3) Create an AWS EC2 / GCP VM Instances (Instance Name: Regno_EC2_VM1, Regno_EC2_VM2) and install a webserver of your choice in each of the instances to host web site of your organization globally.

4) Create an Application Load Balancer to ensure the fare allocation of tasks among the web servers deployed on the Virtual machine instances.

Solution:

Step 1: Navigate to EC2 homepage of AWS console.

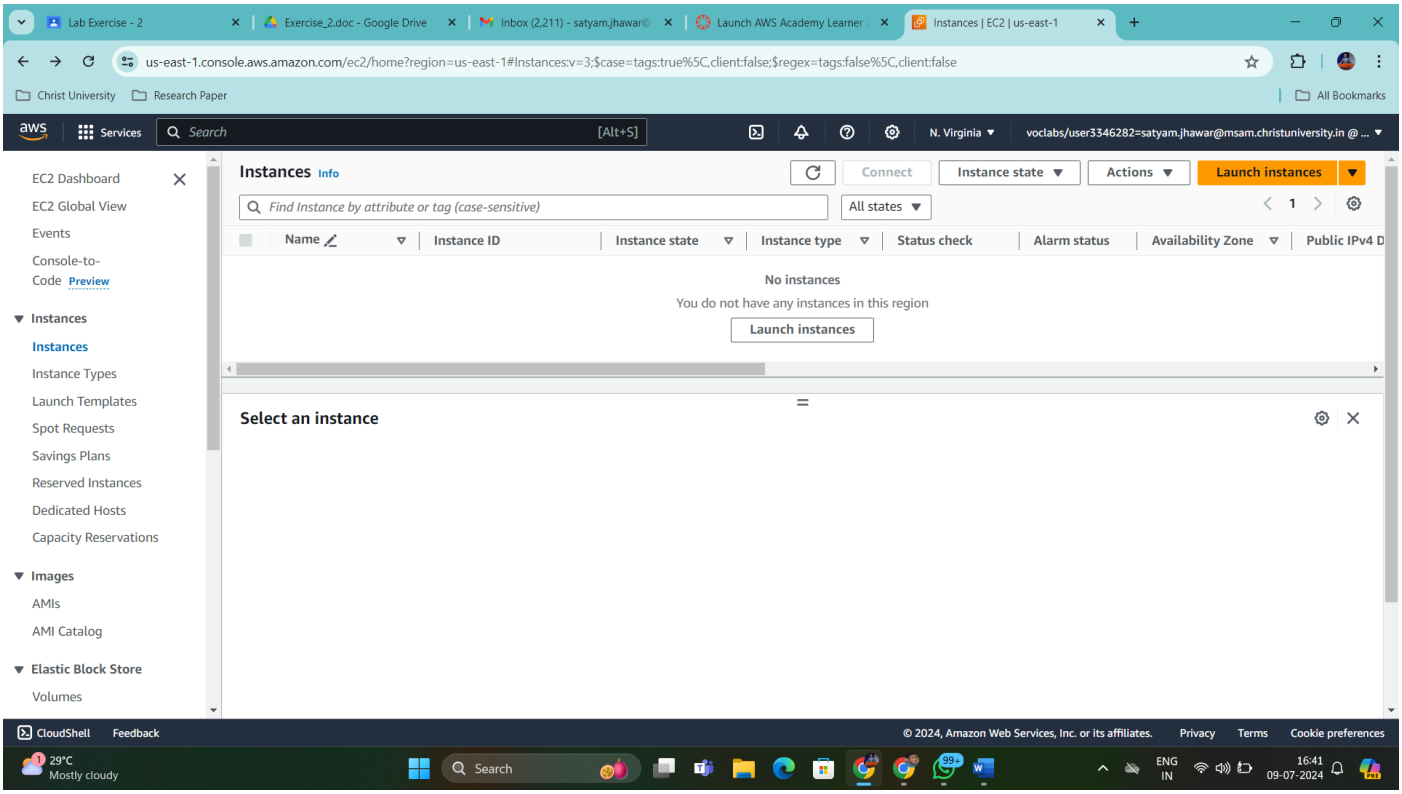

Figure 1: EC2 Homepage

Step 2: Click on Launch Instances and Create 2 identical EC2 instances with having the same security group

EC2 Configurations:

i) No. of instances = 2
ii) Name: 2348554_EC2_VM1 and 2348554_EC2_VM2
iii) AMI: Amazon Linux 2023 AMI
iv) Instance Type: t2.micro
v) Key Pair: vockey
vi) Network Settings
    a. Click on Existing Security Group
    b. Select launch wizard 1
vii) Click on Launch Instances

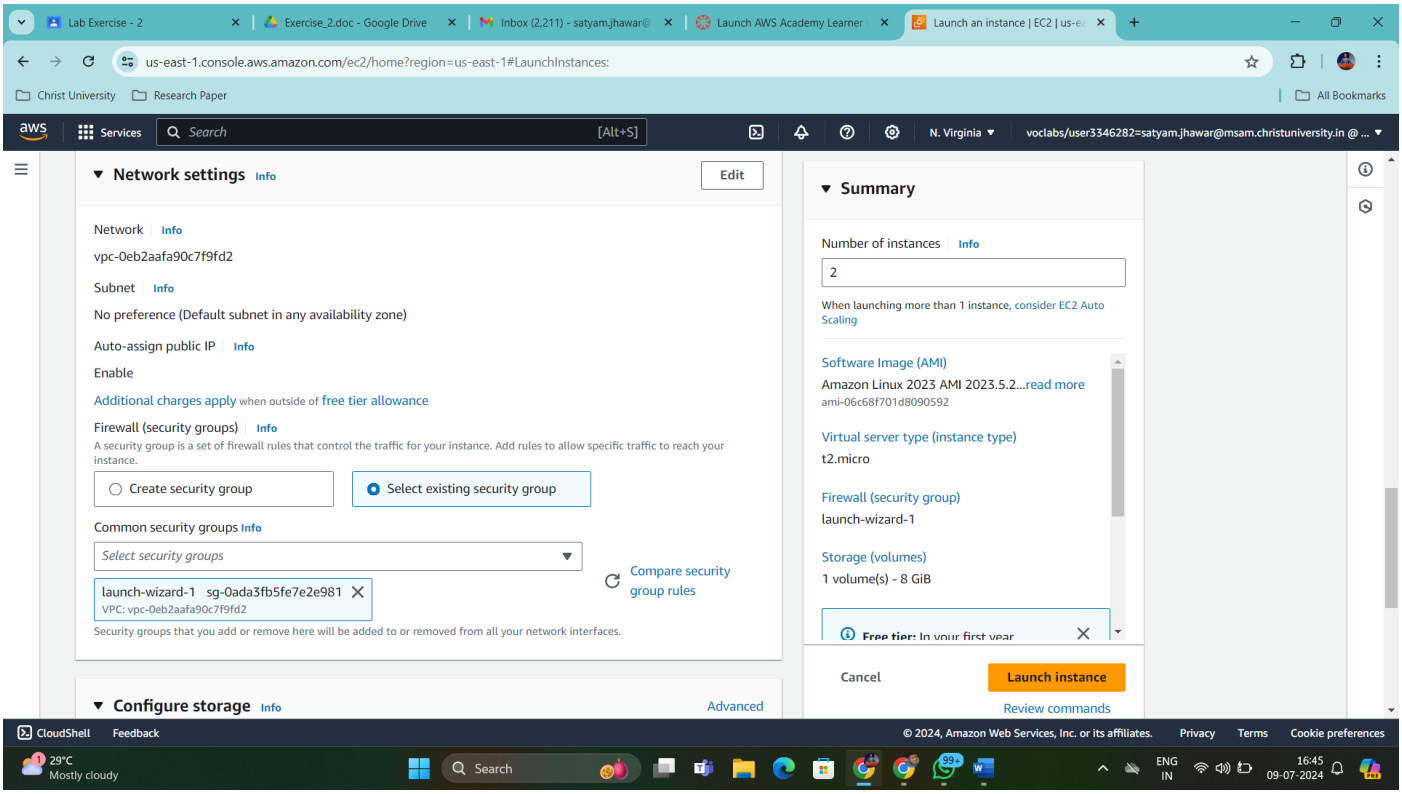

Figure 2: EC2 Configurations

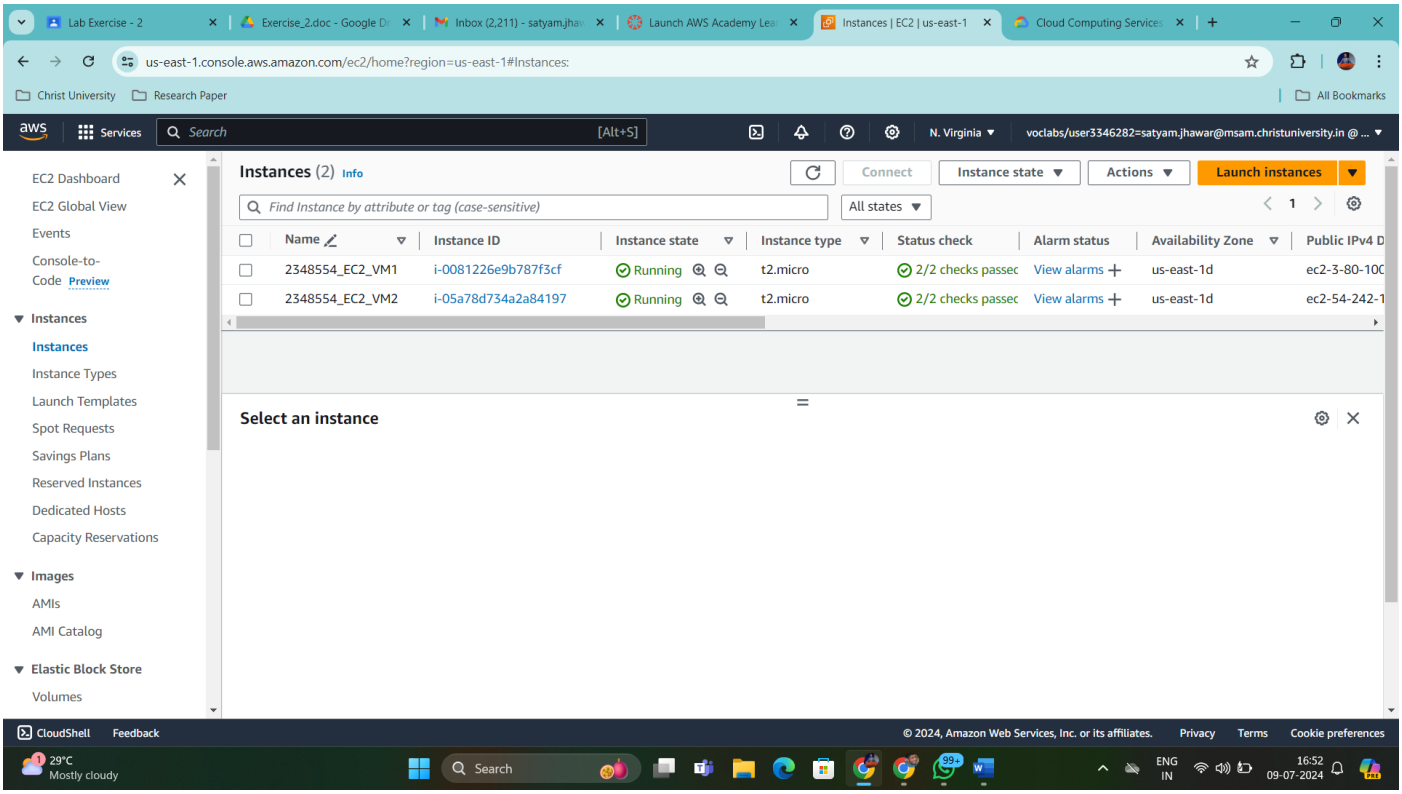

Figure 3: EC2 Ready to Launch

Step 3: Connect both the instances via amazon connect and run a static website in it. To do it run the below commands

i) Sudo su
ii) Yum update -y

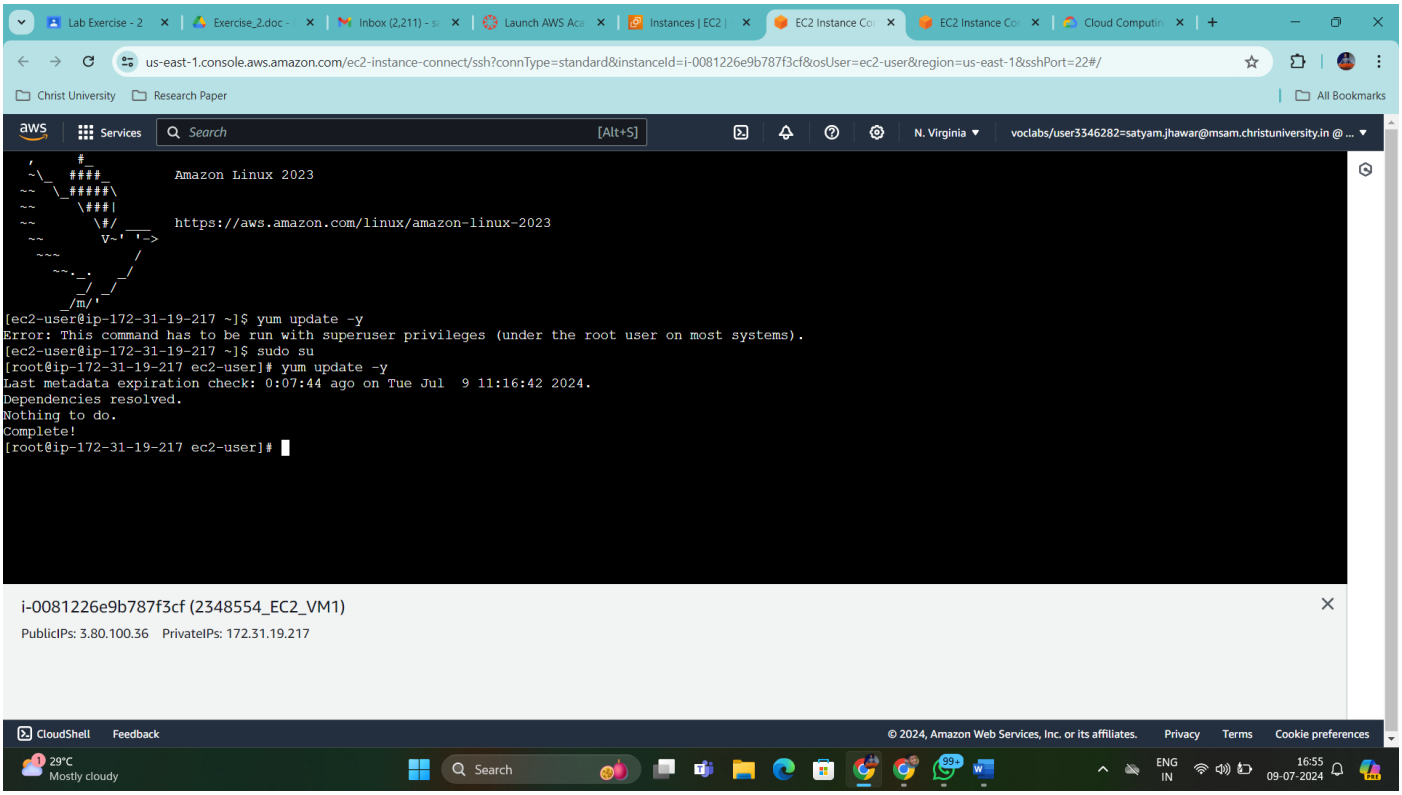

Figure 4: Update on instance 1

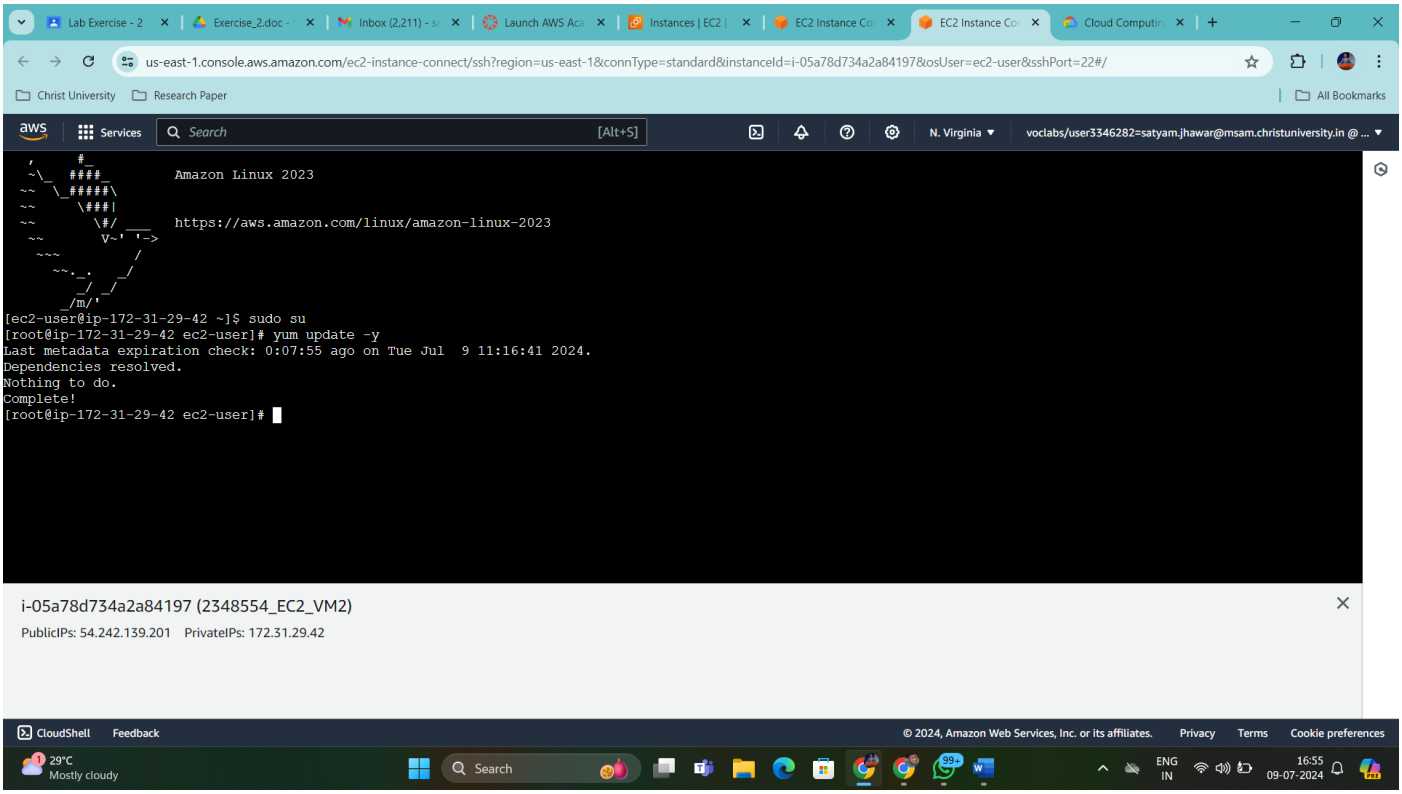

Figure 5: Update on instance 2

iii) Yum install httpd -y

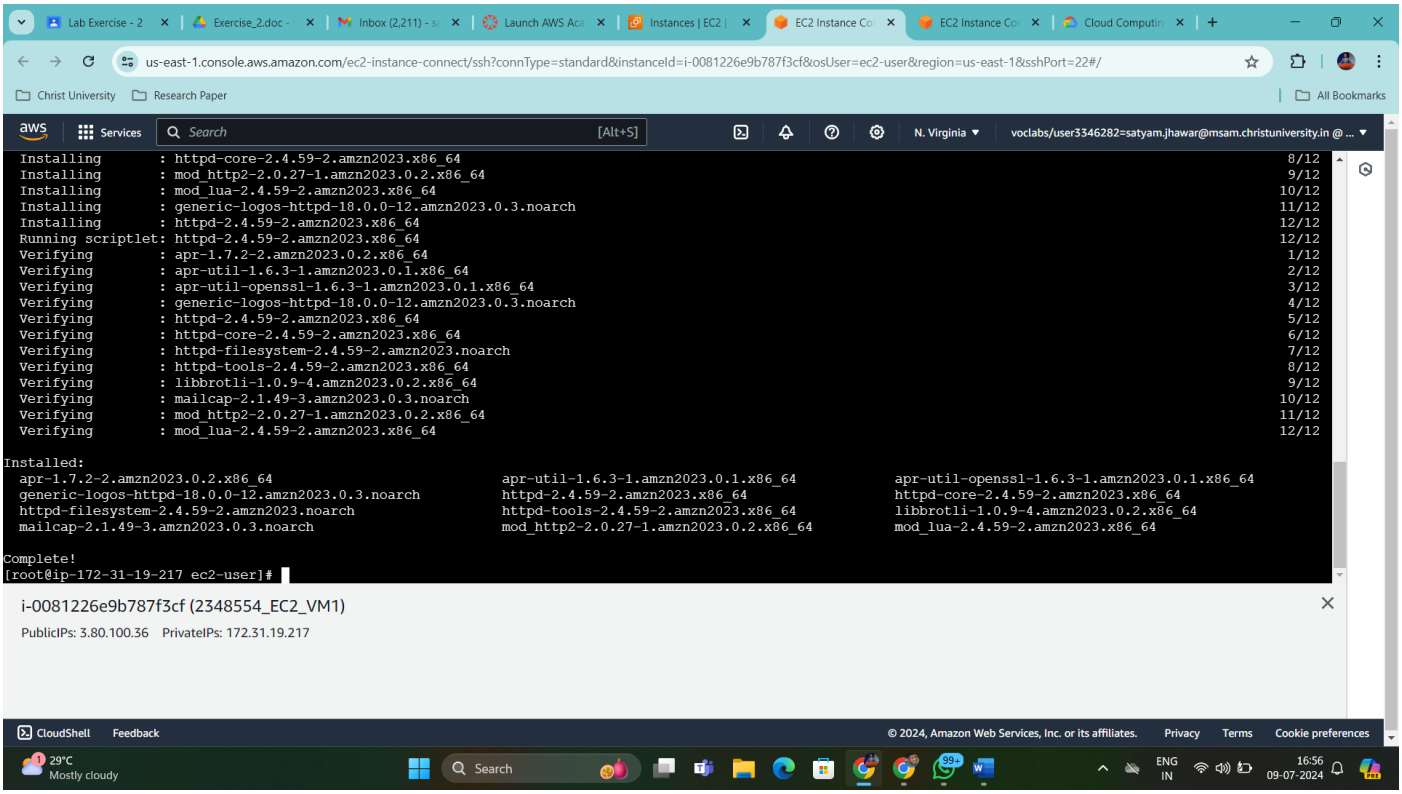

Figure 6: Httpd server on Instance 1

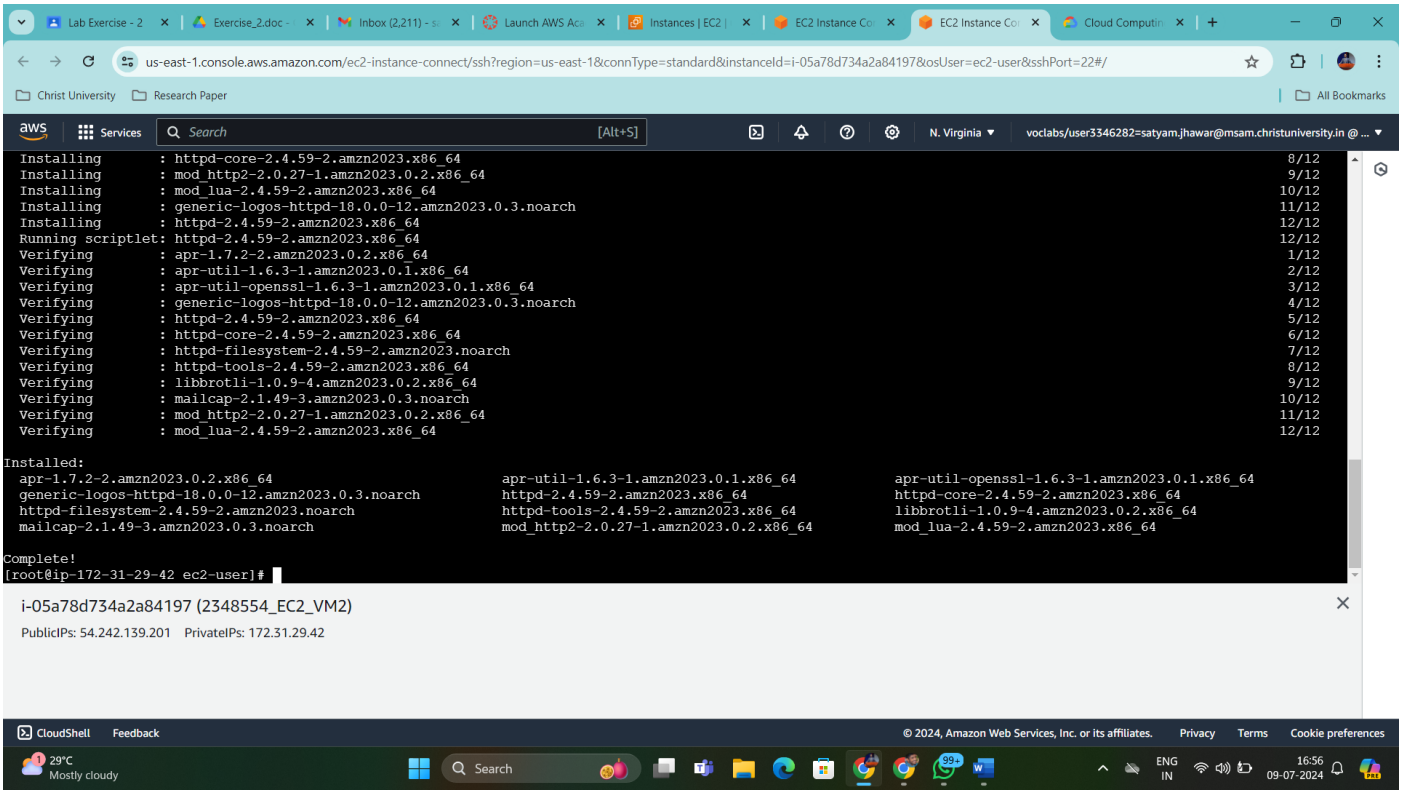

Figure 7: Httpd server on instance 2

iv) Systemctl start httpd

v) Systemctl status httpd

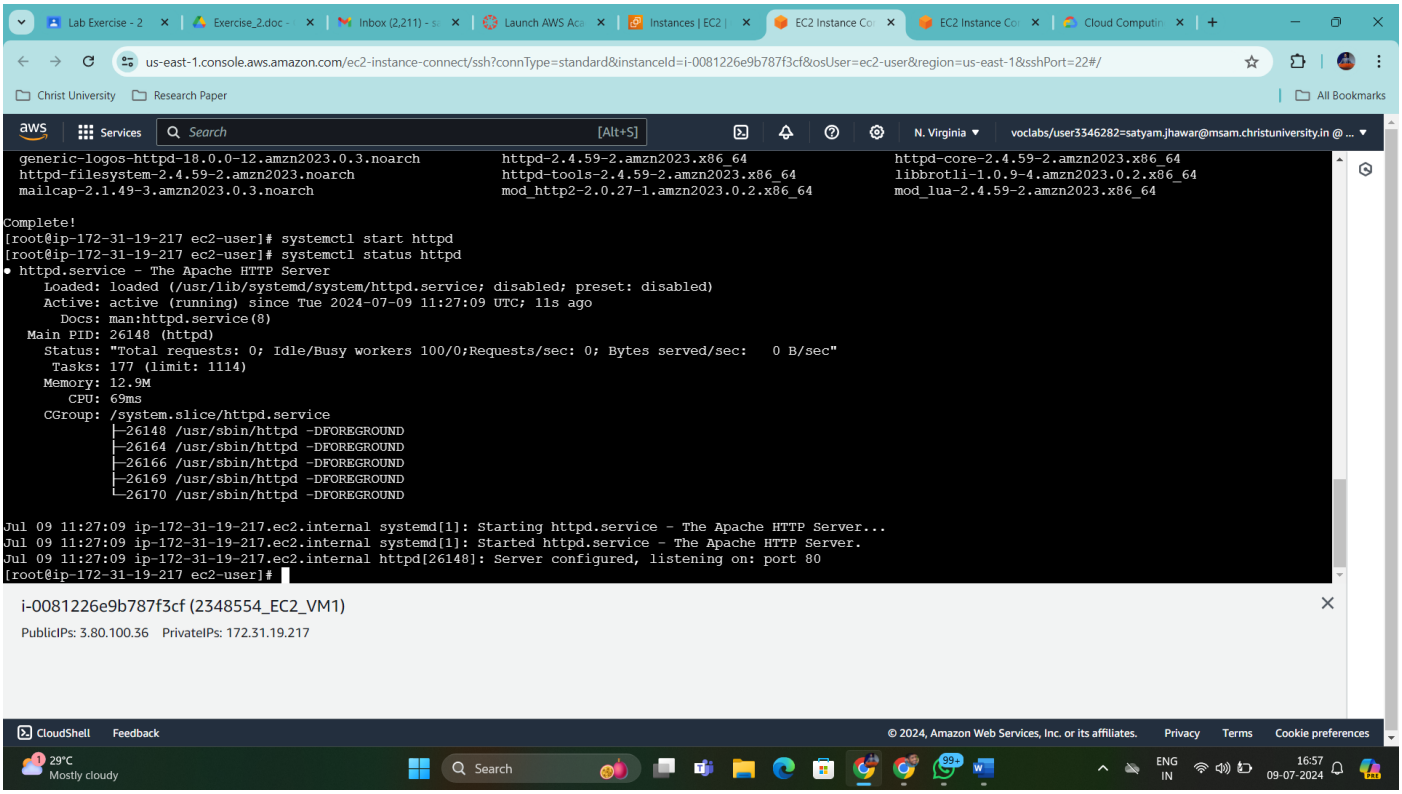

Figure 8: Running Apache server on Instance 1

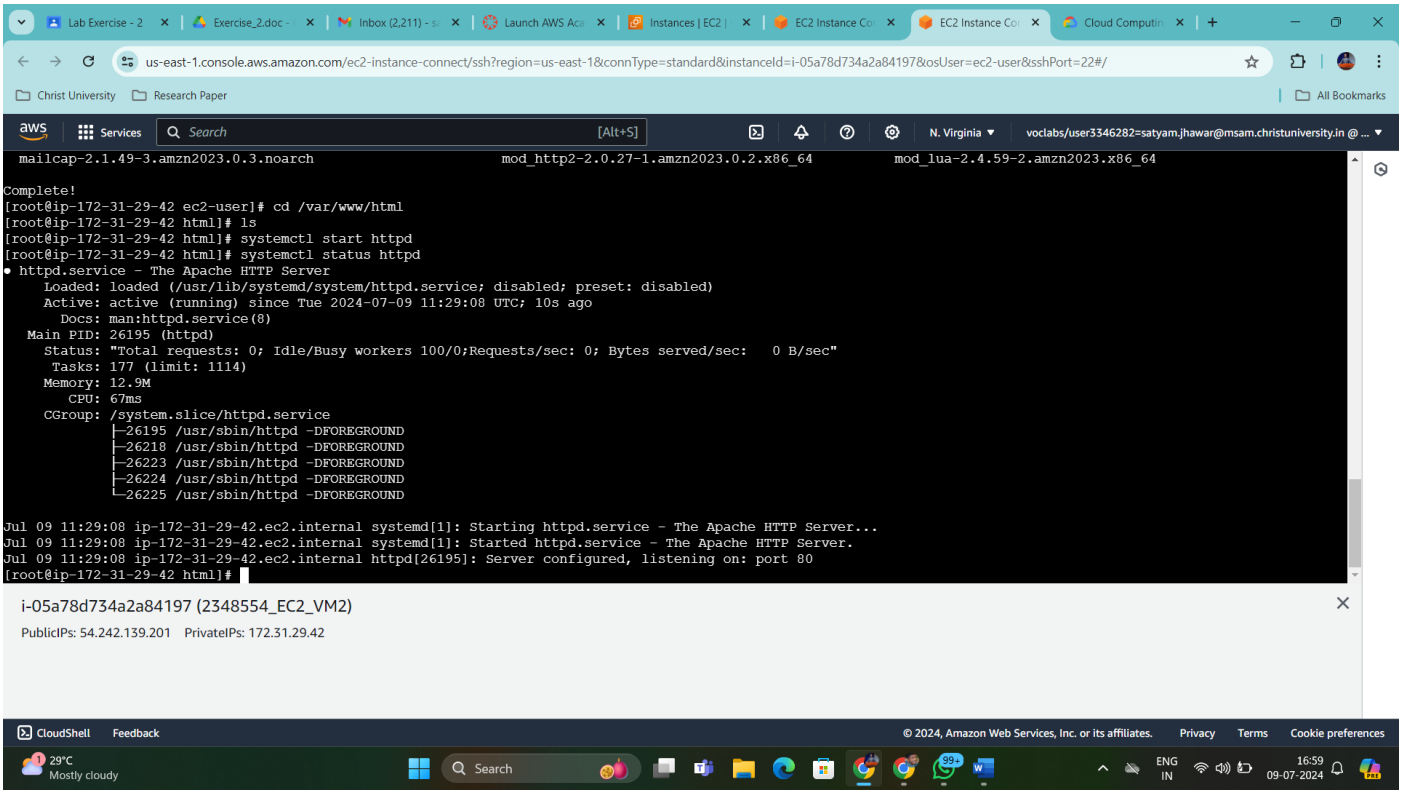

Figure 9: Running Apache Server on Instance 2

vi) Cd/var/www/html

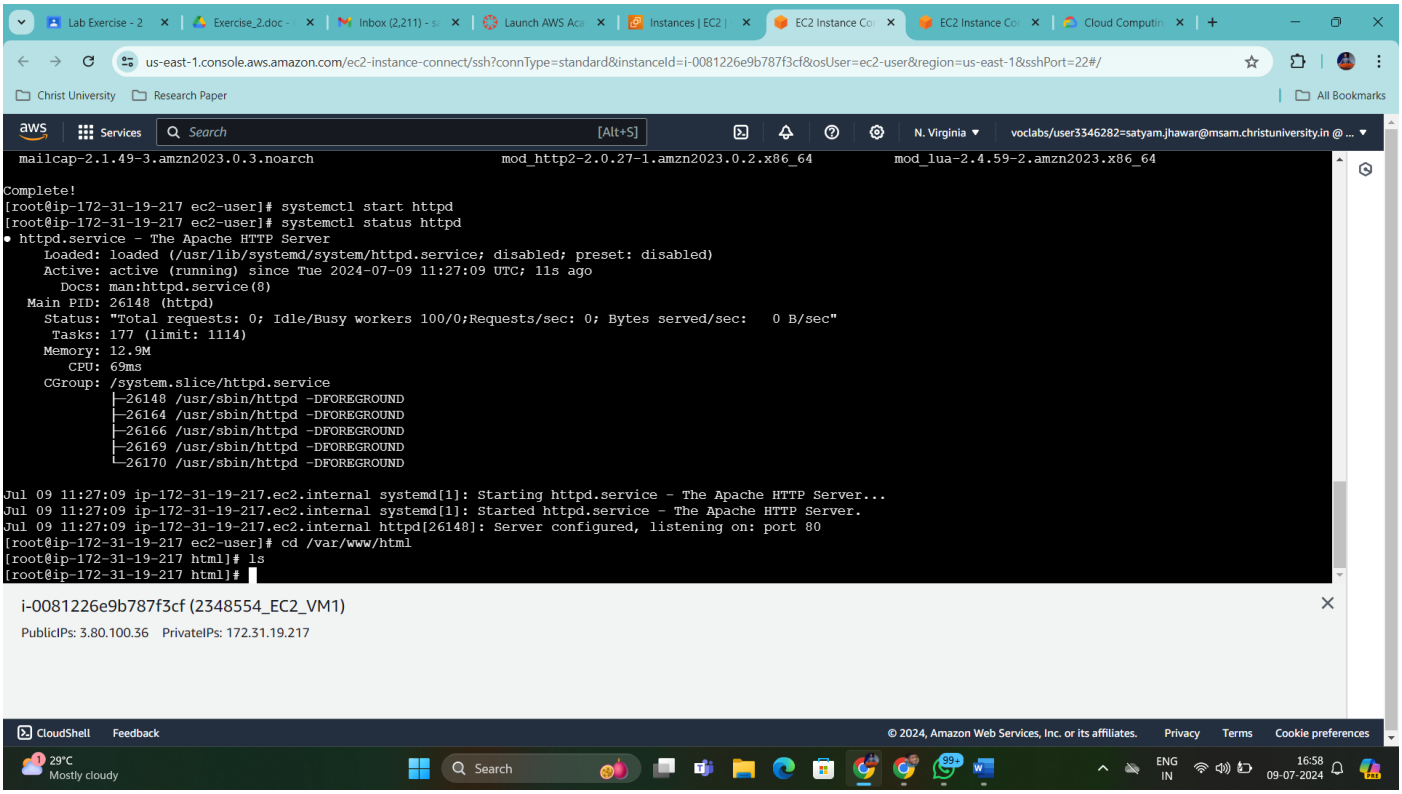

Figure 10: Changing to html directory on instance 1

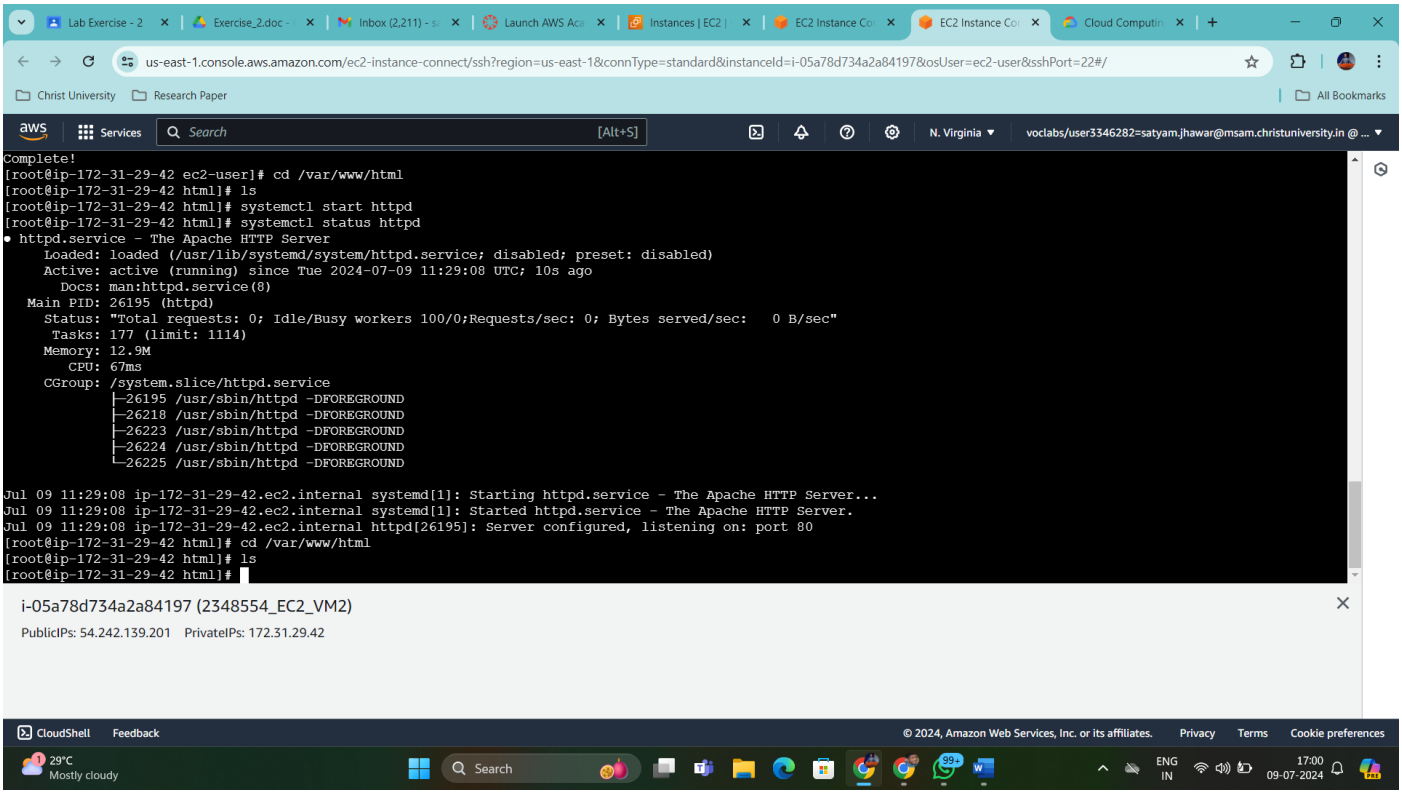

Figure 11: changing to html directory in instance 2

vii) Vim index.html

a. For Instance 1

```
<html>

<body>

<h1> My name is Satyam Jhawar </h1>

</body>

</html>
```

b. For instance 2

```
<html>

<body>

<h1> I Love cloud </h1>

</body>

</html>
```

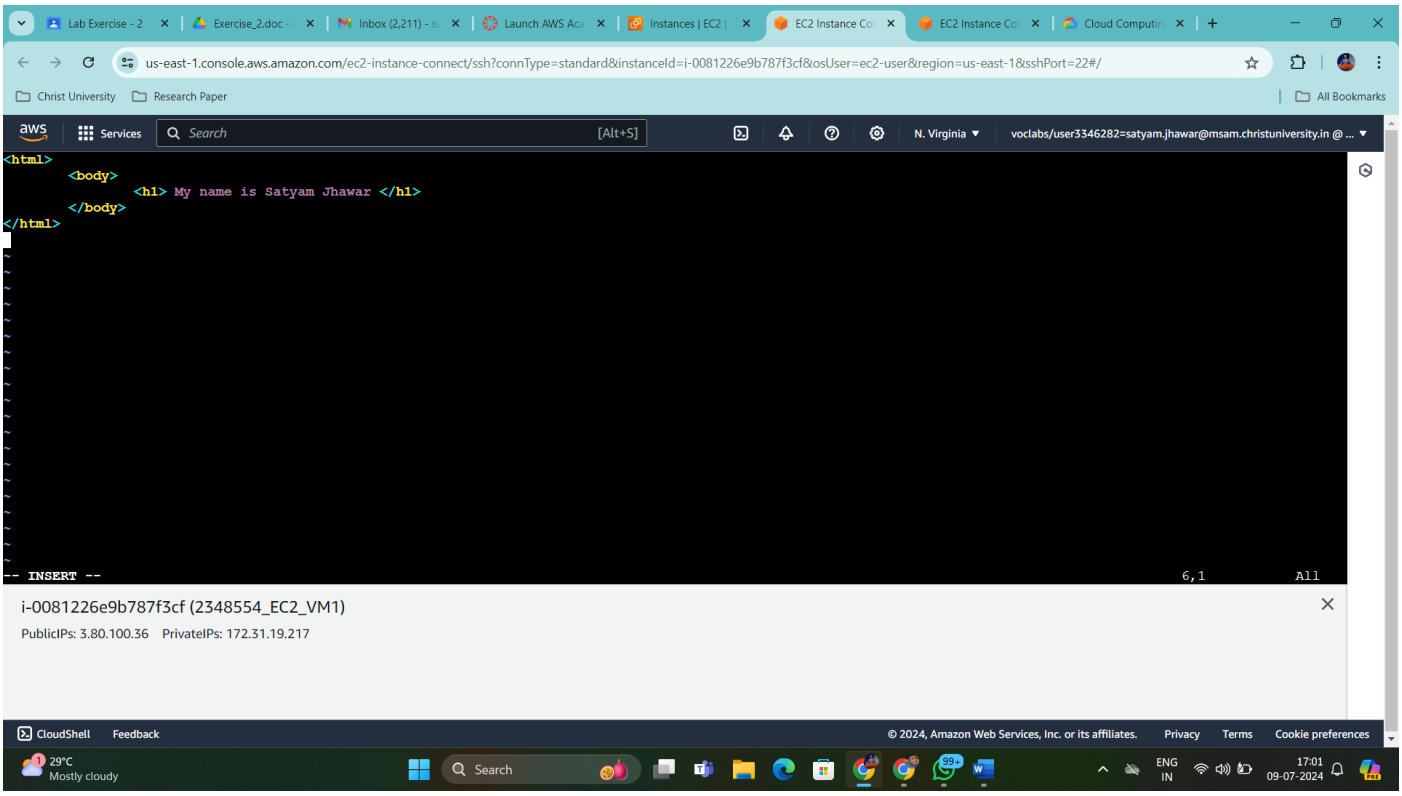

Figure 12: Creating a index.html in instance 1

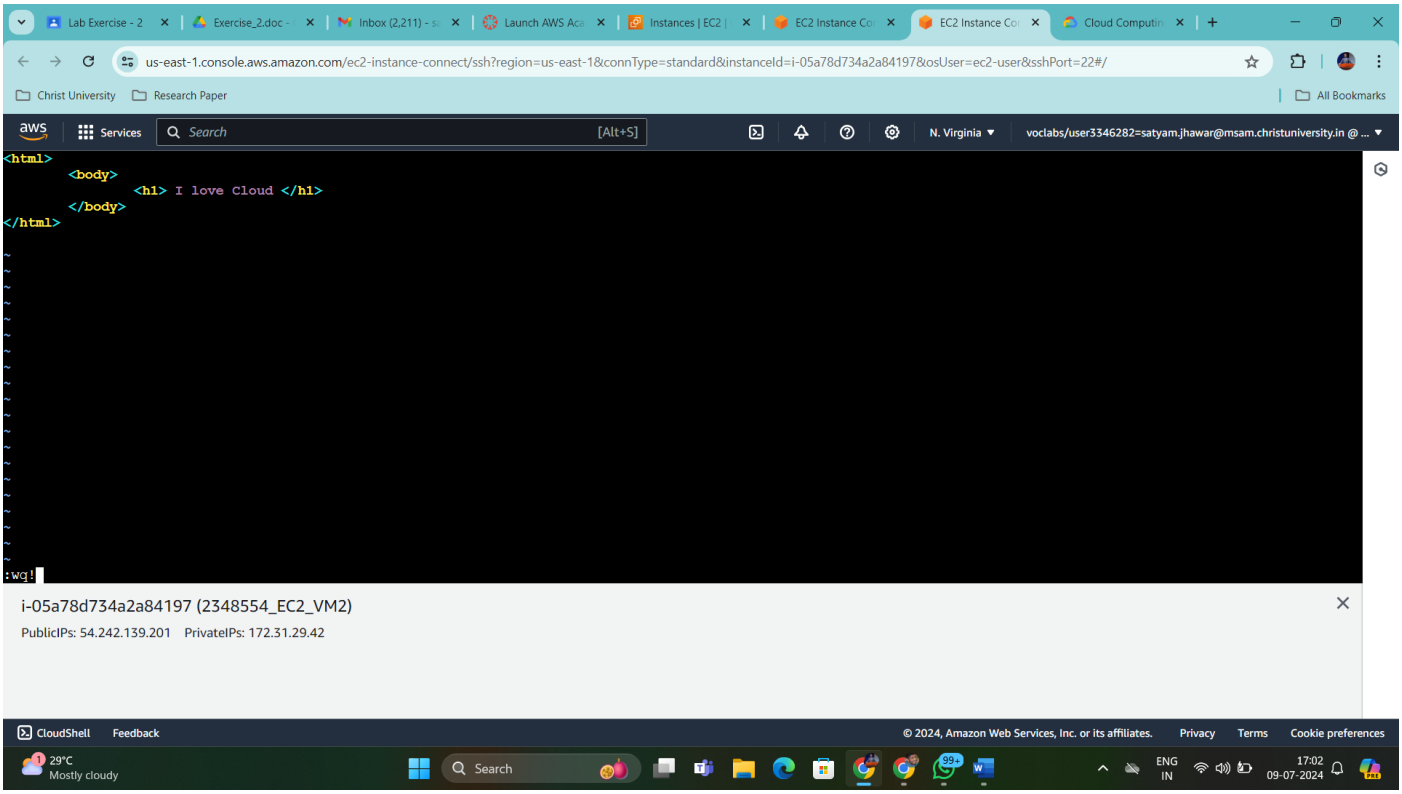

Figure 13: Creating index.html in instance 2

viii) Systemctl start httpd

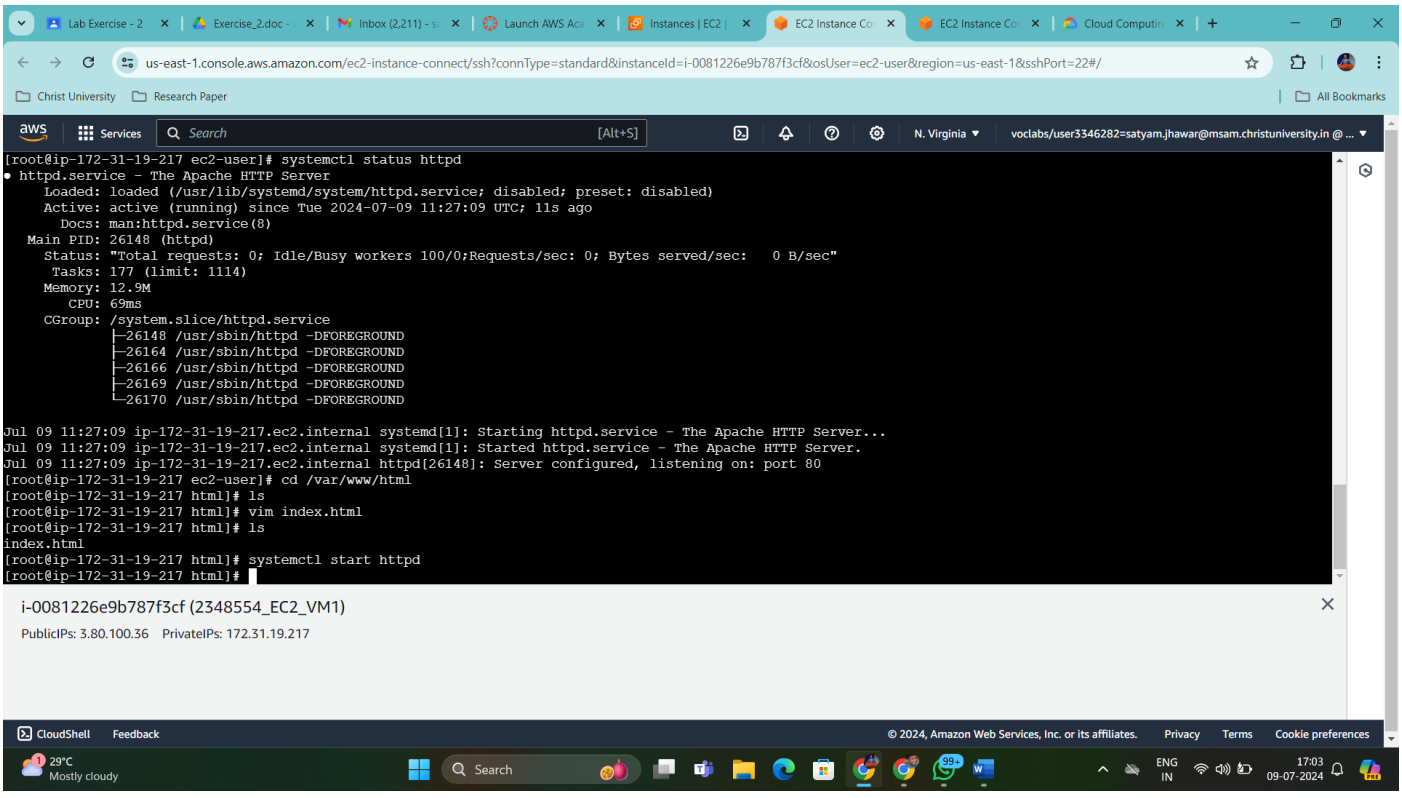

Figure 14: Run index.html instance 1

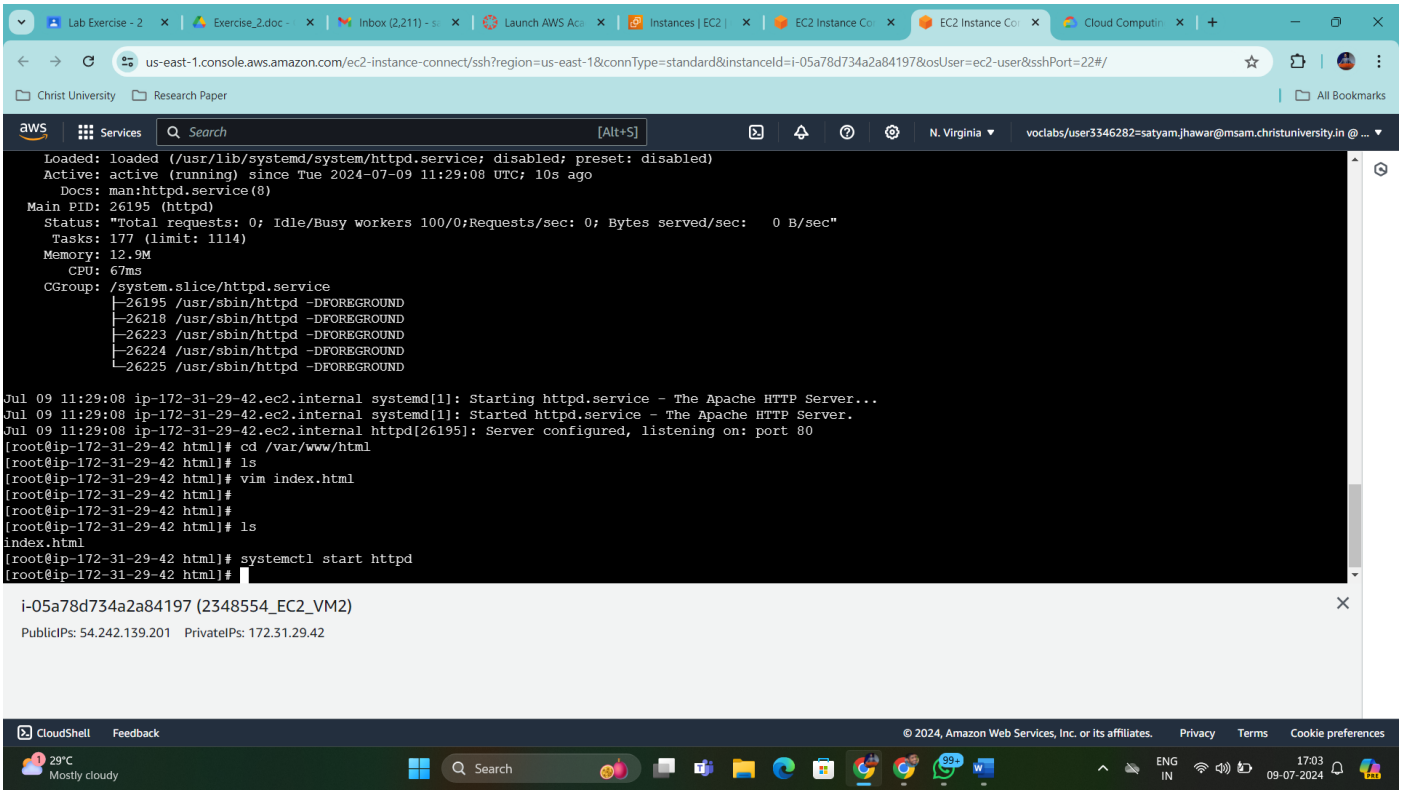

Figure 15: Ru-n index.html in instance 2

Step 4: Exit the Cloudshell of both the instances and navigate back to EC2

Step 5: Copy the public IPv4DNS address of both the instances and paste it in anew tab and verify the html file is running or not.

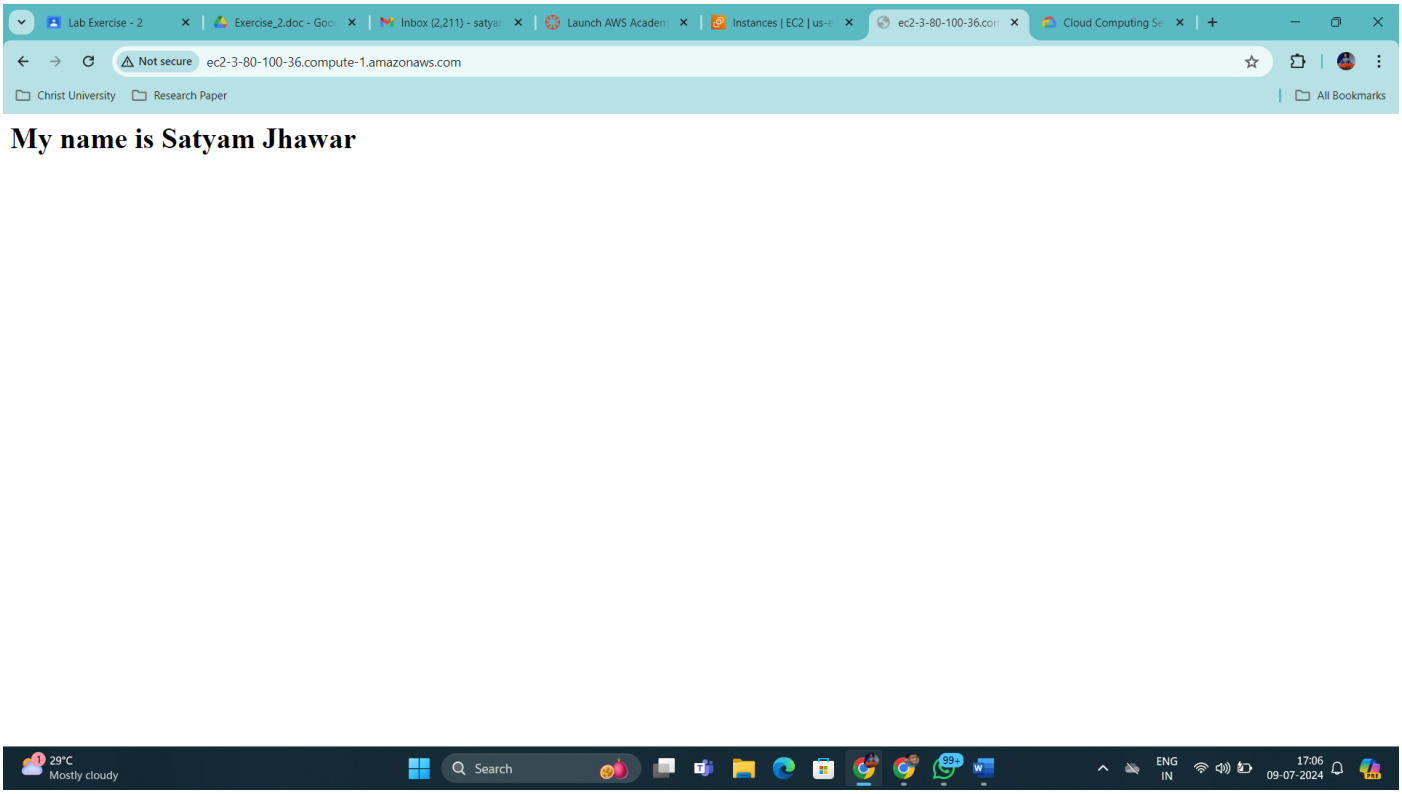

Figure 16: Instance 1 Output

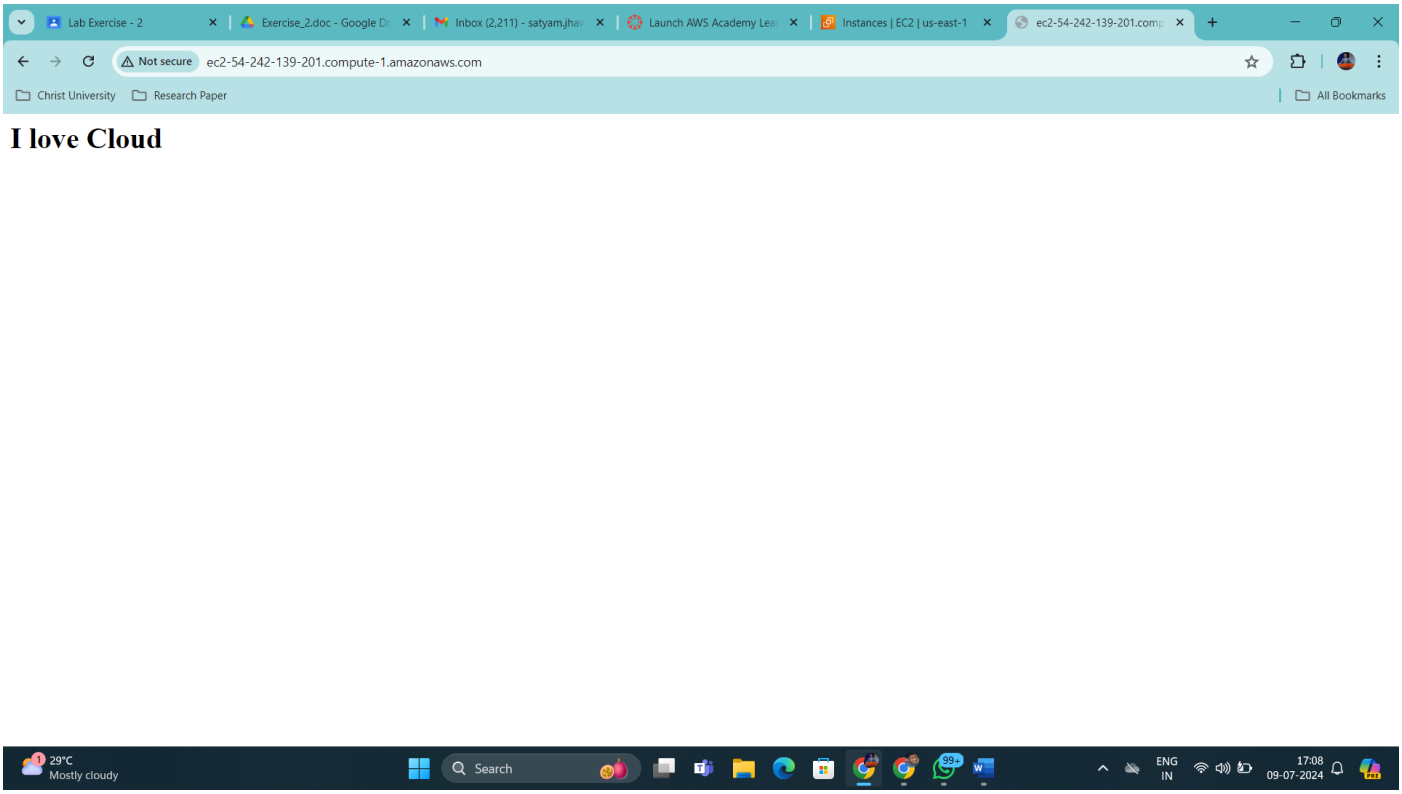

Figure 17: Instance 2 Output

Step 6: Navigate to AWS search panel and search for EC2 Load Balancer

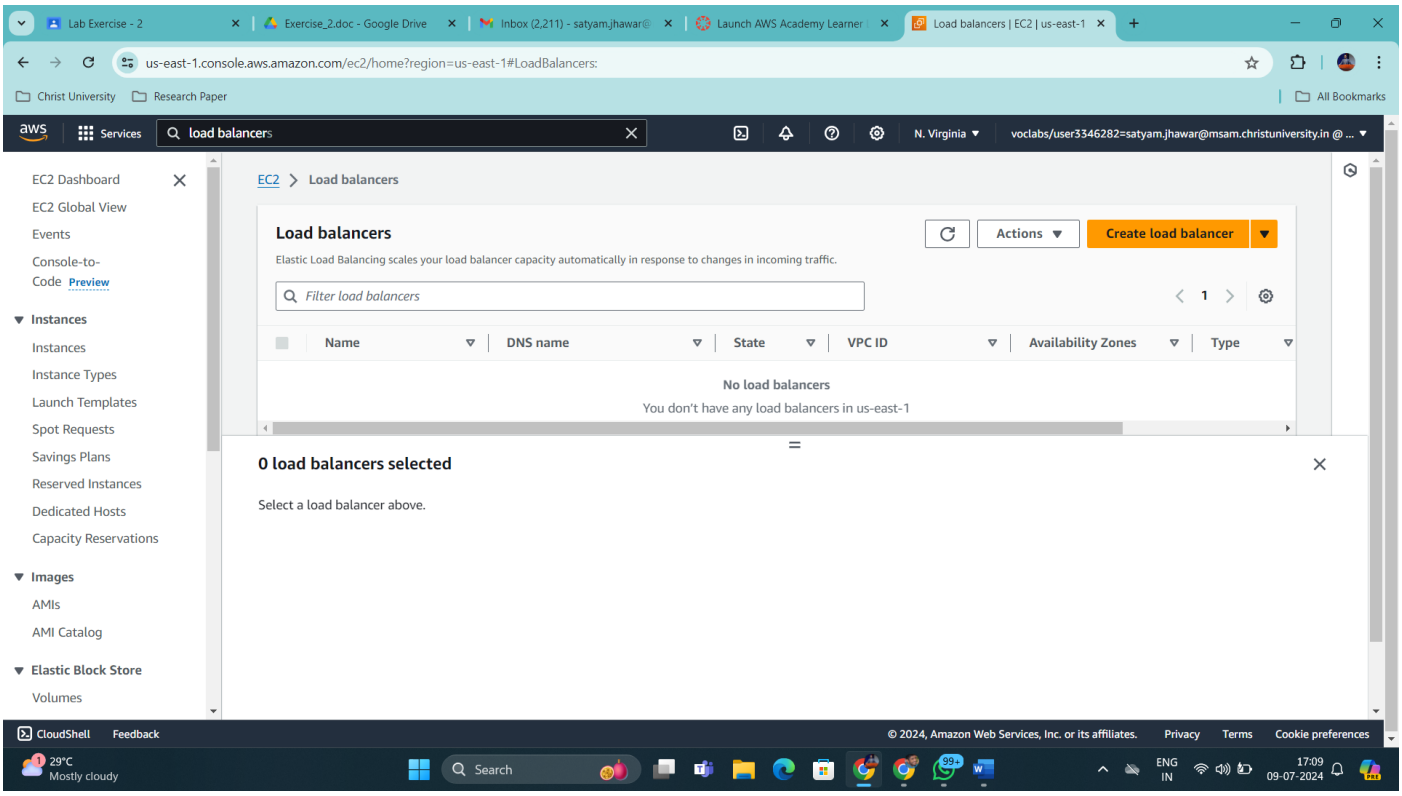

Figure 18: Load Balancer Dashboard

Step 7: Click on Create Load Balancer and select Application Load Balancer

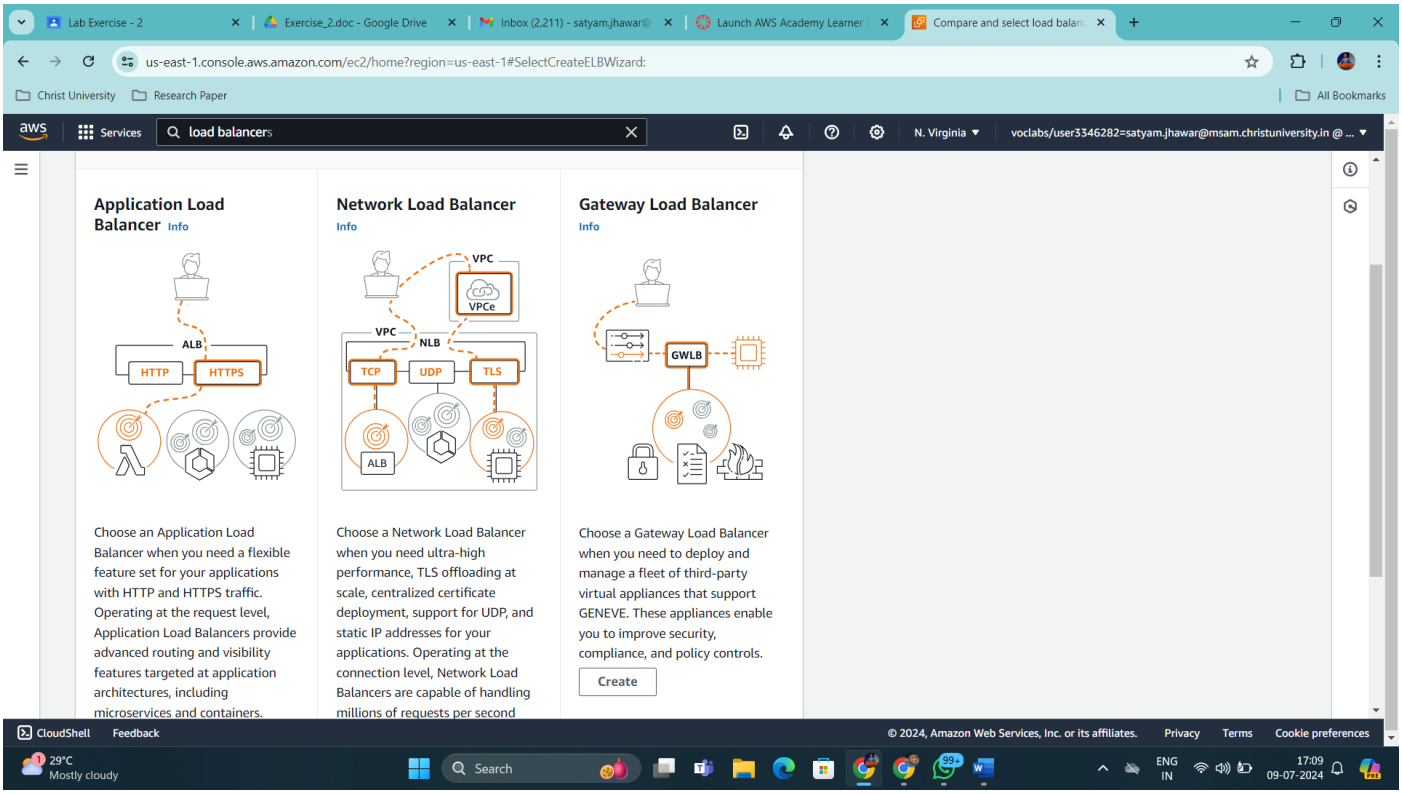

Figure 19: Create Load Balancer dashboard

Step 8: Application Load Balancer Configuration

i) Load Balancer Name: 2348554LB
ii) Scheme: Internet-facing (Default)
iii) Load Balancer IP address type: IPv4 (Default)
iv) Network Mapping: Select the default VPC and make sure to select the availability zone in which your instance is running on. In my case it is “us-east-1d”. We will have to select two availability zones, so select any other of your choice. Leave the subnet by default.
v) Security Group: Select the same security group of your launched instances. In my case it is “launch-wizard-1”.
vi) Listeners and Routing: Click on create a target group
    a. Target Group Configurations
    b. Target Group Name: 2348554TG
    c. IP address Type: IPv4 (Default)
    d. Protocol Version HTTP1 (Default)

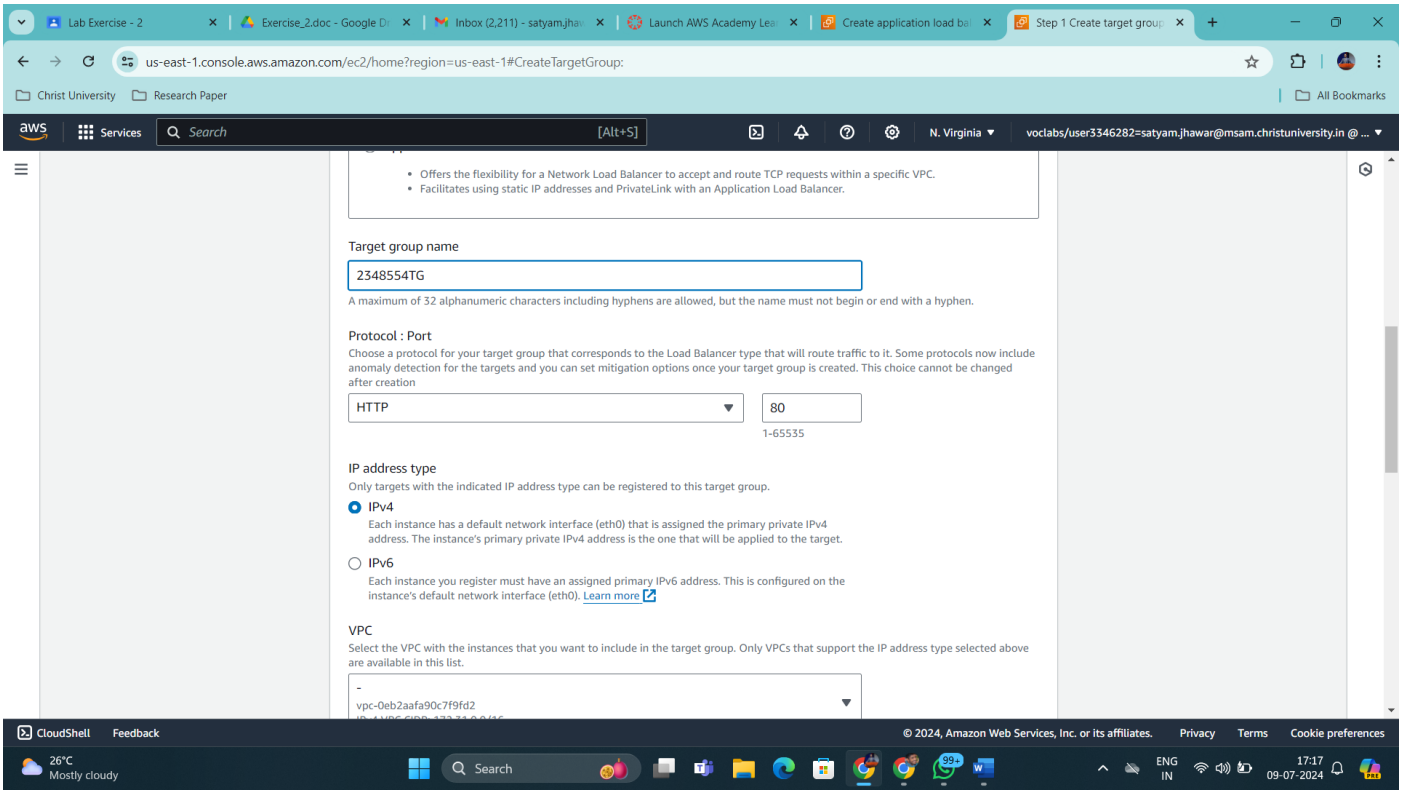

Figure 20: Target Group dashboard

e. Click on Next
f. Select both the available instances and click on include as pending below

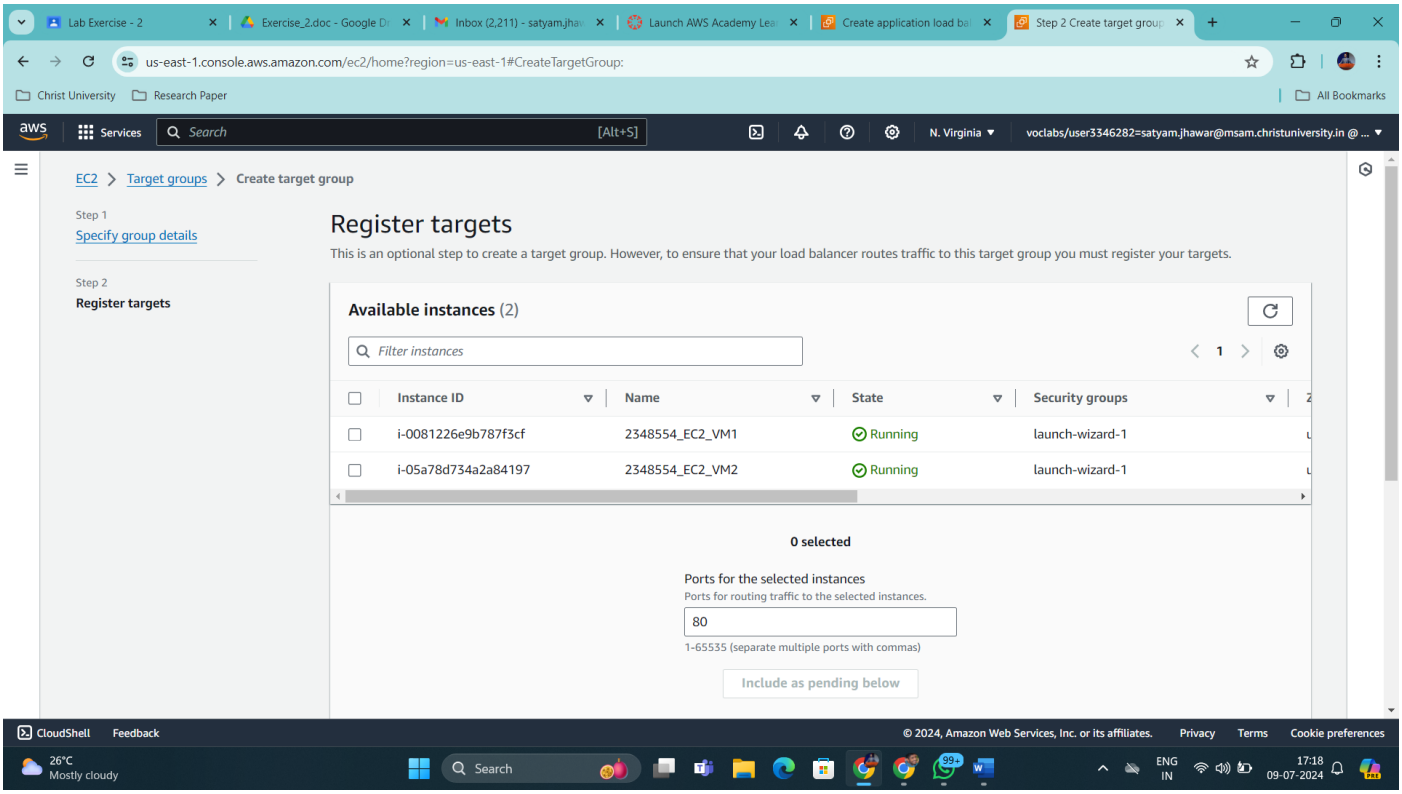

Figure 21: Selection of Instances

g. Click on Create Target Group

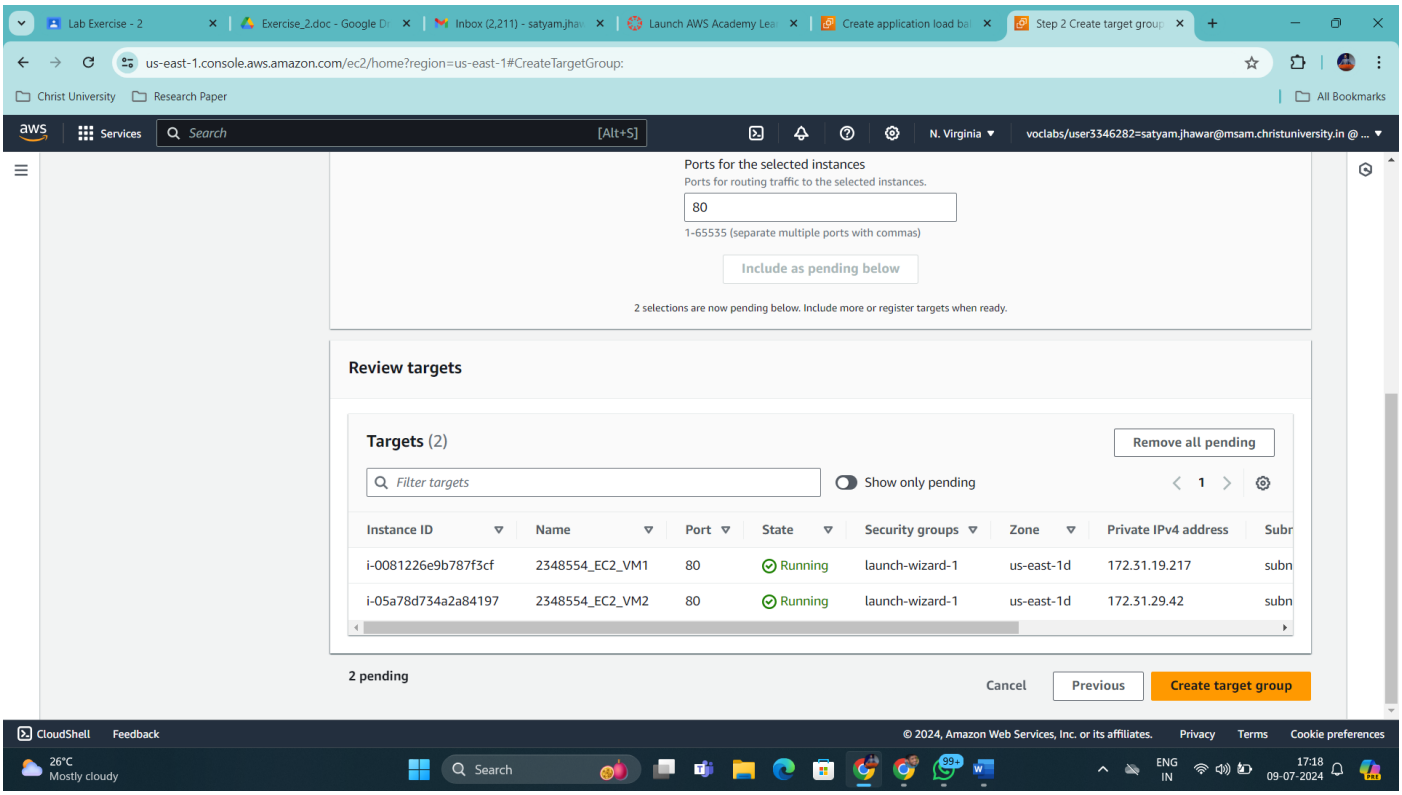

Figure 22: Target Group Creation

vii) Navigate back to load balancer and select the created target group

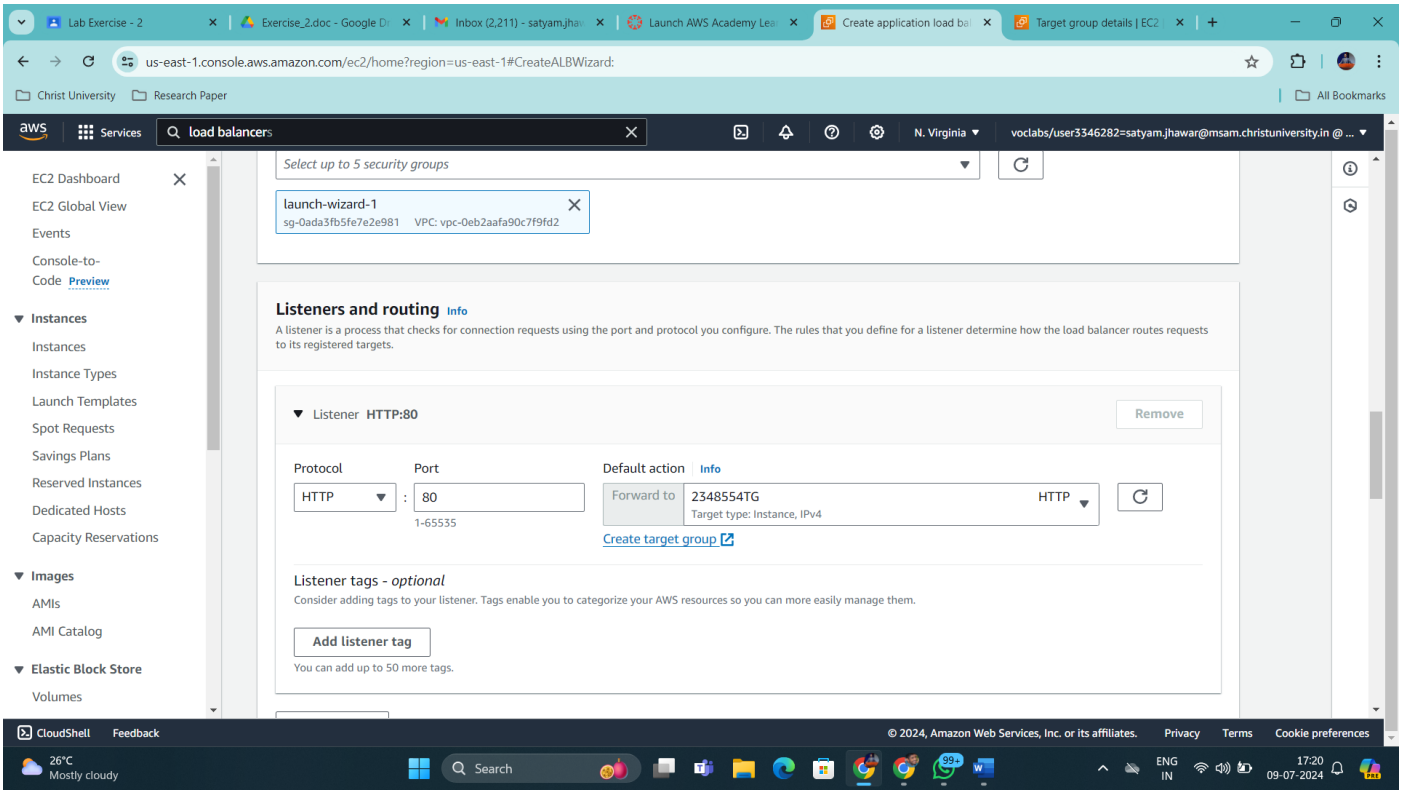

Figure 23: Select created Target Group

viii) Click on Create Load Balancer

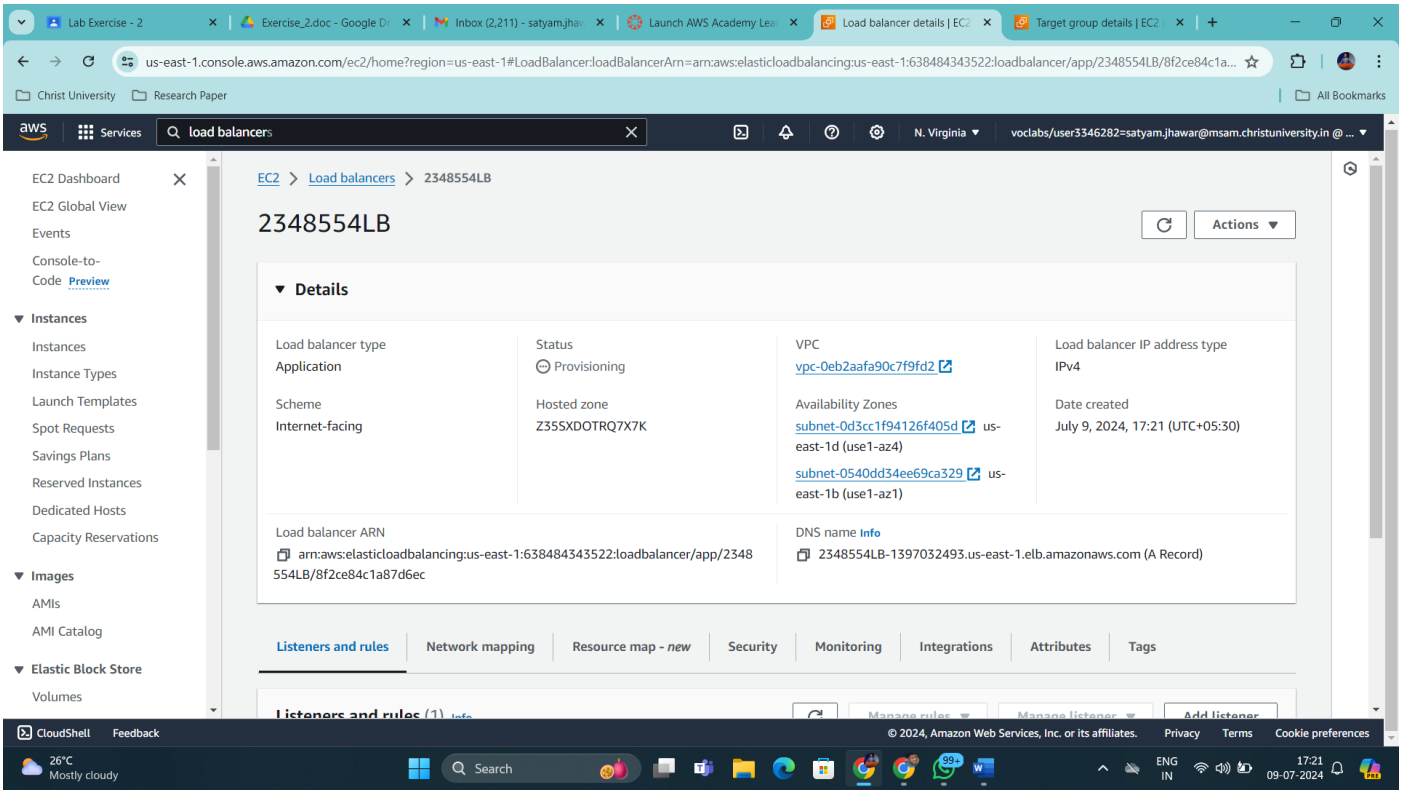

Figure 24: Load Balancer successfully created

Step 9: Wait for the Load Balancer Status to be active. Might take 2-5 minutes.

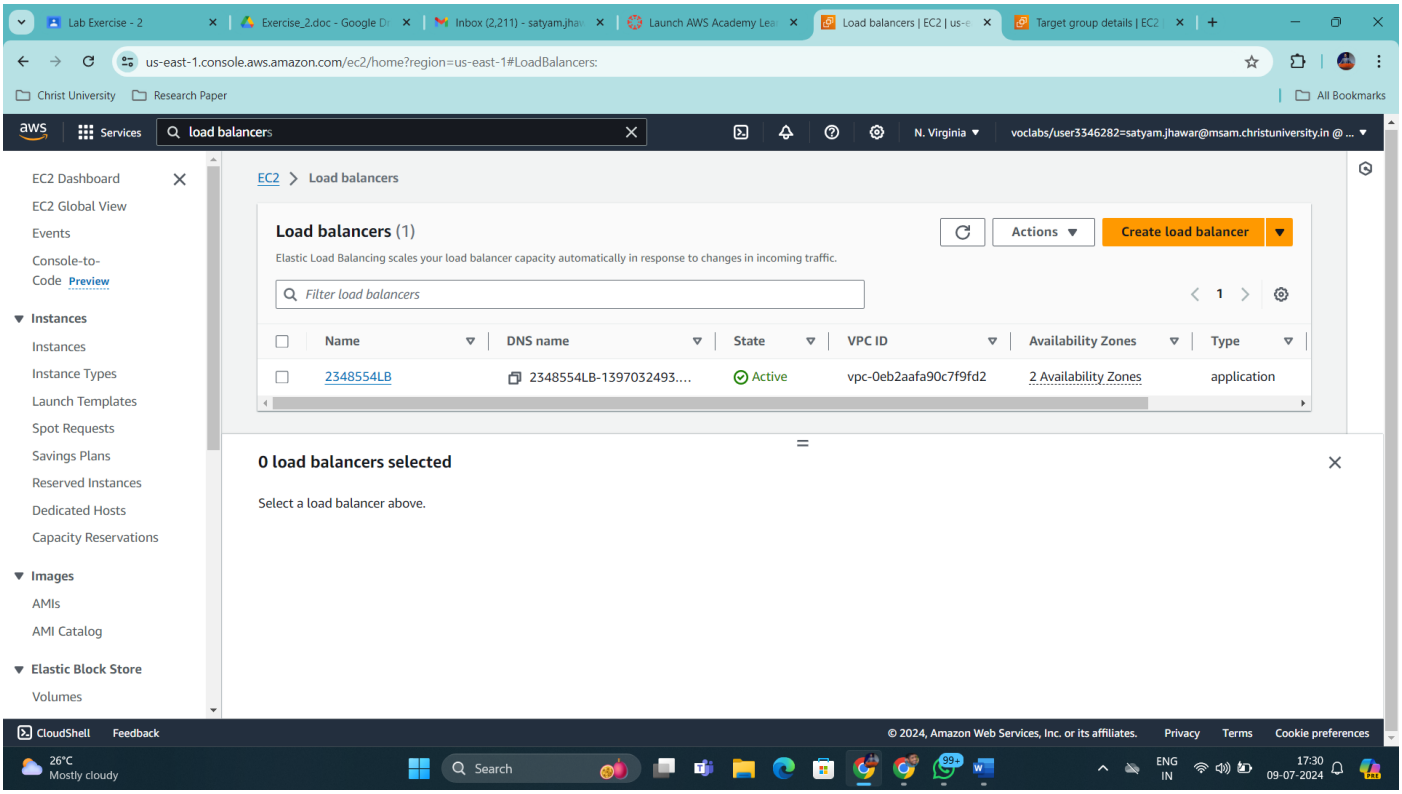

Figure 25: Load Balancer to active Stage

Step 10: Navigate back to Target Group and check the health status of both the instances, it should so “healthy”.

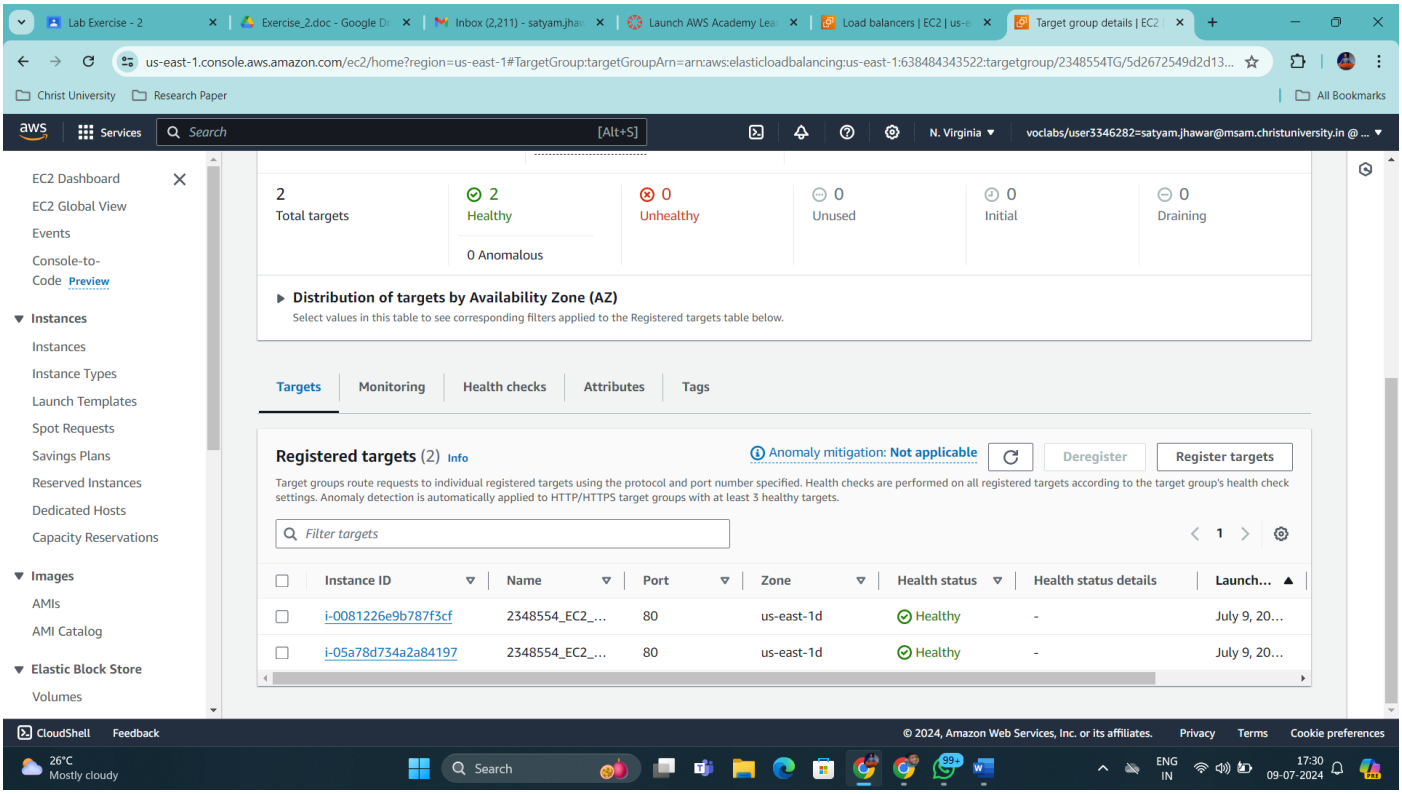

Figure 26: Health status of both the instances

Step 11: Copy the Load Balancer DNS name and paste it on a browser. We will see the index.html of first instance. On refreshing we will see the output of index.html of second instance.

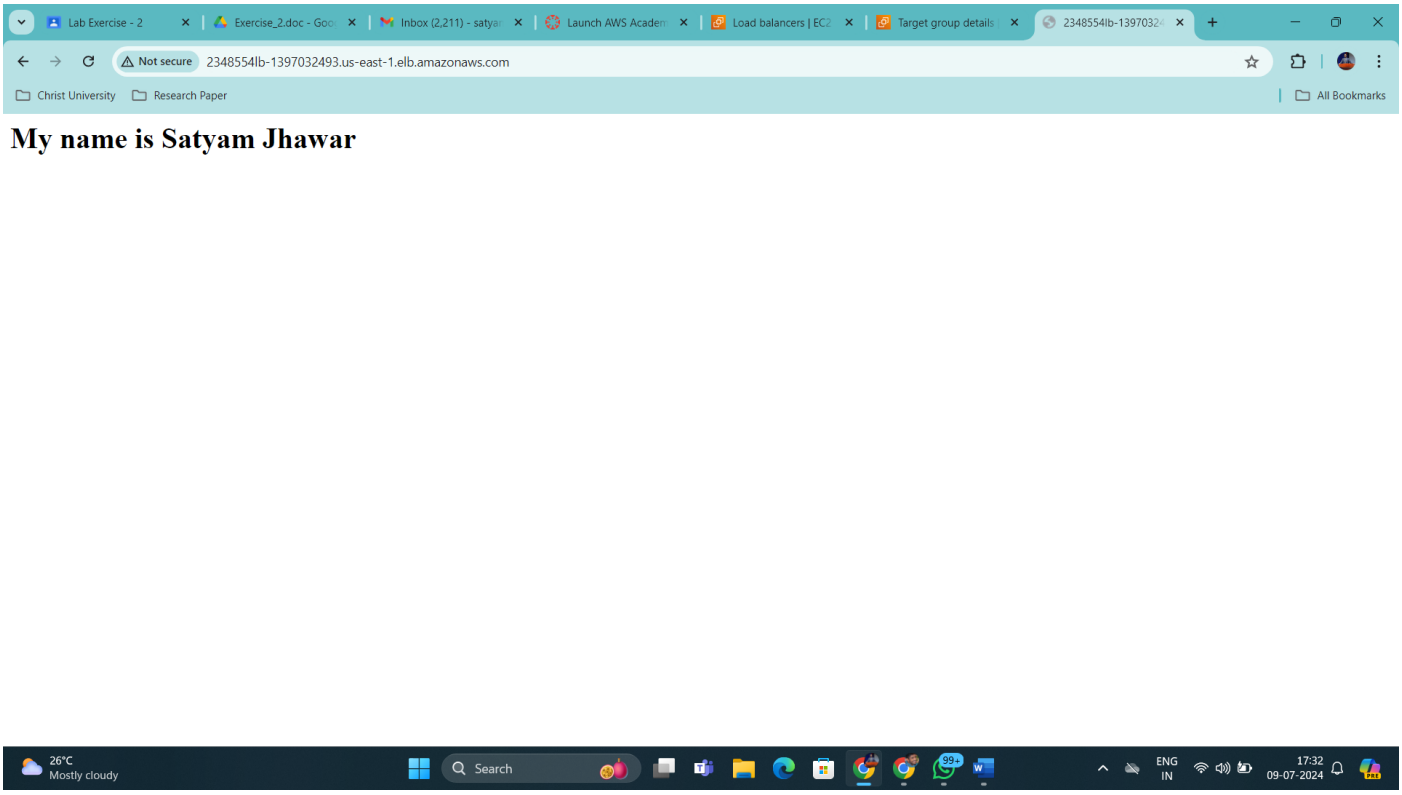

Figure 27: Load Balancer Output

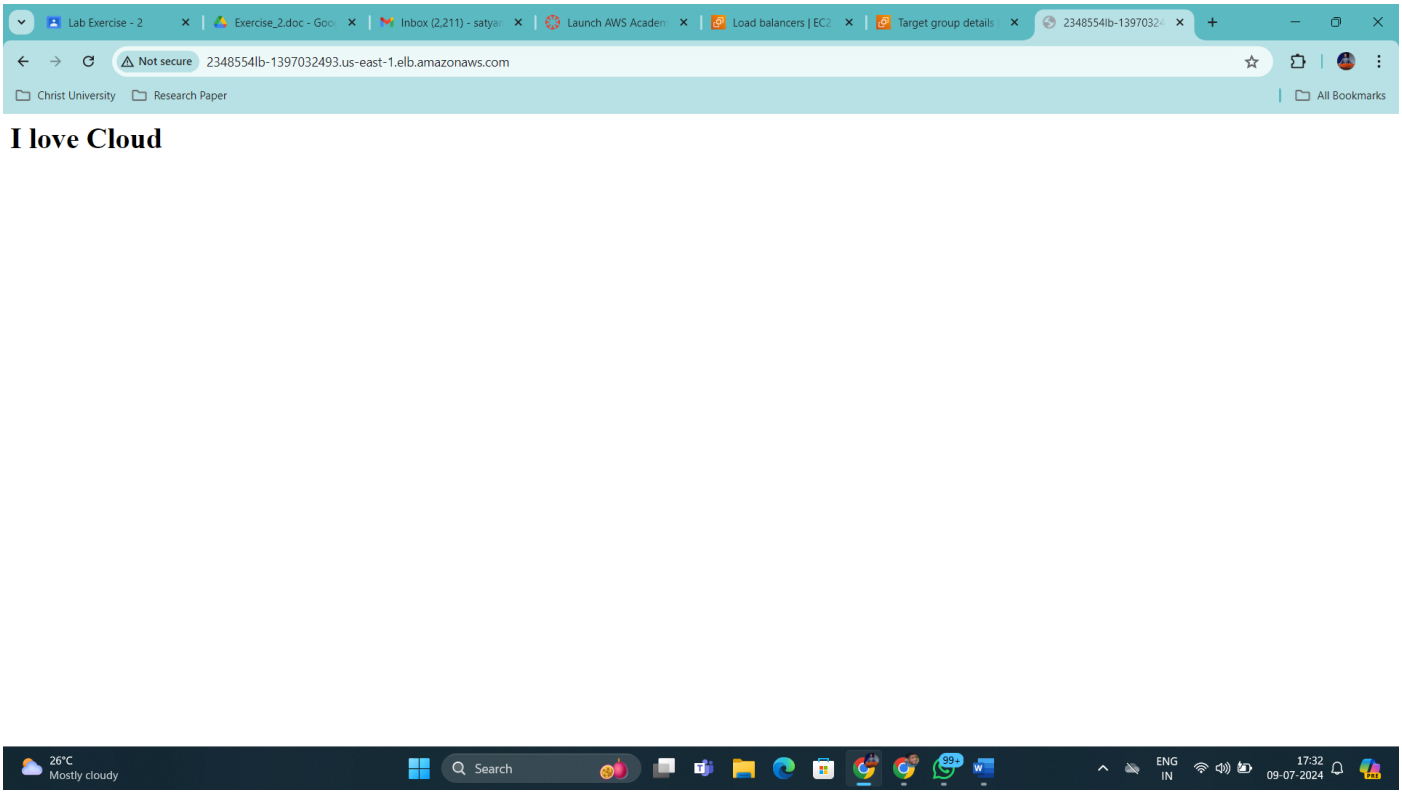

Figure 28: Load Balancer Output

Navigate to Load Balancer and check the monitoring requests graph and we will find a surge in the graph.

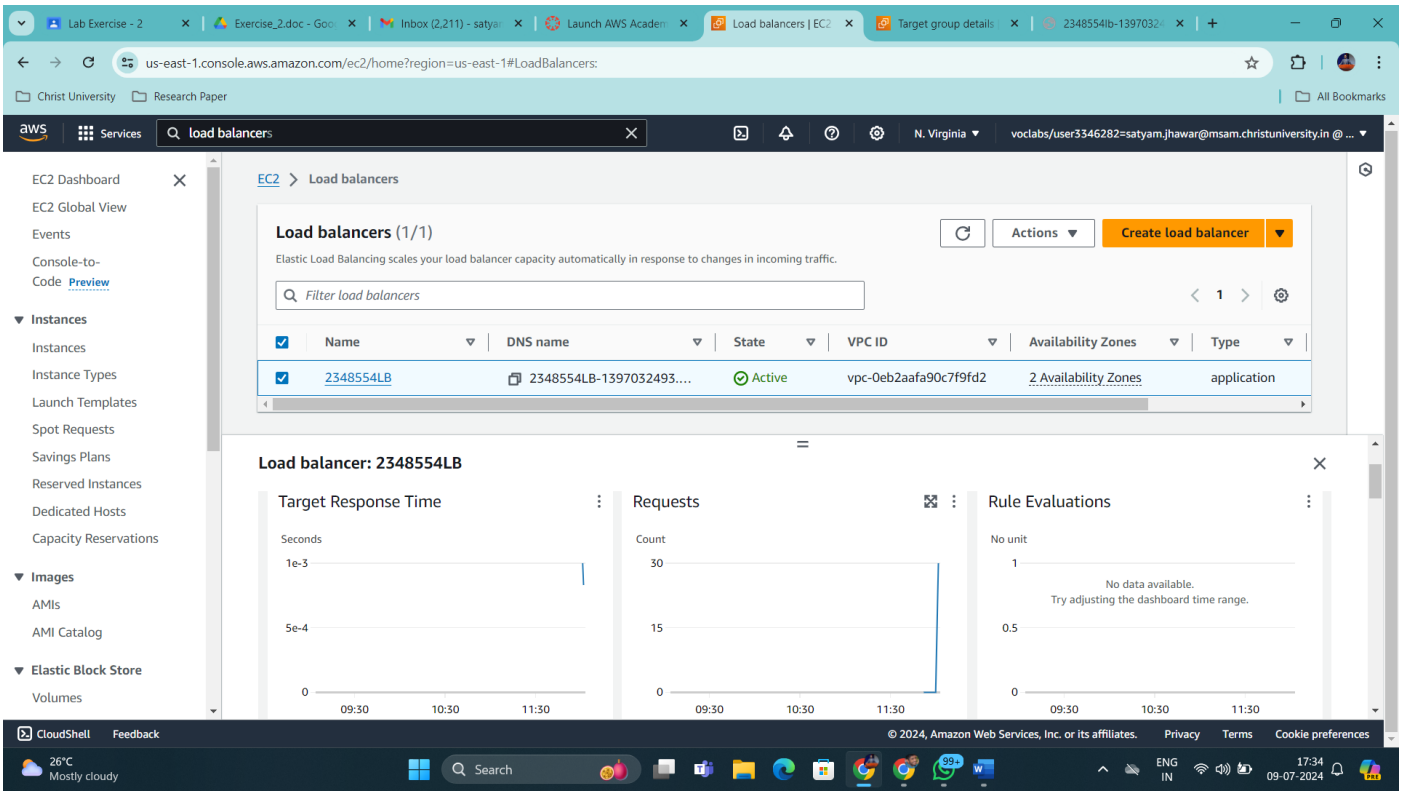

Figure 29: Load Balancer Monitoring Graphs

Navigate to EC2 and select both the instances and check the monitoring graphs.

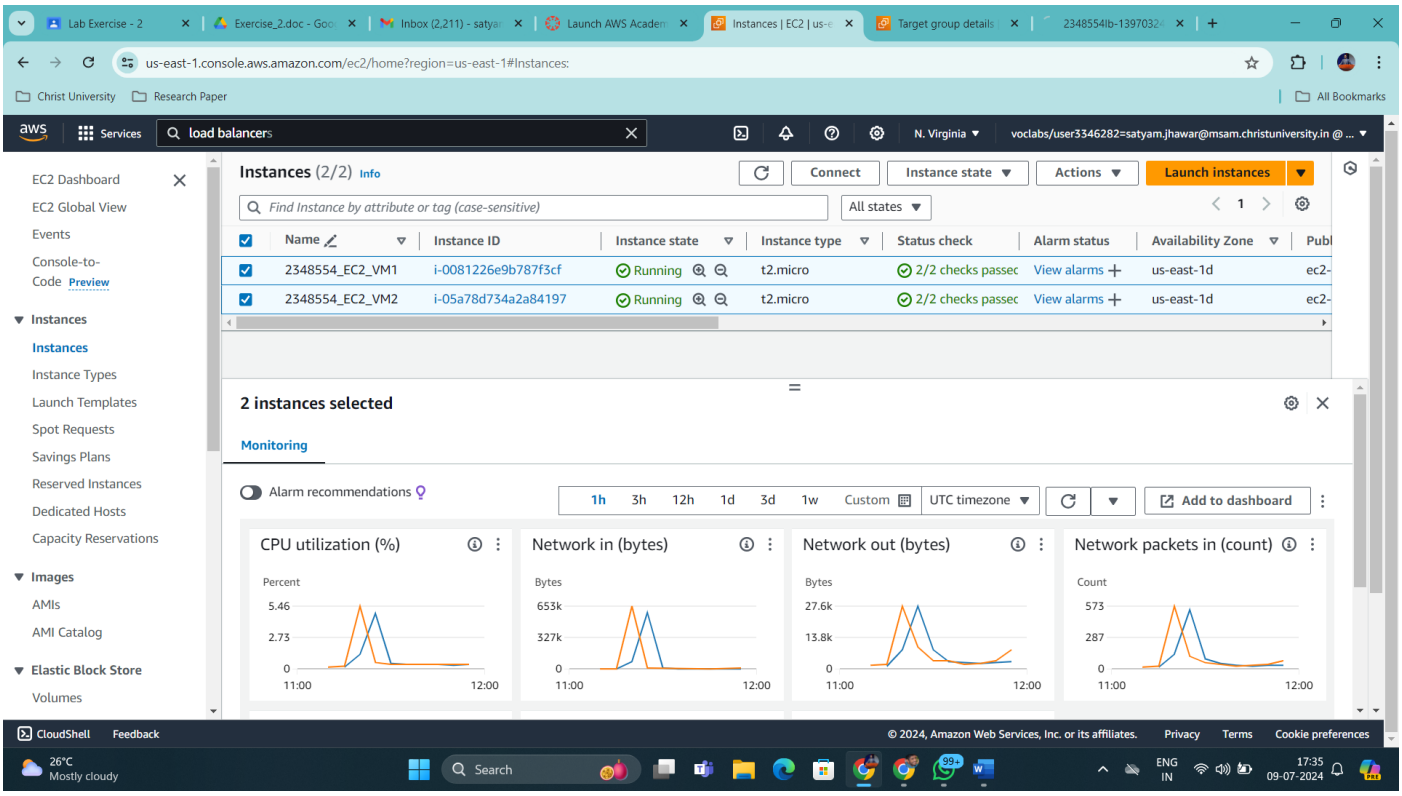

Figure 30: EC2 Monitoring Graph

Delete every services step by step to avoid costs