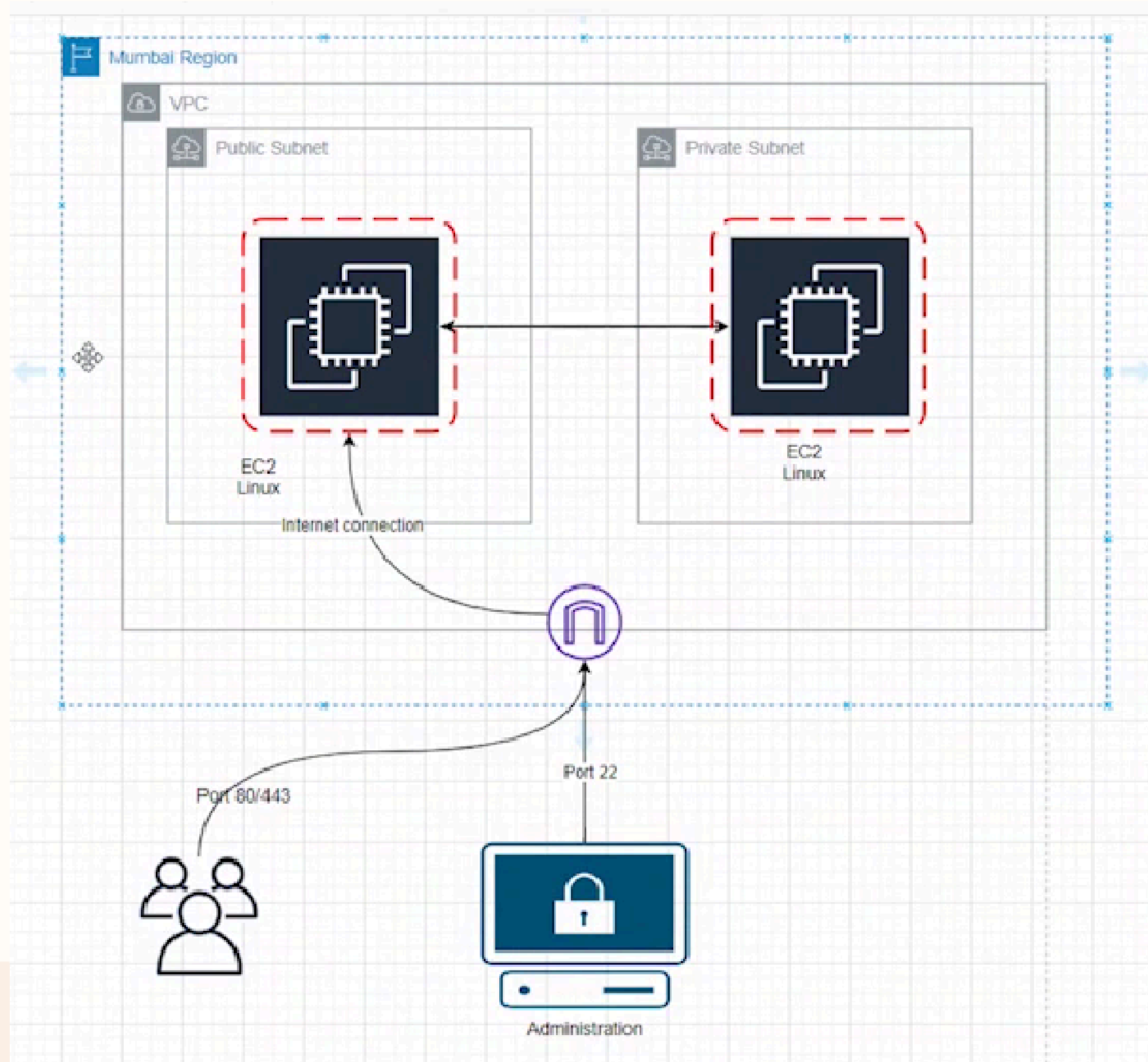


# PROJECT ON VPC

## Title:-Hosting a small website using VPC+EC2



# 1.Create a VPC

vpcs | VPC Console

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

aws Services Search [Alt+S]

N. Virginia Pushpa

VPC dashboard

EC2 Global View

Filter by VPC

Virtual private cloud

Your VPCs

Subnets

Route tables

Internet gateways

Egress-only internet gateways

Carrier gateways

DHCP option sets

Elastic IPs

Managed prefix lists

Endpoints

Endpoint services

NAT gateways

Peering connections

You successfully created vpc-055b019cd3e450a3c / vpc-project

Your VPCs (1/1) Info

Last updated less than a minute ago

Actions

Create VPC

Search

<input checked="" type="checkbox"/>	Name	VPC ID	State	IPv4 CIDR	IPv6 CIDR	DHCP o
<input checked="" type="checkbox"/>	vpc-project	<a href="#">vpc-055b019cd3e450a3c</a>	<span>Available</span>	10.0.0.0/16	-	<a href="#">dopt-0b</a>

vpc-055b019cd3e450a3c / vpc-project

Details Resource map CIDRs Flow logs Tags Integrations

Details

VPC ID	State	DNS hostnames	DNS resolution
vpc-055b019cd3e450a3c	<span>Available</span>	Disabled	Enabled
Tenancy	DHCP option set	Main route table	Main network ACL

## 2.Create two subnets(Public-subnet &Private subnet)

← → ↺

us-east-1.console.aws.amazon.com/vpcconsole/home?region=us-east-1#subnets:subnetId=subnet-08efb21796aec32d9,subnet-095a2fddf47ecd883

🔍 ☆ 🔄 📄 🌐

aws

Services

Search

[Alt+S]

📄 🔔 ? ⚙️

N. Virginia ▾

Pushpa ▾

VPC dashboard

×

EC2 Global View

🔗

Filter by VPC

▾

Virtual private cloud

▾

Your VPCs

Subnets

Route tables

Internet gateways

Egress-only internet gateways

Carrier gateways

DHCP option sets

Elastic IPs

Managed prefix lists

Endpoints

Endpoint services

NAT gateways

Peering connections

🟢 You have successfully created 2 subnets: subnet-08efb21796aec32d9, subnet-095a2fddf47ecd883

✕ ⓘ

Subnets (2) Info

Last updated less than a minute ago

🔄

Actions ▾

Create subnet

🕒

🔍 Find resources by attribute or tag

Subnet ID : subnet-08efb21796aec32d9

✕

Subnet ID : subnet-095a2fddf47ecd883

✕

Clear filters

< 1 > ⚙️

<input type="checkbox"/>	Name ▾	Subnet ID ▾	State ▾	VPC ▾	IPv4 CIDR ▾
<input type="checkbox"/>	private subnet	<a href="#">subnet-095a2fddf47ecd883</a>	🟢 Available	<a href="#">vpc-055b019cd3e450a3c</a>   <a href="#">vpc-...</a>	10.0.1.0/24
<input type="checkbox"/>	public-subnet	<a href="#">subnet-08efb21796aec32d9</a>	🟢 Available	<a href="#">vpc-055b019cd3e450a3c</a>   <a href="#">vpc-...</a>	10.0.0.0/24

Select a subnet

📄 📄 📄

CloudShell

Feedback

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Privacy

Terms

Cookie preferences

### 3. Create an IGW(Internet Gateway)

The screenshot displays the AWS VPC console interface. The top navigation bar shows the AWS logo, a search bar, and the current region (N. Virginia) and user (Pushpa). The left sidebar contains the VPC dashboard and a list of VPC resources, with 'Internet gateways' selected. The main content area shows a table of Internet gateways with one entry: 'vpc-proj-gateway' with ID 'igw-0a7372f83da6c28ed', which is in a 'Detached' state. Below the table, the details for this specific gateway are shown, including its ID, state, VPC ID, and owner.

**Internet gateways (1/1)** [Info](#)

<input checked="" type="checkbox"/>	Name	Internet gateway ID	State	VPC ID	Owner
<input checked="" type="checkbox"/>	vpc-proj-gateway	<a href="#">igw-0a7372f83da6c28ed</a>	Detached	-	025066266788

**igw-0a7372f83da6c28ed / vpc-proj-gateway**

[Details](#) | [Tags](#)

**Details**

Internet gateway ID	State	VPC ID	Owner
igw-0a7372f83da6c28ed	Detached	-	025066266788

## 4. Connect this IGW to the vpc

The screenshot shows the AWS Management Console interface for attaching an Internet Gateway to a VPC. The browser tab is titled 'Attach internet gateway | VPC M' and the URL is 'us-east-1.console.aws.amazon.com/vpcconsole/home?region=us-east-1#AttachInternetGateway:internetGatewayId=igw-0a7372f83da6c28ed'. The console header includes the AWS logo, 'Services', a search bar, and the region 'N. Virginia' with the user 'Pushpa'.

The breadcrumb navigation is 'VPC > Internet gateways > Attach to VPC (igw-0a7372f83da6c28ed)'. The main heading is 'Attach to VPC (igw-0a7372f83da6c28ed)' with an 'Info' link.

The 'VPC' section contains the instruction: 'Attach an internet gateway to a VPC to enable the VPC to communicate with the internet. Specify the VPC to attach below.'

The 'Available VPCs' section contains the instruction: 'Attach the internet gateway to this VPC.' Below this is a search input field with the text 'vpc-055b019cd3e450a3c' and a clear button (X).

Below the search field is a link: '▶ AWS Command Line Interface command'.

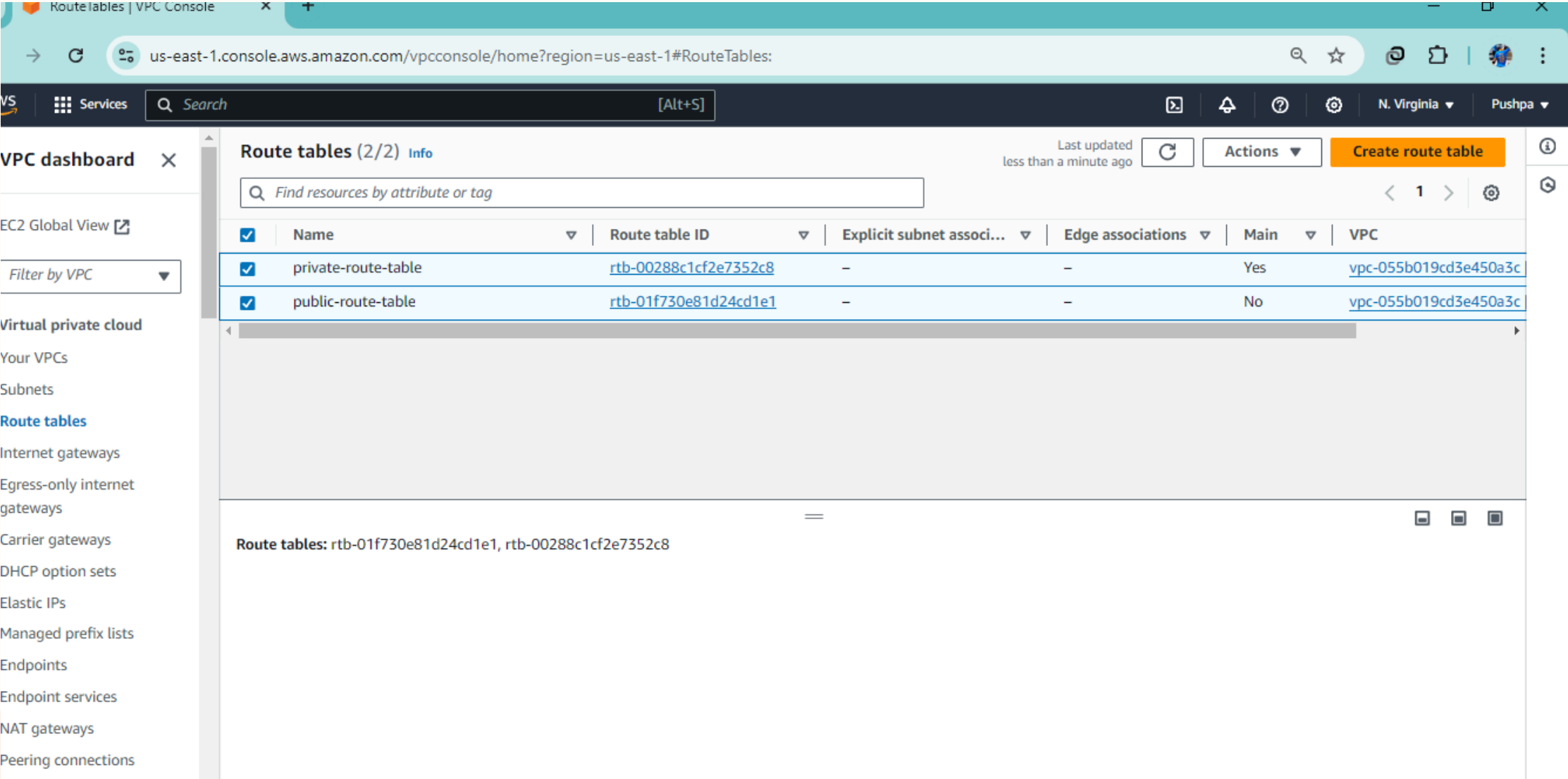
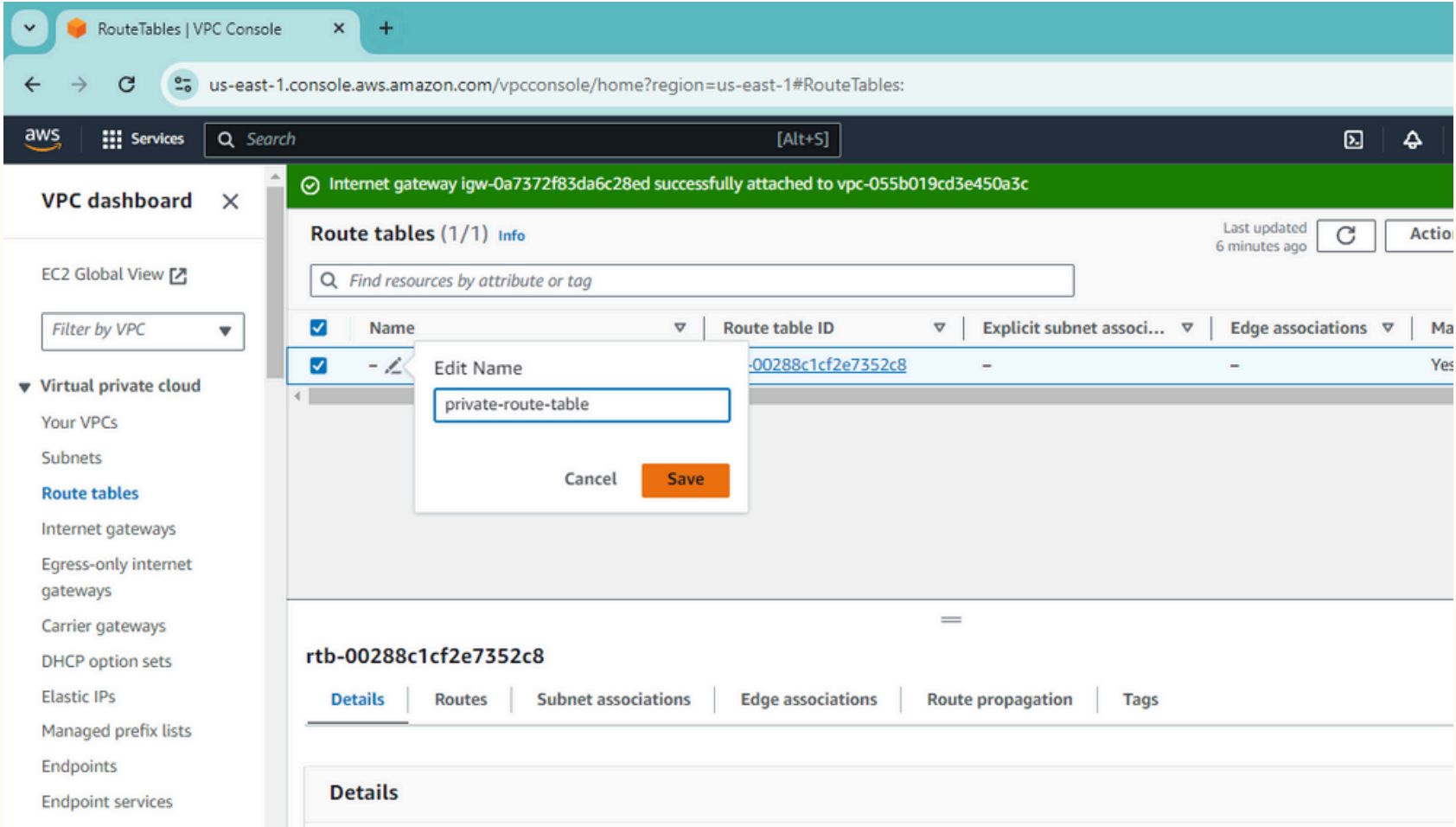
At the bottom of the console panel are two buttons: 'Cancel' and 'Attach internet gateway'.

**5.**Now we have to connect this IGW to the public subnet.For this we have to change the route tables(which are default established when subnets are created).In both Private subnet-route table and public subnet route table their Id's are same.So when we change configurations in one route table the other one will also gets changed.(i.e when we connect IGW to public subnet it will also be attached to private subnet)

**6.**Now create a new route table in the VPC in the name of “public-rt”.

**7.**And one route-table will be default created during subnet creation name that as “private-rt”.





8.Now go to “private-rt” >edit subnet associations>select private subnet >save it.

EditRouteTableSubnetAssociatic

us-east-1.console.aws.amazon.com/vpccconsole/home?region=us-east-1#EditRouteTableSubnetAssociations:RouteTableId=rtb-00288c1cf2e7352c8

aws Services Search [Alt+S]

N. Virginia Pushpa

VPC > Route tables > rtb-00288c1cf2e7352c8 > Edit subnet associations

Edit subnet associations

Change which subnets are associated with this route table.

Available subnets (1/2)

Filter subnet associations

< 1 >

	Name	Subnet ID	IPv4 CIDR	IPv6 CIDR	Route table ID
<input checked="" type="checkbox"/>	private subnet	subnet-095a2fddf47ecd883	10.0.1.0/24	–	Main (rtb-00288c1cf2e7352c8 /
<input type="checkbox"/>	public-subnet	subnet-08efb21796aec32d9	10.0.0.0/24	–	Main (rtb-00288c1cf2e7352c8 /

Selected subnets

subnet-095a2fddf47ecd883 / private subnet

Cancel

Save associations



9. Now go to “public-rt” > edit routes > 0.0.0.0 & IGW > save it.

us-east-1.console.aws.amazon.com/vpcconsole/home?region=us-east-1#EditRoutes:RouteTableId=rtb-01f730e81d24cd1e1

aws Services Search [Alt+S] N. Virginia Pushpa

VPC > Route tables > rtb-01f730e81d24cd1e1 > Edit routes

### Edit routes

Destination	Target	Status	Propagated
10.0.0.0/16	local	Active	No
0.0.0.0/0	Internet Gateway	-	No

igw-0a7372f83da6c28ed

Add route

Cancel Preview Save changes

And goto edit subnet associations>select public subnet >save it

The screenshot shows the AWS Management Console interface for editing subnet associations. The breadcrumb navigation is: VPC > Route tables > rtb-01f730e81d24cd1e1 > Edit subnet associations. The main heading is 'Edit subnet associations' with a subtext 'Change which subnets are associated with this route table.' Below this is a section titled 'Available subnets (1/2)' with a search bar 'Filter subnet associations'. A table lists two subnets: 'private subnet' (subnet-095a2fddf47ecd883, 10.0.1.0/24) and 'public-subnet' (subnet-08efb21796aec32d9, 10.0.0.0/24). The 'public-subnet' is selected with a checkbox. The 'Route table ID' column shows 'rtb-00288c1cf2e7352c8 / private-rc' for the private subnet and 'Main (rtb-00288c1cf2e7352c8 / priv' for the public subnet. Below the table is a 'Selected subnets' section showing 'subnet-08efb21796aec32d9 / public-subnet' with a close button. At the bottom right are 'Cancel' and 'Save associations' buttons.

	Name	Subnet ID	IPv4 CIDR	IPv6 CIDR	Route table ID
<input type="checkbox"/>	private subnet	subnet-095a2fddf47ecd883	10.0.1.0/24	-	rtb-00288c1cf2e7352c8 / private-rc
<input checked="" type="checkbox"/>	public-subnet	subnet-08efb21796aec32d9	10.0.0.0/24	-	Main (rtb-00288c1cf2e7352c8 / priv

Selected subnets

subnet-08efb21796aec32d9 / public-subnet X

Cancel Save associations

Now we have attached IGW to public subnet.

10. Now go to EC2 and launch 2 linux instances with same keypair(.pem)

1. public instance:-

- In the network give VPC to it
- In the subnet give public subnet
- In configure Security Group add one rule(Custom tcp, port num-80 ,anywhere)

2. private instance:-

- In the network give VPC to it
- In the subnet give private subnet
- In configure Security Group ,no need of adding another one just leave ssh -22 but change it to custom and keep "10.0.0.0/16".

Instances | EC2 | us-east-1

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

aws Services Search [Alt+S]

EC2 Dashboard

EC2 Global View

Events

Console-to-Code [Preview](#)

Instances

Instances

Instance TypesLaunch TemplatesSpot RequestsSavings PlansReserved InstancesDedicated HostsCapacityReservations [New](#)

Images

AMIs

AMI Catalog

Instances (2/5) Info

Last updated less than a minute ago

Connect

Instance state

Actions

Launch instances

Find Instance by attribute or tag (case-sensitive)

All states

< 1 >

	Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Z
<input type="checkbox"/>	public	i-05a63c15388e1182d	Terminated	t2.micro	–	<a href="#">View alarms</a>	us-east-1a
<input checked="" type="checkbox"/>	private	i-09ee6132dbd1a84e0	Running	t2.micro	Initializing	<a href="#">View alarms</a>	us-east-1b
<input type="checkbox"/>	private-server-2	i-094e5a3de0ba4438a	Terminated	t2.micro	–	<a href="#">View alarms</a>	us-east-1b
<input type="checkbox"/>	public-server	i-06e856e1afa160843	Terminated	t2.micro	–	<a href="#">View alarms</a>	us-east-1a
<input checked="" type="checkbox"/>	public	i-09191e75f86d39ec9	Running	t2.micro	2/2 checks passed	<a href="#">View alarms</a>	us-east-1a

2 instances selected

# After creating public instance enable vpc's DNS host names

us-east-1.console.aws.amazon.com/vpcconsole/home?region=us-east-1#EditVpcSettings:VpcId=vpc-055b019cd3e450a3c

aws Services Search [Alt+S]

vpc-project

### DHCP settings

DHCP option set [Info](#)

dopt-0b7fdb71fa5604549

### DNS settings

- ☒ Enable DNS resolution [Info](#)
- ☒ Enable DNS hostnames [Info](#)

### Network Address Usage metrics settings

- ☐ Enable Network Address Usage metrics [Info](#)

Cancel Save

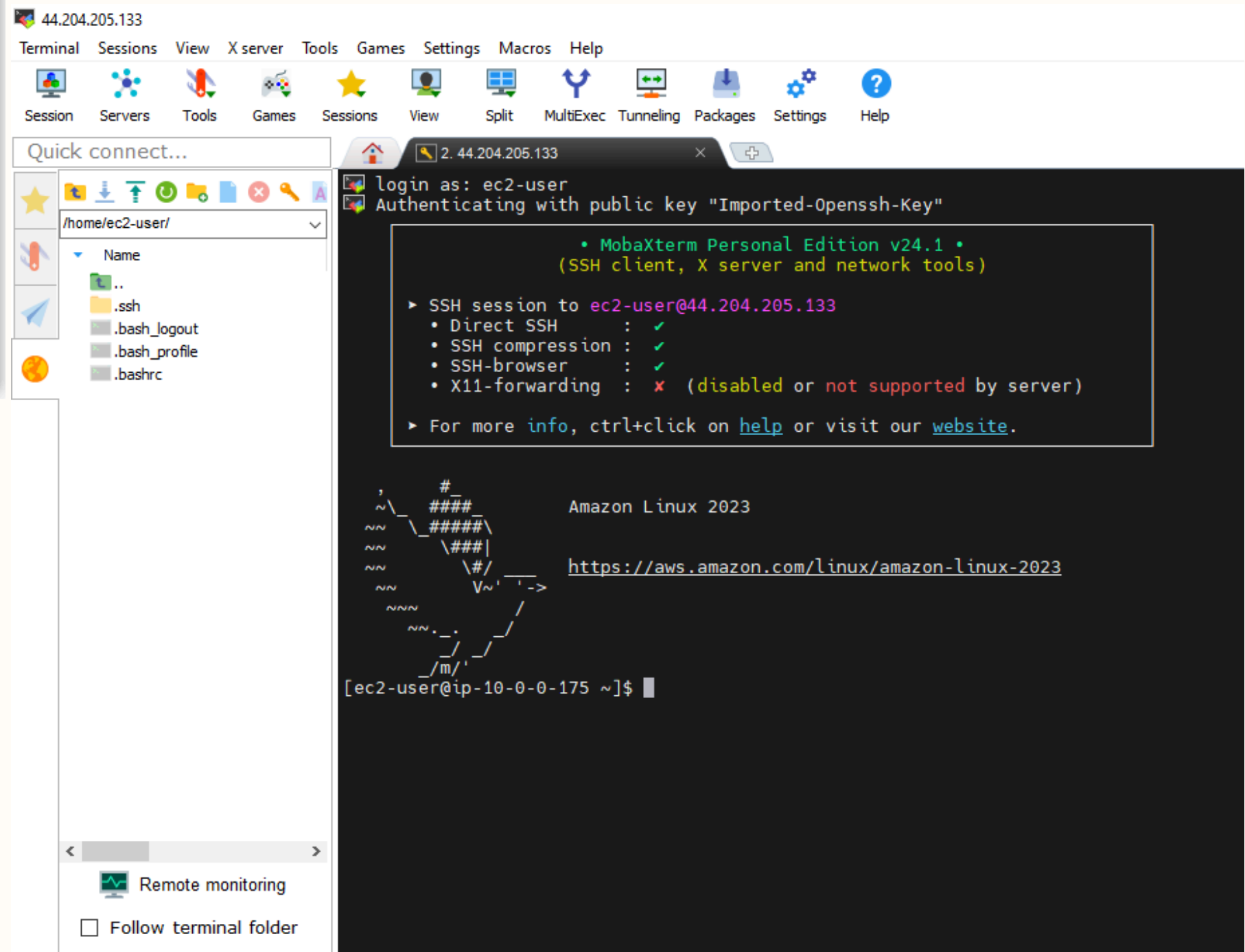
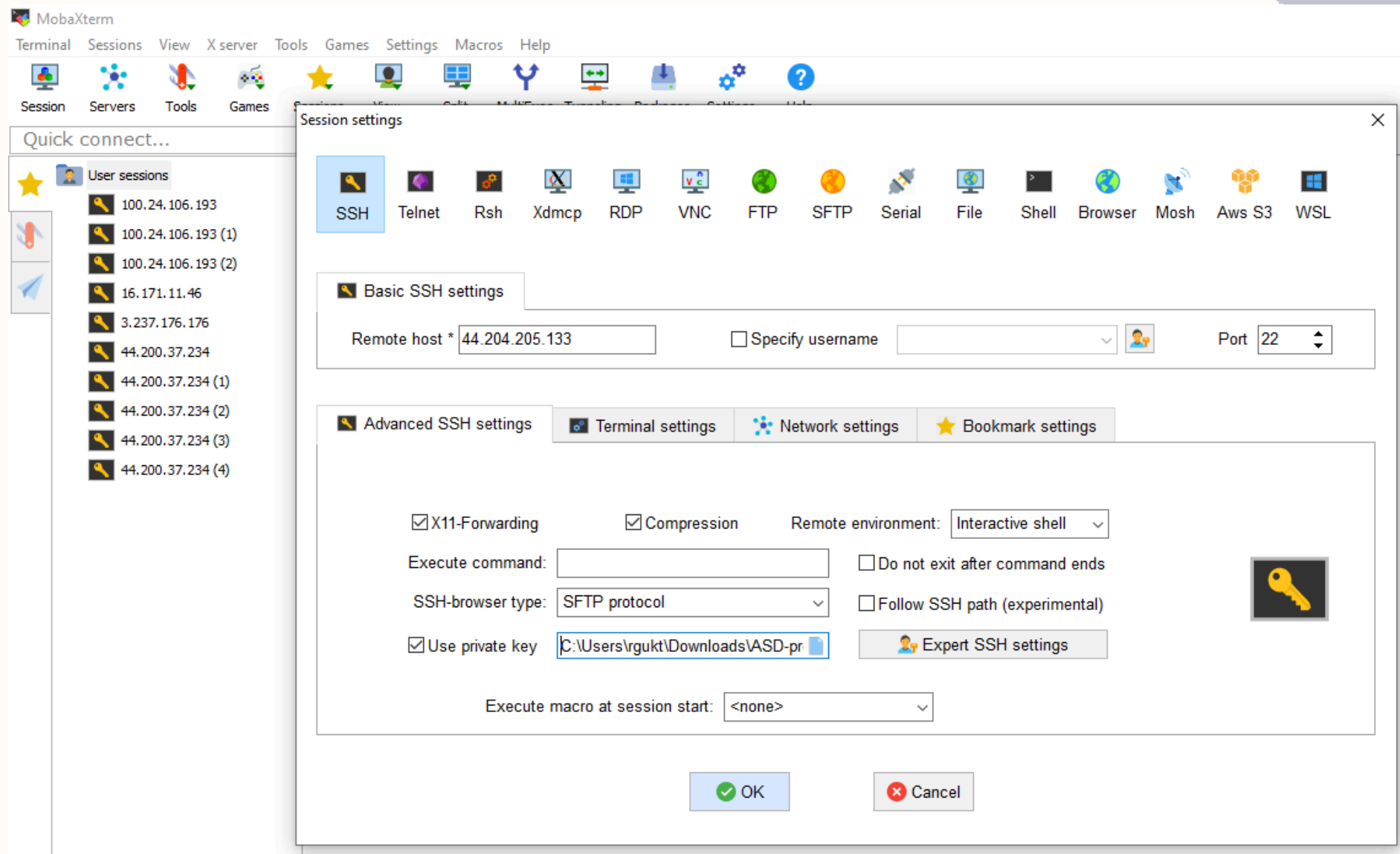
## Entering into the Instances

- we are using “mobaxterm” app instead of “putty” because in mobaxterm we don’t have to convert the .pem file again into .ppk
- go to MobaXterm >session>remote host(give public ip)>username(optional)>advanced ssh settings >use private key (mark it)>give your keypair<ok

Now we are in our ec2-instance(public-instance)

- Login as:ec2-user
- Now try to enter into private ec2-instance with same process,but we will get connection timeout error becoz we didn’t give any access to private-instance.
- So now we will try to enter into private instance through the public instance.





# STEPS to enter into private instance through public instance:-

- In the server(public-instance) , in the left side click on “up arrow” and upload your keypair file
- In the Public Instance type “ssh”
- Now go to `aws>dashboard>private-ec2 instance>connect >ssh client>copy the chmod (3rd step) and paste it in ec2 server`
- Then copy the example and paste it it ec2 server>enter
- Check the IP address of the server you are currently in and compare it to the private IP address of Private ec2 instance.

Connect to instance | EC2 | us-e

us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#ConnectToInstance:instanceId=i-09ee6132dbd1a84e0

aws Services Search [Alt+S] N. Virginia Pushpa

# Connect to instance Info

Connect to your instance i-09ee6132dbd1a84e0 (private) using any of these options


EC2 Instance Connect



Session Manager

**SSH client**


EC2 serial console

Instance ID

 i-09ee6132dbd1a84e0 (private)

1. Open an SSH client.
2. Locate your private key file. The key used to launch this instance is ASD-project-keypair.pem
3. Run this command, if necessary, to ensure your key is not publicly viewable.  
 `chmod 400 "ASD-project-keypair.pem"`
4. Connect to your instance using its Public DNS:  
 `ec2-3-83-175-206.compute-1.amazonaws.com`

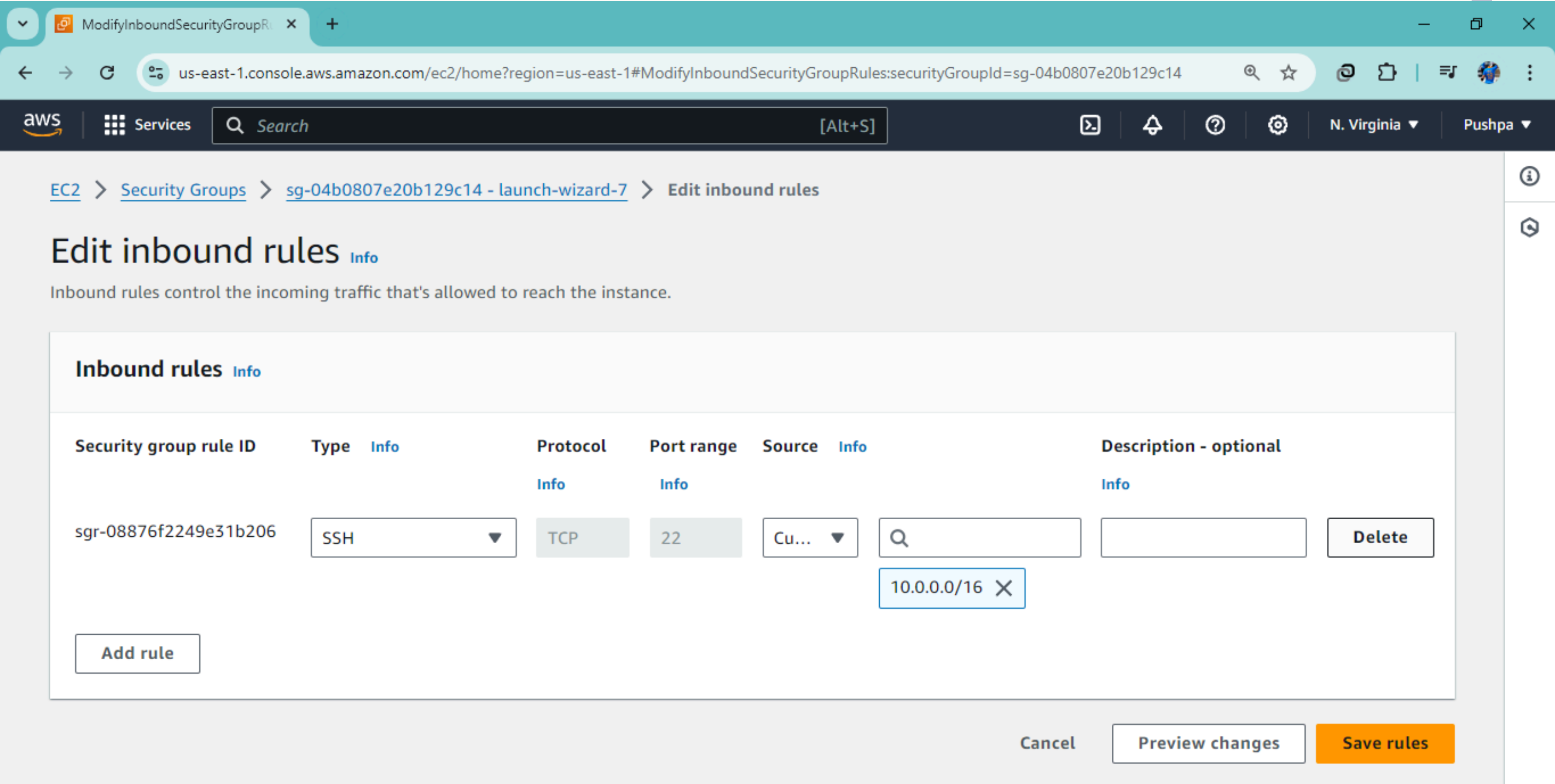
Example:

 `ssh -i "ASD-project-keypair.pem" ec2-user@ec2-3-83-175-206.compute-1.amazonaws.com`

**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.



11.Now goto private ec2>security>security group(click)>edit inbound rule>delete>save



we have deleted the above rule



12. Now logout from private server (by clicking Ctrl+d) and again login to private server.

- we may get connection timeout error since we removed inbound rules

- Now let's again edit the inbound rules of private instance

- Copy the private IP of public server

- goto private server > security group > edit inbound rule > add rule > give custom, port range-22, and paste that IP address (also give /32 so that only one IP address will be allowed (that one is not ngn but the public server))

- What we have done is we given access to connect to private server only through public server, no other servers can connect to the private server now.

- Now go to public server and try connecting to private server.



# Edit inbound rules Info

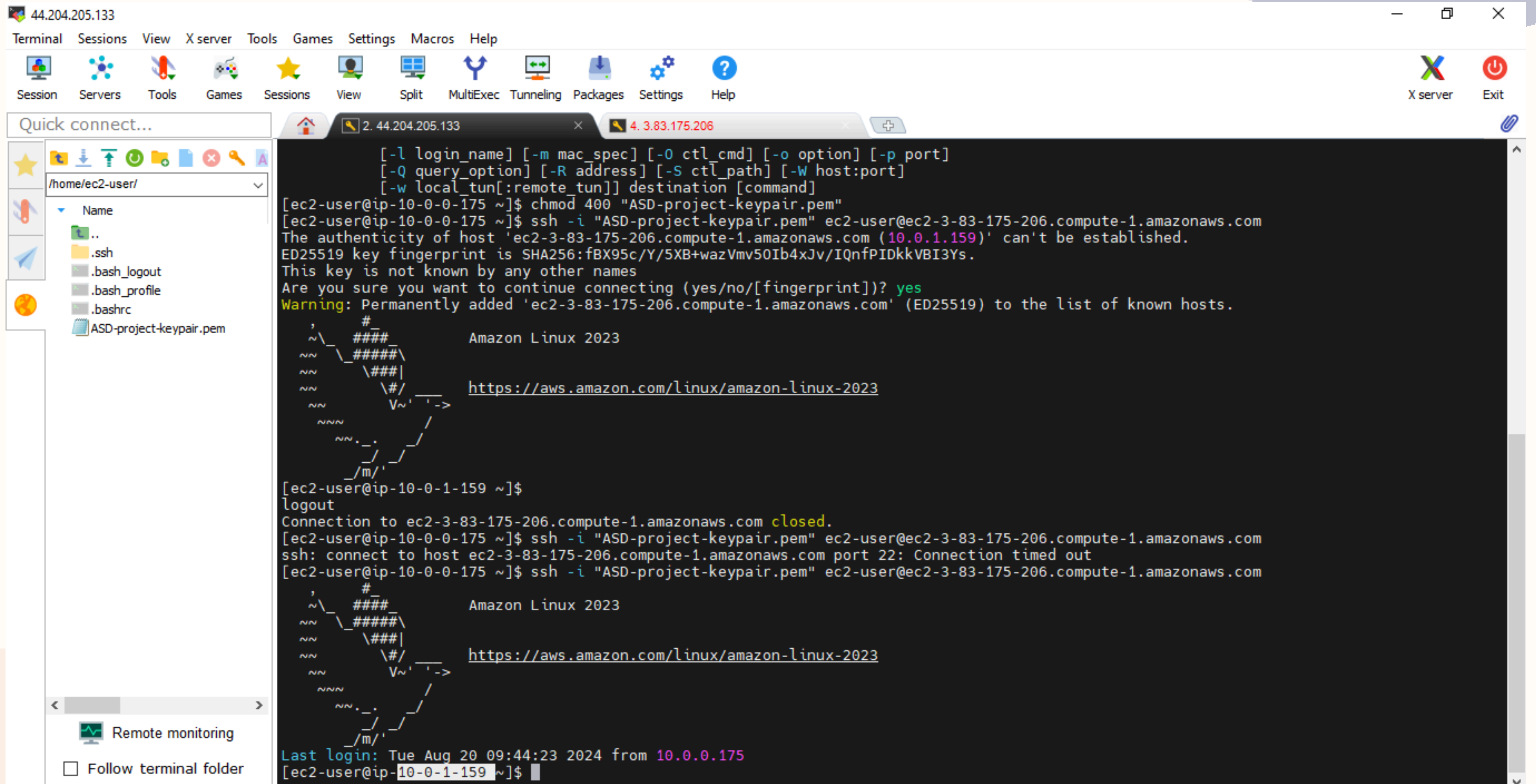
Inbound rules control the incoming traffic that's allowed to reach the instance.

Inbound rules Info

Security group rule ID	Type <small>Info</small>	Protocol <small>Info</small>	Port range <small>Info</small>	Source <small>Info</small>	Description - optional <small>Info</small>
-	Custom TCP ▼	TCP	22	Cu... ▼ <div><div>🔍 10.0.0.175/32 ✕</div><div>10.0.0.175/32 ✕</div></div>	<div></div> <div>Delete</div>

Add rule

-Now go to public server and try connecting to private server.



The screenshot shows a terminal window titled "44.204.205.133" with a menu bar (Terminal, Sessions, View, X server, Tools, Games, Settings, Macros, Help) and a toolbar. The left sidebar shows a file explorer for "/home/ec2-user/" with files like ".ssh", ".bash\_logout", ".bash\_profile", ".bashrc", and "ASD-project-keypair.pem". The main terminal area shows the following commands and output:

```
[ec2-user@ip-10-0-0-175 ~]$ chmod 400 "ASD-project-keypair.pem"
[ec2-user@ip-10-0-0-175 ~]$ ssh -i "ASD-project-keypair.pem" ec2-user@ec2-3-83-175-206.compute-1.amazonaws.com
The authenticity of host 'ec2-3-83-175-206.compute-1.amazonaws.com (10.0.1.159)' can't be established.
ED25519 key fingerprint is SHA256:fbX95c/Y/5XB+wazVmv50Ib4xJv/IQnfPIDkkVBI3Ys.
This key is not known by any other names
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added 'ec2-3-83-175-206.compute-1.amazonaws.com' (ED25519) to the list of known hosts.

#
~\##### Amazon Linux 2023
~~\#####\
~~\###|
~~\#/
~~V~' -> https://aws.amazon.com/linux/amazon-linux-2023
~~~
~~~.~.~
~~~\m/' ->

[ec2-user@ip-10-0-1-159 ~]$
logout
Connection to ec2-3-83-175-206.compute-1.amazonaws.com closed.
[ec2-user@ip-10-0-0-175 ~]$ ssh -i "ASD-project-keypair.pem" ec2-user@ec2-3-83-175-206.compute-1.amazonaws.com
ssh: connect to host ec2-3-83-175-206.compute-1.amazonaws.com port 22: Connection timed out
[ec2-user@ip-10-0-0-175 ~]$ ssh -i "ASD-project-keypair.pem" ec2-user@ec2-3-83-175-206.compute-1.amazonaws.com

#
~\##### Amazon Linux 2023
~~\#####\
~~\###|
~~\#/
~~V~' -> https://aws.amazon.com/linux/amazon-linux-2023
~~~
~~~.~.~
~~~\m/' ->

Last login: Tue Aug 20 09:44:23 2024 from 10.0.0.175
[ec2-user@ip-10-0-1-159 ~]$
```

At the bottom of the terminal window, there are checkboxes for "Remote monitoring" (checked) and "Follow terminal folder" (unchecked).

-lets try small html code

-ssh

-sudo yum install httpd -y

-sudo service httpd start

-sudo vim /var/www/html/index.html

(html code here)

type “i” so you can write the code

-after press “esc” and type “:wq”

44.204.205.133

TerminalSessionsViewX serverToolsGamesSettingsMacrosHelp

SessionServersToolsGamesSessionsViewSplitMultiExecTunnelingPackagesSettingsHelp

X serverExit

Quick connect...

2. 44.204.205.1334. 3.83.175.206

Star

Download

Upload

Refresh

Folder

File

Close

Key

Search

/home/ec2-user/

Name

..

.ssh

.bash\_logout

.bash\_profile

.bashrc

ASD-project-keypair.pem

Installing: apr-1.7.2-2.amzn2023.0.2.x86\_641/12

Installing: apr-util-openssl-1.6.3-1.amzn2023.0.1.x86\_642/12

Installing: apr-util-1.6.3-1.amzn2023.0.1.x86\_643/12

Installing: mailcap-2.1.49-3.amzn2023.0.3.noarch4/12

Installing: httpd-tools-2.4.62-1.amzn2023.x86\_645/12

Installing: libbrotli-1.0.9-4.amzn2023.0.2.x86\_646/12

Running scriptlet: httpd-filesystem-2.4.62-1.amzn2023.noarch7/12

Installing: httpd-filesystem-2.4.62-1.amzn2023.noarch7/12

Installing: httpd-core-2.4.62-1.amzn2023.x86\_648/12

Installing: mod\_http2-2.0.27-1.amzn2023.0.3.x86\_649/12

Installing: mod\_lua-2.4.62-1.amzn2023.x86\_6410/12

Installing: generic-logos-httpd-18.0.0-12.amzn2023.0.3.noarch11/12

Installing: httpd-2.4.62-1.amzn2023.x86\_6412/12

Running scriptlet: httpd-2.4.62-1.amzn2023.x86\_6412/12

Verifying: apr-1.7.2-2.amzn2023.0.2.x86\_641/12

Verifying: apr-util-1.6.3-1.amzn2023.0.1.x86\_642/12

Verifying: apr-util-openssl-1.6.3-1.amzn2023.0.1.x86\_643/12

Verifying: generic-logos-httpd-18.0.0-12.amzn2023.0.3.noarch4/12

Verifying: httpd-2.4.62-1.amzn2023.x86\_645/12

Verifying: httpd-core-2.4.62-1.amzn2023.x86\_646/12

Verifying: httpd-filesystem-2.4.62-1.amzn2023.noarch7/12

Verifying: httpd-tools-2.4.62-1.amzn2023.x86\_648/12

Verifying: libbrotli-1.0.9-4.amzn2023.0.2.x86\_649/12

Verifying: mailcap-2.1.49-3.amzn2023.0.3.noarch10/12

Verifying: mod\_http2-2.0.27-1.amzn2023.0.3.x86\_6411/12

Verifying: mod\_lua-2.4.62-1.amzn2023.x86\_6412/12

Installed:

apr-1.7.2-2.amzn2023.0.2.x86\_64apr-util-1.6.3-1.amzn2023.0.1.x86\_64apr-util-openssl-1.6.3-1.amzn2023.0.1.x86\_64

generic-logos-httpd-18.0.0-12.amzn2023.0.3.noarchhttpd-2.4.62-1.amzn2023.x86\_64httpd-core-2.4.62-1.amzn2023.x86\_64

httpd-filesystem-2.4.62-1.amzn2023.noarchhttpd-tools-2.4.62-1.amzn2023.x86\_64libbrotli-1.0.9-4.amzn2023.0.2.x86\_64

mailcap-2.1.49-3.amzn2023.0.3.noarchmod\_http2-2.0.27-1.amzn2023.0.3.x86\_64mod\_lua-2.4.62-1.amzn2023.x86\_64

Complete!

[ec2-user@ip-10-0-0-175 ~]\$ sudo service httpd start

Redirecting to /bin/systemctl start httpd.service

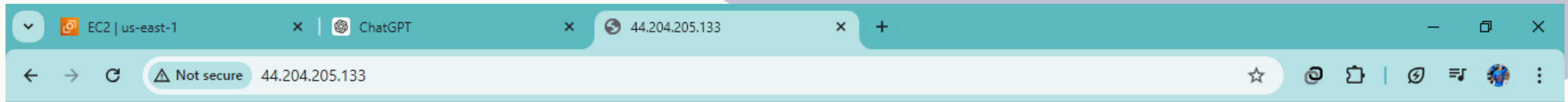
[ec2-user@ip-10-0-0-175 ~]\$ sudo vim /var/www/html/index.html

[ec2-user@ip-10-0-0-175 ~]\$

Remote monitoring

Follow terminal folder





**This is my project output on VPC handson**

-Now copy public ip and browse we will get the output.



Thank you!