

**Bansilal Ramnath Agarwal Charitable Trust's
VISHWAKARMA INSTITUTE OF INFORMATION
TECHNOLOGY,**

PUNE-48 Department of Information Technology

ITUA32202: CLOUD COMPUTING

Assignment-3

Shreyas Shripad Kulkarni

C2 Batch

Roll No. 333030

PRN: 22010443

AIM: To deploy a web application on AWS Cloud

THEORY:

What is cloud computing?

Cloud computing is the on-demand delivery of IT resources over the Internet with pay-as-you-go pricing. Instead of buying, owning, and maintaining physical data centres and servers, you can access technology services, such as computing power, storage, and databases, on an as-needed basis from a cloud provider like Amazon Web Services (AWS).

Cloud Service models & Deployment Models

Three Service Models:

1. Infrastructure as a Service: Providing basic computing infrastructure, including virtualized computing resources, storage, and network capabilities over the internet.
2. Platform as a Service: Providing a platform for developers to build, run, and manage applications and services without having to worry about the underlying infrastructure.
3. Software as a Service: Providing access to software applications over the internet, typically on a subscription basis.

Cloud Deployment Models describe where the infrastructure for the cloud service is located.

1. Public Cloud: Cloud infrastructure is owned and operated by a third-party provider and is made available to the public over the internet.

Advantages

- ✚ Widely available and accessible to anyone with an internet connection
- ✚ Lower upfront costs as the infrastructure is owned and maintained by the cloud provider
- ✚ Scalability and on-demand access to resources as needed

Disadvantages

- ✚ Less control and customization options compared to private cloud deployment
- ✚ Security and privacy concerns as data is stored on a shared infrastructure
- ✚ Dependence on the reliability and security of the cloud provider

2. Community Cloud: A shared cloud infrastructure that is dedicated to serving a specific community of consumers from organizations that have shared concerns.

Advantages:

- ✚ Shared infrastructure for a specific community of consumers with shared concerns, reducing costs for each individual organization
- ✚ Improved security and privacy compared to public cloud deployment
- ✚ Better regulatory compliance as the community can control how data is managed and stored

Disadvantages:

- ✚ Limited availability and accessibility compared to public cloud deployment
- ✚ Dependence on the community for maintenance and management of the infrastructure
- ✚ Potential for disagreements and disputes between community members.

3. Hybrid Cloud: A combination of public and private cloud services that remain separate but are bound together, allowing data and applications to be shared between them.

Advantages:

- ✚ Combines the benefits of both public and private cloud deployment
- ✚ Allows for the deployment of sensitive workloads in a private cloud environment while leveraging the scalability and cost benefits of the public cloud
- ✚ Improved disaster recovery options as data can be replicated between the public and private cloud

Disadvantages:

- ✚ More complex management and deployment compared to single cloud deployment
- ✚ Increased dependence on network connectivity between the public and private cloud
- ✚ Difficulty in ensuring data consistency and security across different cloud environments

4. Private cloud: Cloud infrastructure is dedicated to a single organization and is operated and managed on-premises or by a third-party provider.

Advantages:

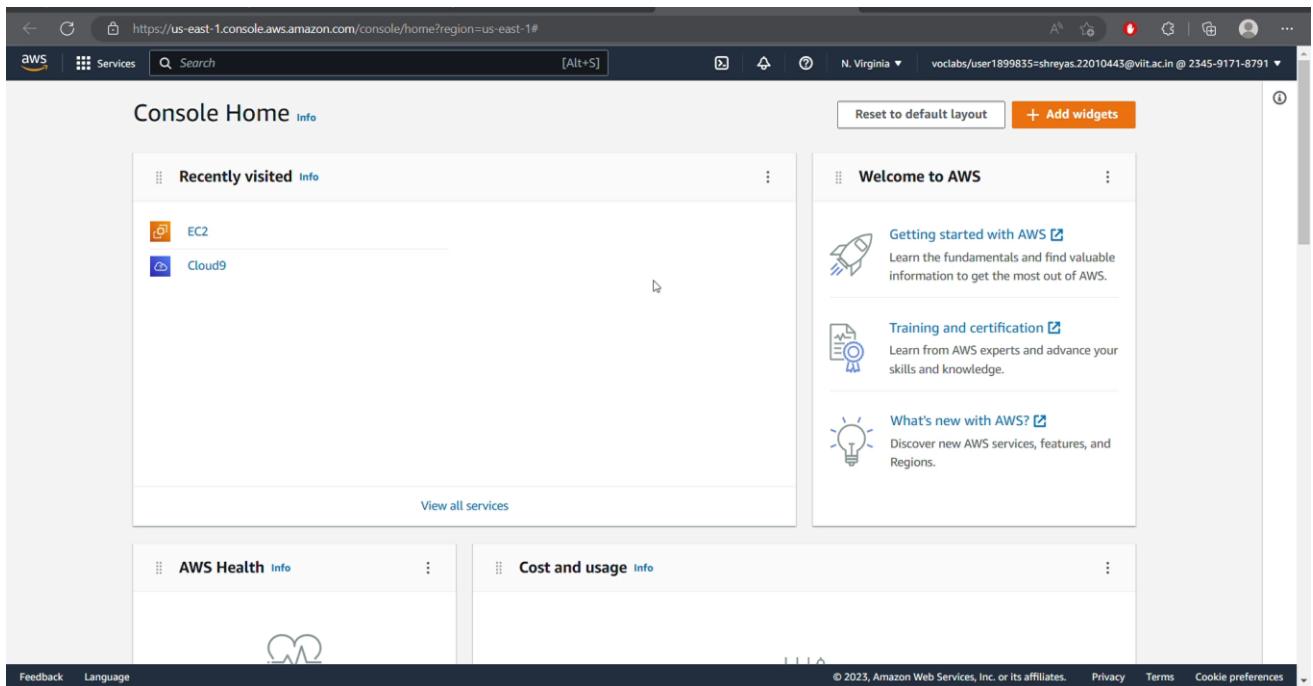
- ✚ Greater control and customization options compared to public cloud deployment
- ✚ Improved security and privacy as the infrastructure is dedicated to a single organization
- ✚ Better regulatory compliance as the organization has more control over the data

Disadvantages:

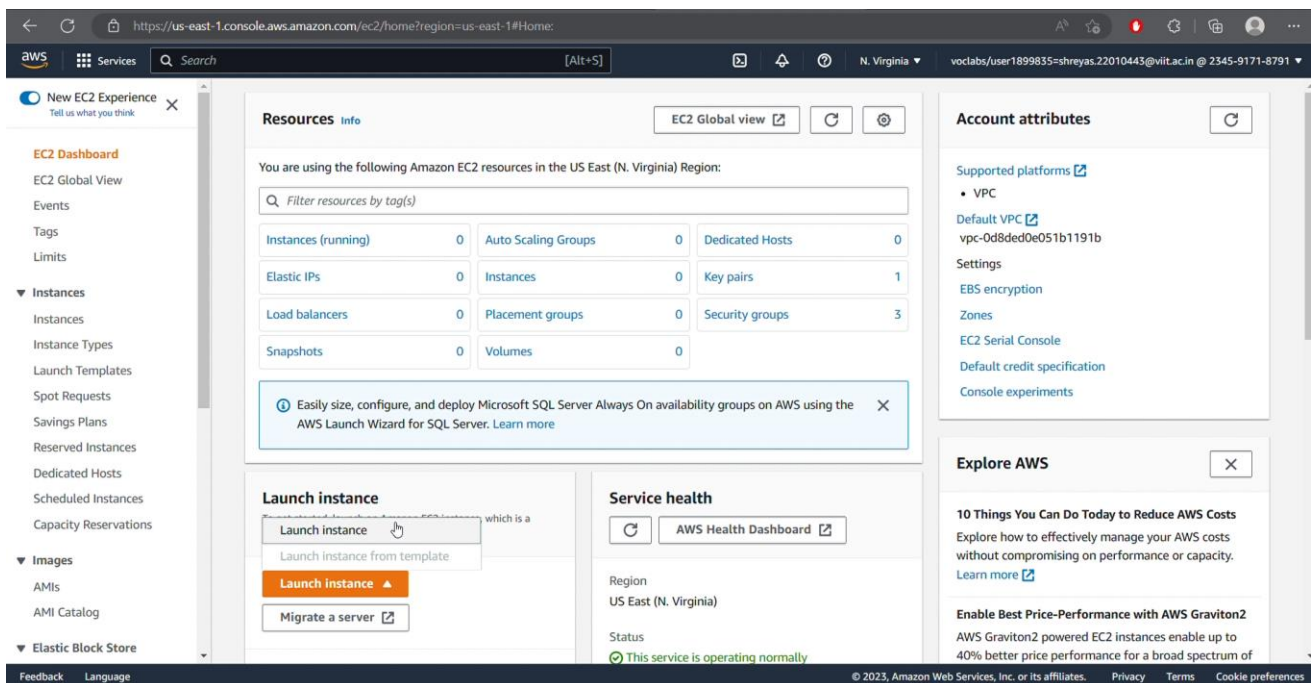
- ✚ Higher upfront costs due to the need to invest in and maintain the infrastructure
- ✚ Limited scalability compared to public cloud deployment
- ✚ Dependence on internal IT resources for management and maintenance

Step by Step Implementation of the Web Application Deployment

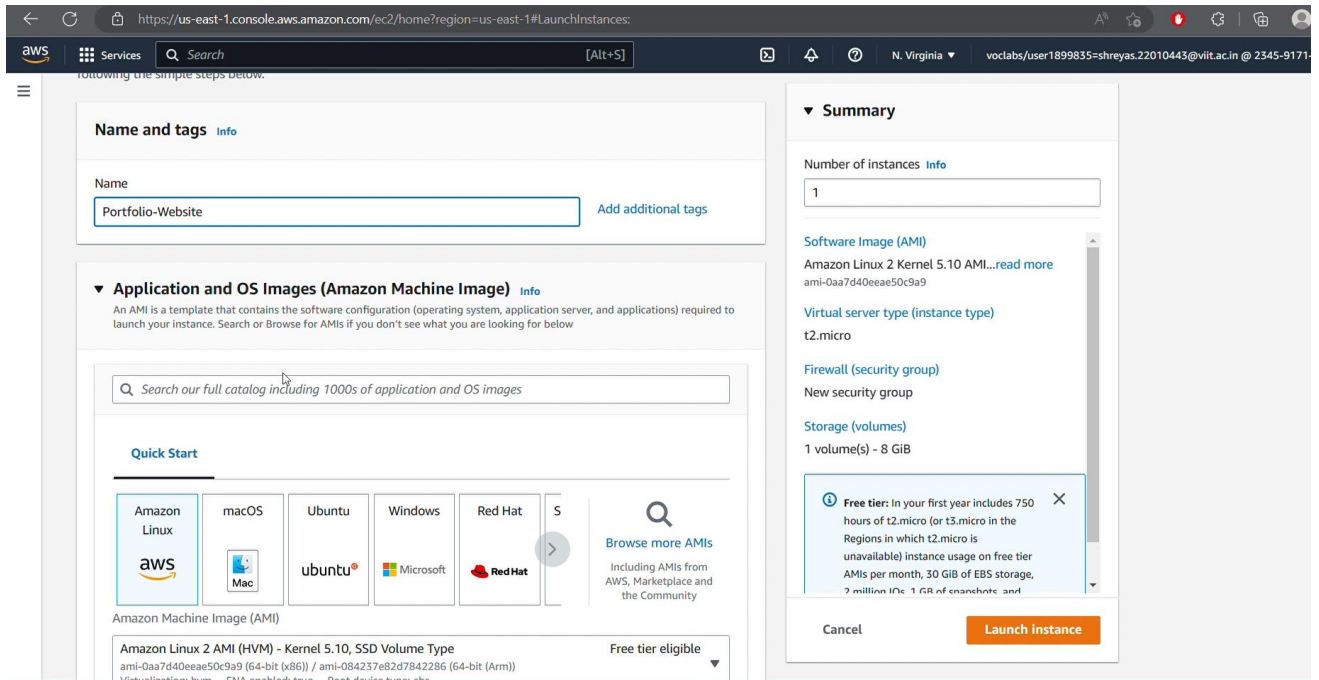
-> Select EC2 from the Services Menu



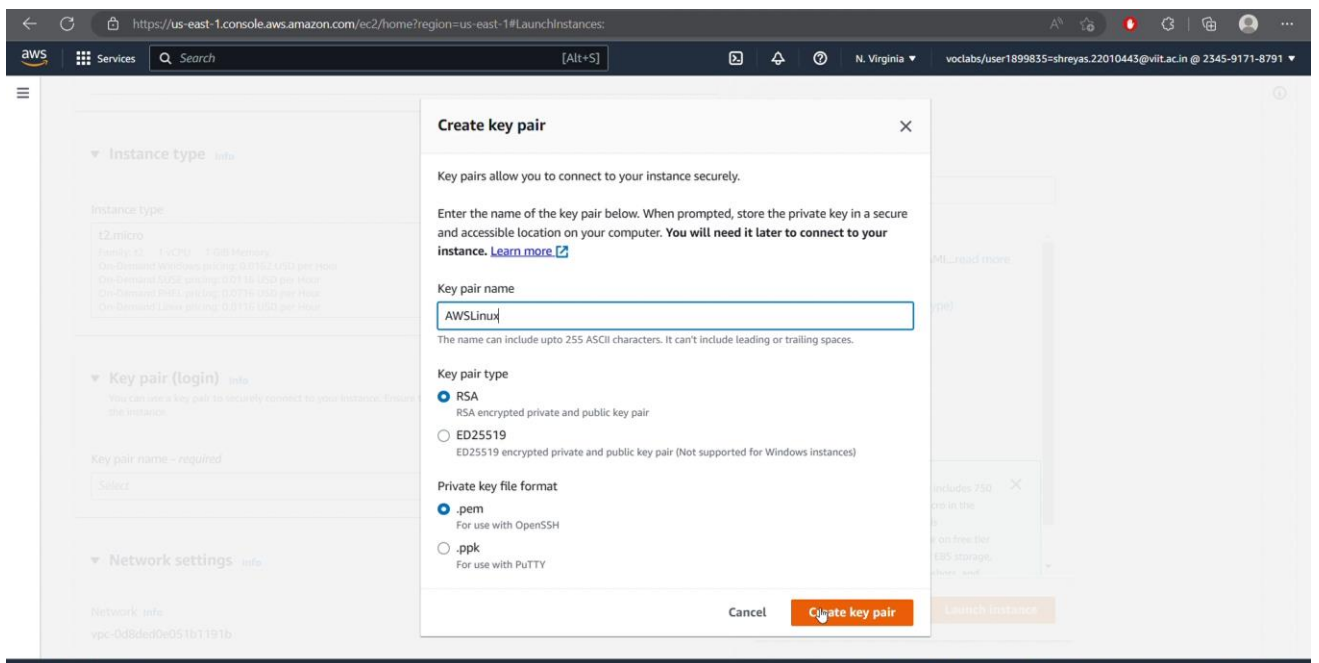
-> Select Launch Instance and Create an EC2 Instance.



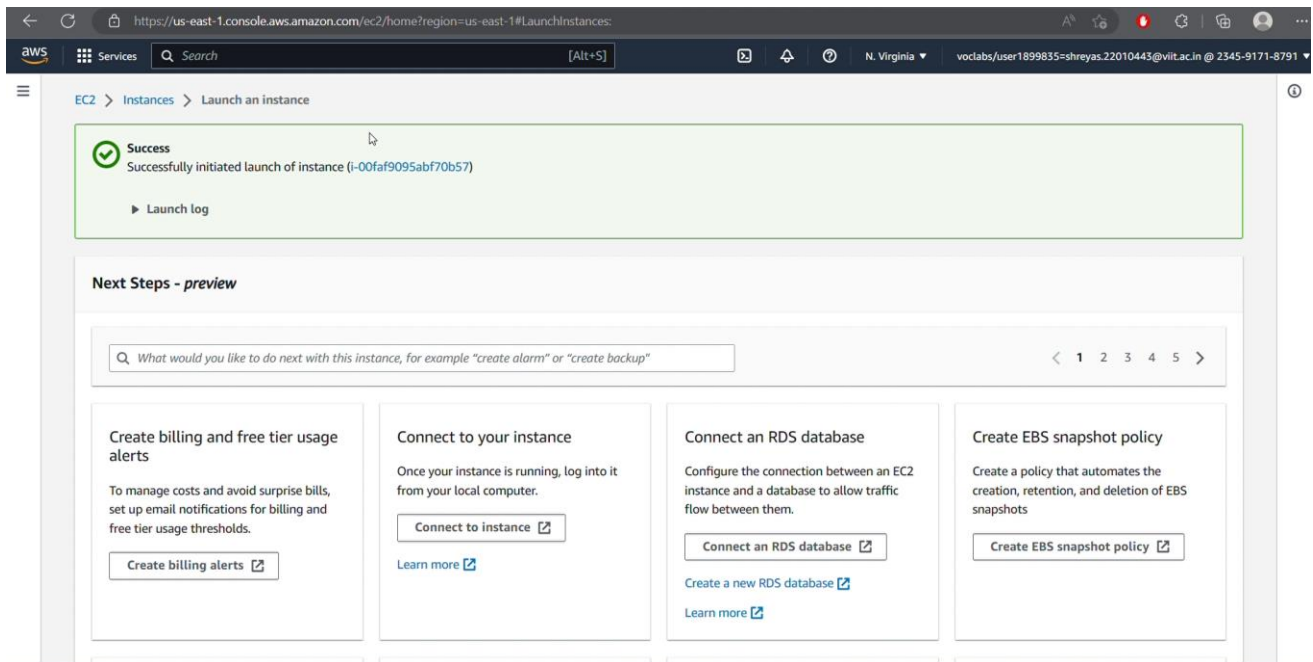
-> Choose appropriate OS. I have used AWS Linux



-> Create a Key Pair. (This .pem/ppk file will be the specific key whose presence will enable you to login from anywhere)

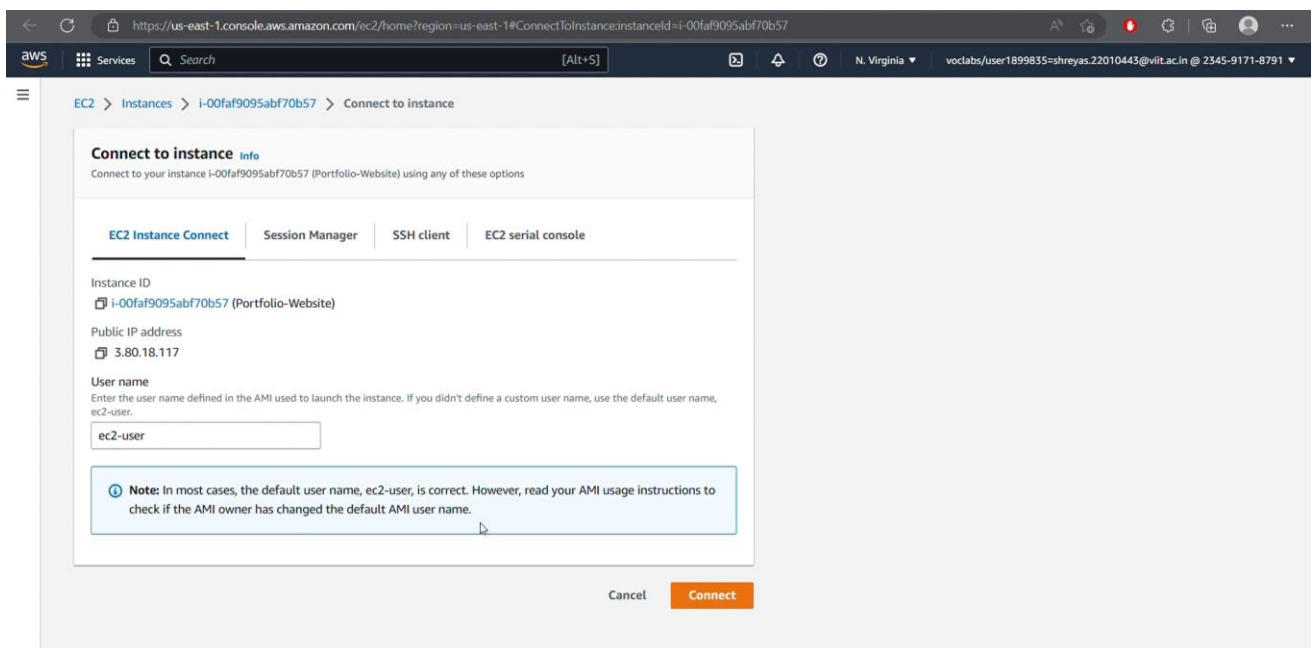


-> We have successfully created & launched the instance.



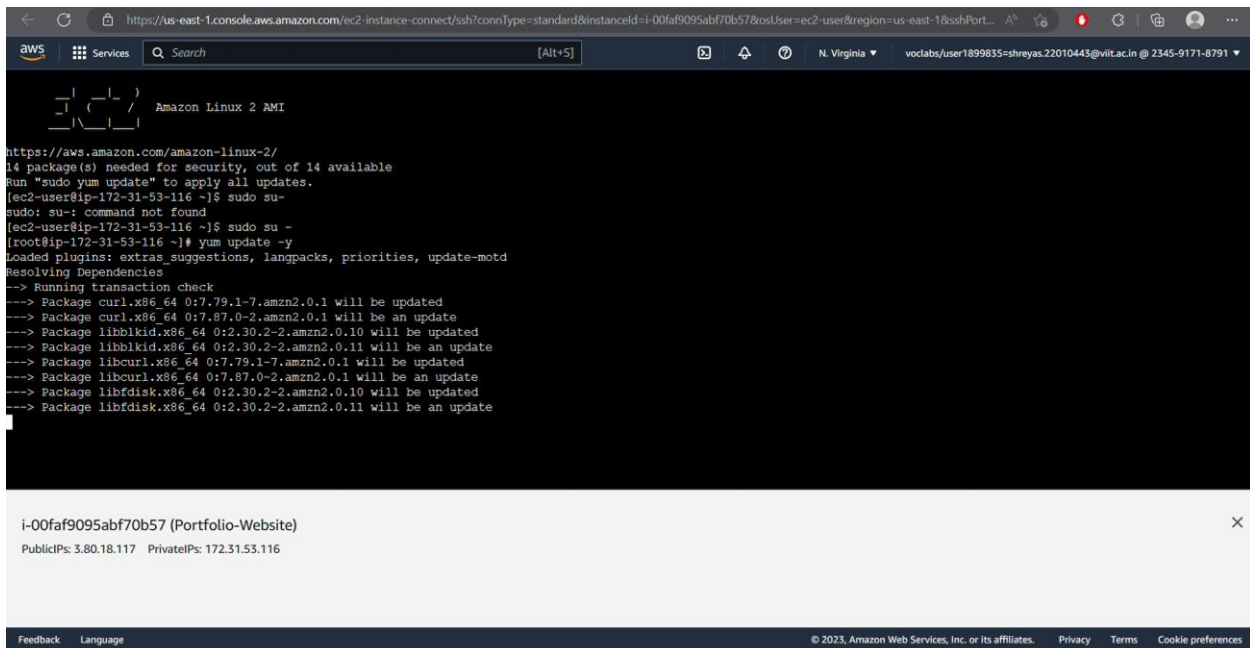
-> After initializing the EC2 Instance, we will have to connect it to the VM. For this we have three methods:

1. We will use the PuTTY to convert .pem file(The key which we downloaded while creating the instance) to .ppk and launch it on our local System/machine
 2. If we have downloaded the .ppk file then we can directly initialize the VM on our local Machine/System.
 3. We will directly connect to the VM through the AWS platform
- I have used the 3rd method.



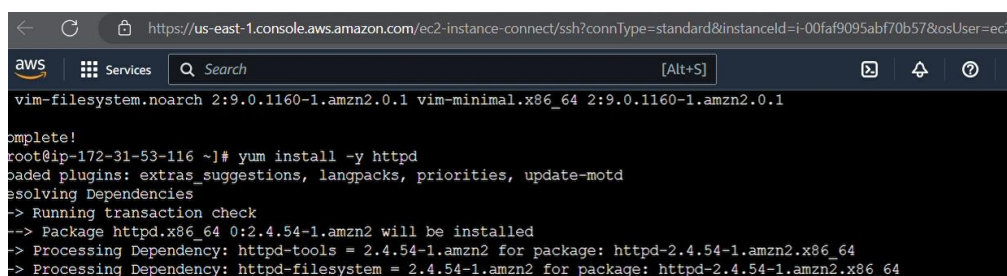
-> After connecting with the Instance, we will run the following commands on the console

1. `sudo su -`
2. `yum update -y`



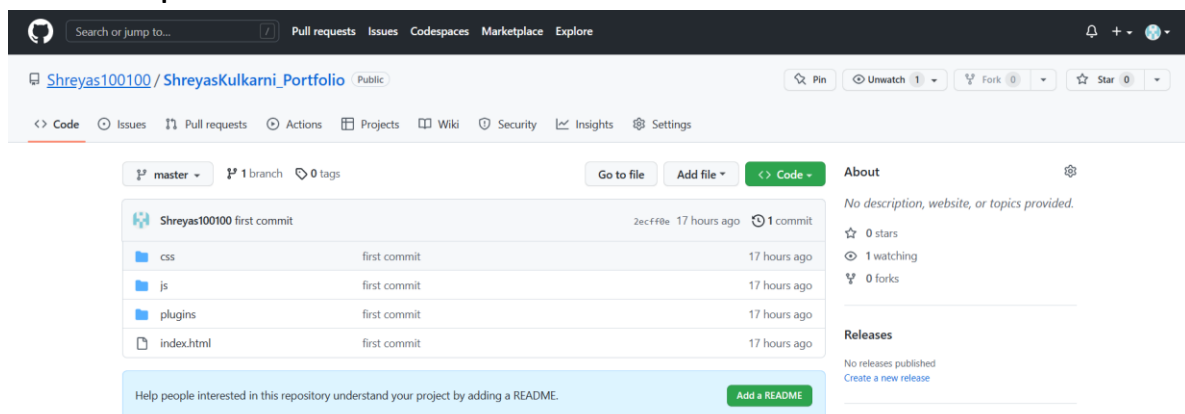
```
https://aws.amazon.com/amazon-linux-2/
14 package(s) needed for security, out of 14 available
Run "sudo yum update" to apply all updates.
[ec2-user@ip-172-31-53-116 ~]$ sudo su -
sudo: su: command not found
[ec2-user@ip-172-31-53-116 ~]$ sudo su -
[root@ip-172-31-53-116 ~]# yum update -y
Loaded plugins: extras_suggestions, langpacks, priorities, update-motd
Resolving Dependencies
--> Running transaction check
--> Package curl.x86_64 0:7.79.1-7.amzn2.0.1 will be updated
--> Package curl.x86_64 0:7.87.0-2.amzn2.0.1 will be an update
--> Package libblkid.x86_64 0:2.30.2-2.amzn2.0.10 will be updated
--> Package libblkid.x86_64 0:2.30.2-2.amzn2.0.11 will be an update
--> Package libcurl.x86_64 0:7.79.1-7.amzn2.0.1 will be updated
--> Package libcurl.x86_64 0:7.87.0-2.amzn2.0.1 will be an update
--> Package libfdisk.x86_64 0:2.30.2-2.amzn2.0.10 will be updated
--> Package libfdisk.x86_64 0:2.30.2-2.amzn2.0.11 will be an update
```

3. `yum install -y httpd`

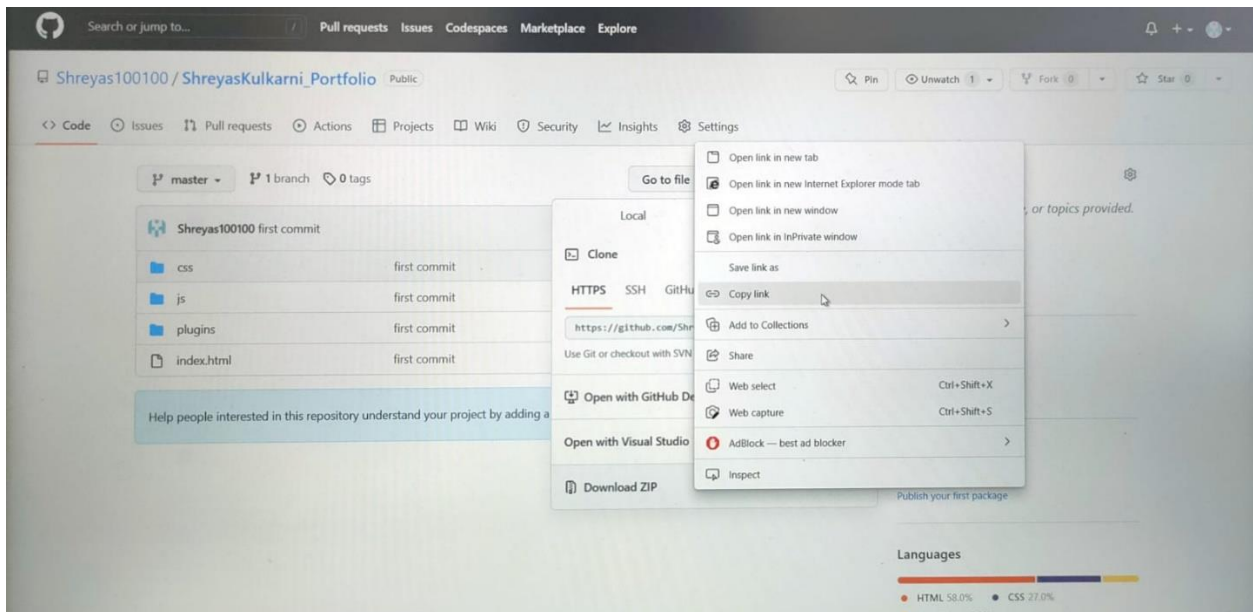


```
vim-filesystem.noarch 2:9.0.1160-1.amzn2.0.1 vim-minimal.x86_64 2:9.0.1160-1.amzn2.0.1
complete!
[root@ip-172-31-53-116 ~]# yum install -y httpd
Loaded plugins: extras_suggestions, langpacks, priorities, update-motd
Resolving Dependencies
--> Running transaction check
--> Package httpd.x86_64 0:2.4.54-1.amzn2 will be installed
--> Processing Dependency: httpd-tools = 2.4.54-1.amzn2 for package: httpd-2.4.54-1.amzn2.x86_64
--> Processing Dependency: httpd-filesystem = 2.4.54-1.amzn2 for package: httpd-2.4.54-1.amzn2.x86_64
```

4. `systemctl status httpd`
5. `mkdir aws_assg3`
6. `cd aws_assg3`
7. For this assignment we have created a portfolio website which we have uploaded on Github.com.



8. Copy the Download Link for the .zip file of the portfolio

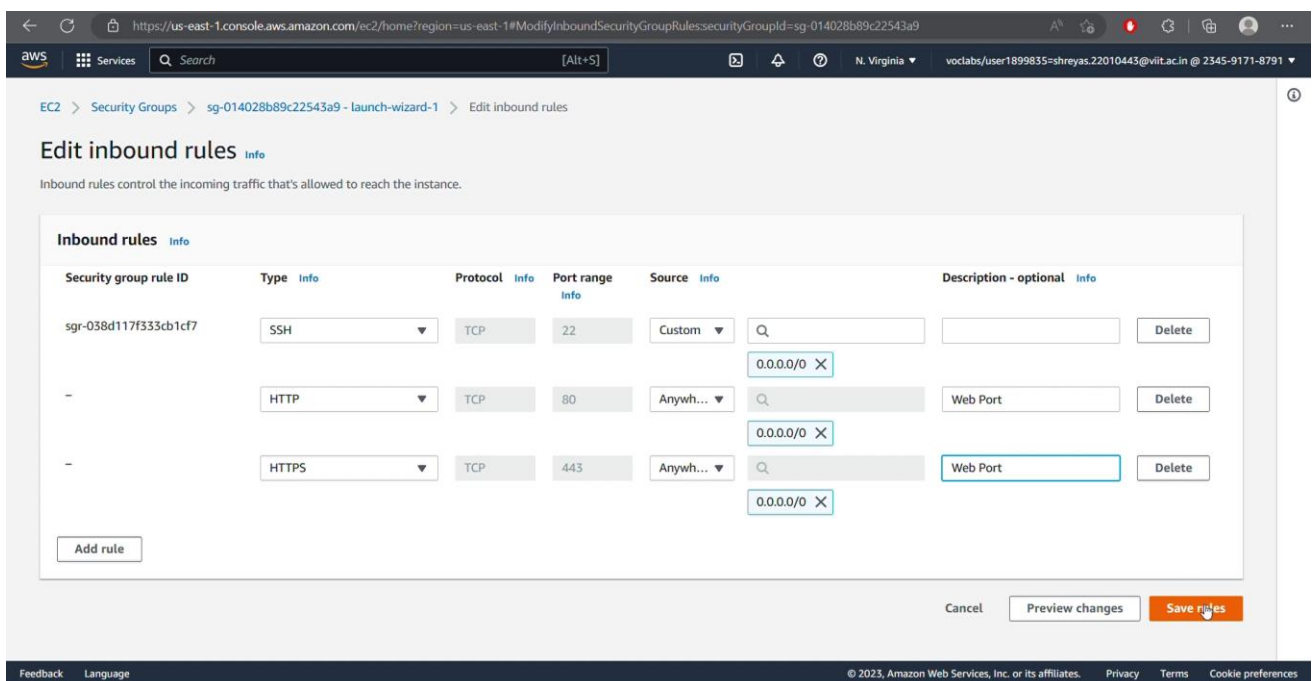


9. using the `wget` command, download the zip file to the folder.

10. unzip the master.zip file and navigate in to the ShreyasKulkarni_Portfolio-master folder using the `cd` command.

11. move all the contents from the folder to `"/var/www/html/"`

-> Edit the Inbound Rules



-> check the status of httpd and then enable & start httpd using the following commands

```
systemctl status httpd
systemctl enable httpd
systemctl start httpd
```

```
[root@ip-172-31-53-116 html]# systemctl status httpd
• httpd.service - The Apache HTTP Server
   Loaded: loaded (/usr/lib/systemd/system/httpd.service; disabled; vendor preset: disabled)
   Active: inactive (dead)
     Docs: man:httpd.service(8)
[root@ip-172-31-53-116 html]# systemctl enable httpd
Created symlink from /etc/systemd/system/multi-user.target.wants/httpd.service to /usr/lib/systemd/system/httpd.service.
[root@ip-172-31-53-116 html]# systemctl start httpd
[root@ip-172-31-53-116 html]#
```

-> Now open the public ipv4 address allocated to the EC2 instance we created in new tab. We will be able to see the Portfolio Website.



We have Successfully Deployed the Web Application on AWS Cloud!

The Video procedure is uploaded here -> [LINK](#)

Conclusion: We have learnt and understood Cloud Computing, Cloud Service Models, Cloud Deployment Models. We have also deployed a web application on AWS Cloud.