Step 2: Execute “ ssh-keygen ” in demoinstance1

When prompted set the key/password.



The screenshot shows an AWS CloudShell terminal session. The command 'ssh-keygen' is being run on an Ubuntu instance. The terminal shows the command line and the user's prompt.

We can see the key has been generated.

The screenshot shows a terminal window in the AWS CloudShell interface. The user is generating an RSA key pair using the command `ssh-keygen`. The output shows the key fingerprint and the randomart image. The terminal window has a dark background with white text. At the bottom, there is a status bar with the instance ID (i-0455f44d3b7c91944), public IP (13.232.105.147), private IP (172.31.44.133), and the AWS logo.

```
ubuntu@ip-172-31-44-133:~$ ssh-keygen
Generating public/private rsa key pair.
Enter file in which to save the key (/home/ubuntu/.ssh/id_rsa):
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in /home/ubuntu/.ssh/id_rsa
Your public key has been saved in /home/ubuntu/.ssh/id_rsa.pub
The key fingerprint is:
SHA256:K94cive+9B7W2gHA4kaNXnNS2KU6Rbl/ju3PLGFNTs ubuntu@ip-172-31-44-133
The key's randomart image is:
+---[RSA 3072]----+
| oo.*.
| o.oBo+
| . o+o+..
| . oo. ...
| .S + oo|
| . . = oE.|
| o + o + +.|
| o.B + o.o+|
| .==B...ooo|
+---[SHA256]----+
ubuntu@ip-172-31-44-133:~$
```

i-0455f44d3b7c91944 (demoinstance1)
PublicIPs: 13.232.105.147 PrivateIPs: 172.31.44.133

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Step 3: Go to the file “ id_rsa.pub ” and copy the key.

Copy the key from demoinstance1 to demoinstance2 into an authorized_keys file

The screenshot shows a terminal window in the AWS CloudShell interface. The user is navigating to the `.ssh` directory and listing files. They then use the `cat` command to view the contents of the `id_rsa.pub` file. The terminal window has a dark background with white text. At the bottom, there is a status bar with the instance ID (i-0455f44d3b7c91944), public IP (13.232.105.147), private IP (172.31.44.133), and the AWS logo.

```
The key fingerprint is:
SHA256:K94cive+9B7W2gHA4kaNXnNS2KU6Rbl/ju3PLGFNTs ubuntu@ip-172-31-44-133
The key's randomart image is:
+---[RSA 3072]----+
| oo.*.
| o.oBo+
| . o+o+..
| . oo. ...
| .S + oo|
| . . = oE.|
| o + o + +.|
| o.B + o.o+|
| .==B...ooo|
+---[SHA256]----+
ubuntu@ip-172-31-44-133:~$ cd .ssh/
ubuntu@ip-172-31-44-133:~/ssh$ ls
authorized_keys  id_rsa  id_rsa.pub
ubuntu@ip-172-31-44-133:~/ssh$ cat id_rsa.pub
ssh-rsa AAAAB3NzaC1yc2EAAQABAAEbgOCzEyyGgH/QB81Jv/FwocJZwv212LPZuiw8y0iUjYqutI2EP2/dr9lSA3+iVmz5Krol26cRTsGhz//s2QB9lho3pvz23KiIdlk3OGiUi28EMG+x6ZEOVCxzby8n3gpNGusWjaKVALG8ziigKyacABYn2R696UpF5s18ERlaTMznuY17e6t89Vn1WCla2bdX0FXh9BSCP/90g4o9lf+4YVN0mQswmBfx9Xm+R147CgF7mPFf74nYitugSl0hPexmgQ9jvriUxhL/6Ghlk4eeUd8T2wbld/D1nolFWLY9JhwN0aMxAy08UFnNPWwAsgVJGX7rMuinVjI3Cae6GkrH6W2Qw4n0if+M2fvDtni9yWNExISMIsUHaKpb1K1K27+CHzKwTwl1I9R6SuZfy32piMUPUqnyC1yTuiRnafffgY0t8uCU5iFEGe7NDwi3mfTkguJMXTA0qvplLirysiyp1NP/I4YxTU12duQCBN66u1lEwo/C0lwEQUs0rJ3tr10= ubuntu@ip-172-31-44-133
ubuntu@ip-172-31-44-133:~/ssh$
```

i-0455f44d3b7c91944 (demoinstance1)
PublicIPs: 13.232.105.147 PrivateIPs: 172.31.44.133

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Step 4: Now go to demoinstance2 and create a user “junaid.demo” using the command “**useradd junaid.demo**”

The screenshot shows a terminal window in the AWS CloudShell interface. The URL is `ap-south-1.console.aws.amazon.com/ec2-instance-connect/ssh?region=ap-south-1&connType=standard&instanceId=i-07bd63d557d452b71&osUser...` . The terminal prompt is `ubuntu@ip-172-31-47-64:~$` . The user has run the command `useradd junaid.demo`. Below the terminal, the instance details are shown: `i-07bd63d557d452b71 (demoinstance2)`, Public IPs: 3.110.85.156, Private IPs: 172.31.47.64. At the bottom right, there are links for `Activate Windows`, `CloudShell`, `Feedback`, and copyright information: `© 2024, Amazon Web Services, Inc. or its affiliates.`

Step 5: Then create a directory “ junaid.demo ” using the command “ **mkdir junaid.demo** ” and under that create .ssh using the command “ **mkdir .ssh** ”

The screenshot shows a terminal window in the AWS CloudShell interface. The URL is `ap-south-1.console.aws.amazon.com/ec2-instance-connect/ssh?region=ap-south-1&connType=standard&instanceId=i-07bd63d557d452b71&osUser...` . The terminal prompt is `root@ip-172-31-47-64:/home/ubuntu#` . The user has run the commands `cd ..`, `useradd junaid.demo`, `mkdir /home/junaid.demo`, and `mkdir /home/junaid.demo/.ssh`. Below the terminal, the instance details are shown: `i-07bd63d557d452b71 (demoinstance2)`, Public IPs: 3.110.85.156, Private IPs: 172.31.47.64. At the bottom right, there are links for `Activate Windows`, `CloudShell`, `Feedback`, and copyright information: `© 2024, Amazon Web Services, Inc. or its affiliates.`

Step 6: Then create a file “authorized_keys” using command “**touch authorized_keys**” under .ssh directory and paste the public key from demoinstance1

```
aws Services Search [Alt+S] Relaunch to update Mumbai Junaid Adil
root@ip-172-31-47-64:/home/ubuntu$ cd ..
root@ip-172-31-47-64:/home$ useradd junaid.demo
root@ip-172-31-47-64:/home$ mkdir /home/junaid.demo
root@ip-172-31-47-64:/home$ mkdir /home/junaid.demo/.ssh
root@ip-172-31-47-64:/home$ touch /home/junaid.demo/.ssh/authorized_keys
root@ip-172-31-47-64:/home$ ls
junaid.demo  ubuntu
root@ip-172-31-47-64:/home$ cd junaid.demo
root@ip-172-31-47-64:/home/junaid.demo$ ls
root@ip-172-31-47-64:/home/junaid.demo$ ll
total 12
drwxr-xr-x 3 root root 4096 Apr 25 18:22 .
drwxr-xr-x 4 root root 4096 Apr 25 18:21 ..
drwxr-xr-x 2 root root 4096 Apr 25 18:22 .ssh/
root@ip-172-31-47-64:/home/junaid.demo$ cd .ssh
root@ip-172-31-47-64:/home/junaid.demo/.ssh$ ls
authorized_keys
root@ip-172-31-47-64:/home/junaid.demo/.ssh#
```

i-07bd63d557d452b71 (demoinstance2)
PublicIPs: 3.110.85.156 PrivateIPs: 172.31.47.64

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demoinstance1 (copy the public key)

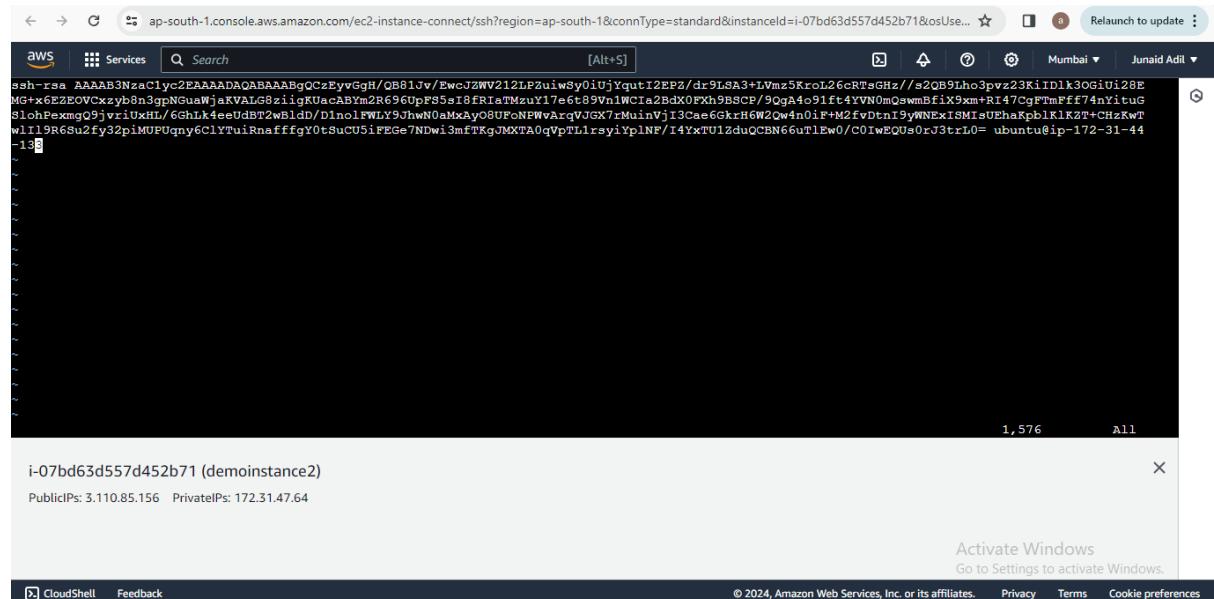
```
aws Services Search [Alt+S] Relaunch to update Mumbai Junaid Adil
The key fingerprint is:
SHA256:k94cive+98W2gHA4ksNXnNS2KU6Rbl/ju3PLGFNTs ubuntu@ip-172-31-44-133
The key's randomart image is:
+---[RSA 3072]---+
| oo.*.
| o..Bo+
| . o+o+..
| .. oo...
| .S + oo|
| . . = oE|
| o + o + +|
| o.B + o.o+|
| .==B...ooo|
+---[SHA256]---+
ubuntu@ip-172-31-44-133:~$ cd .ssh/
ubuntu@ip-172-31-44-133:~/ssh$ ls
authorized_keys  id_rsa  id_rsa.pub
ubuntu@ip-172-31-44-133:~/ssh$ cat id_rsa.pub
ssh-rsa AAAAB3NzaC1yc2EAAQABAAQABgQCZyyGgH/QB81Jv/EwcJzWV212LPZuiw8y0iUjYqutI2EP2/dr9L8A3+LVmz5KroL26cRTsGHZ/s2Q9Lho3pvz23kiDlk3OgiUi28eMGx6E2EOVCxyh8n3gpNguaWjaKVALG8ziigKUacABYn2R69UpF5s18RIaTMzuY17e6t89Vn1WCta2Bdx0Fx9BSCF/9cgA4o9ift4YVN0mQswmBfxXxm+Ri47CgFmPff74nYitugSlohPexmgQ9jvriUXHII/6ghLk4eeUdt2wBlhd/DinolFWLY9JhwN0MxAyo8UFoNPFWaRqgVJGXRkUinVjI3CaeGGkrH6W2Qw4n0iI+M2fvDtnt9yNNExISMlsUEhaKpbIKLKZT+CHzkwTwl1l9R6Gu2fy32piMUqny6ClyTuiRnafffgY0tSuCUSiFEGe7NDwi3mfTKgJMXTAOqVpTlrsyiYplNF/I4YxTU1ZduQCBN66u1leWo/COIwEQUs0rJ3trL0=  ubuntu@ip-172-31-44-133
ubuntu@ip-172-31-44-133:~/ssh$
```

i-0455f44d3b7c91944 (demoinstance1)
PublicIPs: 13.232.105.147 PrivateIPs: 172.31.44.133

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demoinstance2 (paste it in the authorized_keys file)



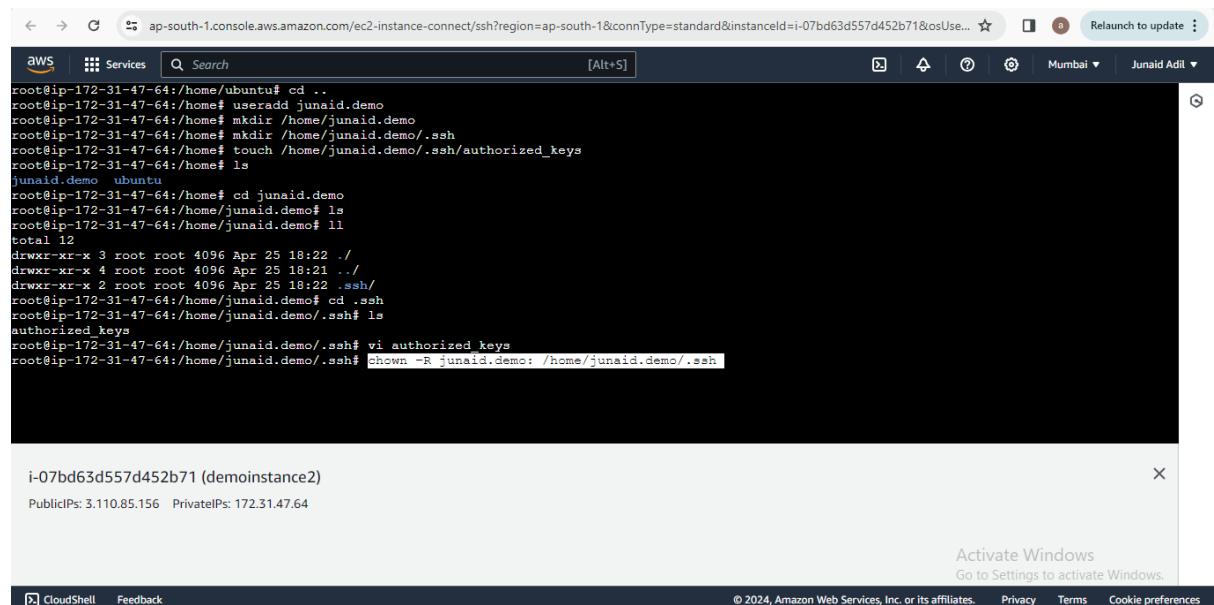
```
ssh-rsa AAAAB3NzaC1yc2EAAAQABAAQBgQCzEyyGgH/QB81Jv/EwcJZWV212LPZuiwSy0iUjYqutI2EP2/dr9LSA3+LVmz5KroL26cRTsGHz//s2QB9lho3pvz23KiIDlk3OGiUi28EMG+x6z2EOVCxxzyb8n3gpNGuaWj#KVALG8iiigKUacAYm2R696UpFS5sIBFrtaTMzuY17e6t89Vn1Cta2BdX0FXh9BSCP/9cg4o91ft4YYN0mQswmBixX9xm+Ri47CgFtMff74nYituoGSl0hPexmg09jvri1uXhLI/6GhLk4eeudBT2wBl0/DInolFWLY9jhWN0aMxAyo8UFoNFWVargVJGxTrMuinVjI3Cae6krHW2o4n0i+F2M2fyDtn19yNNExISMisUEhaKpb1kLkZT+ChZkwTwl119R68u2fy32piMUPUqny6C1YTuiRnafffgY0tSuCUSiFEGe7NDwi3mfTKqJMXTA0qVpTLlrsyiYplNF/I4YxTU12duQCBN66u7lewo/COIwEQUsOrJ3trL0= ubuntu@ip-172-31-44-138
```

i-07bd63d557d452b71 (demoinstance2)
Public IPs: 3.110.85.156 Private IPs: 172.31.47.64

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Step 7: Now change the ownership of the .ssh to the created user junaid.demo using the command “ **chown -R junaid.demo: /home/junaid.demo/.ssh** ”



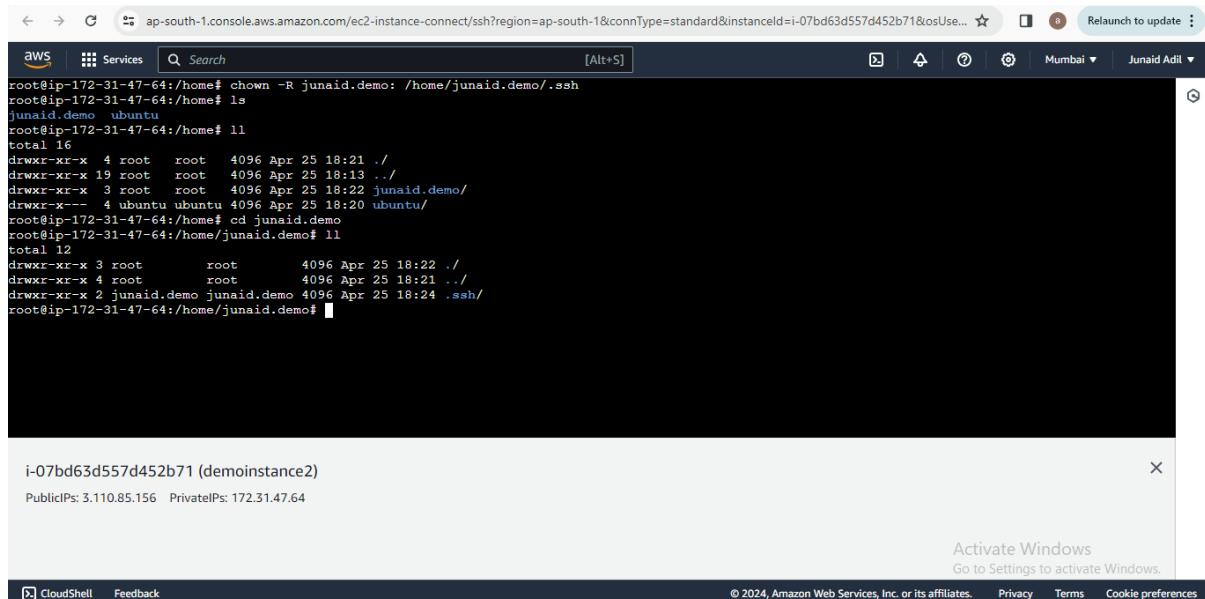
```
root@ip-172-31-47-64:/home/ubuntu# cd ..
root@ip-172-31-47-64:/home# useradd junaid.demo
root@ip-172-31-47-64:/home# mkdir /home/junaid.demo
root@ip-172-31-47-64:/home# mkdir /home/junaid.demo/.ssh
root@ip-172-31-47-64:/home# touch /home/junaid.demo/.ssh/authorized_keys
root@ip-172-31-47-64:/home# ls
junaid.demo  ubuntu
root@ip-172-31-47-64:/home# cd junaid.demo
root@ip-172-31-47-64:/home/junaid.demo# ls
root@ip-172-31-47-64:/home/junaid.demo# ll
total 12
drwxr-xr-x 3 root root 4096 Apr 25 18:22 .
drwxr-xr-x 4 root root 4096 Apr 25 18:21 ..
drwxr-xr-x 2 root root 4096 Apr 25 18:22 .ssh/
root@ip-172-31-47-64:/home/junaid.demo# cd .ssh
root@ip-172-31-47-64:/home/junaid.demo/.ssh# ls
authorized_keys
root@ip-172-31-47-64:/home/junaid.demo/.ssh# vi authorized_keys
root@ip-172-31-47-64:/home/junaid.demo/.ssh# chown -R junaid.demo: /home/junaid.demo/.ssh
```

i-07bd63d557d452b71 (demoinstance2)
Public IPs: 3.110.85.156 Private IPs: 172.31.47.64

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We can see the owner has been changed to junaid.demo



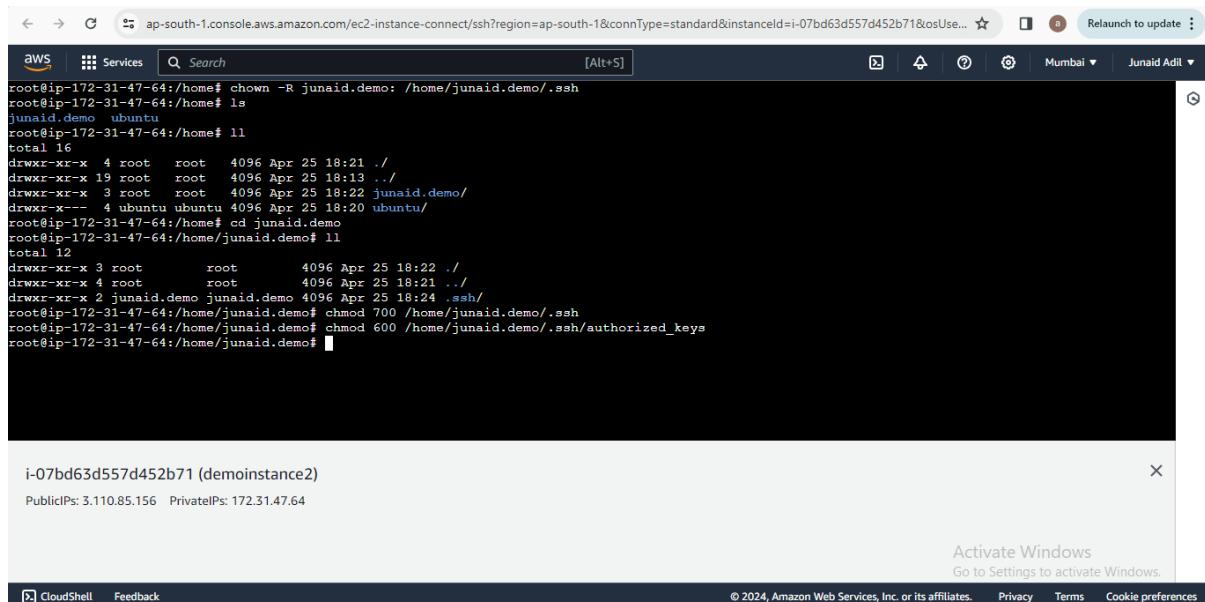
```
aws Services Search [Alt+S]
root@ip-172-31-47-64:/home# chown -R junaid.demo: /home/junaid.demo/.ssh
root@ip-172-31-47-64:/home# ls
junaid.demo  ubuntu
root@ip-172-31-47-64:/home# ll
total 16
drwxr-xr-x  4 root    root   4096 Apr 25 18:21 .
drwxr-xr-x 19 root    root   4096 Apr 25 18:13 ..
drwxr-xr-x  3 root    root   4096 Apr 25 18:22 junaid.demo/
drwxr-x---  4 ubuntu  root   4096 Apr 25 18:20 ubuntu/
root@ip-172-31-47-64:/home# cd junaid.demo
root@ip-172-31-47-64:/home/junaid.demo# ll
total 12
drwxr-xr-x  3 root    root   4096 Apr 25 18:22 .
drwxr-xr-x  4 root    root   4096 Apr 25 18:21 ..
drwxr-xr-x  2 junaid.demo junaid.demo 4096 Apr 25 18:24 .ssh/
root@ip-172-31-47-64:/home/junaid.demo#
```

i-07bd63d557d452b71 (demoinstance2)
PublicIPs: 3.110.85.156 PrivateIPs: 172.31.47.64

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Step 8: Now execute the commands “ **chmod 700 /home/junaid.demo/.ssh** ” and “ **chmod 600 /home/junaid.demo/.ssh/authorized_keys** ” to give permissions to .ssh and authorized_keys file



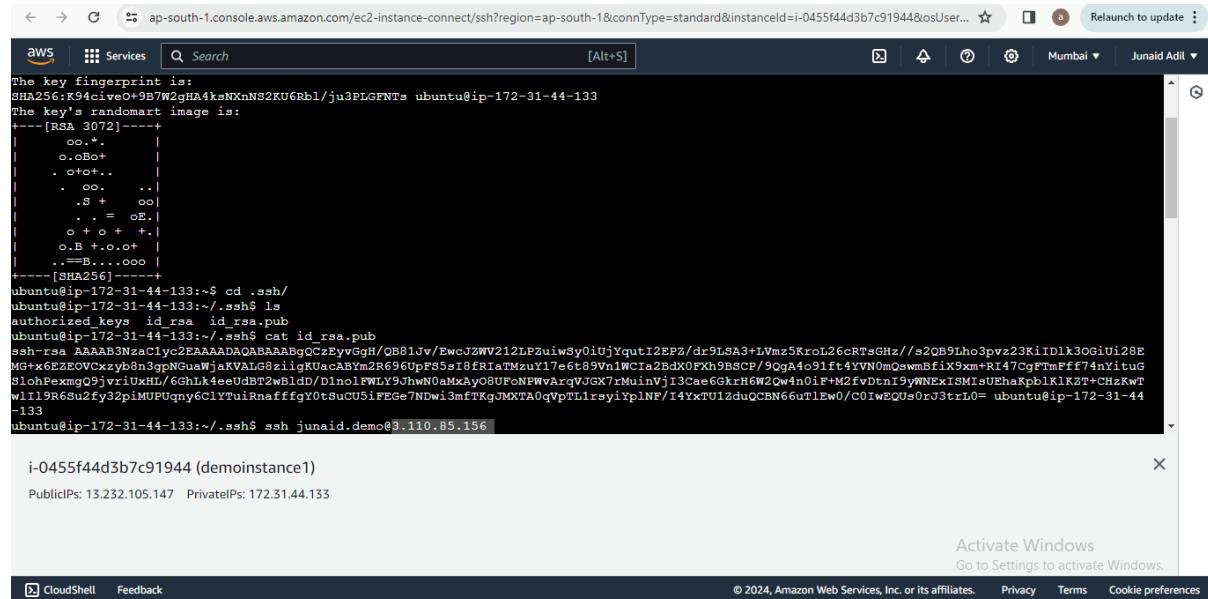
```
aws Services Search [Alt+S]
root@ip-172-31-47-64:/home# chown -R junaid.demo: /home/junaid.demo/.ssh
root@ip-172-31-47-64:/home# ls
junaid.demo  ubuntu
root@ip-172-31-47-64:/home# ll
total 16
drwxr-xr-x  4 root    root   4096 Apr 25 18:21 .
drwxr-xr-x 19 root    root   4096 Apr 25 18:13 ..
drwxr-xr-x  3 root    root   4096 Apr 25 18:22 junaid.demo/
drwxr-x---  4 ubuntu  root   4096 Apr 25 18:20 ubuntu/
root@ip-172-31-47-64:/home# cd junaid.demo
root@ip-172-31-47-64:/home/junaid.demo# ll
total 12
drwxr-xr-x  3 root    root   4096 Apr 25 18:22 .
drwxr-xr-x  4 root    root   4096 Apr 25 18:21 ..
drwxr-xr-x  2 junaid.demo junaid.demo 4096 Apr 25 18:24 .ssh/
root@ip-172-31-47-64:/home/junaid.demo# chmod 700 /home/junaid.demo/.ssh
root@ip-172-31-47-64:/home/junaid.demo# chmod 600 /home/junaid.demo/.ssh/authorized_keys
root@ip-172-31-47-64:/home/junaid.demo#
```

i-07bd63d557d452b71 (demoinstance2)
PublicIPs: 3.110.85.156 PrivateIPs: 172.31.47.64

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Step 9: Now execute the command “ `ssh junaid.demo@ 3.110.85.156` ” in demoinstance1, where we have to enter the public IP of demoinstance2.



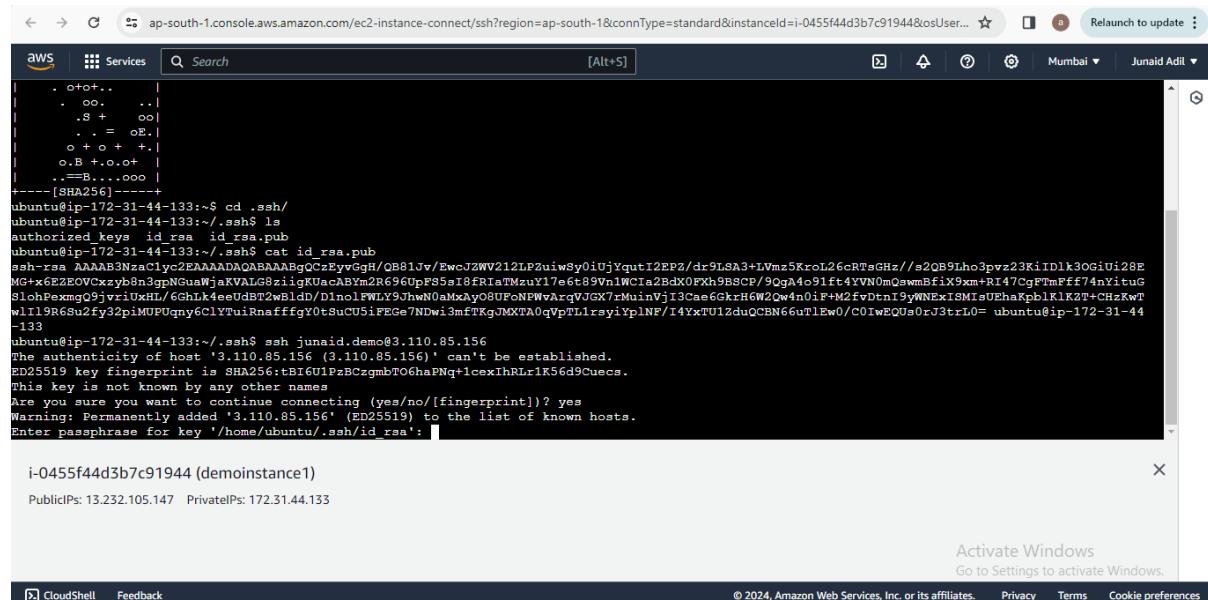
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aws Services Search [Alt+S] Relaunch to update Mumbai Junaid Adil
The key fingerprint is:
SHA256:k94cive+9B7W2gH4ksNXnNS2KU6Rb1/ju3PLGFNTs ubuntu@ip-172-31-44-133
The key's randomart image is:
+---[RSA 3072]----+
 .o+*.
 .oBo+
 .o+o+..
 . oo. ...
 .S + oo
 . . = oE.
 o + o + .
 o.B + o.o+
 .==B...ooo
+---[SHA256]----+
ubuntu@ip-172-31-44-133:~$ cd .ssh/
ubuntu@ip-172-31-44-133:~/ssh$ ls
authorized_keys id_rsa id_rsa.pub
ubuntu@ip-172-31-44-133:~/ssh$ cat id_rsa.pub
ssh-rsa AAAAB3NzaC1yc2EAAAQABAAABgCcZeyvGgH/QB81Jv/EwcJZWV212LPZuiw8y0iUjYqutI2EP2/dr9LSA3+LVmz5KroL26cRTsGHz//s2QB9lho3pvz23KiIDlk3OGiUi28EMG+x6Z2EOVCxxby8n3gpNGuaWjaKVALG8ziigKUacABym2R696UpFSs18FRtaTMzuY17e6t89Vn1WCia2BdX0Fxm9BSCP/9QgA4o91ft4YVN0mQswmBfix9xm+Ri47CgFmFFF74nYitugSl0hPexmgQ9jvriUxhIL/6GhLk4eeetdBT2wBlbd/Dinol1FWLY9jhN0aMxAyo8UFoNPFWaRgVJGXRmuinVjI3Cae6KxH6W2Qw4n0i+F+M2fvDtnI9ywNNExISMIsUEhaKpbIKLKZT+ChzKwTwl1l9R68u2fy32piMUPUqny6ClyTuiRnafffgY0tSuCU5iFEGe7NDwi3mfTKgJMXTA0qvptLlrsyiYplNF/I4YxTU1ZduQCBN66uTlew0/C0IwEQUs0rJ3trL0= ubuntu@ip-172-31-44-133
ubuntu@ip-172-31-44-133:~/ssh$ ssh junaid.demo@3.110.85.156

i-0455f44d3b7c91944 (demoinstance1)
PublicIPs: 13.232.105.147 PrivateIPs: 172.31.44.133

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```

Step 10: Then enter the password of key which was given while generating the public key in demoinstance1



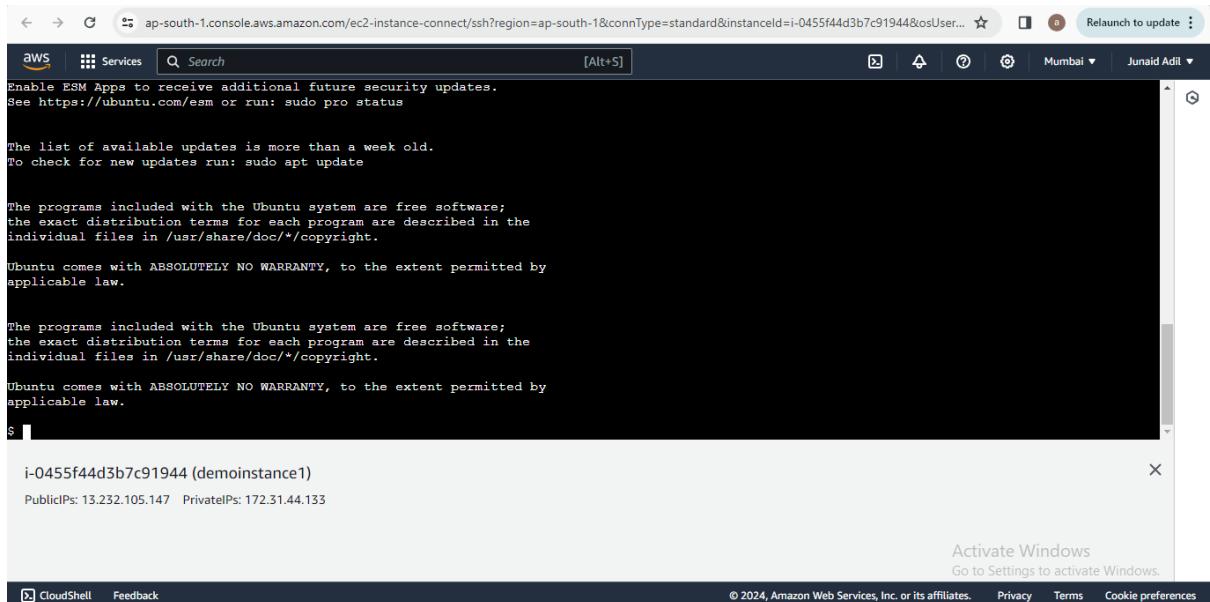
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aws Services Search [Alt+S] Relaunch to update Mumbai Junaid Adil
The key fingerprint is:
SHA256:k94cive+9B7W2gH4ksNXnNS2KU6Rb1/ju3PLGFNTs ubuntu@ip-172-31-44-133
The key's randomart image is:
+---[RSA 3072]----+
 .o+*.
 .oBo+
 .o+o+..
 . oo. ...
 .S + oo
 . . = oE.
 o + o + .
 o.B + o.o+
 .==B...ooo
+---[SHA256]----+
ubuntu@ip-172-31-44-133:~$ cd .ssh/
ubuntu@ip-172-31-44-133:~/ssh$ ls
authorized_keys id_rsa id_rsa.pub
ubuntu@ip-172-31-44-133:~/ssh$ cat id_rsa.pub
ssh-rsa AAAAB3NzaC1yc2EAAAQABAAABgCcZeyvGgH/QB81Jv/EwcJZWV212LPZuiw8y0iUjYqutI2EP2/dr9LSA3+LVmz5KroL26cRTsGHz//s2QB9lho3pvz23KiIDlk3OGiUi28EMG+x6Z2EOVCxxby8n3gpNGuaWjaKVALG8ziigKUacABym2R696UpFSs18FRtaTMzuY17e6t89Vn1WCia2BdX0Fxm9BSCP/9QgA4o91ft4YVN0mQswmBfix9xm+Ri47CgFmFFF74nYitugSl0hPexmgQ9jvriUxhIL/6GhLk4eeetdBT2wBlbd/Dinol1FWLY9jhN0aMxAyo8UFoNPFWaRgVJGXRmuinVjI3Cae6KxH6W2Qw4n0i+F+M2fvDtnI9ywNNExISMIsUEhaKpbIKLKZT+ChzKwTwl1l9R68u2fy32piMUPUqny6ClyTuiRnafffgY0tSuCU5iFEGe7NDwi3mfTKgJMXTA0qvptLlrsyiYplNF/I4YxTU1ZduQCBN66uTlew0/C0IwEQUs0rJ3trL0= ubuntu@ip-172-31-44-133
ubuntu@ip-172-31-44-133:~/ssh$ ssh junaid.demo@3.110.85.156
The authenticity of host '3.110.85.156 (3.110.85.156)' can't be established.
ED25519 key fingerprint is SHA256:tb1601pz8zCzgmbT06naPNq+1cexihLrif56d9cuecs.
This key is not known by any other names
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '3.110.85.156' (ED25519) to the list of known hosts.
Enter passphrase for key '/home/ubuntu/.ssh/id_rsa': i-0455f44d3b7c91944 (demoinstance1)

i-0455f44d3b7c91944 (demoinstance1)
PublicIPs: 13.232.105.147 PrivateIPs: 172.31.44.133

Activate Windows
Go to Settings to activate Windows.

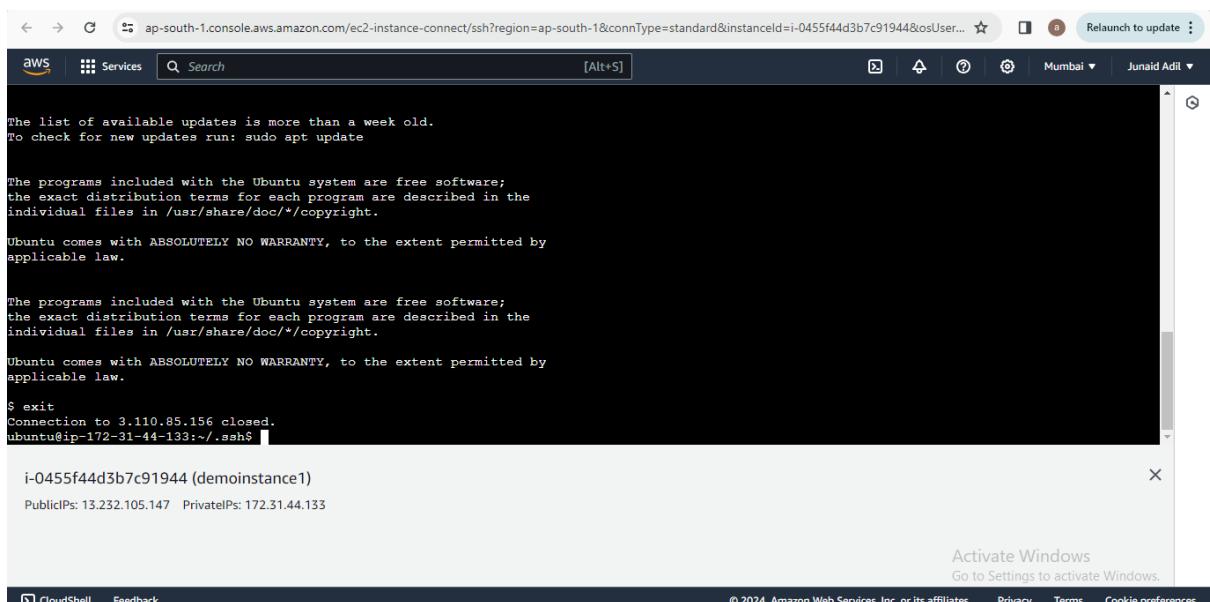
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```

We can see the demoinstance2 is connected in demoinstance1.



The screenshot shows a terminal window within the AWS CloudShell interface. The title bar indicates the URL is ap-south-1.console.aws.amazon.com/ec2-instance-connect/ssh?region=ap-south-1&connType=standard&instanceId=i-0455f44d3b7c91944&osUser... The terminal content displays several lines of text from the Ubuntu system, including ESM update information, copyright notices, and a warning about no warranty. At the bottom of the terminal, the command \$ exit is entered, followed by the message "Connection to 3.110.85.156 closed." Below the terminal, the instance details are shown: i-0455f44d3b7c91944 (demoinstance1), PublicIPs: 13.232.105.147, PrivateIPs: 172.31.44.133. The status bar at the bottom right includes links for Activate Windows, CloudShell, Feedback, and cookie preferences.

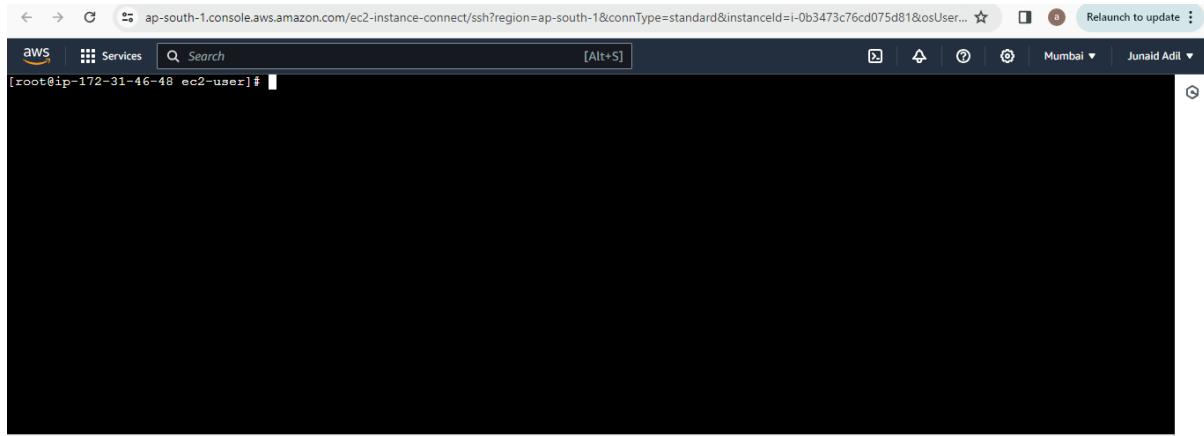
Step 11: Execute the command “exit” to logout of demoinstance 2.



This screenshot shows the same AWS CloudShell terminal window as the previous one, but it has been closed. The terminal history now ends with the "exit" command and its confirmation message. The instance details and status bar remain the same as in the previous screenshot.

L2 - As a Linux root user Create Files/Directory in the same Instance and change the ownership to a new user

Step 1: create an Instance and connect.

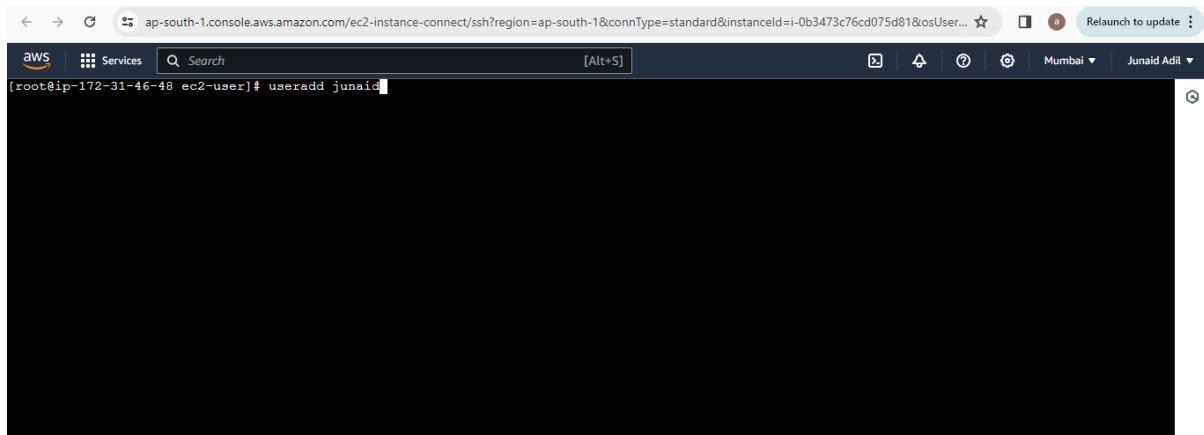


i-0b3473c76cd075d81 (Instance3)
PublicIPs: 13.233.232.231 PrivateIPs: 172.31.46.48

Activate Windows
Go to Settings to activate Windows.

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Step 2: Add username using the command “**useradd junaid**” and by using command “**sudo su**” we can change from regular user to root user.



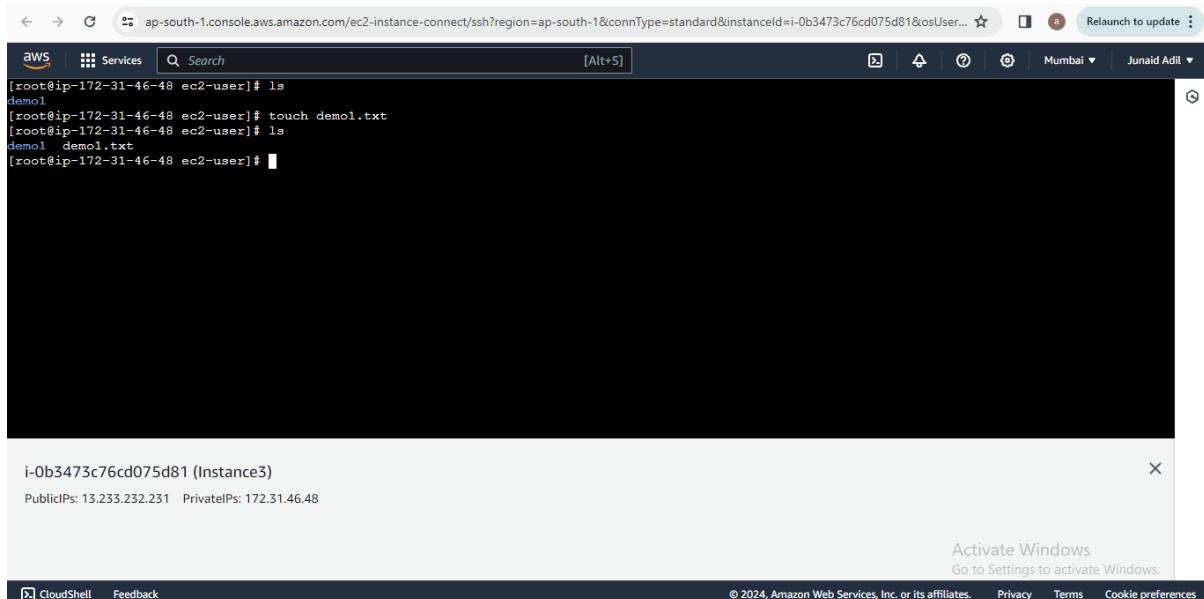
```
[root@ip-172-31-46-48 ec2-user]# useradd junaid
```

i-0b3473c76cd075d81 (Instance3)
PublicIPs: 13.233.232.231 PrivateIPs: 172.31.46.48

Activate Windows
Go to Settings to activate Windows.

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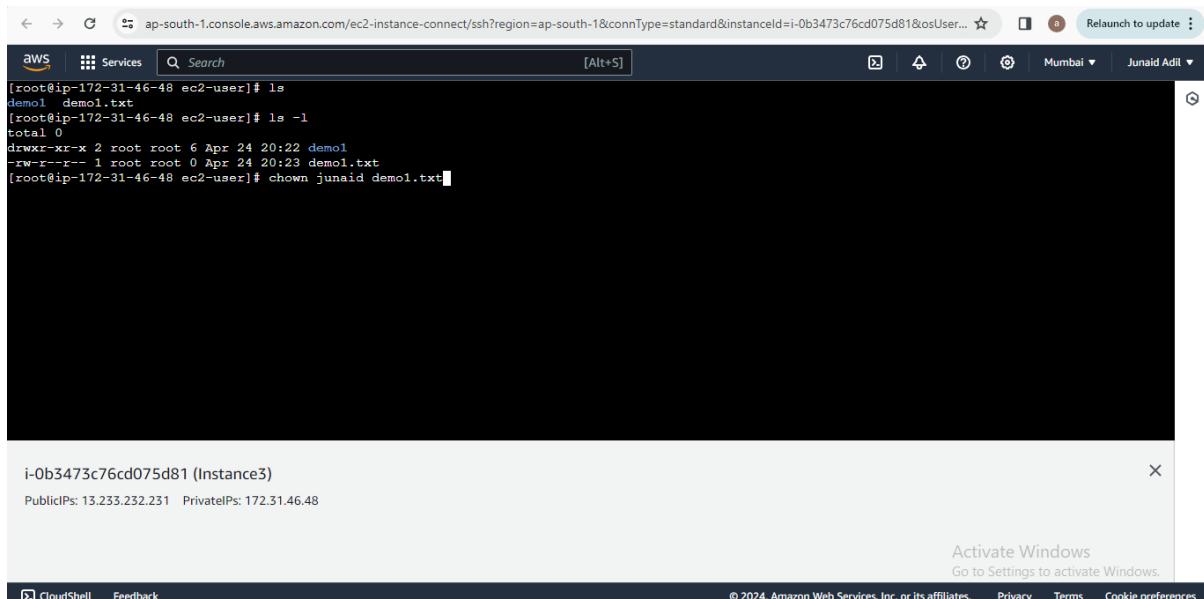
Step 3: create a Directory “demo1” using the command “**mkdir demo1**” and file “**“demo1.txt”** using the command “**touch demo1.txt**”



The screenshot shows a terminal session in the AWS CloudShell interface. The user has run the command `ls`, which shows a directory named `demo1`. Then, they run `touch demo1.txt`, creating a new file. Finally, they run `ls` again, which now includes the `demo1.txt` file.

```
[root@ip-172-31-46-48 ec2-user]# ls
demo1
[root@ip-172-31-46-48 ec2-user]# touch demo1.txt
[root@ip-172-31-46-48 ec2-user]# ls
demo1  demo1.txt
[root@ip-172-31-46-48 ec2-user]#
```

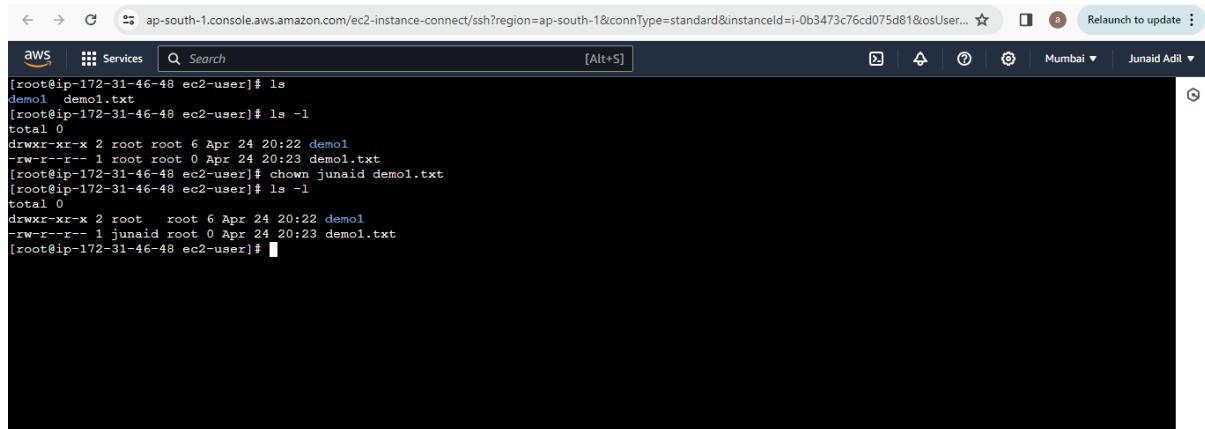
Step 4: To change the ownership of a file to junaid, execute the command “**chown junaid demo1.txt**”



The screenshot shows a terminal session in the AWS CloudShell interface. The user has run `ls` to list files, then `ls -l` to show detailed file information, revealing that `demo1.txt` belongs to root. They then run `chown junaid demo1.txt` to change the owner of the file to junaid.

```
[root@ip-172-31-46-48 ec2-user]# ls
demo1  demo1.txt
[root@ip-172-31-46-48 ec2-user]# ls -l
total 0
drwxr-xr-x 2 root root 6 Apr 24 20:22 demo1
-rw-r--r-- 1 root root 0 Apr 24 20:23 demo1.txt
[root@ip-172-31-46-48 ec2-user]# chown junaid demo1.txt
```

Step 5: Execute the command “ ls -l ”, We can see the owner of file demo1.txt has been changed to junaid



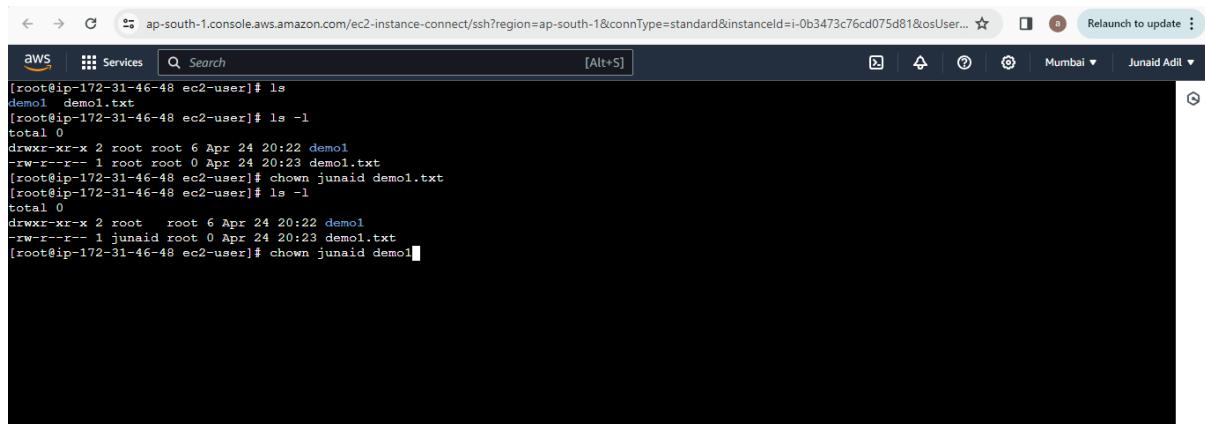
```
[root@ip-172-31-46-48 ec2-user]# ls
demo1  demo1.txt
[root@ip-172-31-46-48 ec2-user]# ls -l
total 0
drwxr-xr-x 2 root root 6 Apr 24 20:22 demo1
-rw-r--r-- 1 root root 0 Apr 24 20:23 demo1.txt
[root@ip-172-31-46-48 ec2-user]# chown junaid demo1.txt
[root@ip-172-31-46-48 ec2-user]# ls -l
total 0
drwxr-xr-x 2 root root 6 Apr 24 20:22 demo1
-rw-r--r-- 1 junaid root 0 Apr 24 20:23 demo1.txt
[root@ip-172-31-46-48 ec2-user]#
```

i-0b3473c76cd075d81 (Instance3)
PublicIPs: 13.233.232.231 PrivateIPs: 172.31.46.48

Activate Windows
Go to Settings to activate Windows.

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Step 6: To change the ownership of a Directory, execute the command “ chown junaid demo1 ”.



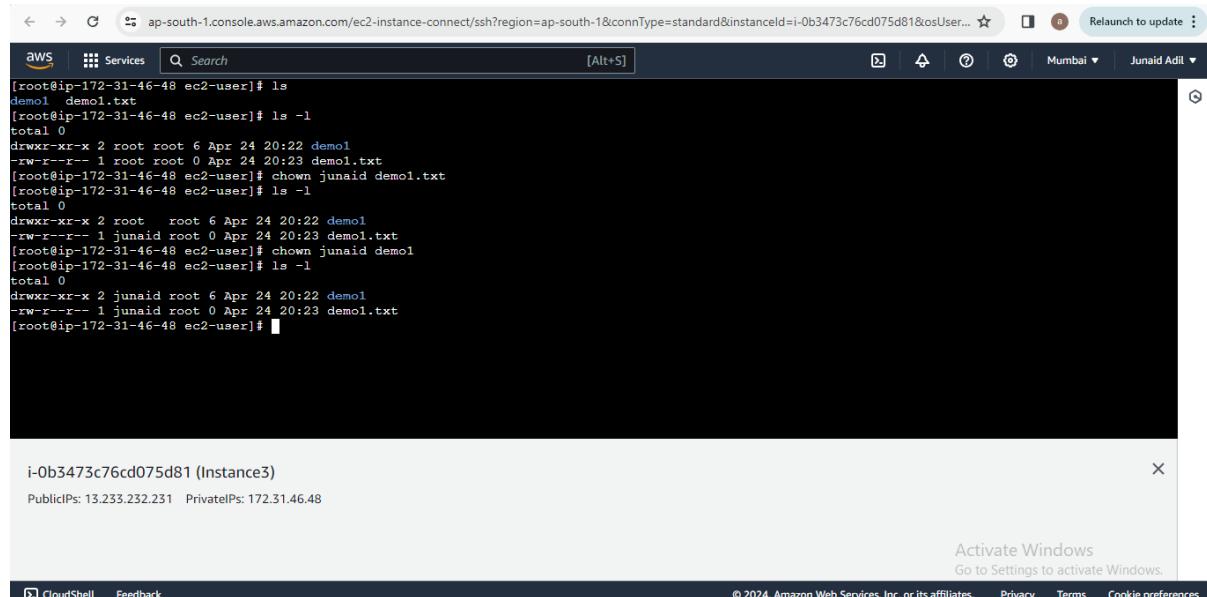
```
[root@ip-172-31-46-48 ec2-user]# ls
demo1  demo1.txt
[root@ip-172-31-46-48 ec2-user]# ls -l
total 0
drwxr-xr-x 2 root root 6 Apr 24 20:22 demo1
-rw-r--r-- 1 root root 0 Apr 24 20:23 demo1.txt
[root@ip-172-31-46-48 ec2-user]# chown junaid demo1.txt
[root@ip-172-31-46-48 ec2-user]# ls -l
total 0
drwxr-xr-x 2 root root 6 Apr 24 20:22 demo1
-rw-r--r-- 1 junaid root 0 Apr 24 20:23 demo1.txt
[root@ip-172-31-46-48 ec2-user]# chown junaid demo1
```

i-0b3473c76cd075d81 (Instance3)
PublicIPs: 13.233.232.231 PrivateIPs: 172.31.46.48

Activate Windows
Go to Settings to activate Windows.

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Step 7: Execute the command “ ls -l ”, We can see the ownership of a directory demo1 has been changed to junaid



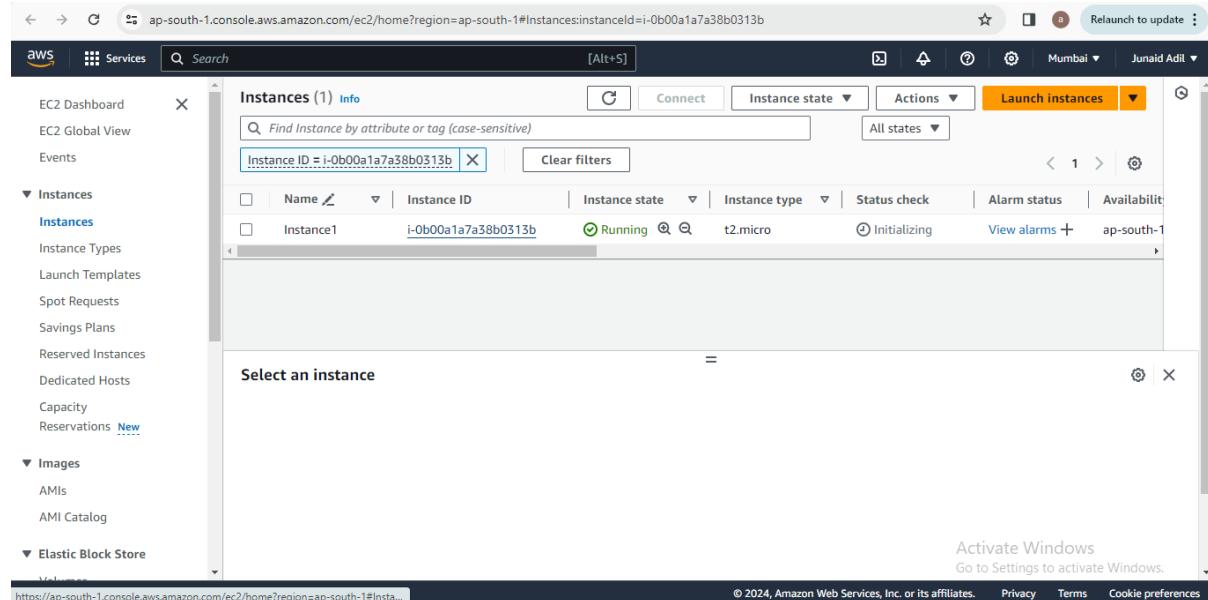
The screenshot shows a terminal session in the AWS CloudShell interface. The user has run several commands to change the ownership of a file named 'demo1.txt' from root to junaid. The terminal output is as follows:

```
[root@ip-172-31-46-48 ec2-user]# ls
demo1  demo1.txt
[root@ip-172-31-46-48 ec2-user]# ls -l
total 0
drwxr-xr-x 2 root root 6 Apr 24 20:22 demo1
-rw-r--r-- 1 root root 0 Apr 24 20:23 demo1.txt
[root@ip-172-31-46-48 ec2-user]# chown junaid demo1.txt
[root@ip-172-31-46-48 ec2-user]# ls -l
total 0
drwxr-xr-x 2 junaid root 6 Apr 24 20:22 demo1
-rw-r--r-- 1 junaid root 0 Apr 24 20:23 demo1.txt
[root@ip-172-31-46-48 ec2-user]# ls -l
total 0
drwxr-xr-x 2 junaid root 6 Apr 24 20:22 demo1
-rw-r--r-- 1 junaid root 0 Apr 24 20:23 demo1.txt
[root@ip-172-31-46-48 ec2-user]#
```

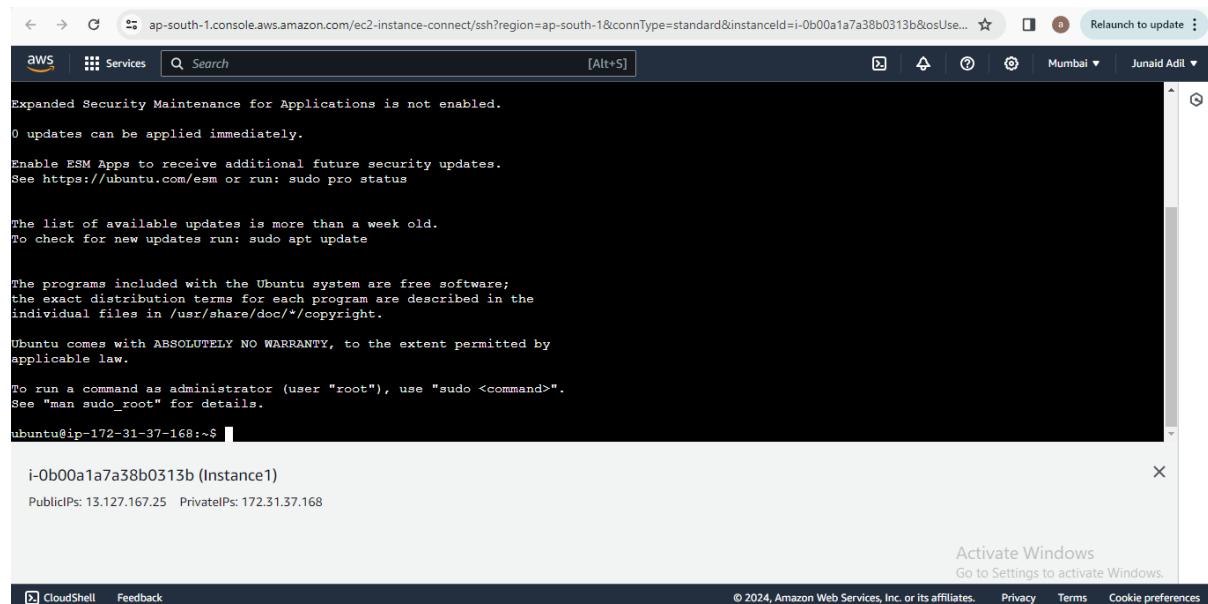
Below the terminal window, the instance details are shown: i-0b3473c76cd075d81 (Instance3), PublicIPs: 13.233.232.231, PrivateIPs: 172.31.46.48. At the bottom right, there are links for Activate Windows, CloudShell, Feedback, and various AWS service links.

L3 - In EC2 Ubuntu Instance Create Files and Directories and Grant R/W/X Access only to the Owner and User Group.

Step 1: Create an ubuntu Instance and connect.



The screenshot shows the AWS EC2 Instances page. On the left, there's a navigation sidebar with options like EC2 Dashboard, EC2 Global View, Events, Instances (selected), Instance Types, Launch Templates, Spot Requests, Savings Plans, Reserved Instances, Dedicated Hosts, Capacity, Reservations (New), Images, AMIs, and AMI Catalog. The main area is titled "Instances (1) Info" and shows a table with one row. The row contains "Instance ID = i-0b00a1a7a38b0313b", "Name = Instance1", "Instance state = Running", "Instance type = t2.micro", "Status check = Initializing", and "Availability zone = ap-south-1". Below the table, a modal window titled "Select an instance" is open, showing the same instance information. At the bottom right of the main page, there are links for "Activate Windows", "Go to Settings to activate Windows.", "Privacy", "Terms", and "Cookie preferences".



The screenshot shows the AWS CloudShell terminal. It displays the following text:
Expanded Security Maintenance for Applications is not enabled.
0 updates can be applied immediately.
Enable ESM Apps to receive additional future security updates.
See <https://ubuntu.com/esm> or run: sudo pro status

The list of available updates is more than a week old.
To check for new updates run: sudo apt update

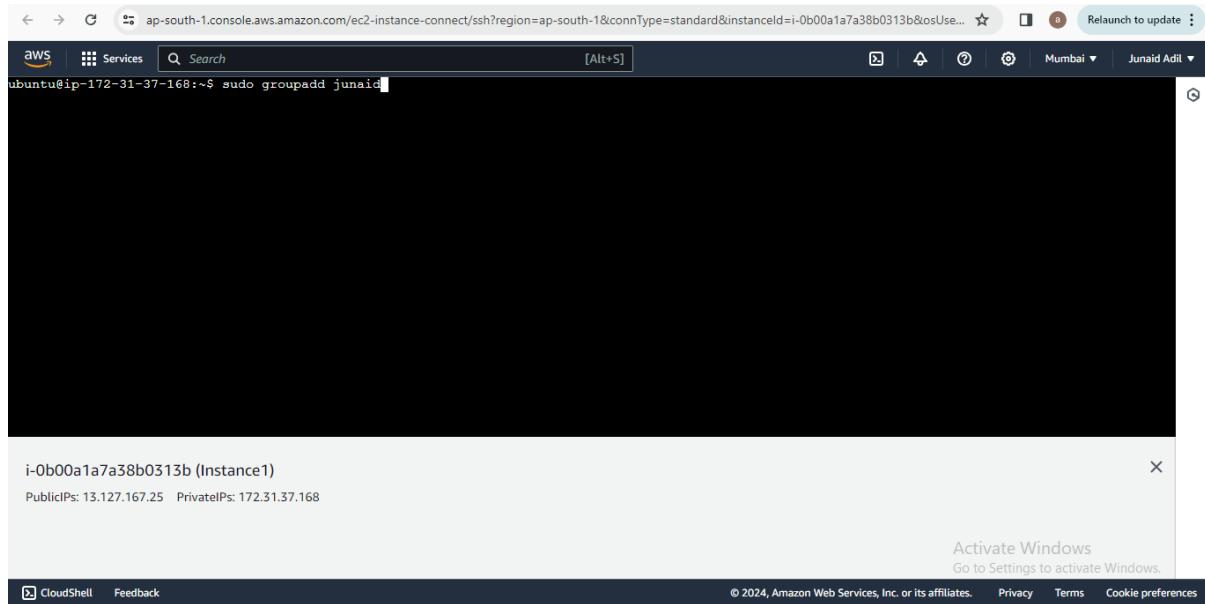
The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

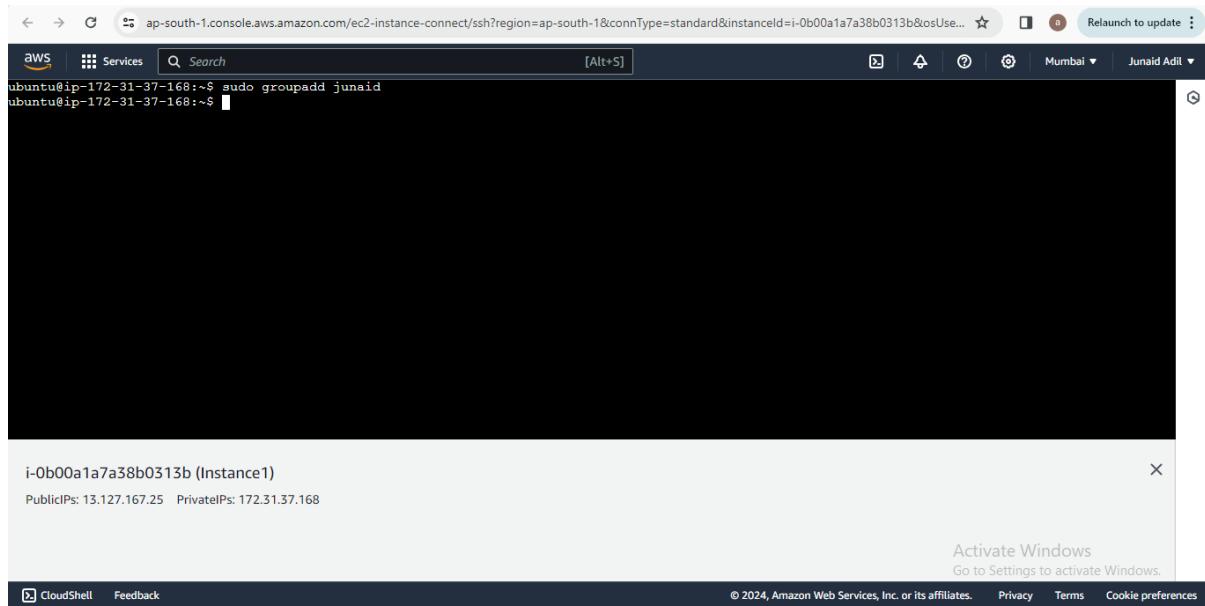
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.
ubuntu@ip-172-31-37-168:~\$

i-0b00a1a7a38b0313b (Instance1)
PublicIPs: 13.127.167.25 PrivateIPs: 172.31.37.168

Step2 : Create the group “Junaid” using command “**sudo groupadd junaid** ”

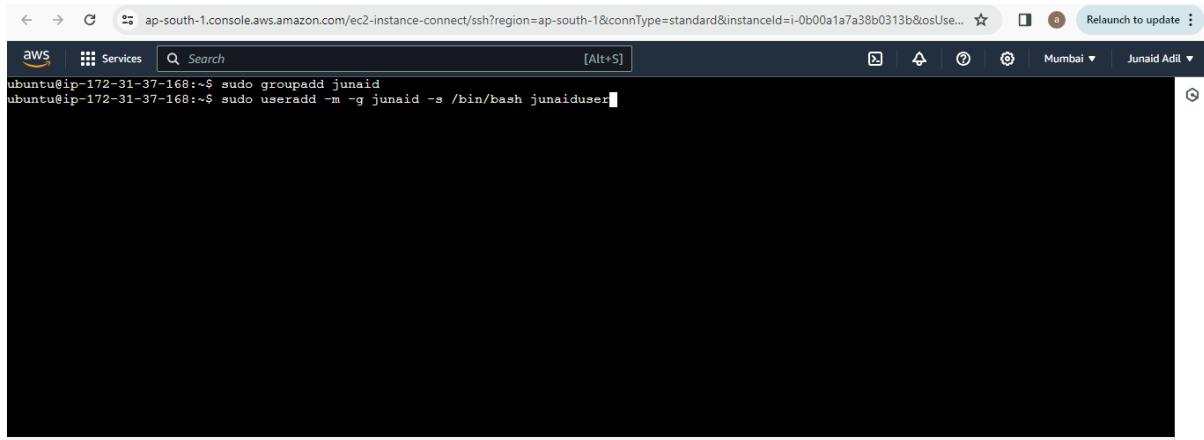


A screenshot of an AWS CloudShell terminal window. The terminal is running on an Ubuntu instance (i-0b00a1a7a38b0313b). The user has run the command `sudo groupadd junaid`. The terminal interface includes a header bar with the AWS logo, services menu, search bar, and user information (Mumbai, Junaid Adil). Below the terminal is a status bar showing the instance ID, public and private IPs, and a cookie consent banner.



A second screenshot of an AWS CloudShell terminal window, identical to the first one. It shows the same terminal session where the user has run the command `sudo groupadd junaid`. The terminal interface and status bar are consistent with the first screenshot.

Step 3: Create an user and assign the user to the created group using command “**sudo useradd -m -g junaid -s /bin/bash junaiduser**”



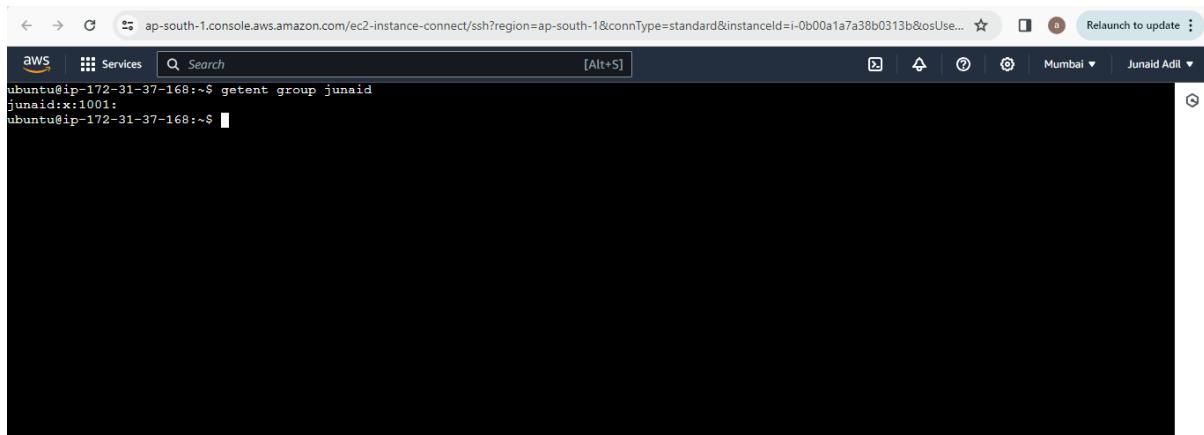
```
ubuntu@ip-172-31-37-168:~$ sudo groupadd junaid
ubuntu@ip-172-31-37-168:~$ sudo useradd -m -g junaid -s /bin/bash junaiduser
```

i-0b00a1a7a38b0313b (Instance1)
PublicIPs: 13.127.167.25 PrivateIPs: 172.31.37.168

Activate Windows
Go to Settings to activate Windows.

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Check if the group has been created, using the command “**getent group junaid**”



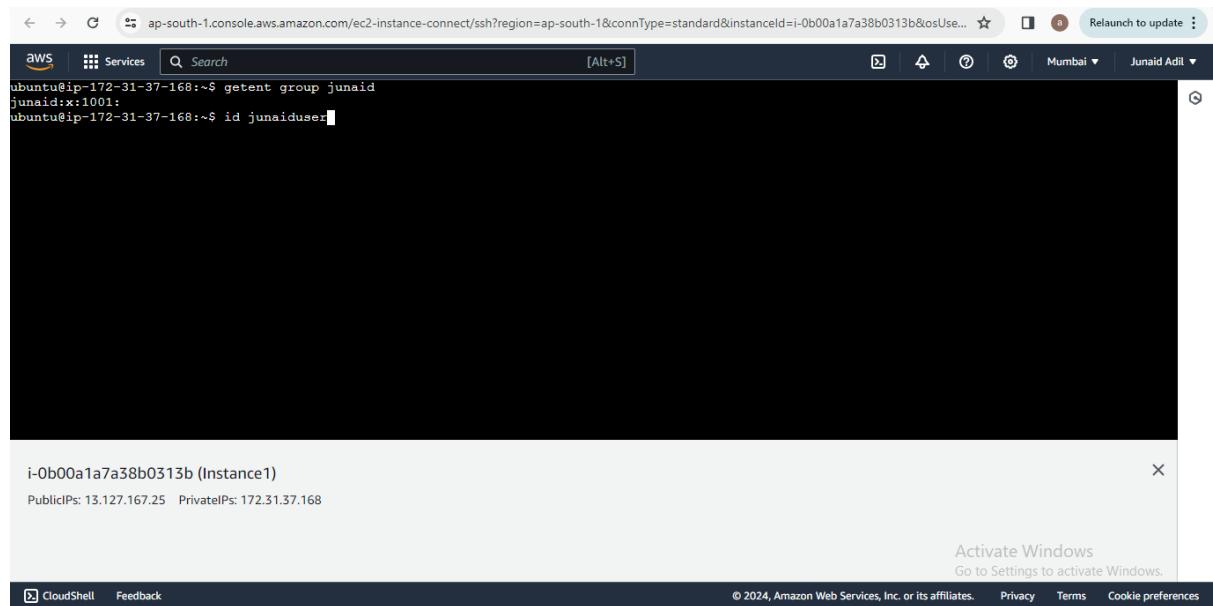
```
ubuntu@ip-172-31-37-168:~$ getent group junaid
junaid:x:1001:
ubuntu@ip-172-31-37-168:~$
```

i-0b00a1a7a38b0313b (Instance1)
PublicIPs: 13.127.167.25 PrivateIPs: 172.31.37.168

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Then check if the user has been created, using the command “**id junaiduser**”

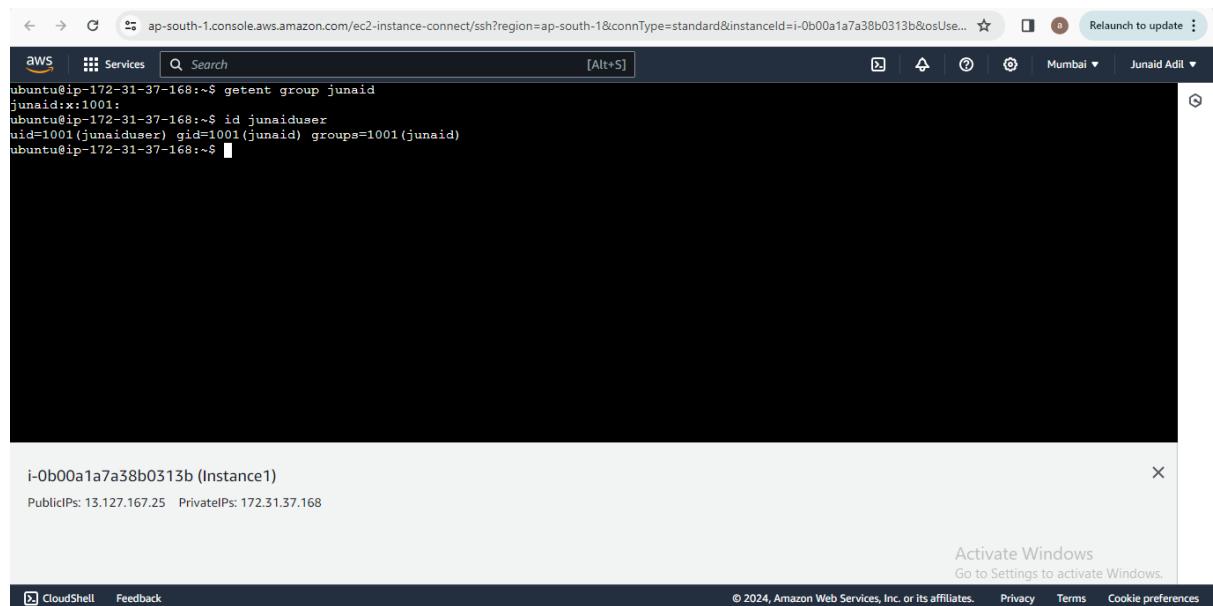


A screenshot of the AWS CloudShell interface. The terminal window shows the following command being run:

```
ubuntu@ip-172-31-37-168:~$ getent group junaid
junaid:x:1001:
ubuntu@ip-172-31-37-168:~$ id junaiduser

```

The status bar at the bottom indicates the instance ID (i-0b00a1a7a38b0313b), Public IP (13.127.167.25), and Private IP (172.31.37.168). A watermark for "Activate Windows" is visible in the background.



A screenshot of the AWS CloudShell interface. The terminal window shows the following command being run:

```
ubuntu@ip-172-31-37-168:~$ getent group junaid
junaid:x:1001:
ubuntu@ip-172-31-37-168:~$ id junaiduser
uid=1001(junaiduser) gid=1001(junaid) groups=1001(junaid)
ubuntu@ip-172-31-37-168:~$ 
```

The status bar at the bottom indicates the instance ID (i-0b00a1a7a38b0313b), Public IP (13.127.167.25), and Private IP (172.31.37.168). A watermark for "Activate Windows" is visible in the background.

Step 4: Create the directory using command “ **mkdir Junaid.demo** ”

Create a file using the command “ **touch junaidfile.txt** ”

The screenshot shows a terminal session in AWS CloudShell. The user has run the command `getent group junaid`, which outputs the group information for the user `junaiddemo`. Then, the user runs `mkdir junaid.demo` to create a new directory. Finally, the user runs `ls` to list the contents of the current directory, which now includes the newly created `junaiddemo` directory. The terminal window has a dark background and white text.

```
ubuntu@ip-172-31-37-168:~$ getent group junaid
junaiddemo:x:1001:
ubuntu@ip-172-31-37-168:~$ id junaiddemo
uid=1001(junaiddemo) gid=1001(junaiddemo) groups=1001(junaiddemo)
ubuntu@ip-172-31-37-168:~$ mkdir junaid.demo
ubuntu@ip-172-31-37-168:~$ ls
junaiddemo
ubuntu@ip-172-31-37-168:~$
```

i-0b00a1a7a38b0313b (Instance1)
PublicIPs: 13.127.167.25 PrivateIPs: 172.31.37.168

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The screenshot shows the same terminal session as the previous one, but with the `ls` command run again. This time, the output shows the directory `junaiddemo` and the file `junaidfile.txt` within it. The terminal window has a dark background and white text.

```
ubuntu@ip-172-31-37-168:~$ ls
junaiddemo junaidfile.txt
ubuntu@ip-172-31-37-168:~$
```

i-0b00a1a7a38b0313b (Instance1)
PublicIPs: 13.127.167.25 PrivateIPs: 172.31.37.168

Activate Windows
Go to Settings to activate Windows.

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Directory and file are created

The screenshot shows a terminal window within the AWS CloudShell interface. The user has run the command `ls` to list the contents of the current directory. The output shows a new directory named `junaid.demo` and a new file named `junaiddfile.txt`. The terminal also displays the user's session information, including the instance ID (i-0b00a1a7a38b0313b), public IP (13.127.167.25), and private IP (172.31.37.168). A watermark for "Activate Windows" is visible in the bottom right corner.

```
ubuntu@ip-172-31-37-168:~$ ls
junaid.demo junaiddfile.txt
ubuntu@ip-172-31-37-168:~$ ll
total 32
drwxr-xr-x 5 ubuntu ubuntu 4096 Apr 25 11:59 .
drwxr-xr-x 4 root root 4096 Apr 25 11:42 ..
-rw-r--r-- 1 ubuntu ubuntu 220 Feb 25 2020 .bash_logout
-rw-r--r-- 1 ubuntu ubuntu 3771 Feb 25 2020 .bashrc
drwxr-xr-x 2 ubuntu ubuntu 4096 Apr 25 11:35 .cache/
-rw-r--r-- 1 ubuntu ubuntu 807 Feb 25 2020 .profile
drwxr-xr-x 2 ubuntu ubuntu 4096 Apr 25 11:35 .ssh/
-rw-r--r-- 1 ubuntu ubuntu 0 Apr 25 11:40 .sudo_as_admin_successful
drwxrwxr-x 2 ubuntu ubuntu 4096 Apr 25 11:50 junaid.demo/
-rw-rw-r-- 1 ubuntu ubuntu 0 Apr 25 11:50 junaiddfile.txt
ubuntu@ip-172-31-37-168:~$
```

i-0b00a1a7a38b0313b (Instance1)
PublicIPs: 13.127.167.25 PrivateIPs: 172.31.37.168

Activate Windows
Go to Settings to activate Windows.

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Step 5: Change the owner of the directory and file to the new created user and their group.

For Directory, execute the command “ **`sudo chown junaiduser:junaid.junaid.demo`** ”

For file, execute the command “ **`sudo chown junaiduser:junaid junaiddfile.txt`** ”

The screenshot shows a terminal window within the AWS CloudShell interface. The user has run the command `ls` again to list the contents of the directory. This time, the directory `junaid.demo` and the file `junaiddfile.txt` both have the owner set to `junaidd.demo`. The terminal also displays the user's session information, including the instance ID (i-0b00a1a7a38b0313b), public IP (13.127.167.25), and private IP (172.31.37.168). A watermark for "Activate Windows" is visible in the bottom right corner.

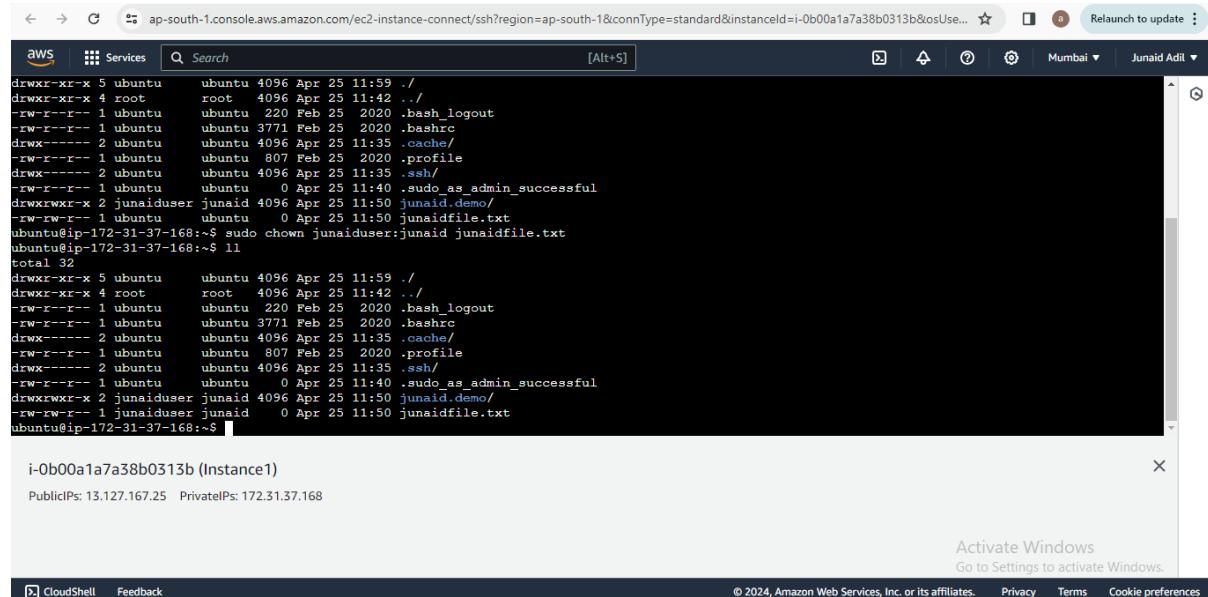
```
ubuntu@ip-172-31-37-168:~$ ls
junaid.demo junaiddfile.txt
ubuntu@ip-172-31-37-168:~$ ll
total 32
drwxr-xr-x 5 ubuntu ubuntu 4096 Apr 25 11:59 .
drwxr-xr-x 4 root root 4096 Apr 25 11:42 ..
-rw-r--r-- 1 ubuntu ubuntu 220 Feb 25 2020 .bash_logout
-rw-r--r-- 1 ubuntu ubuntu 3771 Feb 25 2020 .bashrc
drwxr-xr-x 2 ubuntu ubuntu 4096 Apr 25 11:35 .cache/
-rw-r--r-- 1 ubuntu ubuntu 807 Feb 25 2020 .profile
drwxr-xr-x 2 ubuntu ubuntu 4096 Apr 25 11:35 .ssh/
-rw-r--r-- 1 ubuntu ubuntu 0 Apr 25 11:40 .sudo_as_admin_successful
drwxrwxr-x 2 ubuntu ubuntu 4096 Apr 25 11:50 junaid.demo/
-rw-rw-r-- 1 ubuntu ubuntu 0 Apr 25 11:50 junaiddfile.txt
ubuntu@ip-172-31-37-168:~$ sudo chown junaiduser:junaid junaid.demo
ubuntu@ip-172-31-37-168:~$ ll
total 32
drwxr-xr-x 5 ubuntu ubuntu 4096 Apr 25 11:59 .
drwxr-xr-x 4 root root 4096 Apr 25 11:42 ..
-rw-r--r-- 1 ubuntu ubuntu 220 Feb 25 2020 .bash_logout
-rw-r--r-- 1 ubuntu ubuntu 3771 Feb 25 2020 .bashrc
drwxr-xr-x 2 ubuntu ubuntu 4096 Apr 25 11:35 .cache/
-rw-r--r-- 1 ubuntu ubuntu 807 Feb 25 2020 .profile
drwxr-xr-x 2 ubuntu ubuntu 4096 Apr 25 11:35 .ssh/
-rw-r--r-- 1 ubuntu ubuntu 0 Apr 25 11:40 .sudo_as_admin_successful
drwxrwxr-x 2 junaiduser junaid 4096 Apr 25 11:50 junaid.demo/
-rw-rw-r-- 1 ubuntu ubuntu 0 Apr 25 11:50 junaiddfile.txt
ubuntu@ip-172-31-37-168:~$
```

i-0b00a1a7a38b0313b (Instance1)
PublicIPs: 13.127.167.25 PrivateIPs: 172.31.37.168

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Go to Settings to activate Windows.

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We can see the owner of the directory and file has changed to junaiduser.



```
drwxr-xr-x 5 ubuntu    ubuntu 4096 Apr 25 11:59 .
drwxr-xr-x 4 root     root   4096 Apr 25 11:42 ..
-rw-r--r-- 1 ubuntu    ubuntu 220 Feb 25 2020 .bash_logout
-rw-r--r-- 1 ubuntu    ubuntu 3771 Feb 25 2020 .bashrc
drwxr-xr-x 2 ubuntu    ubuntu 4096 Apr 25 11:35 .cache/
-rw-r--r-- 1 ubuntu    ubuntu 807 Feb 25 2020 .profile
drwxr-xr-x 2 ubuntu    ubuntu 4096 Apr 25 11:35 .ssh/
-rw-r--r-- 1 ubuntu    ubuntu 0 Apr 25 11:40 .sudo_as_admin_successful
drwxrwxr-x 2 junaiduser junaid 4096 Apr 25 11:50 junaid.demo/
-rw-rw-r-- 1 ubuntu    ubuntu 0 Apr 25 11:50 junaidfile.txt
ubuntu@ip-172-31-37-168:~$ sudo chown junaiduser:junaid junaidfile.txt
ubuntu@ip-172-31-37-168:~$ ll
total 32
drwxr-xr-x 5 ubuntu    ubuntu 4096 Apr 25 11:59 .
drwxr-xr-x 4 root     root   4096 Apr 25 11:42 ..
-rw-r--r-- 1 ubuntu    ubuntu 220 Feb 25 2020 .bash_logout
-rw-r--r-- 1 ubuntu    ubuntu 3771 Feb 25 2020 .bashrc
drwxr-xr-x 2 ubuntu    ubuntu 4096 Apr 25 11:35 .cache/
-rw-r--r-- 1 ubuntu    ubuntu 807 Feb 25 2020 .profile
drwxr-xr-x 2 ubuntu    ubuntu 4096 Apr 25 11:35 .ssh/
-rw-r--r-- 1 ubuntu    ubuntu 0 Apr 25 11:40 .sudo_as_admin_successful
drwxrwxr-x 2 junaiduser junaid 4096 Apr 25 11:50 junaid.demo/
-rw-rw-r-- 1 junaiduser junaid 0 Apr 25 11:50 junaidfile.txt
ubuntu@ip-172-31-37-168:~$
```

i-0b00a1a7a38b0313b (Instance1)
PublicIPs: 13.127.167.25 PrivateIPs: 172.31.37.168

Activate Windows
Go to Settings to activate Windows.

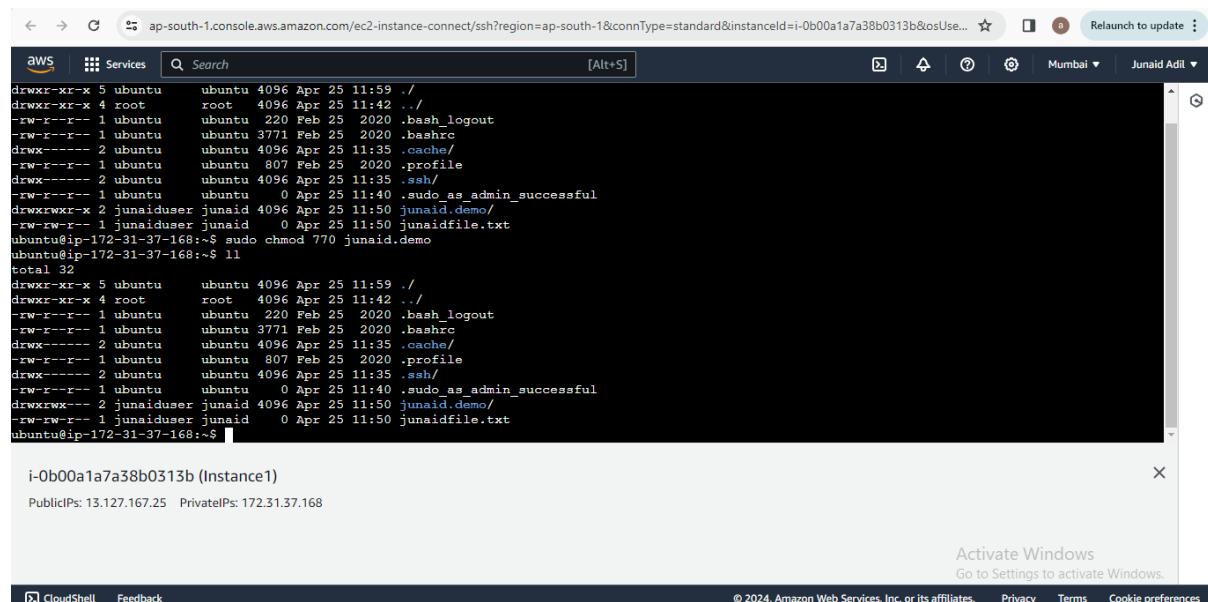
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Step 6: Set the permissions for a directory and file using the commands.

For Directory : **sudo chmod 770 junaid.demo**

For the file : **sudo chmod 770 junaidfile.txt**

By executing the above commands we can give R/W/X access to the directory and file.



```
drwxr-xr-x 5 ubuntu    ubuntu 4096 Apr 25 11:59 .
drwxr-xr-x 4 root     root   4096 Apr 25 11:42 ..
-rw-r--r-- 1 ubuntu    ubuntu 220 Feb 25 2020 .bash_logout
-rw-r--r-- 1 ubuntu    ubuntu 3771 Feb 25 2020 .bashrc
drwxr-xr-x 2 ubuntu    ubuntu 4096 Apr 25 11:35 .cache/
-rw-r--r-- 1 ubuntu    ubuntu 807 Feb 25 2020 .profile
drwxr-xr-x 2 ubuntu    ubuntu 4096 Apr 25 11:35 .ssh/
-rw-r--r-- 1 ubuntu    ubuntu 0 Apr 25 11:40 .sudo_as_admin_successful
drwxrwxr-x 2 junaiduser junaid 4096 Apr 25 11:50 junaid.demo/
-rw-rw-r-- 1 junaiduser junaid 0 Apr 25 11:50 junaidfile.txt
ubuntu@ip-172-31-37-168:~$ sudo chmod 770 junaid.demo
ubuntu@ip-172-31-37-168:~$ ll
total 32
drwxr-xr-x 5 ubuntu    ubuntu 4096 Apr 25 11:59 .
drwxr-xr-x 4 root     root   4096 Apr 25 11:42 ..
-rw-r--r-- 1 ubuntu    ubuntu 220 Feb 25 2020 .bash_logout
-rw-r--r-- 1 ubuntu    ubuntu 3771 Feb 25 2020 .bashrc
drwxr-xr-x 2 ubuntu    ubuntu 4096 Apr 25 11:35 .cache/
-rw-r--r-- 1 ubuntu    ubuntu 807 Feb 25 2020 .profile
drwxr-xr-x 2 ubuntu    ubuntu 4096 Apr 25 11:35 .ssh/
-rw-r--r-- 1 ubuntu    ubuntu 0 Apr 25 11:40 .sudo_as_admin_successful
drwxrwxr-x 2 junaiduser junaid 4096 Apr 25 11:50 junaid.demo/
-rw-rw-r-- 1 junaiduser junaid 0 Apr 25 11:50 junaidfile.txt
ubuntu@ip-172-31-37-168:~$
```

i-0b00a1a7a38b0313b (Instance1)
PublicIPs: 13.127.167.25 PrivateIPs: 172.31.37.168

Activate Windows
Go to Settings to activate Windows.

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The screenshot shows a terminal window within the AWS CloudShell interface. The user has run the command `ls -l` to list directory contents. The output shows various files and directories with their permissions, ownership, and timestamps. The terminal also displays the user's session details, including the instance ID (i-0b00a1a7a38b0313b), public and private IP addresses, and a note about activating Windows.

```
drwxr-xr-x 5 ubuntu    ubuntu 4096 Apr 25 11:59 .
drwxr-xr-x 4 root      root   4096 Apr 25 11:42 ../
-rw-r--r-- 1 ubuntu    ubuntu 220 Feb 25 2020 .bash_logout
-rw-r--r-- 1 ubuntu    ubuntu 3771 Feb 25 2020 .bashrc
drwxr-xr-x 2 ubuntu    ubuntu 4096 Apr 25 11:35 .cache/
-rw-r--r-- 1 ubuntu    ubuntu 807 Feb 25 2020 .profile
drwxr-xr-x 2 ubuntu    ubuntu 4096 Apr 25 11:35 .ssh/
-rw-r--r-- 1 ubuntu    ubuntu 0 Apr 25 11:40 .sudo_as_admin_successful
drwxrwx--- 2 junaiduser junaid 4096 Apr 25 11:50 junaid_demo/
-rw-rw--- 1 junaiduser junaid 0 Apr 25 11:50 junaidfile.txt
ubuntu@ip-172-31-37-168:~$ sudo chmod 770 junaidfile.txt
ubuntu@ip-172-31-37-168:~$ ll
total 32
drwxr-xr-x 5 ubuntu    ubuntu 4096 Apr 25 11:59 .
drwxr-xr-x 4 root      root   4096 Apr 25 11:42 ../
-rw-r--r-- 1 ubuntu    ubuntu 220 Feb 25 2020 .bash_logout
-rw-r--r-- 1 ubuntu    ubuntu 3771 Feb 25 2020 .bashrc
drwxr-xr-x 2 ubuntu    ubuntu 4096 Apr 25 11:35 .cache/
-rw-r--r-- 1 ubuntu    ubuntu 807 Feb 25 2020 .profile
drwxr-xr-x 2 ubuntu    ubuntu 4096 Apr 25 11:35 .ssh/
-rw-r--r-- 1 ubuntu    ubuntu 0 Apr 25 11:40 .sudo_as_admin_successful
drwxrwx--- 2 junaiduser junaid 4096 Apr 25 11:50 junaid_demo/
-rw-rw--- 1 junaiduser junaid 0 Apr 25 11:50 junaidfile.txt*
ubuntu@ip-172-31-37-168:~$ 
```

i-0b00a1a7a38b0313b (Instance1)
Public IPs: 13.127.167.25 Private IPs: 172.31.37.168

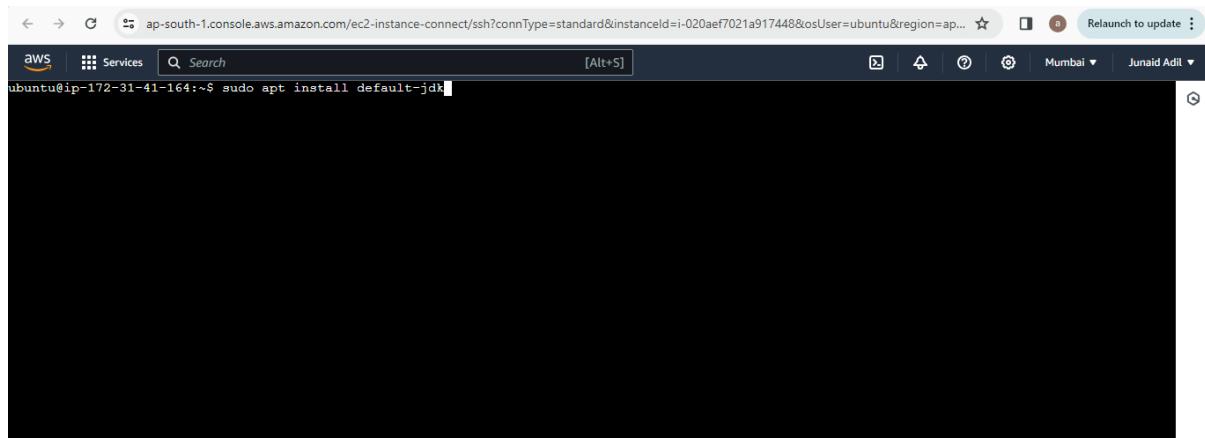
Activate Windows
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In the Screenshot above we can see that the directory and file permissions have been set to user and group with R/W/X.

L4 - In EC2 Ubuntu Instance install JDK and setup JAVA_HOME path environment variable

Step 1: Install java using command “ sudo apt install default-jdk ”



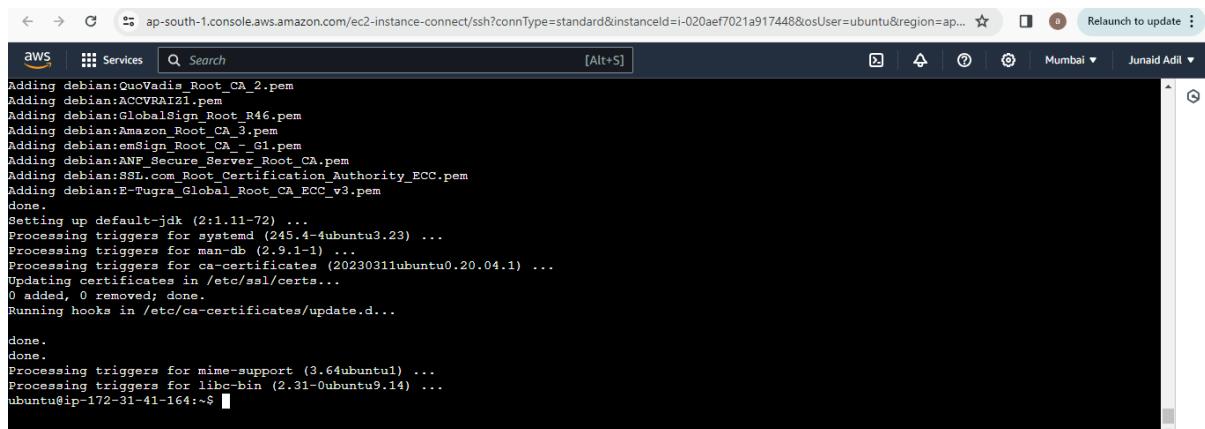
i-020aef7021a917448 (Demo1)
PublicIPs: 3.6.39.152 PrivateIPs: 172.31.41.164

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```
ubuntu@ip-172-31-41-164:~$ sudo apt install default-jdk
```

Java has been installed



i-020aef7021a917448 (Demo1)
PublicIPs: 3.6.39.152 PrivateIPs: 172.31.41.164

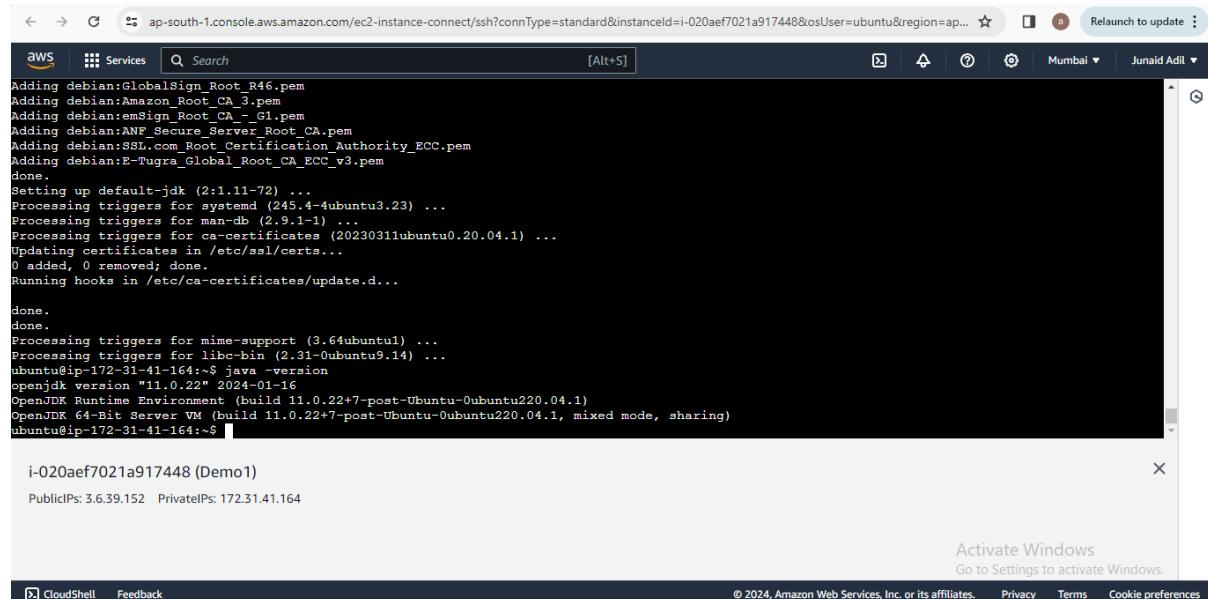
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```
Adding debian:QuoVadis_Root_CA_2.pem
Adding debian:ACCVRAIZ1.pem
Adding debian:GlobalSign_Root_R46.pem
Adding debian:Amazon_Root_CA_3.pem
Adding debian:emSign_Root_CA_-G1.pem
Adding debian:ANF_Secure_Server_Root_CA.pem
Adding debian:SSL_com_Root_Certification_Authority_ECC.pem
Adding debian:E-Tugra_Global_Root_CA_ECC_v3.pem
done.
Setting up default-jdk (2:1.11-72) ...
Processing triggers for systemd (245.4-4ubuntu3.23) ...
Processing triggers for man-db (2.9.1-1) ...
Processing triggers for ca-certificates (20230311ubuntu0.20.04.1) ...
Updating certificates in /etc/ssl/certs...
0 added, 0 removed; done.
Running hooks in /etc/ca-certificates/update.d...

done.
done.
Processing triggers for mime-support (3.64ubuntu1) ...
Processing triggers for libc-bin (2.31-0ubuntu9.14) ...
ubuntu@ip-172-31-41-164:~$
```

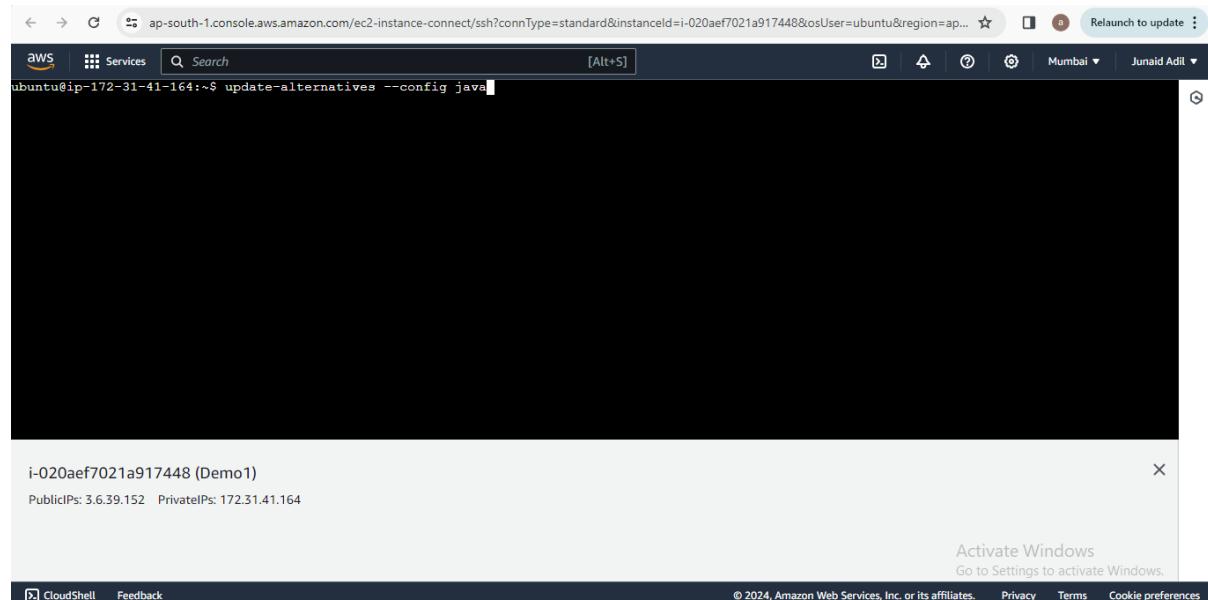
Step 2: Can check Java version using command “ java -version ”



```
Adding debian:GlobalSign_Root_R46.pem
Adding debian:Amazon_Root_CA_3.pem
Adding debian:emSign_Root_CA_-_G1.pem
Adding debian:ANF_Secure_Server_Root_CA.pem
Adding debian:SSL_com_Root_Certification_Authority_ECC.pem
Adding debian:E-Tugra_Global_Root_CA_ECC_v3.pem
done.
Setting up default-jdk (2:1.11-72) ...
Processing triggers for systemd (245.4-4ubuntu3.23) ...
Processing triggers for man-db (2.9.1-1) ...
Processing triggers for ca-certificates (20230311ubuntu0.20.04.1) ...
Updating certificates in /etc/ssl/certs...
0 added, 0 removed; done.
Running hooks in /etc/ca-certificates/update.d...

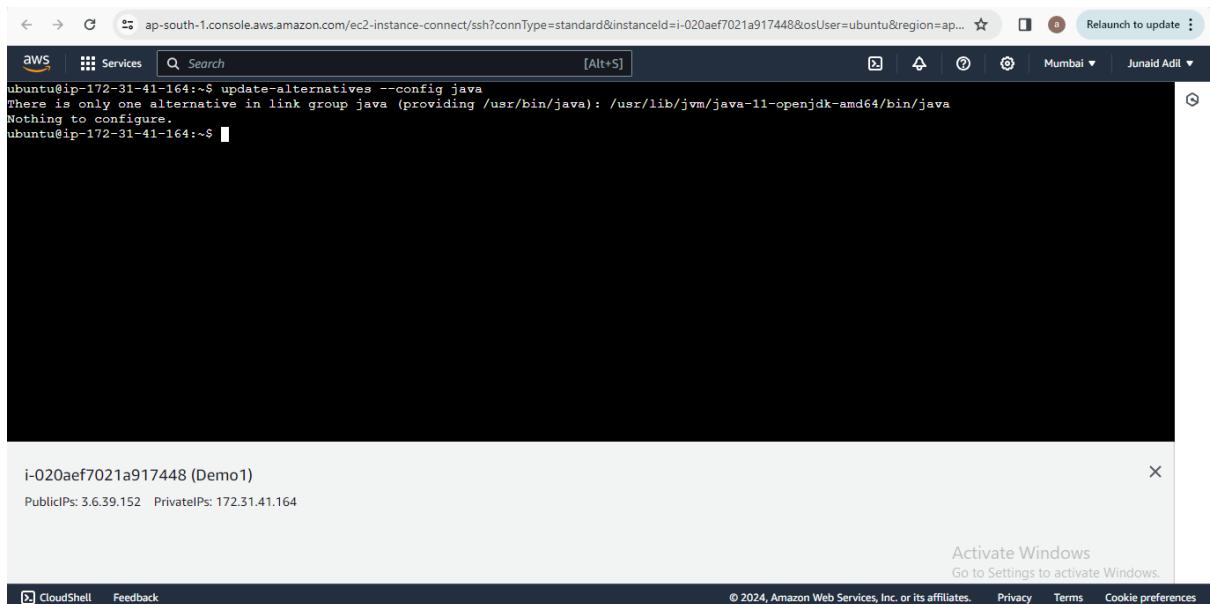
done.
done.
Processing triggers for mime-support (3.64ubuntu1) ...
Processing triggers for libc-bin (2.31-0ubuntu9.14) ...
ubuntu@ip-172-31-41-164:~$ java -version
openjdk version "11.0.22" 2024-01-16
OpenJDK Runtime Environment (build 11.0.22+7-post-Ubuntu-0ubuntu220.04.1)
OpenJDK 64-Bit Server VM (build 11.0.22+7-post-Ubuntu-0ubuntu220.04.1, mixed mode, sharing)
ubuntu@ip-172-31-41-164:~$
```

Step 3: To setup the home page for java, we need to locate the directory where java has been installed using command “update-alternatives -config java”



```
ubuntu@ip-172-31-41-164:~$ update-alternatives --config java
```

We can see the location/path.



```
ubuntu@ip-172-31-41-164:~$ update-alternatives --config java
There is only one alternative in link group java (providing /usr/bin/java): /usr/lib/jvm/java-11-openjdk-amd64/bin/java
Nothing to configure.
ubuntu@ip-172-31-41-164:~$
```

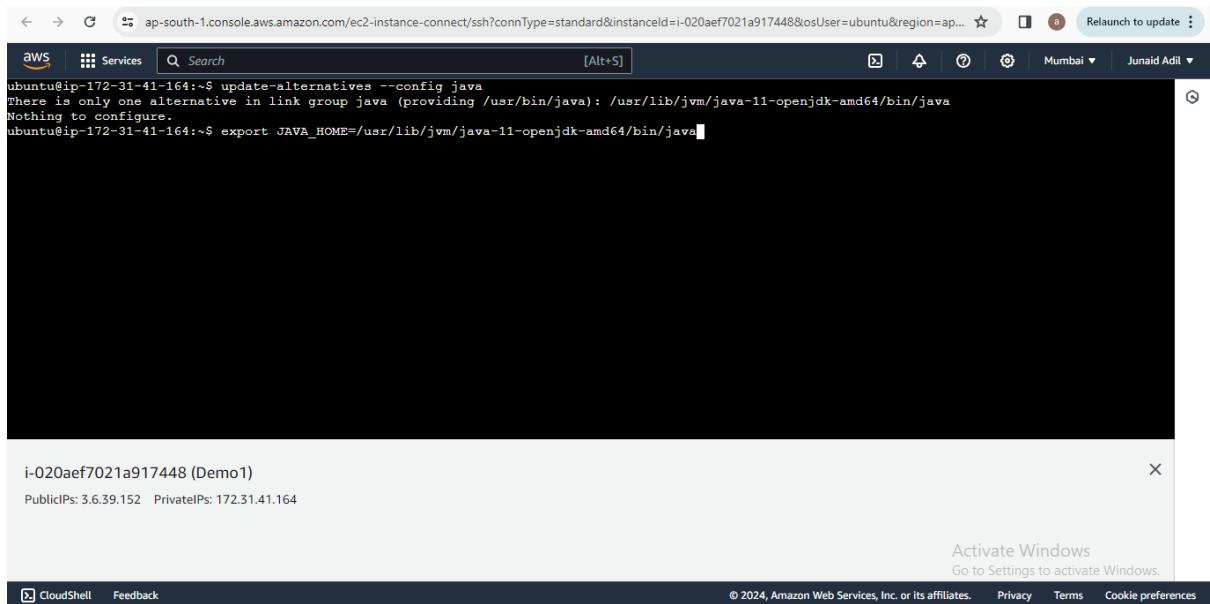
i-020aef7021a917448 (Demo1)
PublicIPs: 3.6.39.152 PrivateIPs: 172.31.41.164

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Step 4: Copy the path of java software “**/usr/lib/jvm/java-11-openjdk-amd64/bin/java**”

Now to set the JAVA_HOME Variable in the above path, execute the command “**export JAVA_HOME=/usr/lib/jvm/java-11-openjdk-amd64/bin/java**”

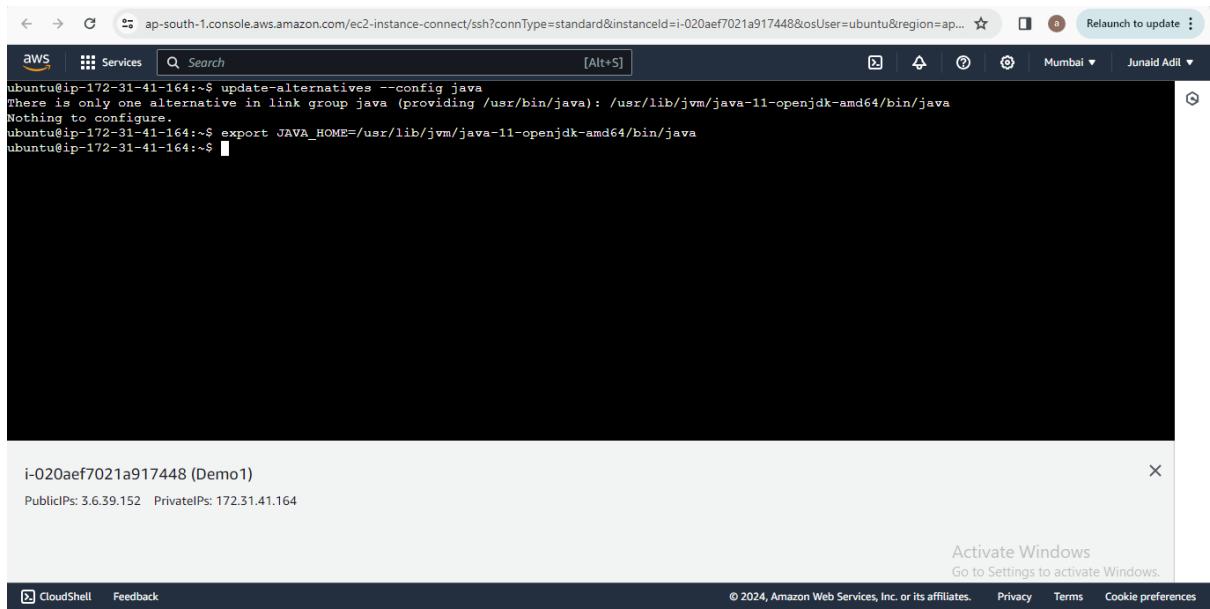


```
ubuntu@ip-172-31-41-164:~$ update-alternatives --config java
There is only one alternative in link group java (providing /usr/bin/java): /usr/lib/jvm/java-11-openjdk-amd64/bin/java
Nothing to configure.
ubuntu@ip-172-31-41-164:~$ export JAVA_HOME=/usr/lib/jvm/java-11-openjdk-amd64/bin/java
```

i-020aef7021a917448 (Demo1)
PublicIPs: 3.6.39.152 PrivateIPs: 172.31.41.164

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```
ubuntu@ip-172-31-41-164:~$ update-alternatives --config java
There is only one alternative in link group java (providing /usr/bin/java): /usr/lib/jvm/java-11-openjdk-amd64/bin/java
Nothing to configure.
ubuntu@ip-172-31-41-164:~$ export JAVA_HOME=/usr/lib/jvm/java-11-openjdk-amd64/bin/java
ubuntu@ip-172-31-41-164:~$
```

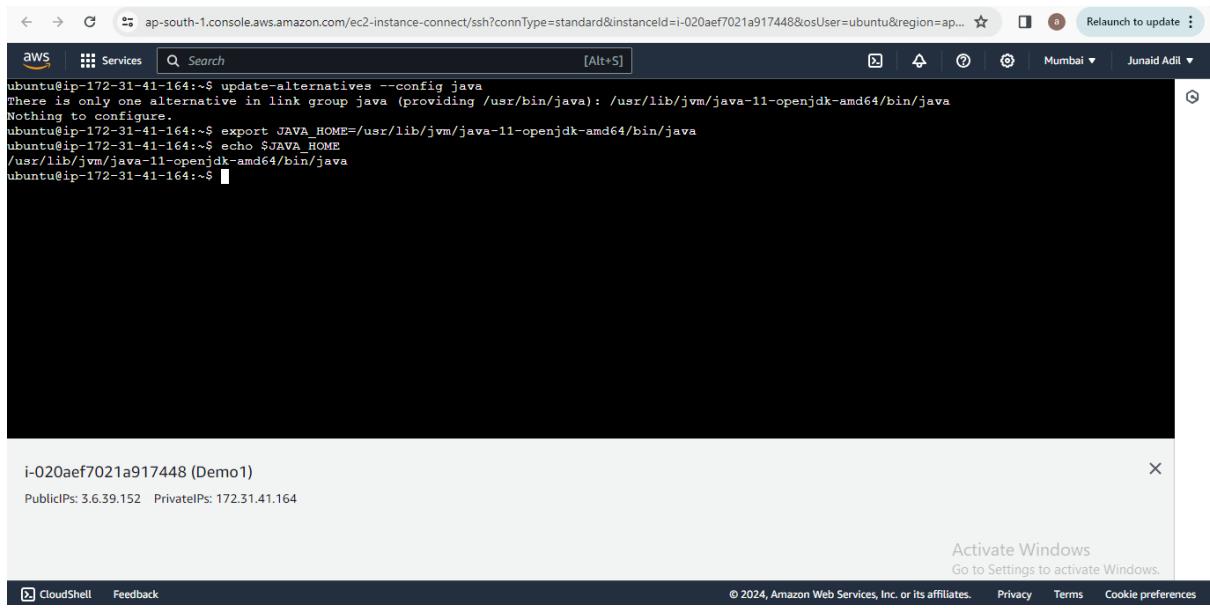
i-020aef7021a917448 (Demo1)

PublicIPs: 3.6.39.152 PrivateIPs: 172.31.41.164

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Step 5: To verify execute the command “ echo \$JAVA_HOME ”



```
ubuntu@ip-172-31-41-164:~$ update-alternatives --config java
There is only one alternative in link group java (providing /usr/bin/java): /usr/lib/jvm/java-11-openjdk-amd64/bin/java
Nothing to configure.
ubuntu@ip-172-31-41-164:~$ export JAVA_HOME=/usr/lib/jvm/java-11-openjdk-amd64/bin/java
ubuntu@ip-172-31-41-164:~$ echo $JAVA_HOME
/usr/lib/jvm/java-11-openjdk-amd64/bin/java
ubuntu@ip-172-31-41-164:~$
```

i-020aef7021a917448 (Demo1)

PublicIPs: 3.6.39.152 PrivateIPs: 172.31.41.164

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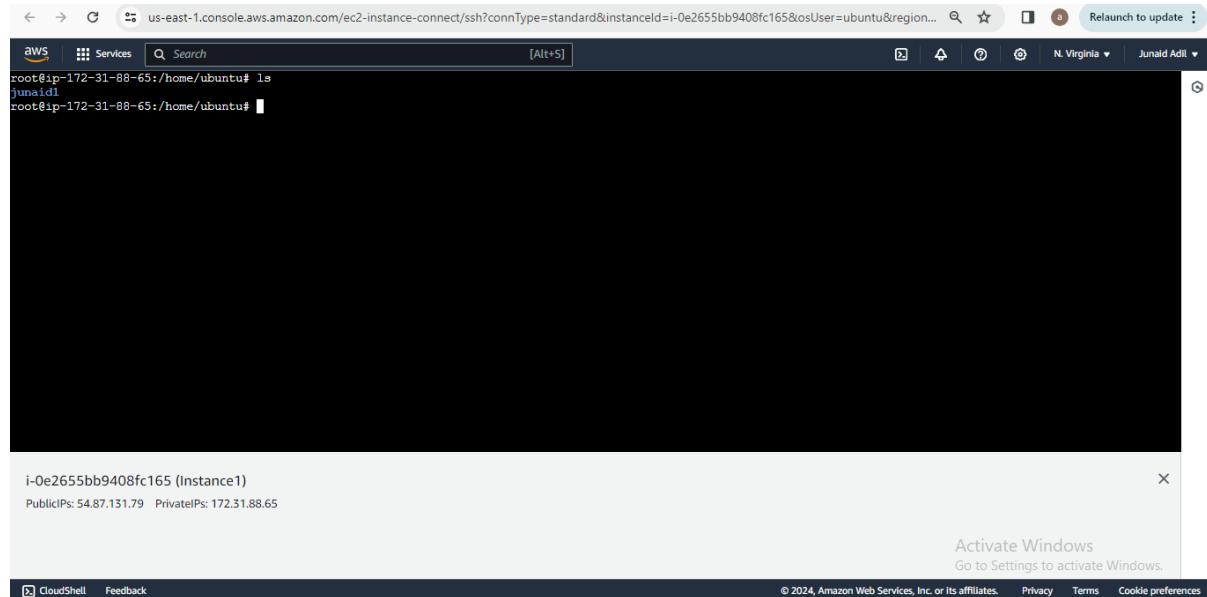
L5 - Create two AWS EC2 Ubuntu Instances to establish SSH Connection and SCP the files from one Instance to another instance.

Step 1: Create 2 EC2 Ubuntu Instances.

The screenshot shows the AWS EC2 'Launch Instances' page. In the 'Name' field, 'Instance1' is entered. Under 'Application and OS Images (Amazon Machine Image)', 'Ubuntu Server 20.04 LTS (HVM, SSD Volume Type)' is selected. The 'Number of instances' is set to 2. The 'Virtual server type (instance type)' is chosen as 't2.micro'. A 'Free tier: In your first year' message is visible. The 'Launch instance' button is highlighted in orange at the bottom right.

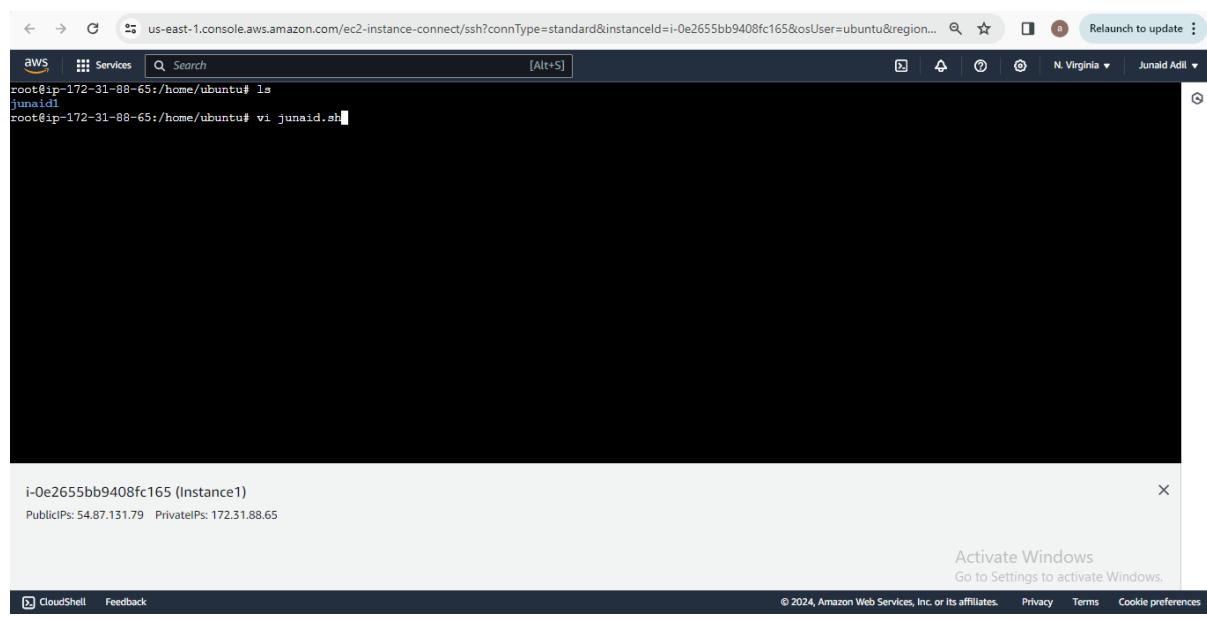
The screenshot shows the AWS EC2 'Instances' page. The sidebar shows 'Instances' is selected. The main table displays two instances: 'Instance2' (i-020c0abef0cc8c44) and 'Instance1' (i-0e2655bb9408fc165), both running and of type t2.micro. The 'Launch instances' button is also visible in the top right of the table area.

Step 2: Connect to the instance1 and create a directory “junaid1” using the command “**mkdir junaid1**”



The screenshot shows a terminal window within the AWS CloudShell interface. The URL is `us-east-1.console.aws.amazon.com/ec2-instance-connect/ssh?connType=standard&instanceId=i-0e2655bb9408fc165&osUser=ubuntu®ion...`. The terminal prompt is `root@ip-172-31-88-65:/home/ubuntu#`. The user has run the command `ls`, which shows a single file named `juna1.dl`. The terminal window has a dark background and white text. At the bottom, there is a status bar with the instance ID `i-0e2655bb9408fc165 (Instance1)`, public IP `54.87.131.79`, and private IP `172.31.88.65`. A watermark for "Activate Windows" is visible in the center of the terminal area.

Step 3: Then create a file in junaid1 directory using command “**vi junaid.sh**”

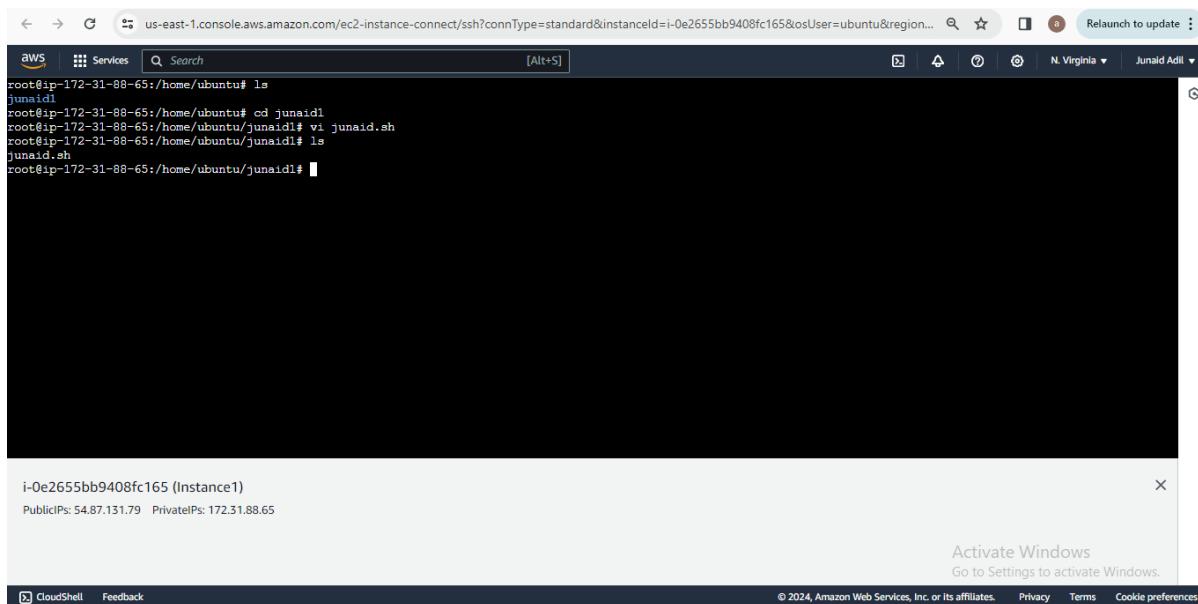


The screenshot shows a terminal window within the AWS CloudShell interface. The URL is `us-east-1.console.aws.amazon.com/ec2-instance-connect/ssh?connType=standard&instanceId=i-0e2655bb9408fc165&osUser=ubuntu®ion...`. The terminal prompt is `root@ip-172-31-88-65:/home/ubuntu#`. The user has run the command `ls`, showing the file `juna1.dl`. They have then run the command `vi junaid.sh`, which opens a new file in the vi editor. The terminal window has a dark background and white text. At the bottom, there is a status bar with the instance ID `i-0e2655bb9408fc165 (Instance1)`, public IP `54.87.131.79`, and private IP `172.31.88.65`. A watermark for "Activate Windows" is visible in the center of the terminal area.

Step 4: Enter the data inside the file and save it



```
#!/bin/bash
echo "Hello"
```



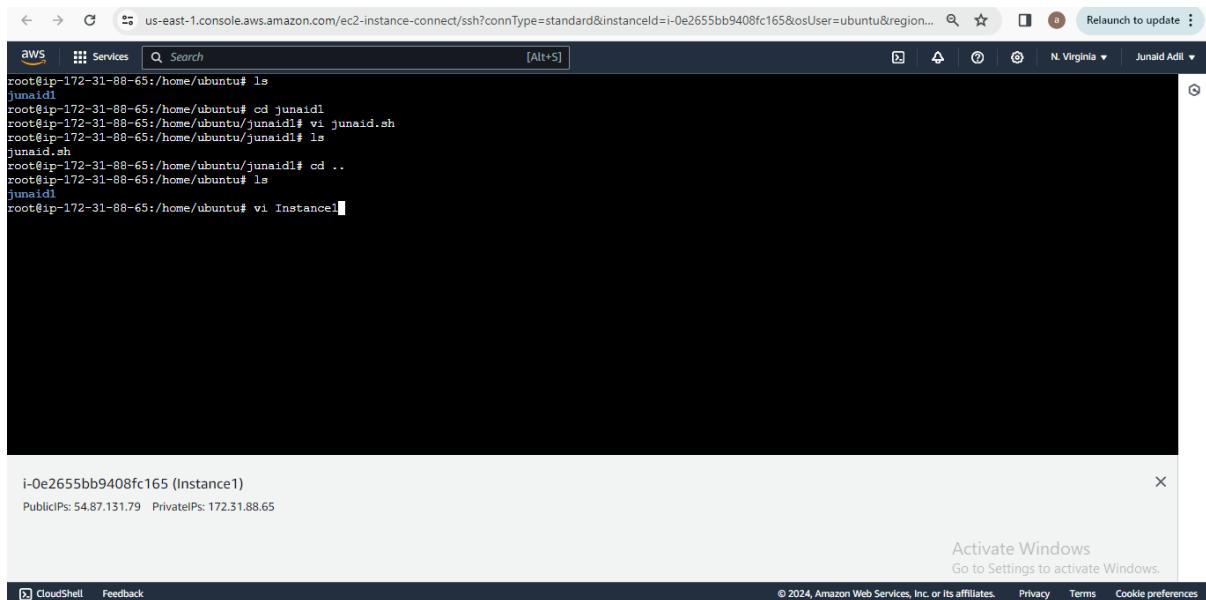
```
root@ip-172-31-88-65:/home/ubuntu# ls
junaid1
root@ip-172-31-88-65:/home/ubuntu# cd junaid1
root@ip-172-31-88-65:/home/ubuntu/junaid1# vi junaid.sh
root@ip-172-31-88-65:/home/ubuntu/junaid1# ls
junaid1.sh
root@ip-172-31-88-65:/home/ubuntu/junaid1#
```

i-0e2655bb9408fc165 (Instance1)
PublicIPs: 54.87.131.79 PrivateIPs: 172.31.88.65

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Step 5: Create a file with the Keypair name of instance2 in Instance1 and paste the key from the keypair file of instance2 to the file which we have created in the instance1 with the same name. File name: Instance1



```

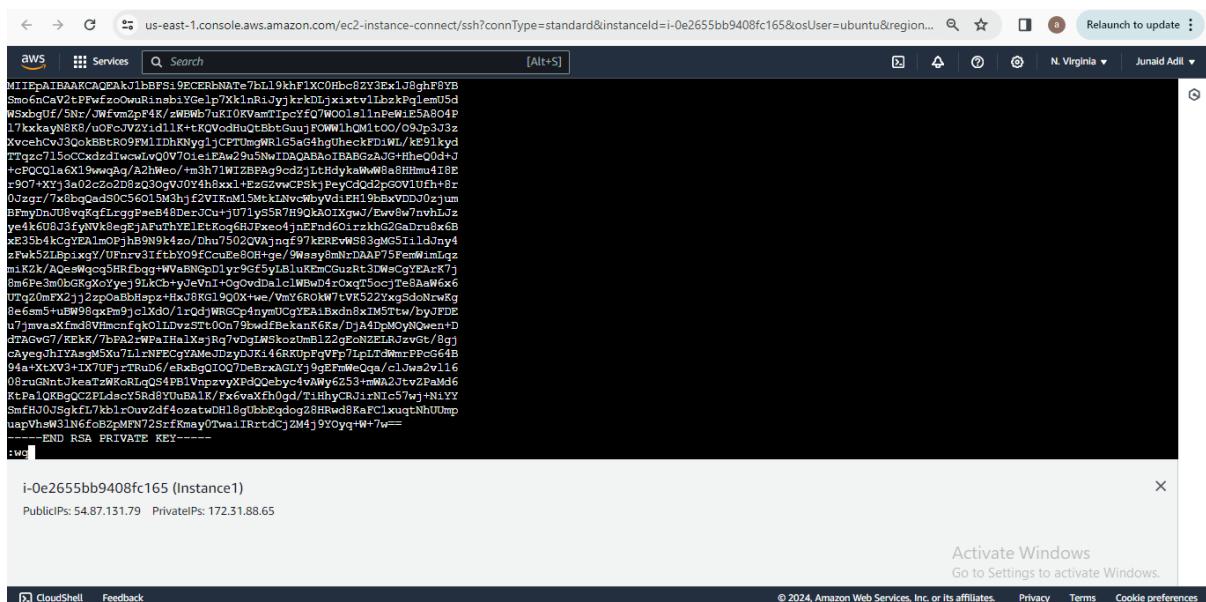
aws Services Search [Alt+S]
root@ip-172-31-88-65:/home/ubuntu# ls
juna1d1
root@ip-172-31-88-65:/home/ubuntu# cd juna1d1
root@ip-172-31-88-65:/home/ubuntu/juna1d1# vi juna1d1.sh
root@ip-172-31-88-65:/home/ubuntu/juna1d1# ls
juna1d1.sh
root@ip-172-31-88-65:/home/ubuntu/juna1d1# cd ..
root@ip-172-31-88-65:/home/ubuntu# ls
juna1d1
root@ip-172-31-88-65:/home/ubuntu# vi Instance1

```

i-0e2655bb9408fc165 (Instance1)
PublicIPs: 54.87.131.79 PrivateIPs: 172.31.88.65

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```

aws Services Search [Alt+S]
root@ip-172-31-88-65:/home/ubuntu# cat Instance1
-----BEGIN RSA PRIVATE KEY-----
MIIEvQIBAAKCAQEAkjlBFSi9EiCERbNATE7hL19khf1Xc0Hc8ZY3Ex1J8ghF8YB
Sm6GzCaV2tPPwfzozmRinrb1yGelp1Xk1nRjyjkrkb1jxixtv1lkzPqlemt5d
WSxbzUf/5Nr/JWFvm2p4KxWMBw7uK1OKVam7Tpcyf07WOOls1lnfewi5A804P
17kxkayNEKg/uOfcJY2xd1l1K+tKVqdHuQtBbtGuuFOWWlhMitoO/09Jp333z
XvcetcvjCv3QckBBtR09FM1DhKNyg1jCTUTmgWR1g5aGhgUheckfD1WL/kE91kyd
TTqz2715ccCxddIwcvIwOV70ie1Aw295NwIDQAABAciBAGzAuGhHeo0d+J
+cPQCQlaGX19weqA/g/A2zAneo/m3h71WIZBBAg9cd2j1tHdykaW#WbaHHmu418E
+x907-KXj3a02cz2zD8zQ3gvJ0Y4h8xx1+EzGZvvCFSkjPjCQdQ2pccV1Ufh+8r
0jzqz//7x0b5ad305c56015M3jF2vIKm15MtKINvWbwydiEH19bhbxVDDJ0zjum
BFmyOnJU8vskqfLrgggPwB48DerxCu+j7ly5S7R/H9QkAOtIXqweJ/Ewv5W/nvhJz
ye4kGU8J3f3yNvk8eqjJAfuThYELETkoqGHJpxee4jnEFnd60irzkhc2Gaaru8x6B
xE354ikcgyEAImOPjhB9N9k4zc/dhu7502QWAjngf97kEREPw583gMS1ldJny4
zFuks2l8pixqg/Ufnr31fttbYO9fCcaE8OH+ge/9WssybmmlxDAApT75FemWiimlqz
mk1K2/4QesWqcSHRfbqgWVAhD1ly9Gf5yLB1KmGu2Rt3IMscqYEarK7j
9m6P43m0GKpXoVyej19Lnb+yEv1t+oqvdalcl1WBwD4rOxqFTsocJte8AaWx6
UTq20mFXj1j2zpOabBhspzHhx8KG19QDX+w/Vmz6ROkW7tVR52ZxqScnRwRq
9e6m5+uEW98pxEm9jclXdo/1xQd1WRGcp4nymUCqfEA1BxdnRx1MS7tw/byJDE
u7jmvaxXfm38Vhafqk01LdvzSTtOn79iwdfBekanK6Ks/DjA4TpMcyQwen+d
jTAGvG7/KEKk/7bxA2tPaIIha1Xs:Rq7vdqglWSkozUmBL22EcNzELRzvGt/8qj
cAyegqJ1tVaqg5Mu71lxFECqYAMeJDzydJK4GRKUpfryFp71pl7cWmrPfcG64B
94a+xtXV3+IX7UFj1rRuD6/exBqQ1OQ7deBrrxAGLYj9qFmWeQca/c1Jws2v116
08ruNnt.Keat2WKRtLqS4P4PvNmvpXQdOebyc4vWm6253+mWA2zv2Pm4d6
Ktpa1QKbgQcZPlsdy5Rd8YUBa1K/Fx6vaXfh0qd/TiHhyCRJriNi57w+jNiYY
SmfH0JSgkfL7kbltovzf4ozatwH1gUbbeqdqgZ8HRwd8KaFC1xuqtNhUmp
uapVhsW31N6f6BzPMN72SrfKmay07waiRrtdCj2M4j9X0yq+W+7w=
-----END RSA PRIVATE KEY-----

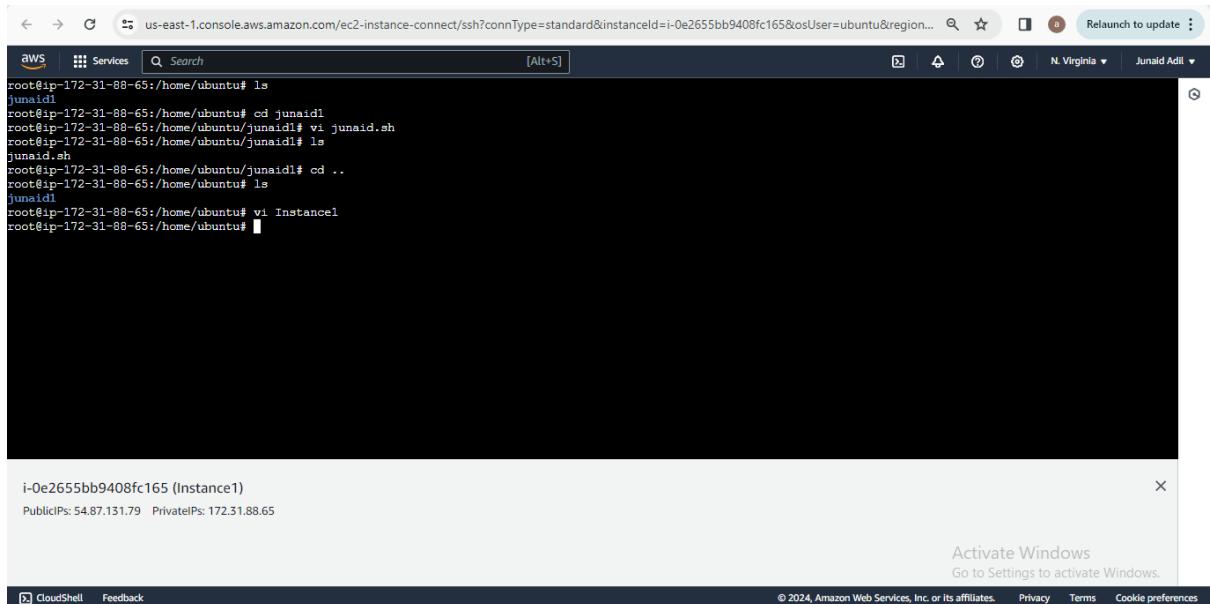
```

i-0e2655bb9408fc165 (Instance1)
PublicIPs: 54.87.131.79 PrivateIPs: 172.31.88.65

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File created with the key.



The screenshot shows a terminal session in AWS CloudShell. The user has run the command `vi Instance1`, which creates a file named `Instance1`. The terminal also shows the directory structure and other files present on the Ubuntu system.

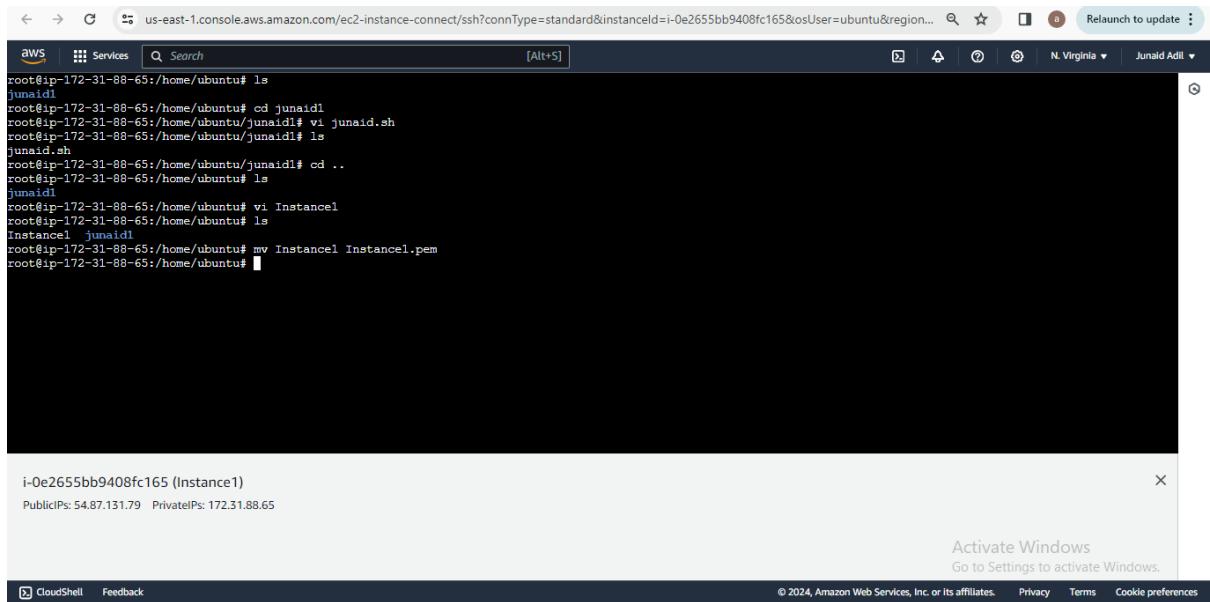
```
root@ip-172-31-88-65:/home/ubuntu# ls
junaid1
root@ip-172-31-88-65:/home/ubuntu# cd junaid1
root@ip-172-31-88-65:/home/ubuntu/junaid1# vi junaid.sh
root@ip-172-31-88-65:/home/ubuntu/junaid1# ls
junaid.sh
root@ip-172-31-88-65:/home/ubuntu/junaid1# cd ..
root@ip-172-31-88-65:/home/ubuntu# ls
junaid1
root@ip-172-31-88-65:/home/ubuntu# vi Instance1
root@ip-172-31-88-65:/home/ubuntu#
```

i-0e2655bb9408fc165 (Instance1)
Public IPs: 54.87.131.79 Private IPs: 172.31.88.65

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Step 6: Change the file name as shown below from Instance1 to Instance1.pem



The screenshot shows a terminal session in AWS CloudShell. The user has run the command `mv Instance1 Instance1.pem`, which renames the file `Instance1` to `Instance1.pem`.

```
root@ip-172-31-88-65:/home/ubuntu# ls
junaid1
root@ip-172-31-88-65:/home/ubuntu# cd junaid1
root@ip-172-31-88-65:/home/ubuntu/junaid1# vi junaid.sh
root@ip-172-31-88-65:/home/ubuntu/junaid1# ls
junaid.sh
root@ip-172-31-88-65:/home/ubuntu/junaid1# cd ..
root@ip-172-31-88-65:/home/ubuntu# ls
junaid1
root@ip-172-31-88-65:/home/ubuntu# vi Instance1
root@ip-172-31-88-65:/home/ubuntu# ls
Instance1 junaid1
root@ip-172-31-88-65:/home/ubuntu# mv Instance1 Instance1.pem
root@ip-172-31-88-65:/home/ubuntu#
```

i-0e2655bb9408fc165 (Instance1)
Public IPs: 54.87.131.79 Private IPs: 172.31.88.65

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Go to Settings to activate Windows.

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A screenshot of the AWS CloudShell interface. The terminal window shows the output of the 'ls' command on an Ubuntu system. The output includes files like 'junaid1', 'junaid1.sh', 'Instance1', 'Instance1.pem', and several configuration files. The terminal prompt is 'root@ip-172-31-88-65:/home/ubuntu#'. Below the terminal, the message 'i-0e2655bb9408fc165 (Instance1)' is displayed, along with public and private IP addresses. A watermark for 'Activate Windows' is visible in the bottom right corner.

```
aws Services Search [Alt+S] Relaunch to update N. Virginia Junaid Adil
root@ip-172-31-88-65:/home/ubuntu# ls
junaid1
root@ip-172-31-88-65:/home/ubuntu# cd junaid1
root@ip-172-31-88-65:/home/ubuntu/junaid1# vi junaid1.sh
root@ip-172-31-88-65:/home/ubuntu/junaid1# ls
junaid1.sh
root@ip-172-31-88-65:/home/ubuntu/junaid1# cd ..
root@ip-172-31-88-65:/home/ubuntu# ls
junaid1
root@ip-172-31-88-65:/home/ubuntu# vi Instance1
root@ip-172-31-88-65:/home/ubuntu# ls
Instance1 junaid1
root@ip-172-31-88-65:/home/ubuntu# mv Instance1 Instance1.pem
root@ip-172-31-88-65:/home/ubuntu# ll
total 40
drwxr-xr-x 5 ubuntu ubuntu 4096 Apr 23 20:13 .
drwxr-xr-x 3 root root 4096 Apr 23 13:06 ..
-rw-r--r-- 1 ubuntu ubuntu 220 Feb 25 2020 .bash_logout
-rw-r--r-- 1 ubuntu ubuntu 3771 Feb 25 2020 .bashrc
drwxr--r-- 2 ubuntu ubuntu 4096 Apr 23 13:12 .cache/
-rw-r--r-- 1 ubuntu ubuntu 807 Feb 25 2020 .profile
drwxr--r-- 2 ubuntu ubuntu 4096 Apr 23 19:05 .ssh/
-rw-r--r-- 1 ubuntu ubuntu 0 Apr 23 13:26 .sudo_as_admin_successful
-rw-r--r-- 1 ubuntu ubuntu 989 Apr 23 19:05 .viminfo
-rw-r--r-- 1 root root 1679 Apr 23 20:12 Instance1.pem
drwxr-xr-x 2 root root 4096 Apr 23 20:03 junaid1/
root@ip-172-31-88-65:/home/ubuntu#
```

i-0e2655bb9408fc165 (Instance1)
PublicIPs: 54.87.131.79 PrivateIPs: 172.31.88.65

Step 7: Change the mode of file Instance1.pem using the command “ chmod 400 Instance.pem ”

A screenshot of the AWS CloudShell interface. The terminal window shows the execution of the 'chmod 400 Instance1.pem' command. The terminal prompt is 'root@ip-172-31-88-65:/home/ubuntu#'. Below the terminal, the message 'i-0e2655bb9408fc165 (Instance1)' is displayed, along with public and private IP addresses. A watermark for 'Activate Windows' is visible in the bottom right corner.

```
aws Services Search [Alt+S] Relaunch to update N. Virginia Junaid Adil
root@ip-172-31-88-65:/home/ubuntu# chmod 400 Instance1.pem
root@ip-172-31-88-65:/home/ubuntu#
```

i-0e2655bb9408fc165 (Instance1)
PublicIPs: 54.87.131.79 PrivateIPs: 172.31.88.65

Step 8: Now to connect to the Instance2 from Instance1, go to Instance2 → Connect → SSH Client and copy the SSH link from Example section and paste it in the Instance1

The screenshot shows the AWS EC2 Instance Connect interface for Instance2 (i-020c0abef0cc8c44). The top navigation bar includes links for AWS Services, Search, and Relaunch to update. Below the navigation is a banner stating "Connect to your instance i-020c0abef0cc8c44 (Instance2) using any of these options". A tab bar at the top of the main content area includes "EC2 Instance Connect", "Session Manager", "SSH client" (which is selected), and "EC2 serial console". The "Instance ID" field displays "i-020c0abef0cc8c44 (Instance2)". Below this, a numbered list provides instructions for connecting via SSH:

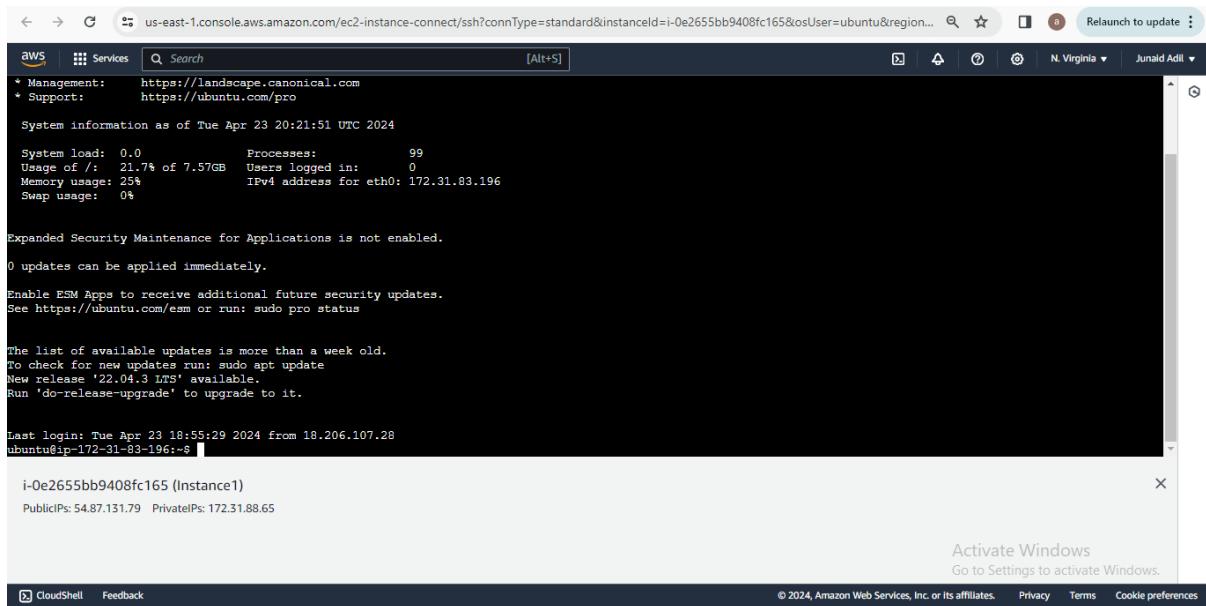
1. Open an SSH client.
2. Locate your private key file. The key used to launch this instance is Instance1.pem
3. Run this command, if necessary, to ensure your key is not publicly viewable.
chmod 400 "Instance1.pem"
4. Connect to your instance using its Public DNS:
ec2-3-88-49-194.compute-1.amazonaws.com

The "Example:" section shows the command: ssh -i "Instance1.pem" ubuntu@ec2-3-88-49-194.compute-1.amazonaws.com. A note below the example states: "Note: In most cases, the guessed username is correct. However, read your AMI usage instructions to check if the AMI owner has changed the default AMI username." At the bottom right of the interface are "Activate Windows" and "Cookie preferences" links.

The screenshot shows the AWS CloudShell interface. The URL in the address bar is us-east-1.console.aws.amazon.com/ec2-instance-connect/ssh?connType=standard&instanceId=i-0e2655bb9408fc165&osUser=ubuntu®ion... The terminal window displays the following command being run:

```
root@ip-172-31-88-65:/home/ubuntu# ls  
Instance1.pem  junaid1  
root@ip-172-31-88-65:/home/ubuntu# ssh -i "Instance1.pem" ubuntu@ec2-3-88-49-194.compute-1.amazonaws.com
```

A modal dialog box at the bottom left provides details about the instance: "i-0e2655bb9408fc165 (Instance1)" and "PublicIPs: 54.87.131.79 PrivateIPs: 172.31.88.65". At the bottom right of the interface are "Activate Windows" and "Cookie preferences" links.



The screenshot shows the AWS CloudShell interface. At the top, there's a navigation bar with back, forward, search, and other browser-like controls. Below it is a header with 'AWS Services' and a search bar. The main area displays system information for Instance2:

```
* Management: https://landscape.canonical.com
* Support: https://ubuntu.com/pro

System information as of Tue Apr 23 20:21:51 UTC 2024

System load: 0.0 Processes: 99
Usage of /: 21.7% of 7.57GB Users logged in: 0
Memory usage: 25% IPv4 address for eth0: 172.31.83.196
Swap usage: 0%

Expanded Security Maintenance for Applications is not enabled.
0 updates can be applied immediately.

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status

The list of available updates is more than a week old.
to check for new updates run: sudo apt update
New release '22.04.3 LTS' available.
Run 'do-release-upgrade' to upgrade to it.

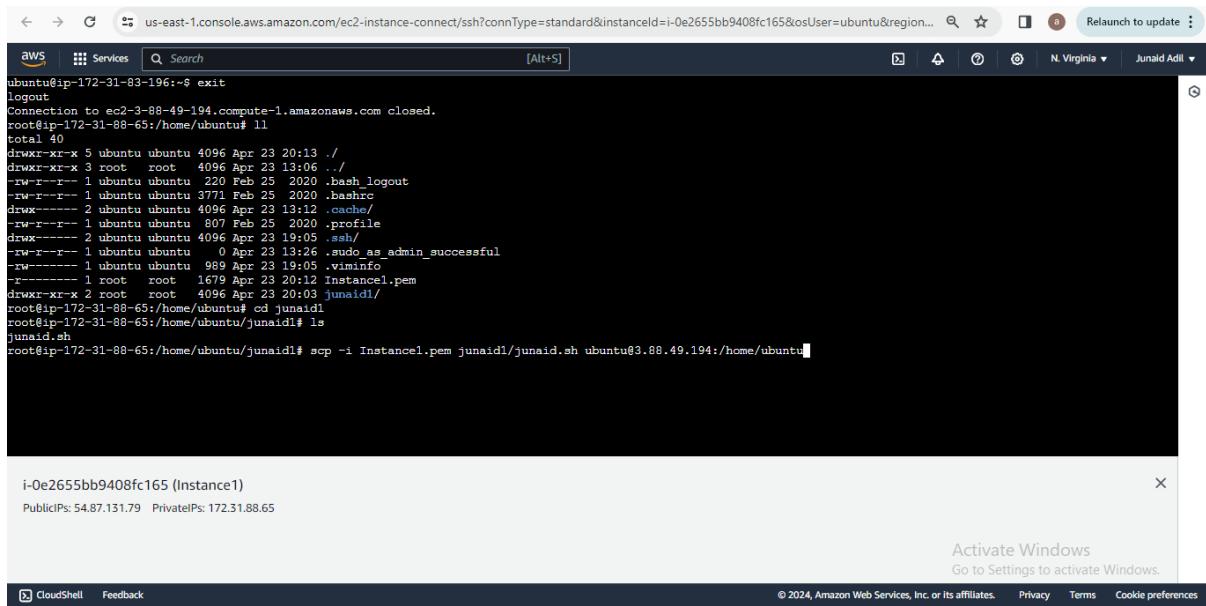
Last login: Tue Apr 23 18:55:29 2024 from 18.206.107.28
ubuntu@ip-172-31-83-196:~
```

At the bottom, there's a footer with 'CloudShell' and 'Feedback' buttons, along with copyright information and links to 'Activate Windows'.

Now we can see the Instance2 is connected in Instance1.

Step 9: Then execute the command “ **scp -i Instance1.pem junaid1/junaid.sh ubuntu@3.88.49.194:/home/ubuntu** ” in Instance1.

Here the IP address above used in the command is Instance2 public IP address.

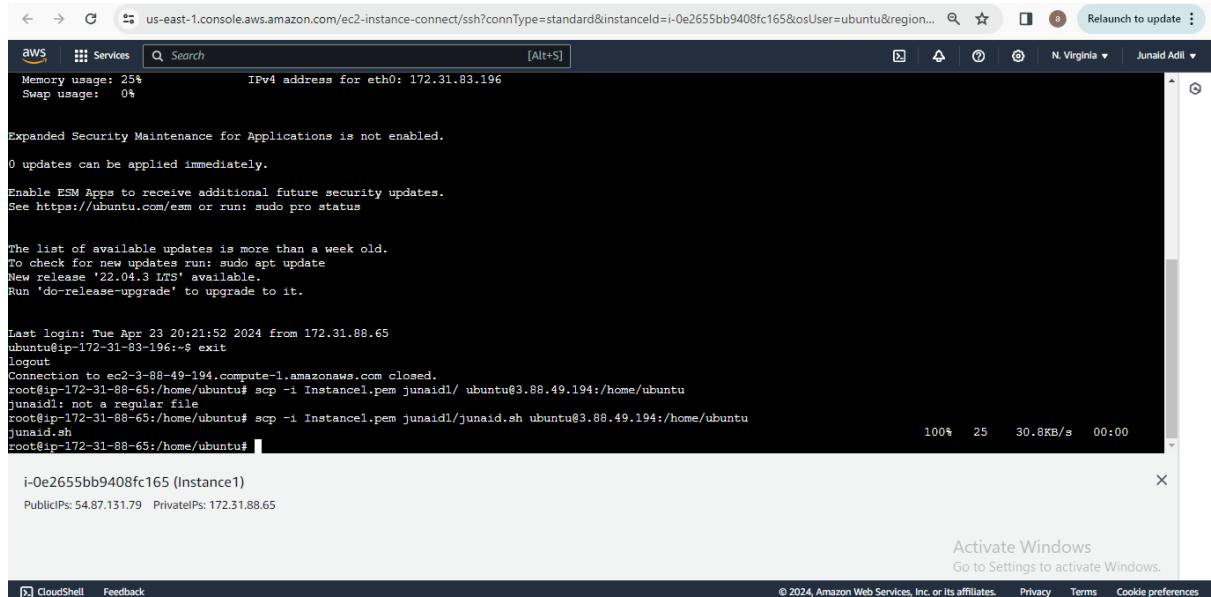


The screenshot shows the AWS CloudShell interface. The terminal window displays the execution of the `scp` command:

```
ubuntu@ip-172-31-83-196:~$ exit
logoff
Connection to ec2-3-88-49-194.compute-1.amazonaws.com closed.
root@ip-172-31-88-65:/home/ubuntu# ll
total 40
drwxr-xr-x 5 ubuntu ubuntu 4096 Apr 23 20:13 .
drwxr-xr-x 3 root root 4096 Apr 23 13:06 ..
-rw-r--r-- 1 ubuntu ubuntu 220 Feb 25 2020 .bash_logout
-rw-r--r-- 1 ubuntu ubuntu 3771 Feb 25 2020 .bashrc
drwxr--r-- 2 ubuntu ubuntu 4096 Apr 23 13:12 .cache/
-rw-r--r-- 1 ubuntu ubuntu 807 Feb 25 2020 .profile
drwxr--r-- 2 ubuntu ubuntu 4096 Apr 23 19:05 .ssh/
-rw-r--r-- 1 ubuntu ubuntu 0 Apr 23 13:26 .sudo_as_admin_successful
-rw-r--r-- 1 ubuntu ubuntu 989 Apr 23 19:05 .viminfo
-rw-r--r-- 1 root root 1679 Apr 23 20:12 Instance1.pem
drwxr-xr-x 2 root root 4096 Apr 23 20:03 junaid1/
root@ip-172-31-88-65:/home/ubuntu# cd junaid1
root@ip-172-31-88-65:/home/ubuntu/junaid1# ls
junaid.sh
root@ip-172-31-88-65:/home/ubuntu/junaid1# scp -i Instance1.pem junaid1/junaid.sh ubuntu@3.88.49.194:/home/ubuntu#
```

At the bottom, there's a footer with 'CloudShell' and 'Feedback' buttons, along with copyright information and links to 'Activate Windows'.

Now we can see the file has been copied



The screenshot shows a terminal window in the AWS CloudShell interface. The terminal title is "i-0e2655bb9408fc165 (Instance1)". The user has run the command "scp -i Instance1.pem junaidl/junaid.sh ubuntu@3.88.49.194:/home/ubuntu". The output shows the file being transferred from the local machine to the remote Ubuntu instance. The progress bar at the bottom right indicates a transfer rate of 30.8KB/s.

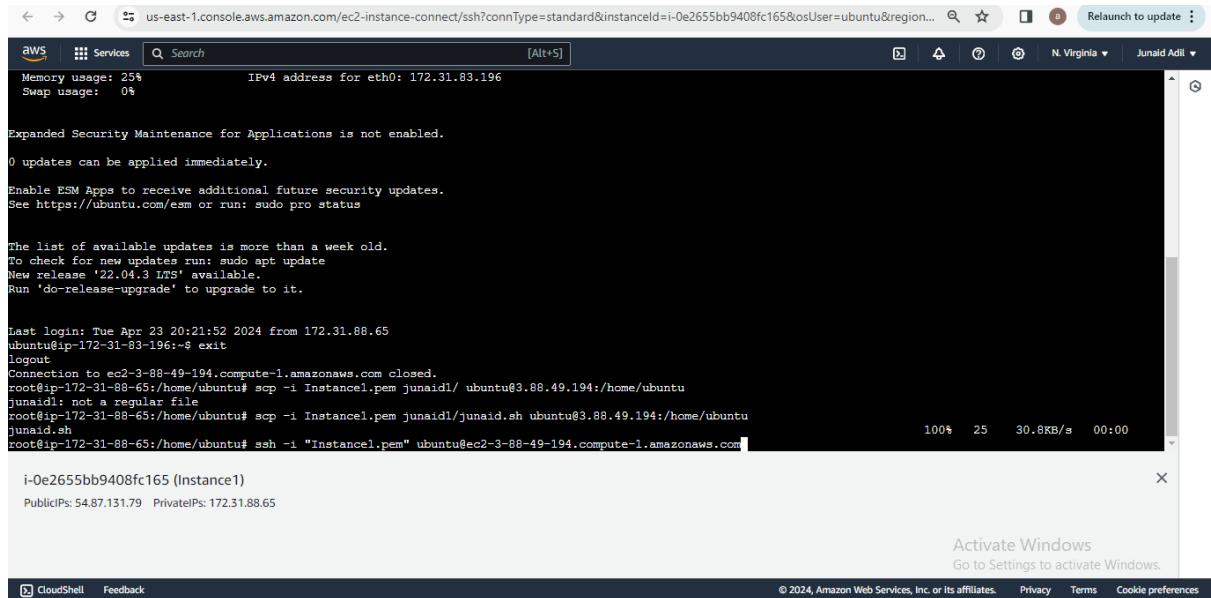
```
Memory usage: 25%          IPv4 address for eth0: 172.31.83.196
Swap usage:  0%
Expanded Security Maintenance for Applications is not enabled.
0 updates can be applied immediately.
Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status

The list of available updates is more than a week old.
to check for new updates run: sudo apt update
New release '22.04.3 LTS' available.
Run 'do-release-upgrade' to upgrade to it.

Last login: Tue Apr 23 20:21:52 2024 from 172.31.88.65
ubuntu@ip-172-31-83-196:~$ exit
logout
Connection to ec2-3-88-49-194.compute-1.amazonaws.com closed.
root@ip-172-31-88-65:/home/ubuntu$ scp -i Instance1.pem junaidl/junaid.sh ubuntu@3.88.49.194:/home/ubuntu
junaidl: not a regular file
root@ip-172-31-88-65:/home/ubuntu$ ssh -i "Instance1.pem" ubuntu@ec2-3-88-49-194.compute-1.amazonaws.com
100% 25 30.8KB/s 00:00

i-0e2655bb9408fc165 (Instance1)
PublicIPs: 54.87.131.79 PrivateIPs: 172.31.88.65
```

Step 10: Then connect to the Instance2 to verify if the file has been copied. Using the Example link from Instance2



The screenshot shows a terminal window in the AWS CloudShell interface. The terminal title is "i-0e2655bb9408fc165 (Instance1)". The user has run the command "scp -i Instance1.pem junaidl/junaid.sh ubuntu@3.88.49.194:/home/ubuntu". The output shows the file being transferred from the local machine to the remote Ubuntu instance. The progress bar at the bottom right indicates a transfer rate of 30.8KB/s.

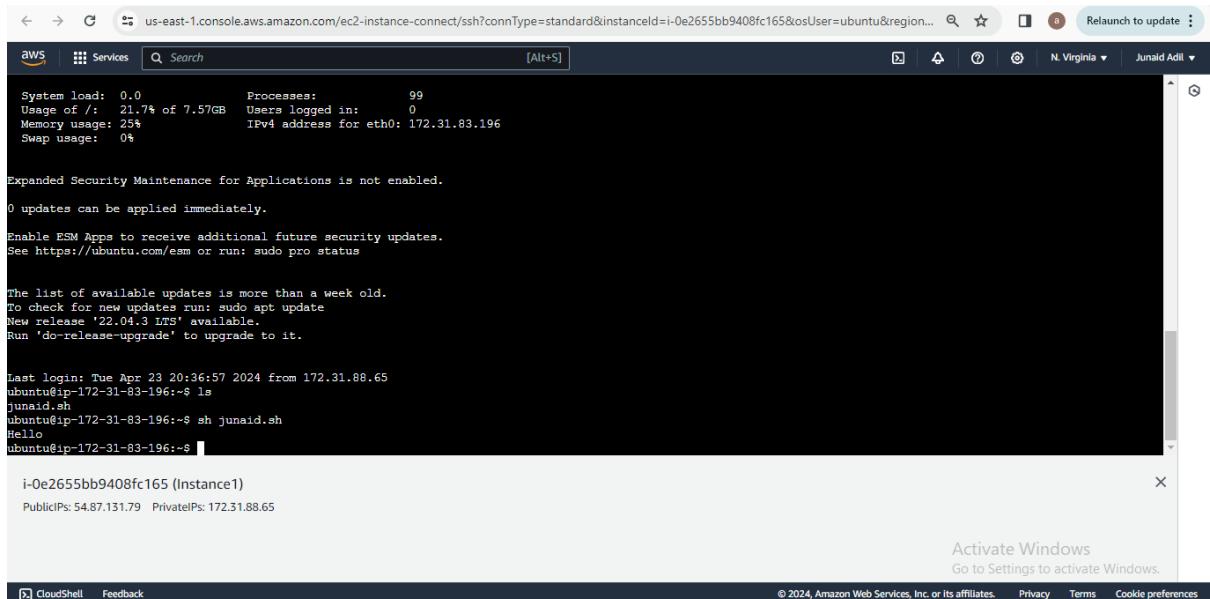
```
Memory usage: 25%          IPv4 address for eth0: 172.31.83.196
Swap usage:  0%
Expanded Security Maintenance for Applications is not enabled.
0 updates can be applied immediately.
Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status

The list of available updates is more than a week old.
to check for new updates run: sudo apt update
New release '22.04.3 LTS' available.
Run 'do-release-upgrade' to upgrade to it.

Last login: Tue Apr 23 20:21:52 2024 from 172.31.88.65
ubuntu@ip-172-31-83-196:~$ exit
logout
Connection to ec2-3-88-49-194.compute-1.amazonaws.com closed.
root@ip-172-31-88-65:/home/ubuntu$ scp -i Instance1.pem junaidl/junaid.sh ubuntu@3.88.49.194:/home/ubuntu
junaidl: not a regular file
root@ip-172-31-88-65:/home/ubuntu$ ssh -i "Instance1.pem" ubuntu@ec2-3-88-49-194.compute-1.amazonaws.com
100% 25 30.8KB/s 00:00

i-0e2655bb9408fc165 (Instance1)
PublicIPs: 54.87.131.79 PrivateIPs: 172.31.88.65
```

We can see the file has been copied to other Instance.



The screenshot shows a terminal window within the AWS CloudShell interface. The terminal displays system statistics, update information, and a script execution:

```
System load: 0.0      Processes: 99
Usage of /: 21.7% of 7.57GB  Users logged in: 0
Memory usage: 25%      IPv4 address for eth0: 172.31.83.196
Swap usage: 0%         

Expanded Security Maintenance for Applications is not enabled.
0 updates can be applied immediately.

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status

The list of available updates is more than a week old.
To check for new updates run: sudo apt update
New release '22.04.3 LTS' available.
Run 'do-release-upgrade' to upgrade to it.

Last login: Tue Apr 23 20:36:57 2024 from 172.31.88.65
ubuntu@ip-172-31-83-196:~$ ls
junaid.sh
ubuntu@ip-172-31-83-196:~$ sh junaid.sh
Hello
ubuntu@ip-172-31-83-196:~$ 

i-0e2655bb9408fc165 (Instance1)
PublicIPs: 54.87.131.79  PrivateIPs: 172.31.88.65
```

At the bottom right of the terminal window, there is an "Activate Windows" message: "Activate Windows Go to Settings to activate Windows."

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L6 - Write a Linux Shell Script to Install Git, JDK, Maven in EC2 Ubuntu Instance

Step 1: To Install Git, JDK, Maven we need to write the commands in a script file. Below mentioned are the commands to be copied to script file to install Git, JDK, Maven.

```
#!/bin/bash

# Update package index
sudo yum update

# Install Git
sudo yum install -y git

# Install OpenJDK
sudo yum install -y default-jdk

# Verify Java installation
java -version

# Install Maven
sudo yum install -y maven

# verify Maven installation
mvn --version
```

- ➔ Create a file with the name “ l6.sh ” and give the execute permission to the user by using the command “ **sudo chmod u+x l6.sh** ” and then add the above mentioned commands in the file.

The screenshot shows a terminal session within the AWS CloudShell interface. The command `vi 16.sh` has been entered, and the file is currently being edited. The status bar at the bottom displays the instance ID (i-0b3473c76cd075d81), region (ap-south-1), and private IP (172.31.46.48). A modal window provides details about the instance, including its ID, public and private IPs, and a link to activate Windows.

```
[ec2-user@ip-172-31-46-48 ~]$ vi 16.sh
```

i-0b3473c76cd075d81 (Instance3)
PublicIPs: 13.201.44.241 PrivateIPs: 172.31.46.48

Activate Windows
Go to Settings to activate Windows.

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This screenshot shows the same terminal session as the first one, but with multiple cursor positions visible in the file content area, indicating simultaneous editing or a complex script execution. The status bar and instance details remain the same.

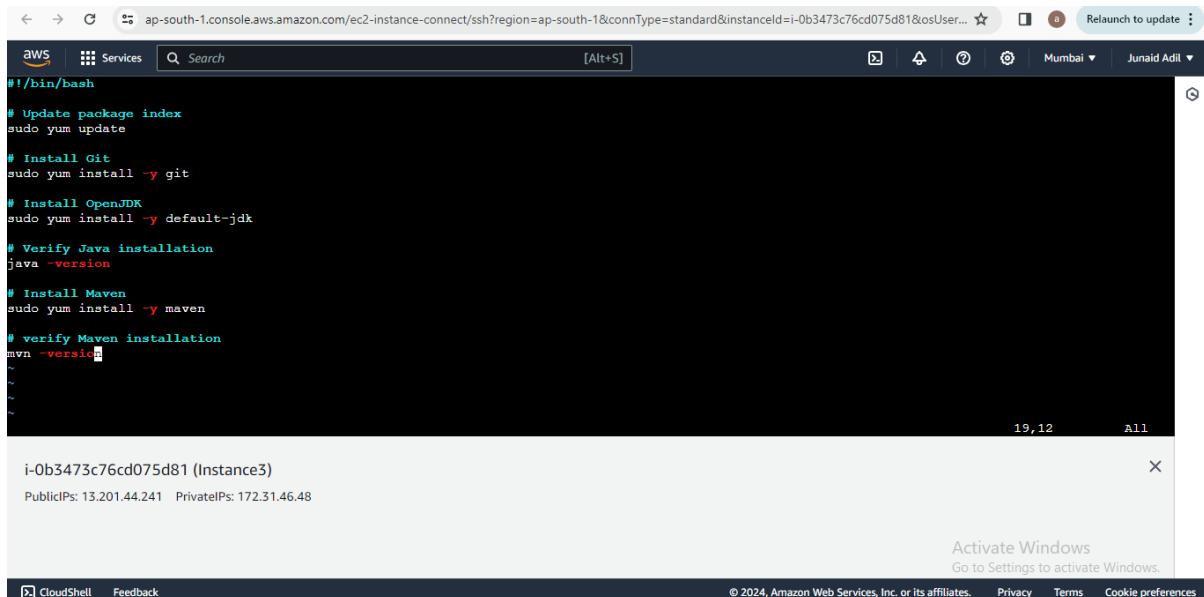
```
"16.sh" [New]
```

i-0b3473c76cd075d81 (Instance3)
PublicIPs: 13.201.44.241 PrivateIPs: 172.31.46.48

Activate Windows
Go to Settings to activate Windows.

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Step 2: Then add the commands to l6.sh file



```
#!/bin/bash

# Update package index
sudo yum update

# Install Git
sudo yum install -y git

# Install OpenJDK
sudo yum install -y default-jdk

# Verify Java installation
java -version

# Install Maven
sudo yum install -y maven

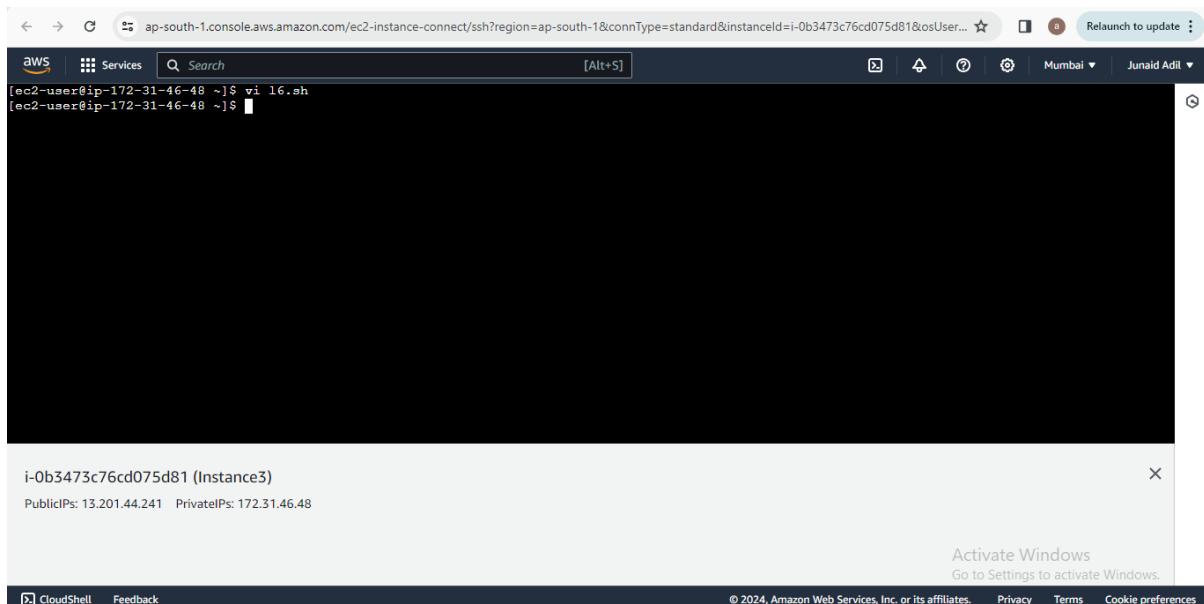
# Verify Maven installation
mvn -version
```

i-0b3473c76cd075d81 (Instance3)
PublicIPs: 13.201.44.241 PrivateIPs: 172.31.46.48

Activate Windows
Go to Settings to activate Windows.

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File has been created



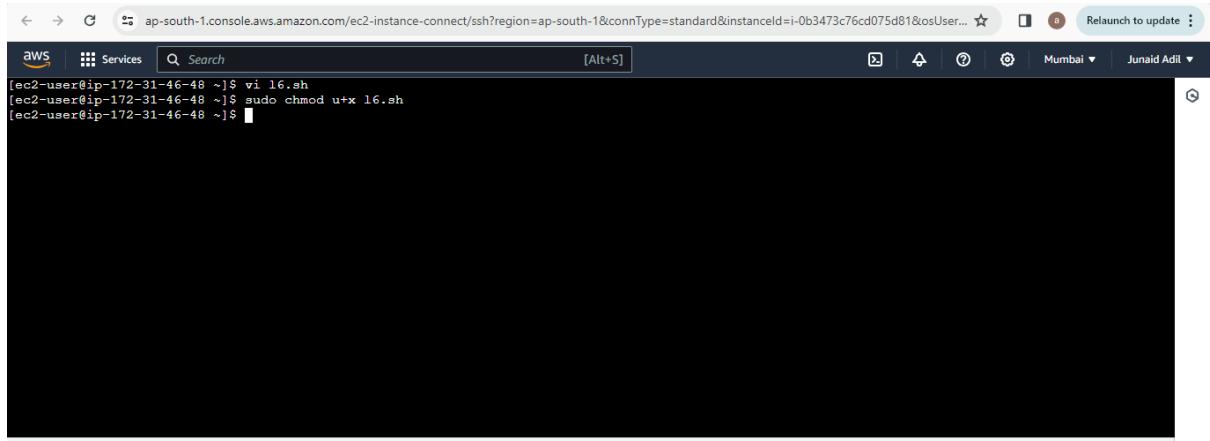
```
[ec2-user@ip-172-31-46-48 ~]$ vi l6.sh
[ec2-user@ip-172-31-46-48 ~]$
```

i-0b3473c76cd075d81 (Instance3)
PublicIPs: 13.201.44.241 PrivateIPs: 172.31.46.48

Activate Windows
Go to Settings to activate Windows.

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Step 3: Now give the execute permission to the file for user to execute, by using the command “**sudo chmod u+x l6.sh**”



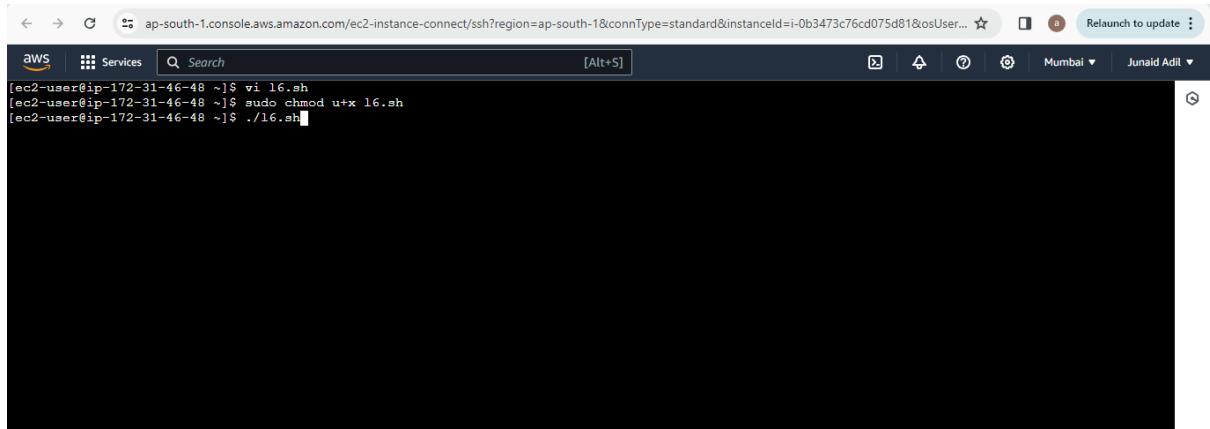
```
[ec2-user@ip-172-31-46-48 ~]$ vi l6.sh
[ec2-user@ip-172-31-46-48 ~]$ sudo chmod u+x l6.sh
[ec2-user@ip-172-31-46-48 ~]$
```

i-0b3473c76cd075d81 (Instance3)
PublicIPs: 13.201.44.241 PrivateIPs: 172.31.46.48

Activate Windows
Go to Settings to activate Windows.

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Step 4: Execute the file l6.sh using command “ **./l6.sh** ”



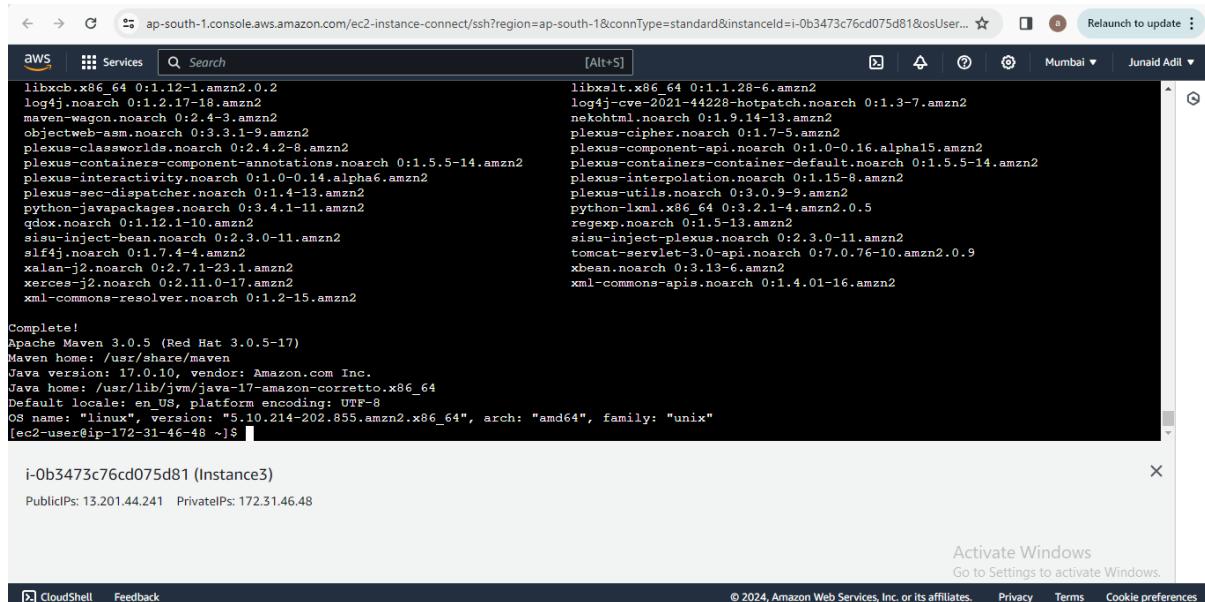
```
[ec2-user@ip-172-31-46-48 ~]$ vi l6.sh
[ec2-user@ip-172-31-46-48 ~]$ sudo chmod u+x l6.sh
[ec2-user@ip-172-31-46-48 ~]$ ./l6.sh
```

i-0b3473c76cd075d81 (Instance3)
PublicIPs: 13.201.44.241 PrivateIPs: 172.31.46.48

Activate Windows
Go to Settings to activate Windows.

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We can see the softwares mentioned in the script file have been installed.



```
libxcb.x86_64 0:1.12-1.amzn2.0.2
log4j.noarch 0:1.2.17-18.amzn2
maven-wagon.noarch 0:2.4-3.amzn2
objectweb-asm.noarch 0:3.3.1-9.amzn2
plexus-classworlds.noarch 0:2.4.2-8.amzn2
plexus-containers-component-annotations.noarch 0:1.5.5-14.amzn2
plexus-interactivity.noarch 0:1.0-0.14.alpha6.amzn2
plexus-sec-dispatcher.noarch 0:1.4-13.amzn2
python-javapackages.noarch 0:3.4.1-11.amzn2
qdox.noarch 0:1.12.1-10.amzn2
sisu-inject-bean.noarch 0:2.3.0-11.amzn2
slf4j.noarch 0:1.7.4-4.amzn2
xalan-j2.noarch 0:2.7.1-23.1.amzn2
xerces-j2.noarch 0:2.11.0-17.amzn2
xml-commons-resolver.noarch 0:1.2-15.amzn2

Complete!
Apache Maven 3.0.5 (Red Hat 3.0.5-17)
Maven home: /usr/share/maven
Java version: 17.0.10, vendor: Amazon.com Inc.
Java home: /usr/lib/jvm/java-17-amazon-corretto.x86_64
Default locale: en_US, platform encoding: UTF-8
OS name: "linux", version: "5.10.214-202.855.amzn2.x86_64", arch: "amd64", family: "unix"
[ec2-user@ip-172-31-46-48 ~]$
```

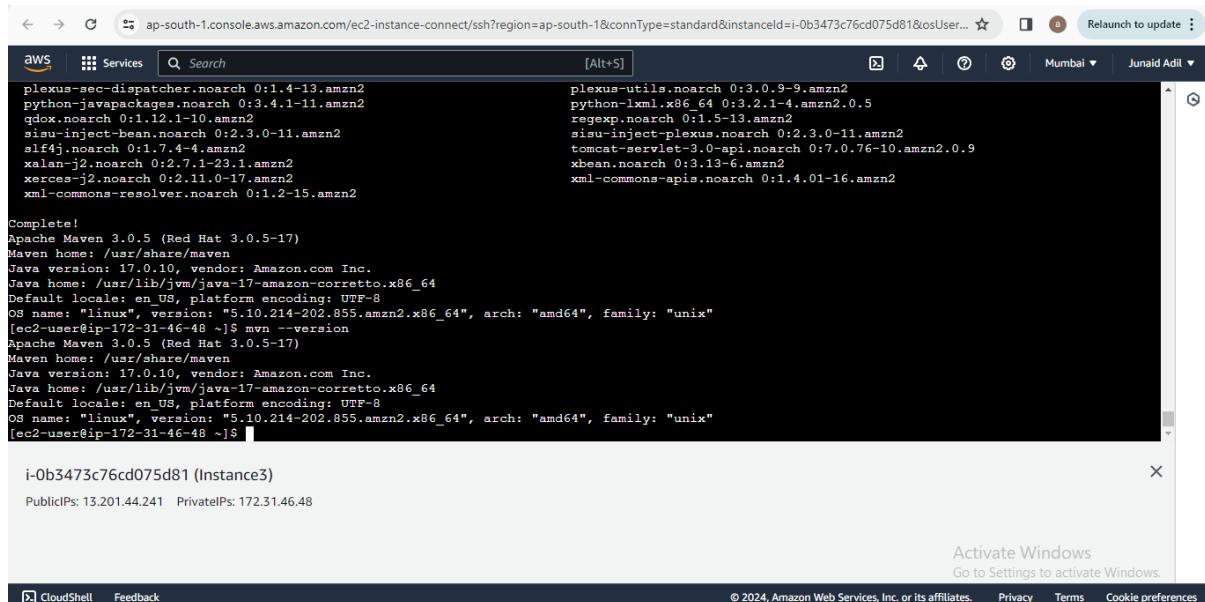
i-0b3473c76cd075d81 (Instance3)
PublicIPs: 13.201.44.241 PrivateIPs: 172.31.46.48

Activate Windows
Go to Settings to activate Windows.

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Step 5: To verify if Git, JDK, maven has been installed. We need to execute some commands.

For Maven we can execute the command “ mvn --version ”



```
plexus-sec-dispatcher.noarch 0:1.4-13.amzn2
python-javapackages.noarch 0:3.4.1-11.amzn2
qdox.noarch 0:1.12.1-10.amzn2
sisu-inject-bean.noarch 0:2.3.0-11.amzn2
slf4j.noarch 0:1.7.4-4.amzn2
xalan-j2.noarch 0:2.7.1-23.1.amzn2
xerces-j2.noarch 0:2.11.0-17.amzn2
xml-commons-resolver.noarch 0:1.2-15.amzn2

Complete!
Apache Maven 3.0.5 (Red Hat 3.0.5-17)
Maven home: /usr/share/maven
Java version: 17.0.10, vendor: Amazon.com Inc.
Java home: /usr/lib/jvm/java-17-amazon-corretto.x86_64
Default locale: en_US, platform encoding: UTF-8
OS name: "linux", version: "5.10.214-202.855.amzn2.x86_64", arch: "amd64", family: "unix"
[ec2-user@ip-172-31-46-48 ~]$ mvn --version
Apache Maven 3.0.5 (Red Hat 3.0.5-17)
Maven home: /usr/share/maven
Java version: 17.0.10, vendor: Amazon.com Inc.
Java home: /usr/lib/jvm/java-17-amazon-corretto.x86_64
Default locale: en_US, platform encoding: UTF-8
OS name: "linux", version: "5.10.214-202.855.amzn2.x86_64", arch: "amd64", family: "unix"
[ec2-user@ip-172-31-46-48 ~]$
```

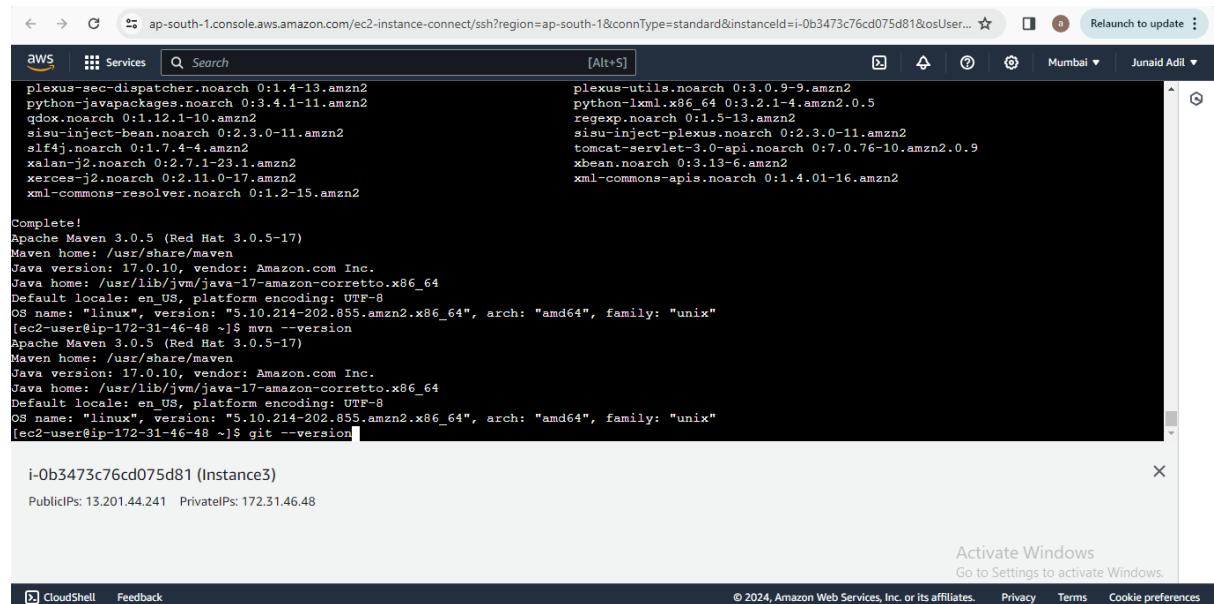
i-0b3473c76cd075d81 (Instance3)
PublicIPs: 13.201.44.241 PrivateIPs: 172.31.46.48

Activate Windows
Go to Settings to activate Windows.

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Apache Maven version 3.0.5 has been installed.

For Git, execute the command “`git --version`”



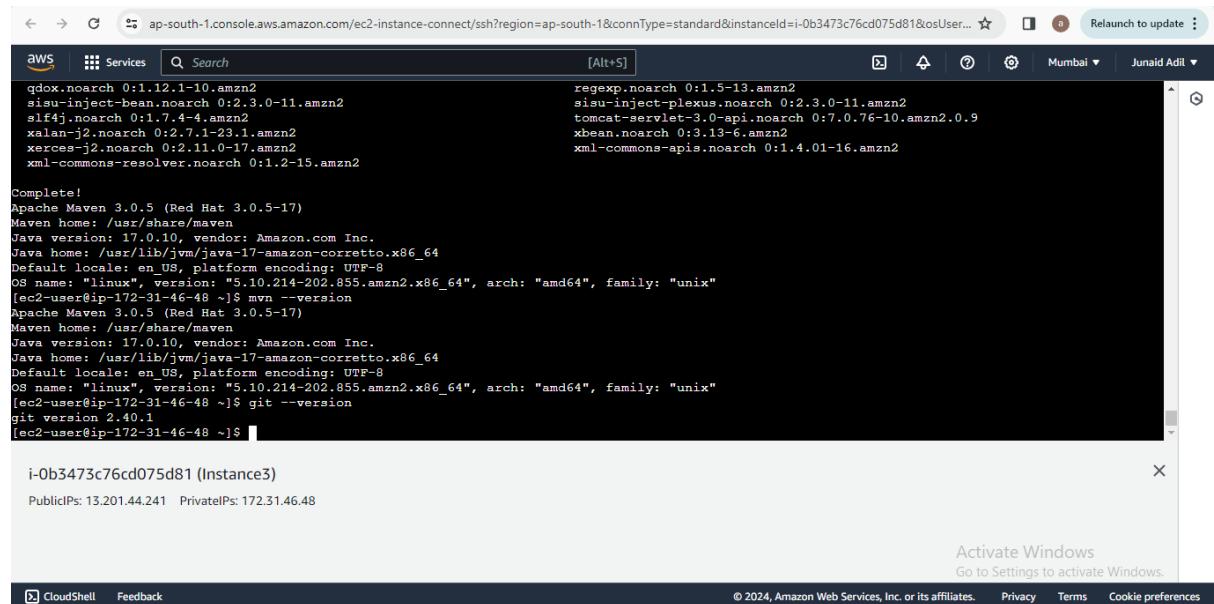
```
plexus-sec-dispatcher.noarch 0:1.4-13.amzn2
python-javapackages.noarch 0:3.4.1-11.amzn2
qdox.noarch 0:1.12.1-10.amzn2
sisu-inject-bean.noarch 0:2.3.0-11.amzn2
slf4j.noarch 0:1.7.4-4.amzn2
xalan-j2.noarch 0:2.7.1-23.1.amzn2
xerces-j2.noarch 0:2.11.0-17.amzn2
xml-commons-resolver.noarch 0:1.2-15.amzn2

Complete!
Apache Maven 3.0.5 (Red Hat 3.0.5-17)
Maven home: /usr/share/maven
Java version: 17.0.10, vendor: Amazon.com Inc.
Java home: /usr/lib/jvm/java-17-amazon-corretto.x86_64
Default locale: en_US, platform encoding: UTF-8
OS name: "linux", version: "5.10.214-202.855.amzn2.x86_64", arch: "amd64", family: "unix"
[ec2-user@ip-172-31-46-48 ~]$ mvn --version
Apache Maven 3.0.5 (Red Hat 3.0.5-17)
Maven home: /usr/share/maven
Java version: 17.0.10, vendor: Amazon.com Inc.
Java home: /usr/lib/jvm/java-17-amazon-corretto.x86_64
Default locale: en_US, platform encoding: UTF-8
OS name: "linux", version: "5.10.214-202.855.amzn2.x86_64", arch: "amd64", family: "unix"
[ec2-user@ip-172-31-46-48 ~]$ git --version
```

i-0b3473c76cd075d81 (Instance3)
PublicIPs: 13.201.44.241 PrivateIPs: 172.31.46.48

Activate Windows
Go to Settings to activate Windows.

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```
qdox.noarch 0:1.12.1-10.amzn2
sisu-inject-bean.noarch 0:2.3.0-11.amzn2
slf4j.noarch 0:1.7.4-4.amzn2
xalan-j2.noarch 0:2.7.1-23.1.amzn2
xerces-j2.noarch 0:2.11.0-17.amzn2
xml-commons-resolver.noarch 0:1.2-15.amzn2

Complete!
Apache Maven 3.0.5 (Red Hat 3.0.5-17)
Maven home: /usr/share/maven
Java version: 17.0.10, vendor: Amazon.com Inc.
Java home: /usr/lib/jvm/java-17-amazon-corretto.x86_64
Default locale: en_US, platform encoding: UTF-8
OS name: "linux", version: "5.10.214-202.855.amzn2.x86_64", arch: "amd64", family: "unix"
[ec2-user@ip-172-31-46-48 ~]$ mvn --version
Apache Maven 3.0.5 (Red Hat 3.0.5-17)
Maven home: /usr/share/maven
Java version: 17.0.10, vendor: Amazon.com Inc.
Java home: /usr/lib/jvm/java-17-amazon-corretto.x86_64
Default locale: en_US, platform encoding: UTF-8
OS name: "linux", version: "5.10.214-202.855.amzn2.x86_64", arch: "amd64", family: "unix"
[ec2-user@ip-172-31-46-48 ~]$ git --version
git version 2.40.1
[ec2-user@ip-172-31-46-48 ~]$
```

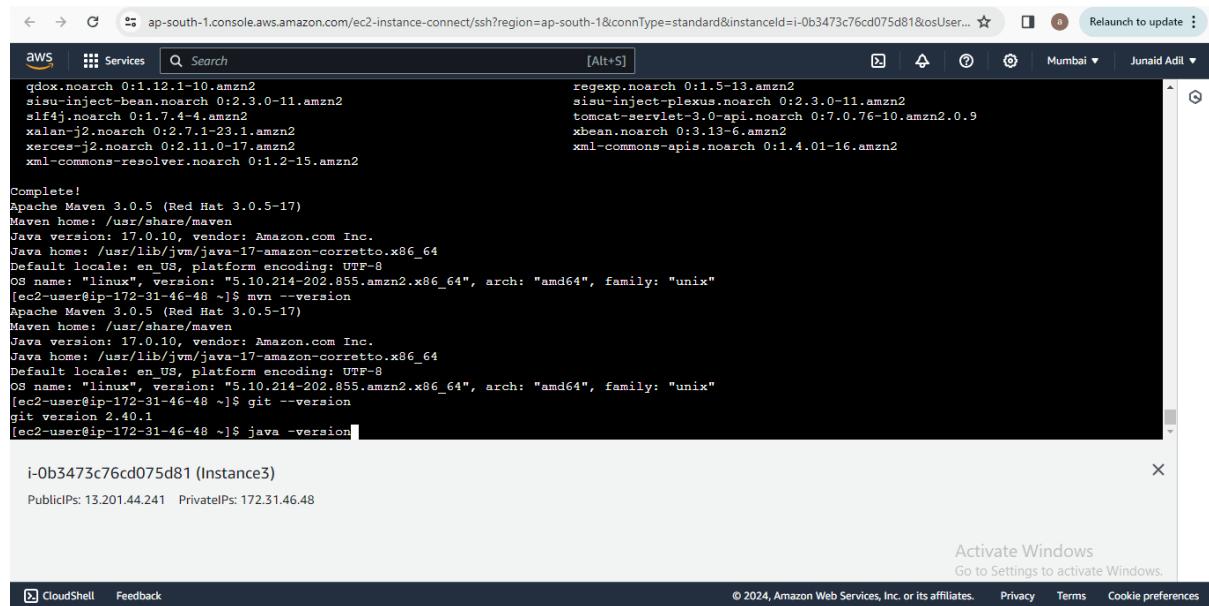
i-0b3473c76cd075d81 (Instance3)
PublicIPs: 13.201.44.241 PrivateIPs: 172.31.46.48

Activate Windows
Go to Settings to activate Windows.

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Git version 2.40.1 has been installed.

For Java, execute the command “ **java -version** ”



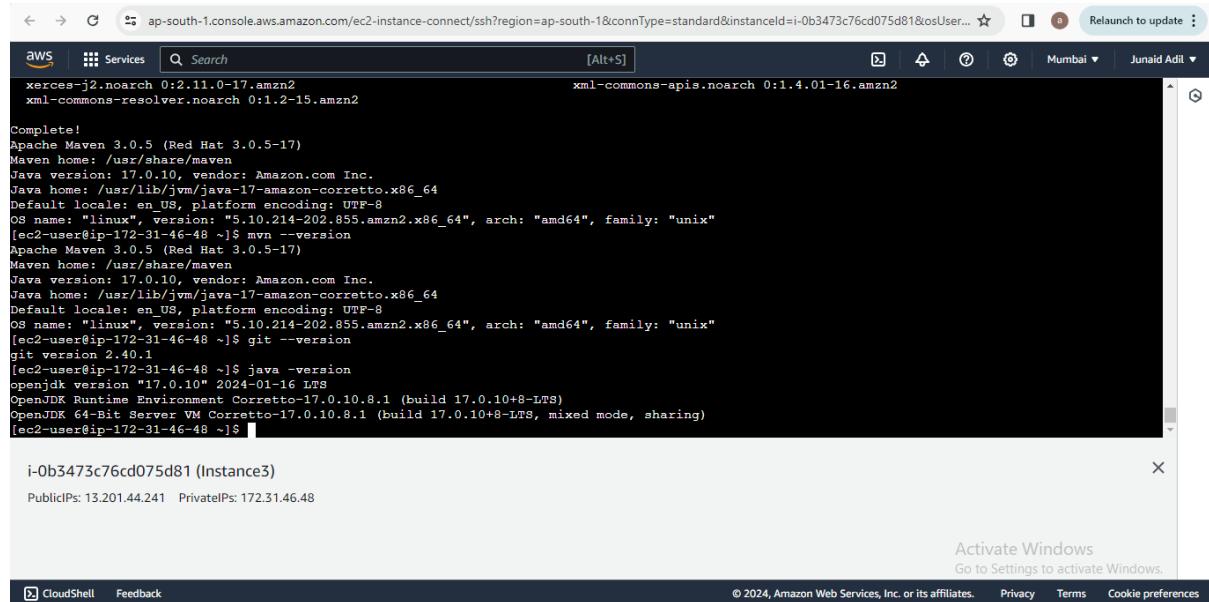
```
qdox.noarch 0:1.12.1-10.amzn2      regexp.noarch 0:1.5-13.amzn2
sisu-inject-bean.noarch 0:2.3.0-11.amzn2  sisu-inject-plexus.noarch 0:2.3.0-11.amzn2
slf4j.noarch 0:1.7.4-4.amzn2       tomcat-servlet-3.0-api.noarch 0:7.0.76-10.amzn2.0.9
xalan-j2.noarch 0:2.7.1-23.1.amzn2  xbean.noarch 0:3.13-6.amzn2
xerces-j2.noarch 0:2.11.0-17.amzn2   xml-commons-apis.noarch 0:1.4.01-16.amzn2
xml-commons-resolver.noarch 0:1.2-15.amzn2

Complete!
Apache Maven 3.0.5 (Red Hat 3.0.5-17)
Maven home: /usr/share/maven
Java version: 17.0.10, vendor: Amazon.com Inc.
Java home: /usr/lib/jvm/java-17-amazon-corretto.x86_64
Default locale: en_US, platform encoding: UTF-8
OS name: "linux", version: "5.10.214-202.855.amzn2.x86_64", arch: "amd64", family: "unix"
[ec2-user@ip-172-31-46-48 ~]$ mvn --version
Apache Maven 3.0.5 (Red Hat 3.0.5-17)
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Java home: /usr/lib/jvm/java-17-amazon-corretto.x86_64
Default locale: en_US, platform encoding: UTF-8
OS name: "linux", version: "5.10.214-202.855.amzn2.x86_64", arch: "amd64", family: "unix"
[ec2-user@ip-172-31-46-48 ~]$ git --version
git version 2.40.1
[ec2-user@ip-172-31-46-48 ~]$ java -version

i-0b3473c76cd075d81 (Instance3)

PublicIPs: 13.201.44.241 PrivateIPs: 172.31.46.48
```

Java version 17.0.10 has been installed.



```
xerces-j2.noarch 0:2.11.0-17.amzn2      xml-commons-apis.noarch 0:1.4.01-16.amzn2
xml-commons-resolver.noarch 0:1.2-15.amzn2

Complete!
Apache Maven 3.0.5 (Red Hat 3.0.5-17)
Maven home: /usr/share/maven
Java version: 17.0.10, vendor: Amazon.com Inc.
Java home: /usr/lib/jvm/java-17-amazon-corretto.x86_64
Default locale: en_US, platform encoding: UTF-8
OS name: "linux", version: "5.10.214-202.855.amzn2.x86_64", arch: "amd64", family: "unix"
[ec2-user@ip-172-31-46-48 ~]$ mvn --version
Apache Maven 3.0.5 (Red Hat 3.0.5-17)
Maven home: /usr/share/maven
Java version: 17.0.10, vendor: Amazon.com Inc.
Java home: /usr/lib/jvm/java-17-amazon-corretto.x86_64
Default locale: en_US, platform encoding: UTF-8
OS name: "linux", version: "5.10.214-202.855.amzn2.x86_64", arch: "amd64", family: "unix"
[ec2-user@ip-172-31-46-48 ~]$ git --version
git version 2.40.1
[ec2-user@ip-172-31-46-48 ~]$ java -version
openjdk version "17.0.10" 2024-01-16 LTS
OpenJDK Runtime Environment Corretto-17.0.10.8.1 (build 17.0.10+8-LTS)
OpenJDK 64-Bit Server VM Corretto-17.0.10.8.1 (build 17.0.10+8-LTS, mixed mode, sharing)
[ec2-user@ip-172-31-46-48 ~]$
```