

Roll No.: 20BCE204

Subject: Cloud Computing

Practical: 3

Aim:

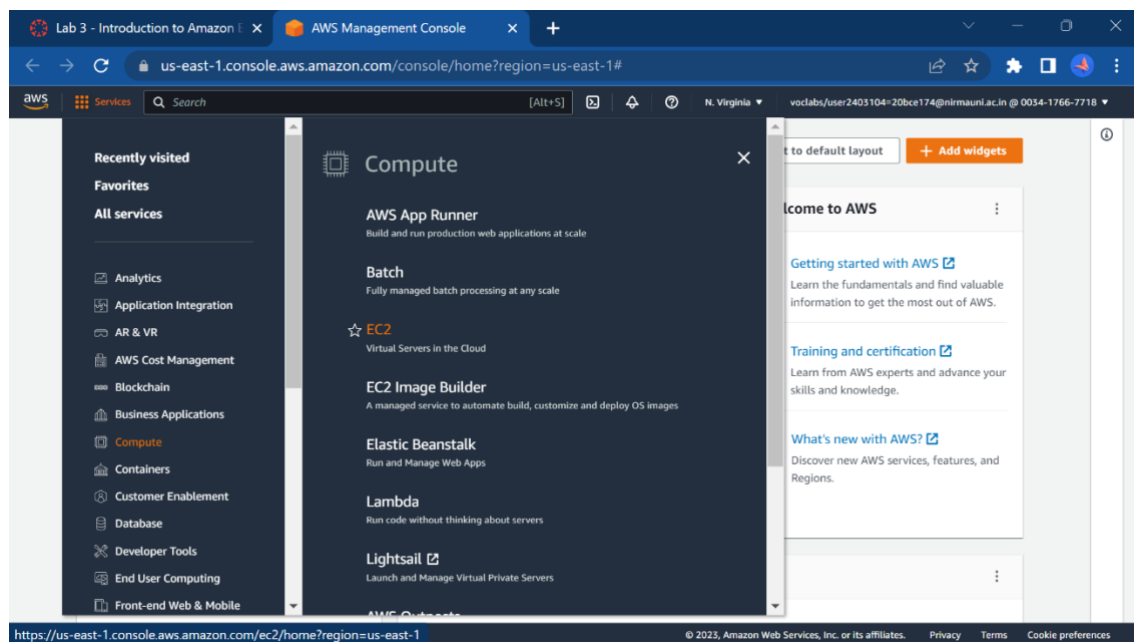
Working with an IaaS Cloud Computing: Using AWS (Amazon Web Services) to understating the following concept. Creating the instances, do remote login and hosting the web page

Amazon Elastic Compute Cloud (Amazon EC2) is a web service that provides resizable compute capacity in the cloud. It is designed to make web-scale cloud computing easier for developers.

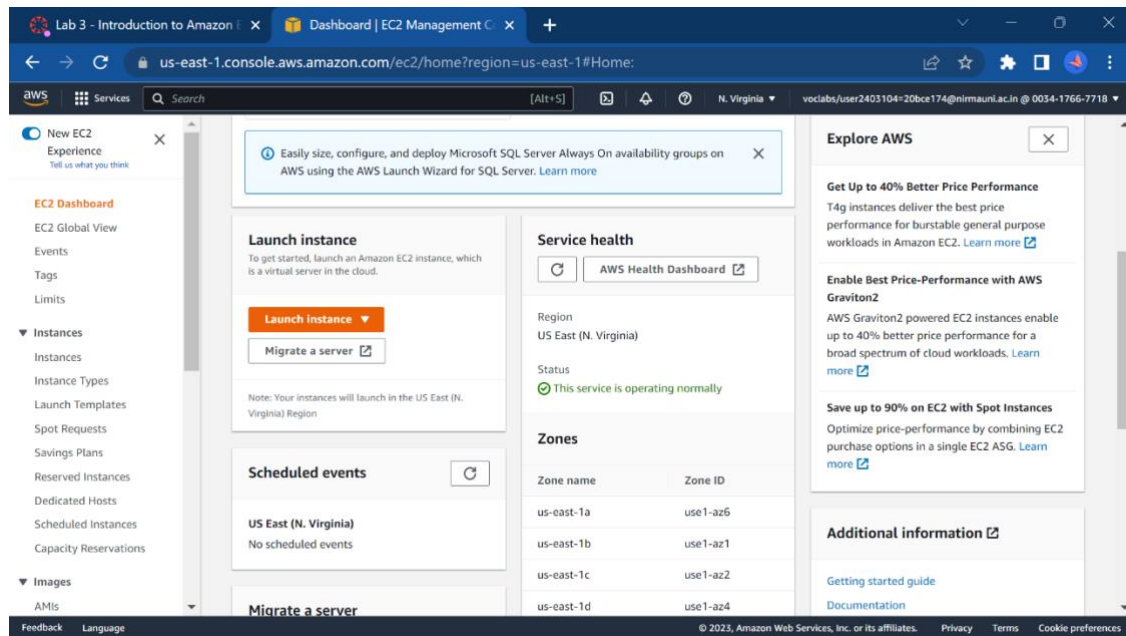
Amazon EC2's simple web service interface allows you to obtain and configure capacity with minimal friction. It provides you with complete control of your computing resources and lets you run on Amazon's proven computing environment

Now, let's the lab

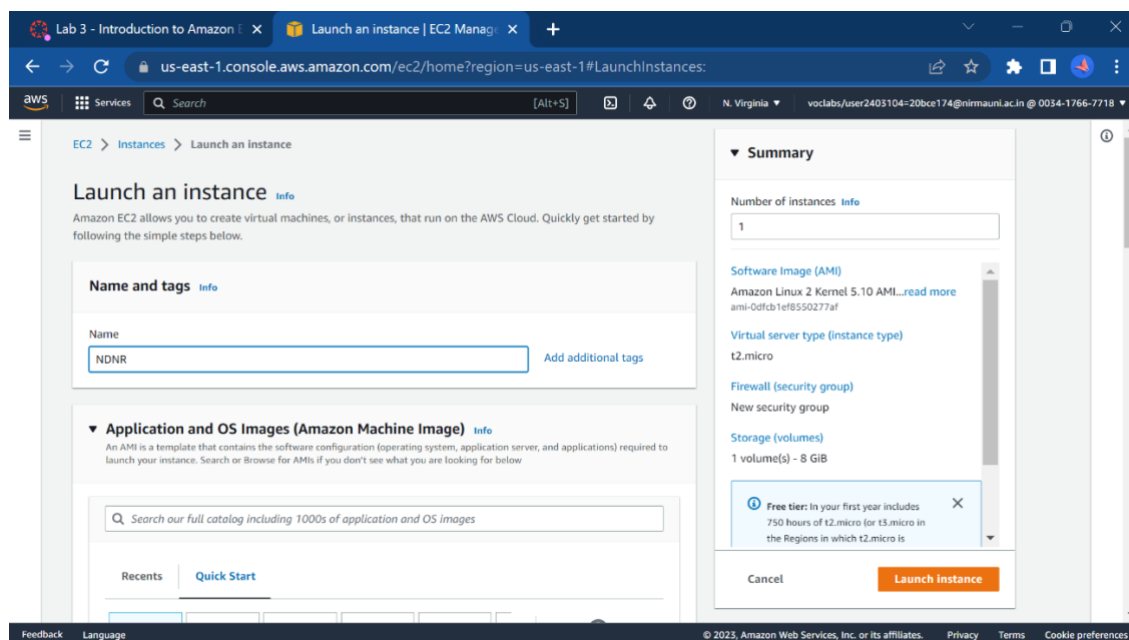
In the AWS console, go to EC2 (Services → Compute → EC2)



You will see the Dashboard of EC2 as shown below:

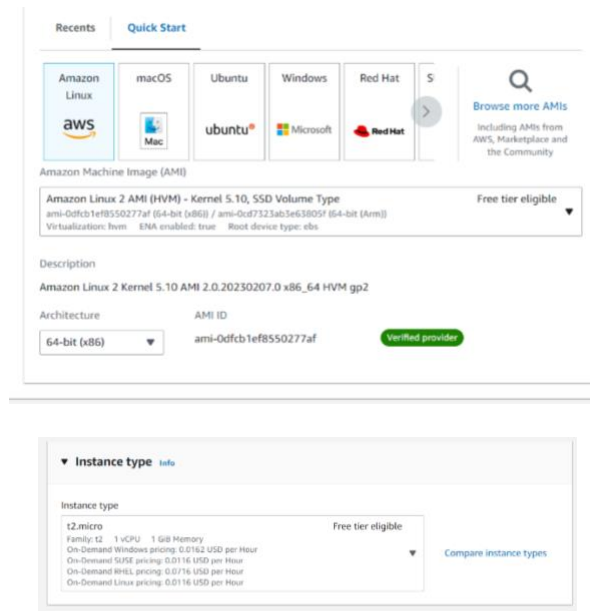


Now we will launch a new Instance of EC2 by click on *Launch Instance* button.

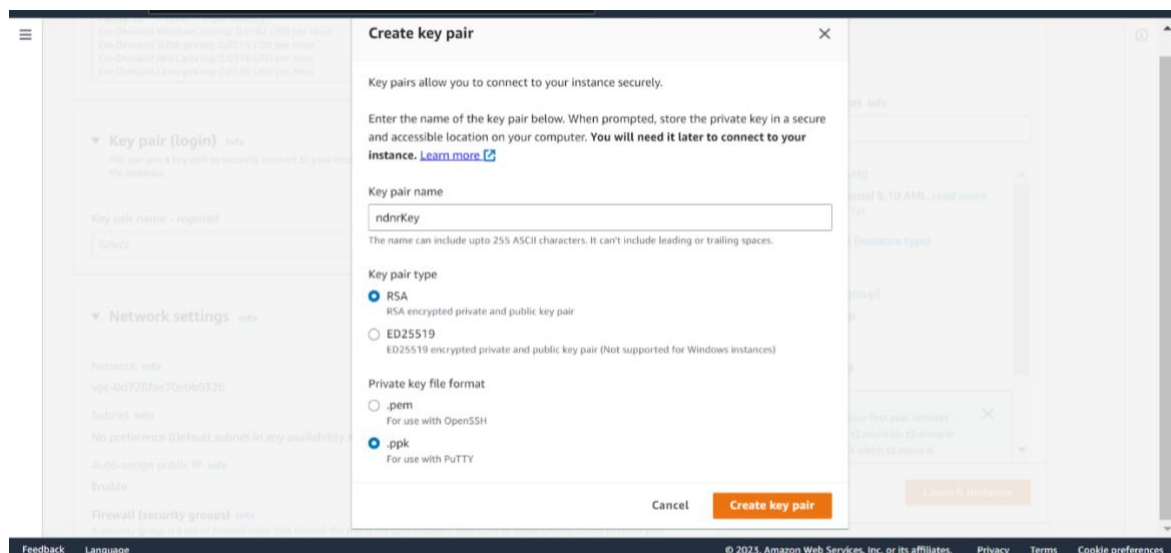


Provide the name of the instance. In our case we have given name of instance as NDNR.

Now select the configuration of your EC2 instance like Operating system (Amazon Linux), instance type (t2.mirco)



In key Pair login, we will create our new key by clicking on Create new Key Pair. To Create new key pair, we have to mention the name of the key, key pair type, and Private key format.



On clicking of Create Key Pair, it will select that click and will download a file of name KeyPairName.ppk or .pem as mention in private key file format.

▼ **Configure storage** [Info](#) Advanced

1x 8 GiB gp2 ▼ Root volume (Not encrypted)

Free tier eligible customers can get up to 30 GB of EBS General Purpose (SSD) or Magnetic storage X

Add new volume

0 x File systems Edit

In advance setting, enable the termination protection feature.

Termination protection [Info](#)

Enable ▼

In user data, enter the below code.

User data - optional [Info](#)

Enter user data in the field.

```
#!/bin/bash
yum -y install httpd
systemctl enable httpd
systemctl start httpd
echo '<html><h1>Hello From Your Web Server!</h1></html>' >
/var/www/html/index.html
```

☐ User data has already been base64 encoded

This code will run when we start our instance. This code will download the apache server for us and will create a file call *index.html* inside */var/www/html*.

Now click on the **Launch Instance** button

Success

Successfully initiated launch of instance (i-0d1389c86be3df6cc)

► Launch log

Now you will be able to see your instance in the *instances page* available in left navigation bar menu.

Now opening the instance, we will be able to see all the details of the instance likes its public IP, private IP, public IP DNS and various other details of instance.

EC2 > Instances > i-0d1389c86be3df6cc

Instance summary for i-0d1389c86be3df6cc (NDNR) [Info](#)

Updated less than a minute ago

[Refresh](#) [Connect](#) [Instance state ▼](#) [Actions ▼](#)

Instance ID i-0d1389c86be3df6cc (NDNR)	Public IPv4 address 34.235.132.63 open address	Private IPv4 addresses 10.0.1.253
IPv6 address -	Instance state ● Running	Public IPv4 DNS ec2-34-235-132-63.compute-1.amazonaws.com open address
Hostname type IP name: ip-10-0-1-253.ec2.internal	Private IP DNS name (IPv4 only) ip-10-0-1-253.ec2.internal	
Answer private resource DNS name IPv4 (A)	Instance type t2.micro	Elastic IP addresses -
Auto-assigned IP address 34.235.132.63 [Public IP]	VPC ID vpc-081d0be5daf46a014 (Lab VPC)	AWS Compute Optimizer finding Opt-in to AWS Compute Optimizer for recommendations. Learn more
IAM Role -	Subnet ID subnet-025a9bdae3e11d2e7 (Public Subnet 1)	Auto Scaling Group name -

[Details](#) | [Security](#) | [Networking](#) | [Storage](#) | [Status checks](#) | [Monitoring](#) | [Tags](#)

When we go to Action → Monitor and troubleshoot → Get system log, there we will see that HTTP is already install by the User Data that we have mentioned at the time of launching our instance.

When we go to Action → Monitor and troubleshoot → Get instance screenshot.

This shows you what your Amazon EC2 instance console would look like if a screen were attached to it

Get instance screenshot [Info](#)

Instance screenshot [Refresh](#) [Download](#)

i-0d1389c86be3df6cc (NDNR) on 2023-02-23 at T09:17:49.605 +05:30

```

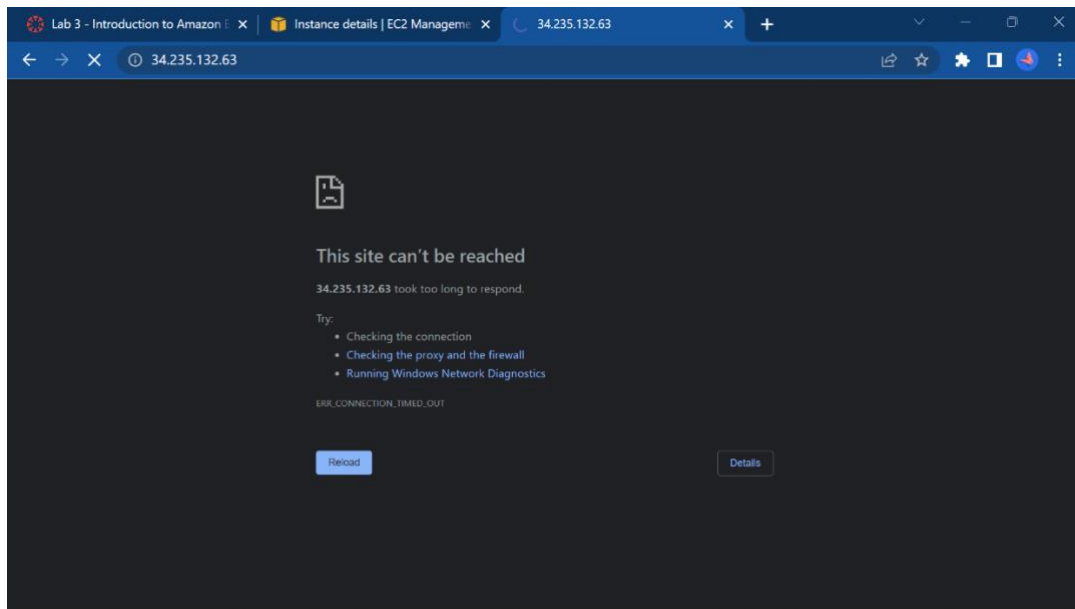
Amazon Linux 2
Kernel 5.10.165-143.735.amzn2.x86_64 on an x86_64

ip-10-0-1-253 login: [ 34.250541] xfs filesystem being remounted at /tmp supports timestamps until 2038 (0x7fffffff)
[ 34.270264] xfs filesystem being remounted at /var/tmp supports timestamps until 2038 (0x7fffffff)

```

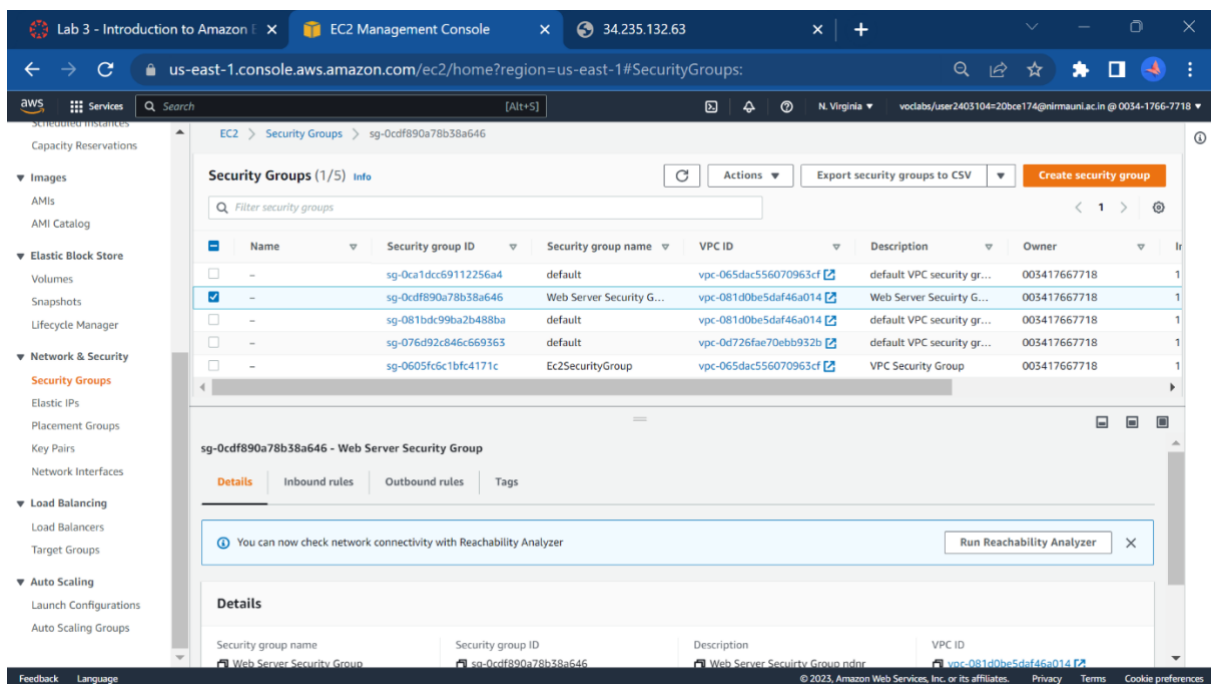
Now, Copy the Public IPv4 address of your instance to your clipboard.

Open a new tab in your web browser, paste the IP address you just copied, then press Enter.

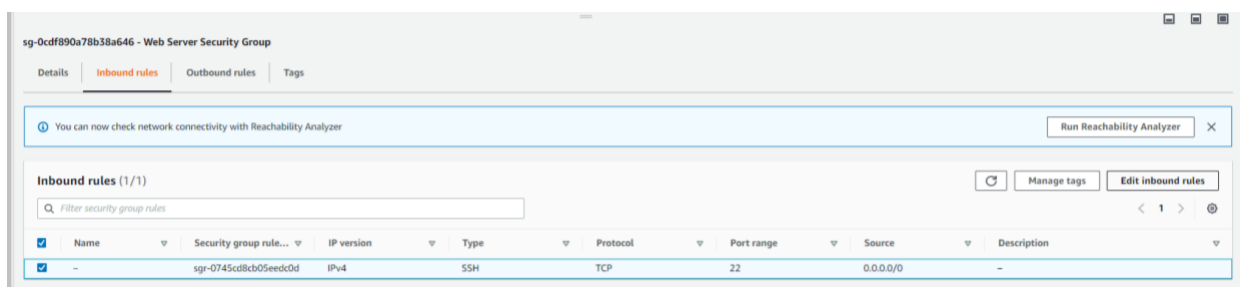


You are not currently able to access your web server because the security group is not permitting inbound traffic on port 80, which is used for HTTP web requests. We will now update the security group to permit web traffic on port 80.

In the left navigation pane, choose Security Groups and select your security group name that you have mentioned at the time of launch.



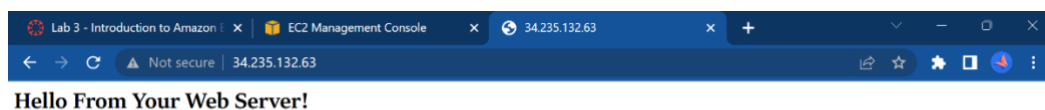
In your security group, go to inbound rule tab.



Now, click on **Edit inbound rules** and **add rule**. Inside it mention, **http** as type and source as **anywhere IPv4** and click on **Save Rules**.

Now refresh that previous page. This time you will see a web page saying that **hello from web server**.

The public IP is displaying us a webpage which we created using **User data** inside **/var/www/html** as **index.html**.



Now let's resize our instance from t2.micro to t2.small.

For this we have to first stop our instance from **instance state** button available on top right corner.

Successfully stopped i-Od1389c86be3df6cc

Instances (1/2) info

Find instance by attribute or tag (case-sensitive)

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IPv4 DNS	Public IPv4 ...	Elastic IP	IPv6 IPs	Monitor
Bastion Host	i-Od6923697faff4932	Running	t2.micro	2/2 checks passed	No alarms	us-east-1a	ec2-52-70-45-100.com...	52.70.45.100	-	-	disabled
NDNR	i-Od1389c86be3df6cc	Stopping	t2.micro	2/2 checks passed	No alarms	us-east-1a	ec2-34-235-132-63.co...	34.235.132.63	-	-	disabled

It will some time to stop the instance. After that, go to *action* → *instance setting* → *change instance type*.

Lab 3 - Introduction to Amazon E... Instances | EC2 Management Co... 34.235.132.63

us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#Instances:

Instances (1/2) info

Find instance by attribute or tag (case-sensitive)

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IPv4 DNS	Public IPv4 ...	Elastic IP	IPv6 IPs	Monitor
Bastion Host	i-Od6923697faff4932	Running	t2.micro	2/2 checks passed	No alarms	us-east-1a	ec2-52-70-45-100.com...	52.70.45.100	-	-	disabled
NDNR	i-Od1389c86be3df6cc	Stopped	t2.micro	2/2 checks passed	No alarms	us-east-1a	ec2-34-235-132-63.co...	34.235.132.63	-	-	disabled

Instance: i-Od1389c86be3df6cc (NDNR)

Details Security Networking Storage Status checks Monitoring

Instance summary info

Instance ID i-Od1389c86be3df6cc (NDNR)

Public IPv4 address -

Instance state Stopped

Private IP DNS name (IPv4 only) ip-10-0-1-253.ec2.internal

Instance type t2.micro

Change instance type

Change Nitro Enclaves

Change credit specification

Change resource based naming options

Modify instance placement

Modify Capacity Reservation settings

Edit user data

Allow tags in instance metadata

Manage tags

Select the required instance type from pool of instance type available to you.

EC2 > Instances > i-Od1389c86be3df6cc > Change instance type

Change instance type info

You can change the instance type only if the current instance type and the instance type that you want are compatible.

Instance ID i-Od1389c86be3df6cc (NDNR)

Current instance type t2.micro

Instance type t2.small

EBS-optimized EBS-optimized is not supported for this instance type

Cancel Apply

At the dashboard, the change in instance type will be reflected under instance state column.

Lab 3 - Introduction to Amazon E... Instances | EC2 Management Co... 34.235.132.63

us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#Instances:

Instance type changed successfully

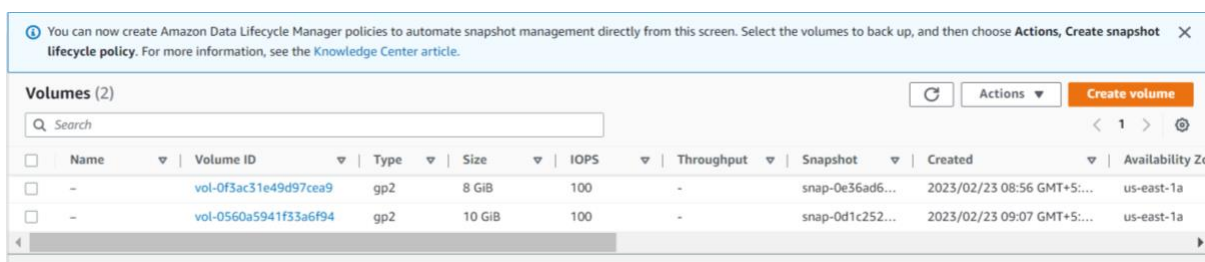
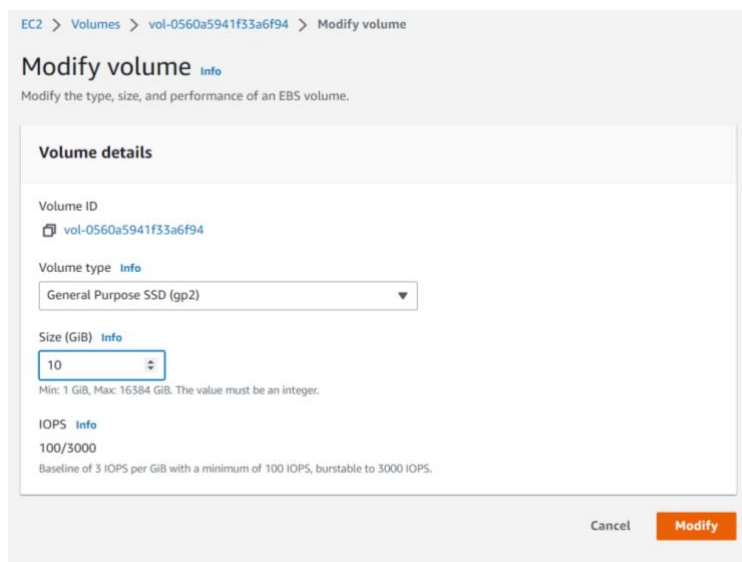
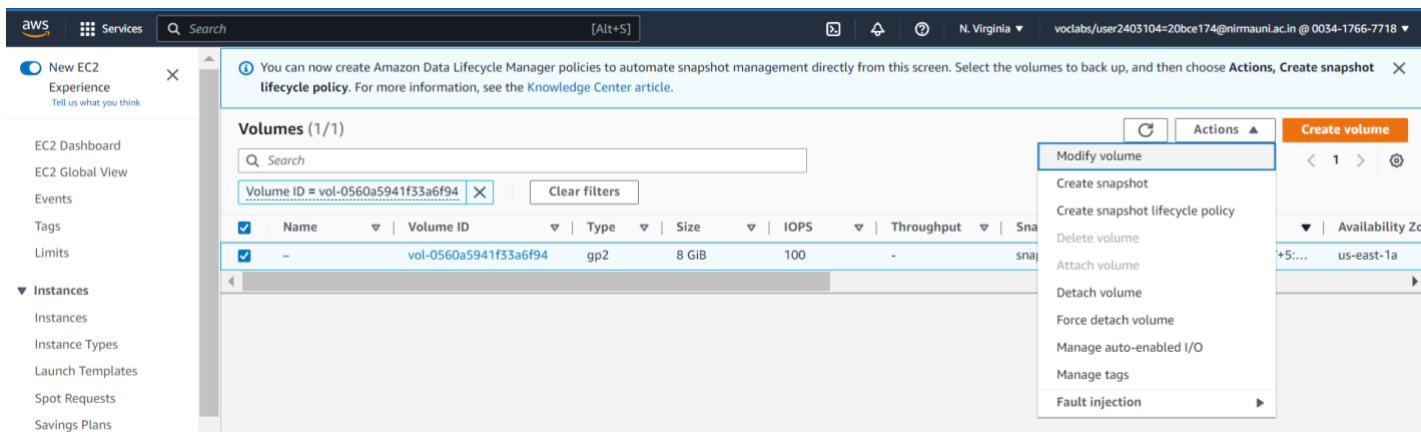
Instances (1/2) info

Find instance by attribute or tag (case-sensitive)

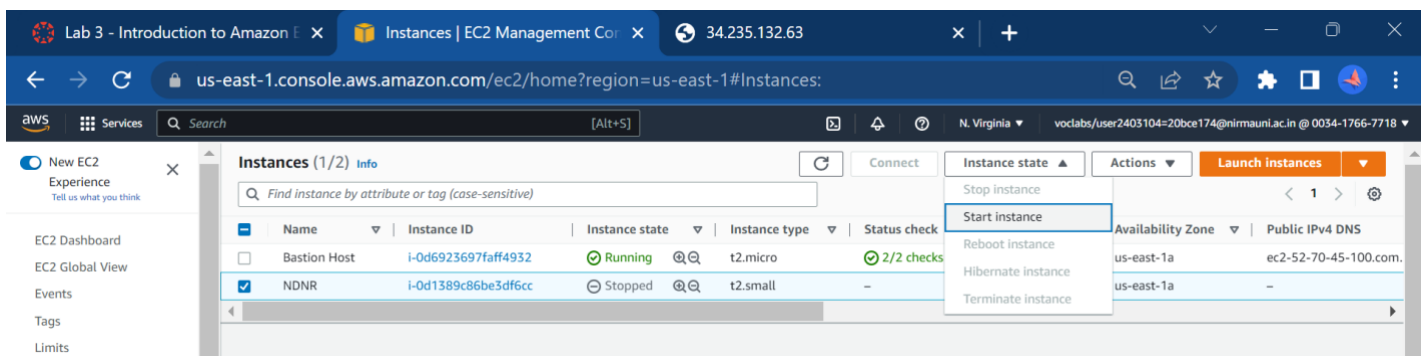
Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IPv4 DNS	Public IPv4 ...	Elastic IP	IPv6 IPs	Monitor
Bastion Host	i-Od6923697faff4932	Running	t2.micro	2/2 checks passed	No alarms	us-east-1a	ec2-52-70-45-100.com...	52.70.45.100	-	-	disabled
NDNR	i-Od1389c86be3df6cc	Stopped	t2.small	-	No alarms	us-east-1a	-	-	-	-	disabled

Inside the **Storage** tab, we will be able to change the storage size of our instance.

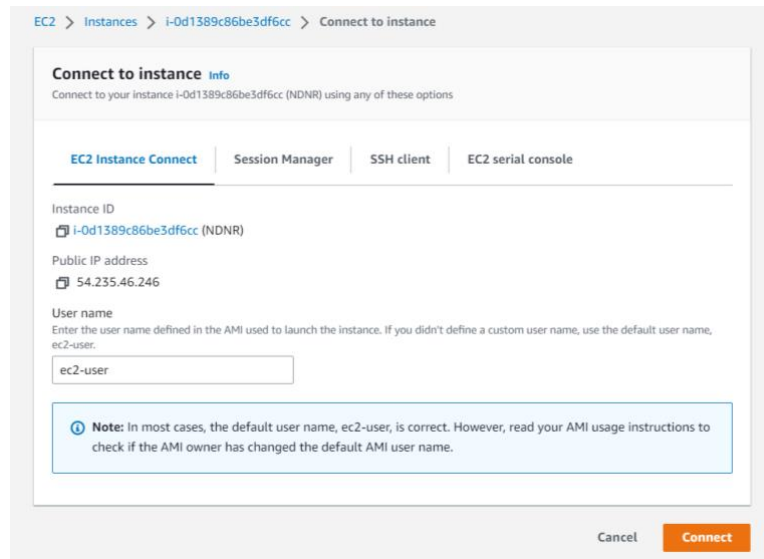
Under the **Action**, click on **modify volume** and change the size to 10GiB



Now let's start our instance once again from **instance state**.

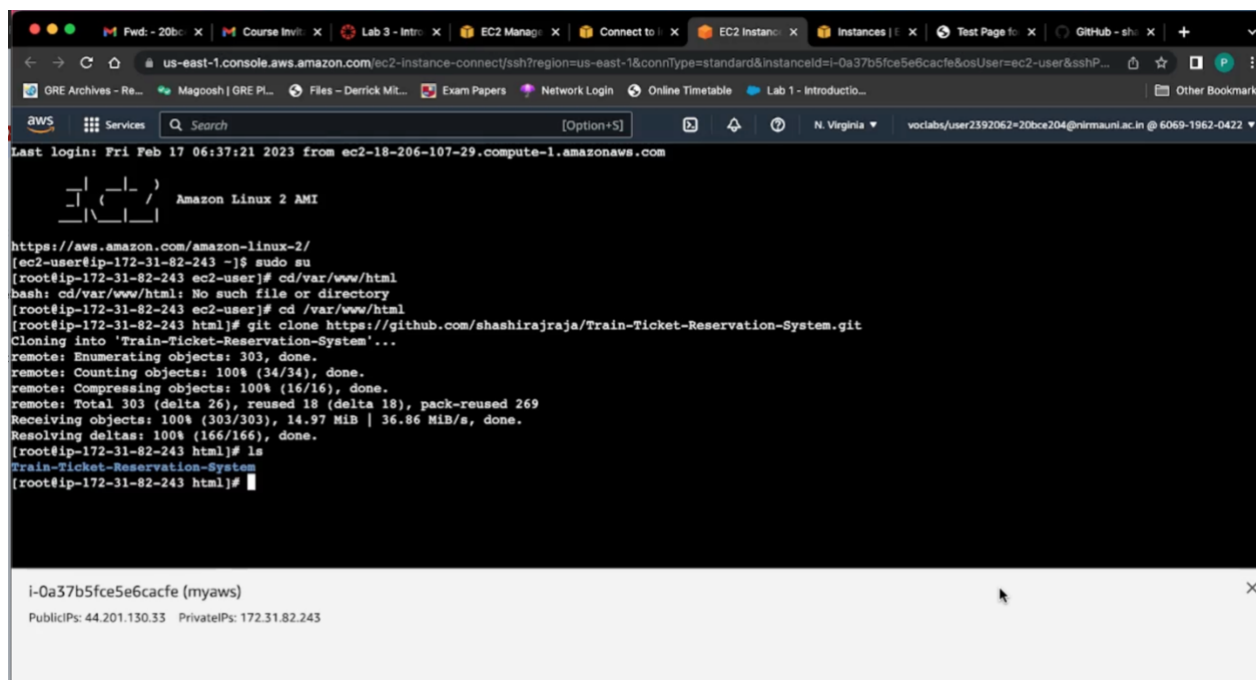


Now let's host a website on our EC2. Inside our instance click on *Connect* and again click on *Connect*.



This will open a new window, which shows command line of our instance.

We will first update our system using command *sudo yum update*.



Now we will clone a website from our GitHub repo.

Commands:

Sudo su

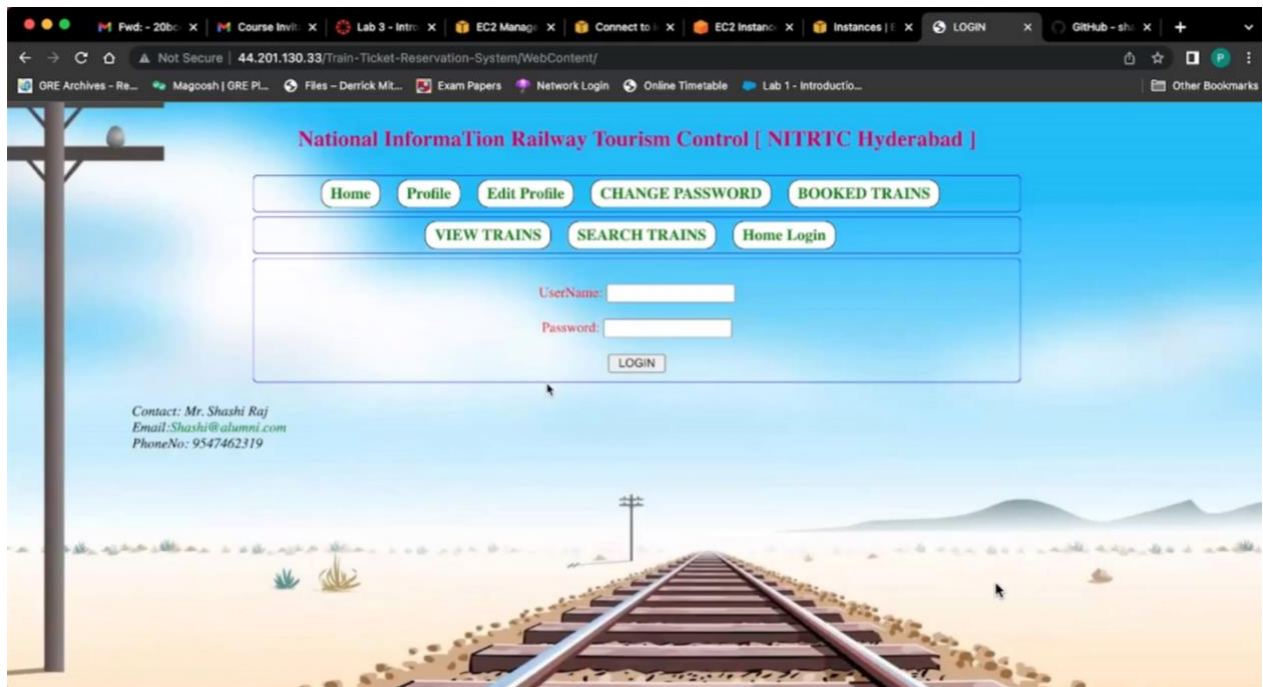
cd /var/www/html

sudo git clone github link

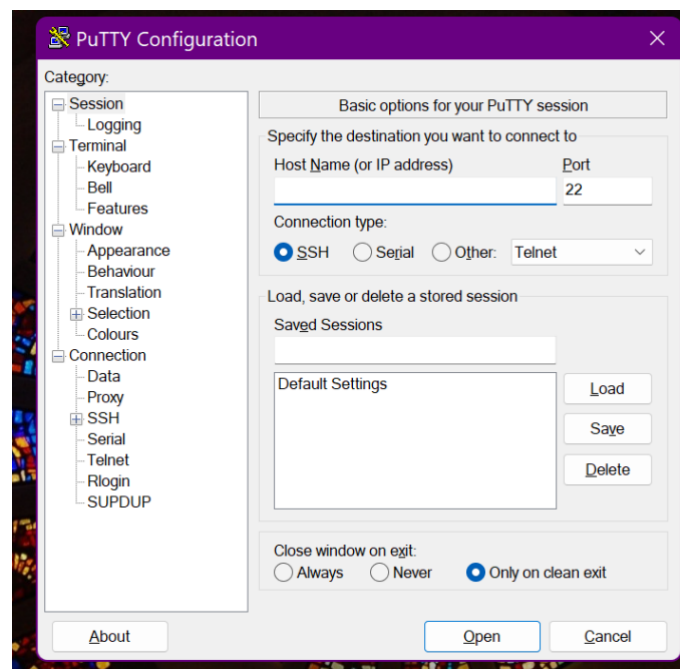
cd RepositoryName

ls

Now we have a clone of our website inside our EC2 instance and now we can access it using **Public IPv4 DNS** 44.201.130.33



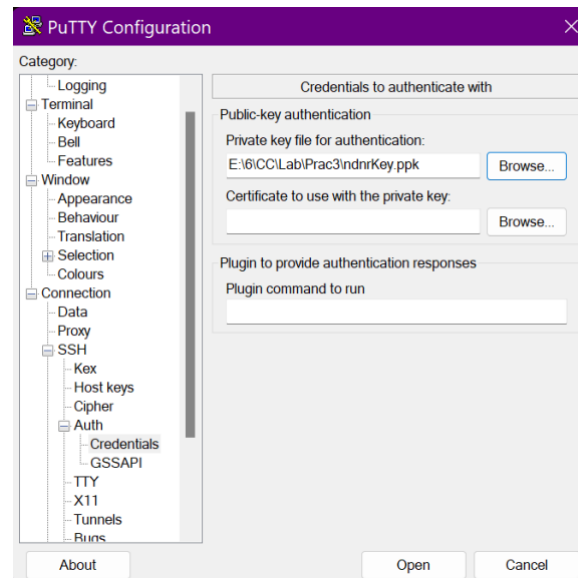
Now let's see how we can remotely access this files and instance without login it on AWS. For this we are required to download a software called **Putty**.



Enter the hostname as **ec2-user@PublicIPv4DNSLink**.

Now, we have to verify ourself. This will be done by using the key that we have download as .ppk or .pem

We will upload that key inside **SSH → Auth → Credentials**



Click on *Open*.

```
ec2-user@ip-10-0-1-253:/var/www/html/html_css_project15
# Using username "ec2-user".
# Authenticating with public key "ndnrKey"
Last login: Thu Feb 23 04:16:53 2023 from ec2-18-206-107-28.compute-1.amazonaws.com

 _ _ _ _ _
| | | | |
|_|_|_|_|_|

Amazon Linux 2 AMI

https://aws.amazon.com/amazon-linux-2/
[ec2-user@ip-10-0-1-253 ~]$ cd /var/www/html
[ec2-user@ip-10-0-1-253 html]$ ls
html_css_project15  index.html
[ec2-user@ip-10-0-1-253 html]$ cd html_css_project15/
[ec2-user@ip-10-0-1-253 html_css_project15]$ ls
15.png  css      javascript  result1.png  result3.png
assets  index.html  Readme.md  result2.png  result4.png
[ec2-user@ip-10-0-1-253 html_css_project15]$
```

As you can see that we can access our files from our system remotely without login in AWS.

Conclusion :

In this practical I have learnt about the Amazon Elastic Compute Cloud service. I have created a virtual machine in the AWS cloud and configured it. I have learnt how to use Putty to connect with the VM and do the operations like hosting a website.