

**Course: DevOps**

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**Module: EBS &EFS**

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**Batch no: 115**

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**Assignment:8**

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## **1.To create one EBS (Elastic Block Store) volume and attach it to 3 instances**

Sign in to the AWS Management Console.

click on "Security Groups".

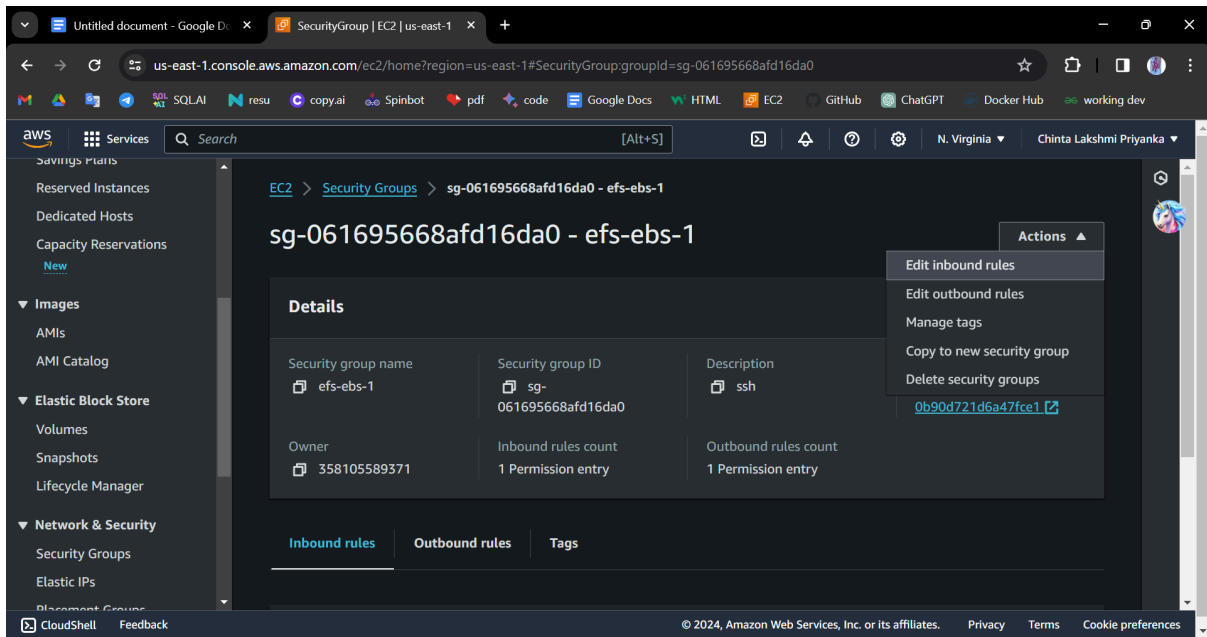
Click the "Create Security Group" button.

In the "Create Security Group" wizard, configure the security group settings:

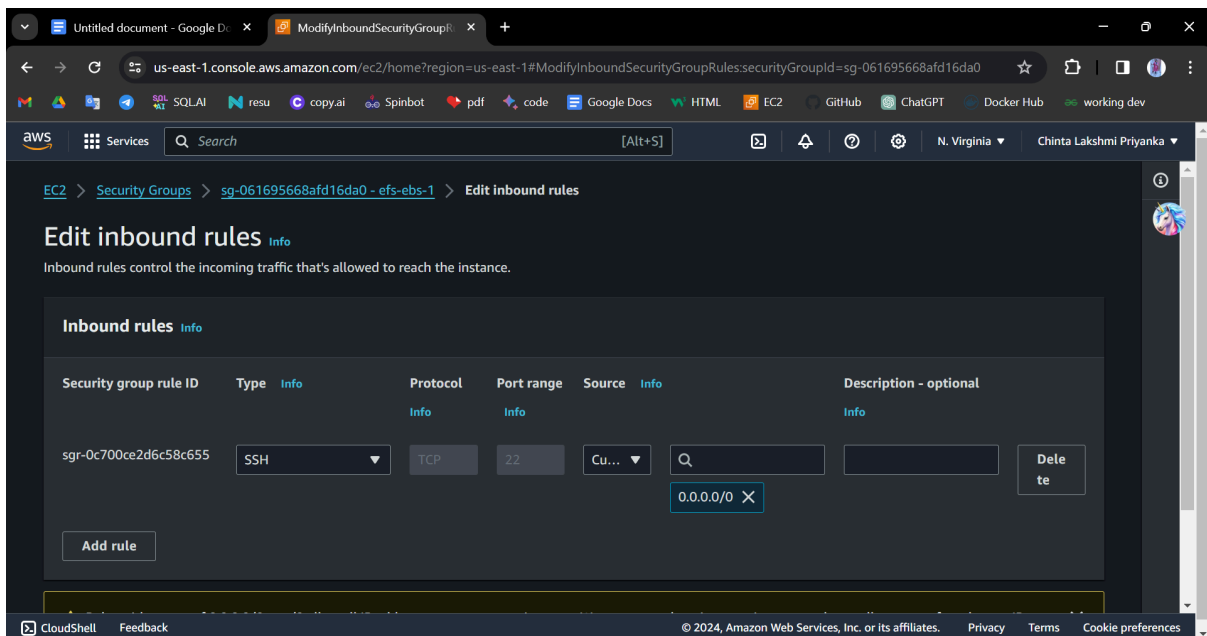
Enter a name for the security group in the "Security group name" field.

Optionally, enter a description for the security group in the "Description" field.

Select the VPC (Virtual Private Cloud) where you want to create the security group(in this it was in default mood).



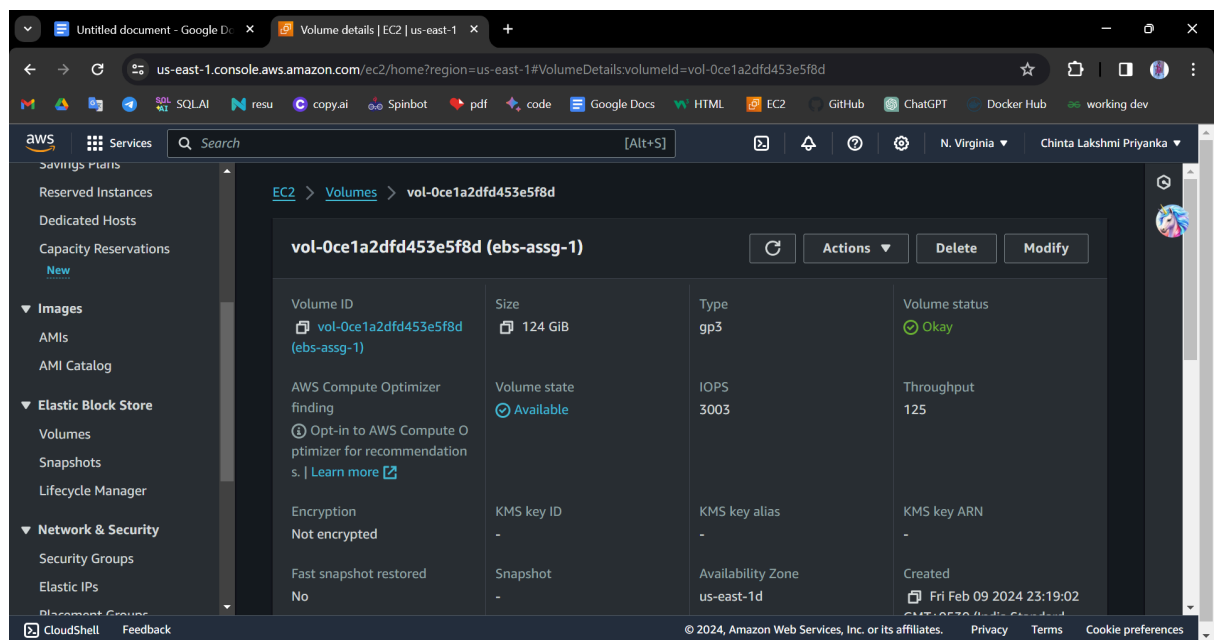
In the "Inbound Rules" section, define the inbound traffic rules for the security group. You can add rules based on your application's requirements, such as allowing SSH (port 22) or HTTP (port 80) traffic. Click the "Add Rule" button to add rules.



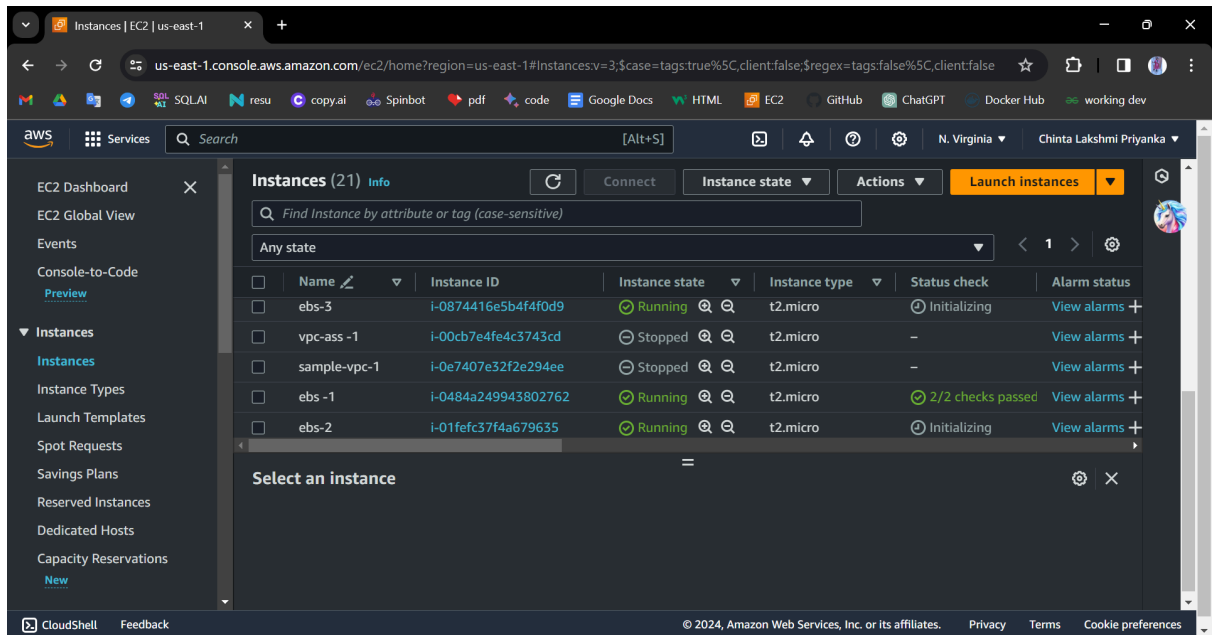
Click the "Create" button to create the security group.

Now create ebs

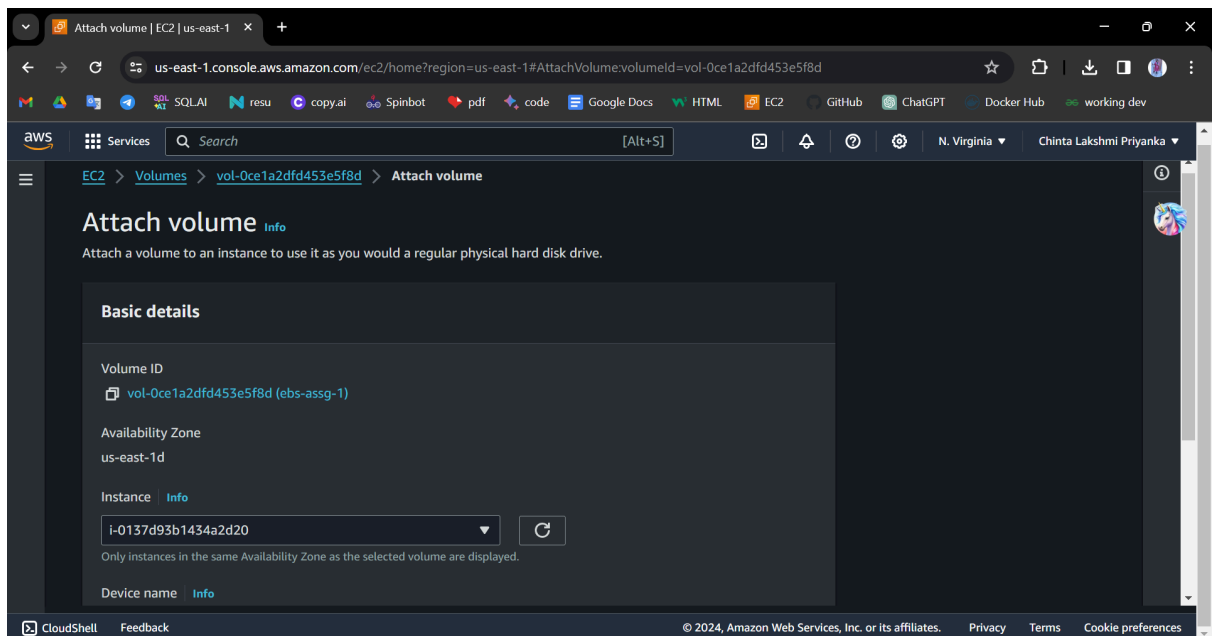
1. Open the Amazon EC2 console at <https://console.aws.amazon.com/ec2/>.
2. In the navigation pane, click on "Volumes".
3. Click the "Create Volume" button.



4. In the "Create Volume" wizard, configure the volume settings:
  - Select the desired Volume Type, Size, Availability Zone, and other settings according to your requirements.
5. Click the "Create" button to create the EBS volume.
6. Once the volume is created, note down the Volume ID.
7. Now go to the EC2 instance and create 3 instances



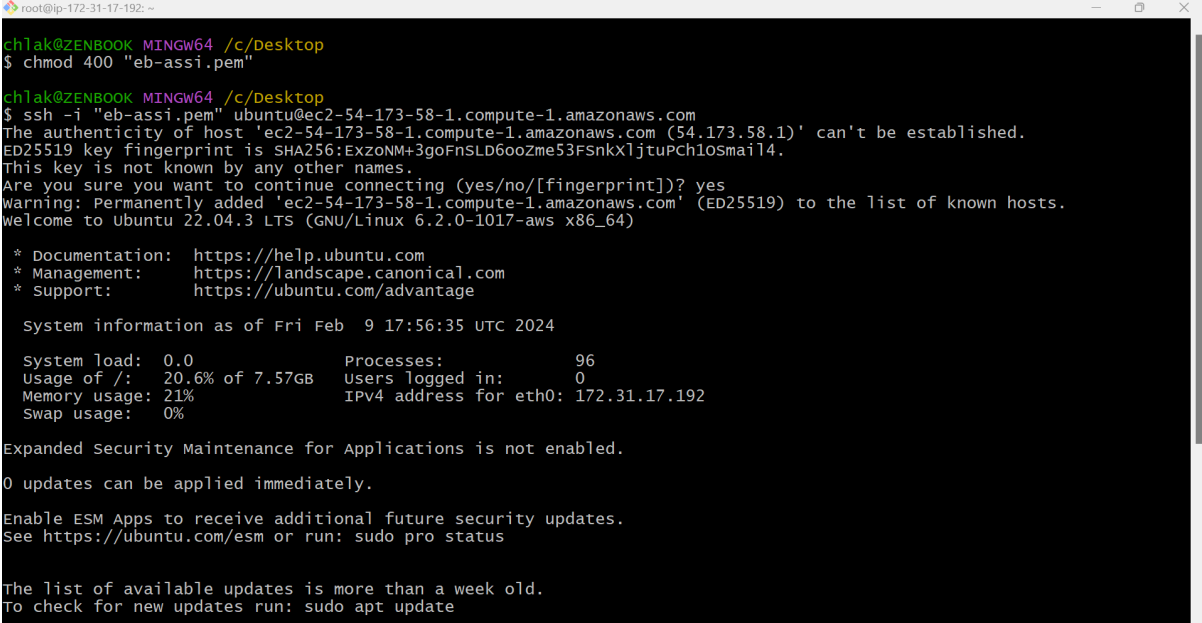
8. In the navigation pane, click on "Instances" and select the instances you want to attach the EBS volume to.
9. Click on the "Actions" button and select "Attach Volume".
10. Attach the first instance to ebs volume.



Now, Connect the instance

To create a file system on an EBS (Elastic Block Store) volume after connecting it to an instance, you can follow these steps:

1. Connect to the instance that has the EBS volume attached using SSH or any other remote access method.

A terminal window showing an SSH session. The user is at a Windows machine (MINGW64) and connects to an Ubuntu instance. The terminal output includes the SSH command, host fingerprint, connection confirmation, and system information for Ubuntu 22.04.3 LTS.

```
root@ip-172-31-17-192: ~  
ch1ak@ZENBOOK MINGW64 /c/Desktop  
$ chmod 400 "eb-assi.pem"  
ch1ak@ZENBOOK MINGW64 /c/Desktop  
$ ssh -i "eb-assi.pem" ubuntu@ec2-54-173-58-1.compute-1.amazonaws.com  
The authenticity of host 'ec2-54-173-58-1.compute-1.amazonaws.com (54.173.58.1)' can't be established.  
ED25519 key fingerprint is SHA256:EXzoNM+3goFnSLD6ooZme53FSnkXlJtuPCh10Smai14.  
This key is not known by any other names.  
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes  
warning: Permanently added 'ec2-54-173-58-1.compute-1.amazonaws.com' (ED25519) to the list of known hosts.  
Welcome to Ubuntu 22.04.3 LTS (GNU/Linux 6.2.0-1017-aws x86_64)  
  
* Documentation:  https://help.ubuntu.com  
* Management:    https://landscape.canonical.com  
* Support:        https://ubuntu.com/advantage  
  
System information as of Fri Feb  9 17:56:35 UTC 2024  
  
System load:  0.0          Processes:            96  
Usage of /:   20.6% of 7.57GB   Users logged in:     0  
Memory usage: 21%          IPv4 address for eth0: 172.31.17.192  
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
```

2. Once connected to the instance, you need to identify the device name of the EBS volume that you want to create a file system on.

## lsblk

This command will display a list of available block devices, including the attached EBS volume. It will show the device name (e.g., /dev/xvdf, /dev/sdf) of the volume you want to use for creating the file system.

**To create file system:**

```
mkfs -s /dev/xvdf
```

**To create directory:**

```
mkdir -p aws/v1&v2
```

4. After the file system is created, you may need to mount it to a directory so that you can access and use it.

```
mount /dev/xvdf aws/v1
```

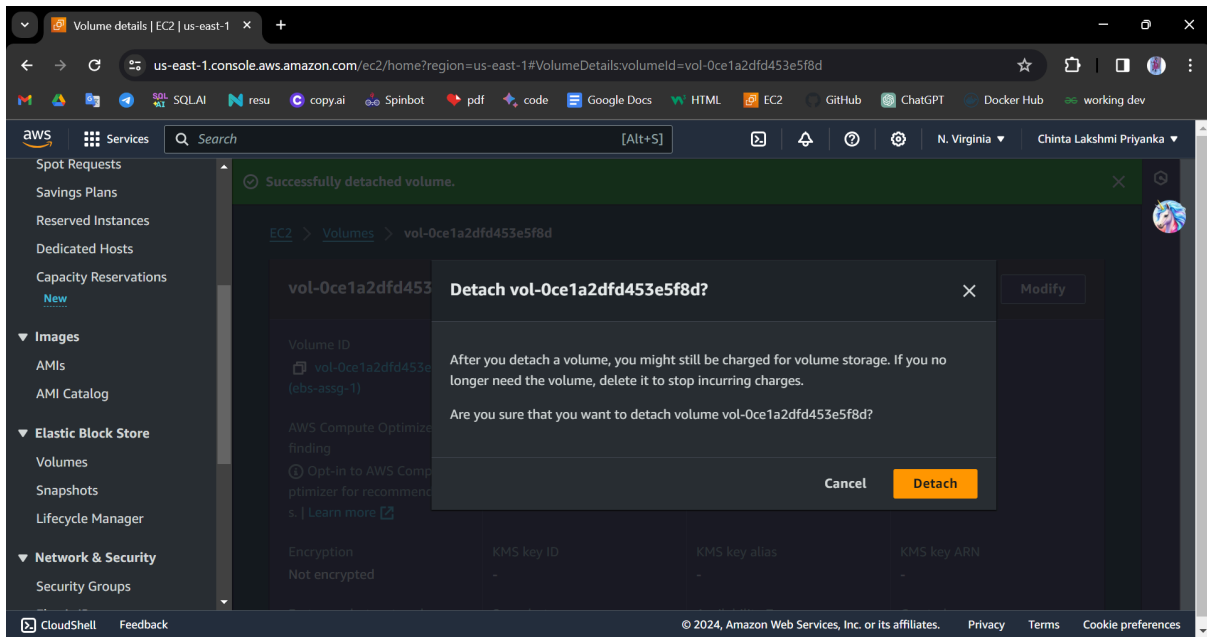
5. You can verify the mounted file system by using the **df -h** command, which lists the file systems and their mount points.

```
df -h
```

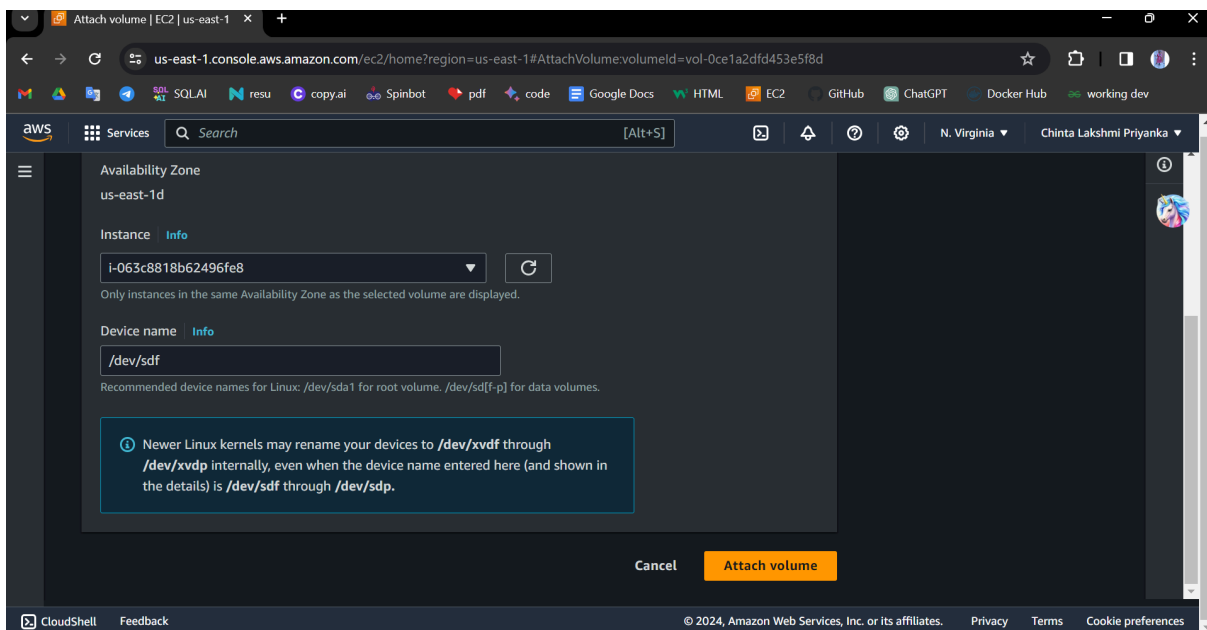
```
root@ip-172-31-17-192: ~  
[-g blocks-per-group] [-L volume-label] [-M last-mounted-directory]  
[-O feature[,...]] [-r fs-revision] [-E extended-option[,...]]  
[-t fs-type] [-T usage-type] [-u UUID] [-e errors_behavior][-z undo_file]  
[-jnvDFSv] device [blocks-count]  
root@ip-172-31-17-192:~# mkfs -t xfs /dev/xvdf  
meta-data=/dev/xvdf          isize=512    agcount=4, agsize=8126464 blks  
=                               sectsz=512   attr=2, projid32bit=1  
=                               crc=1       finobt=1, sparse=1, rmapbt=0  
=                               reflink=1    bigtime=0 inobtcount=0  
data      =                   bsize=4096   blocks=32505856, imaxpct=25  
=                               sunit=0      swidth=0 blks  
naming    =version 2          bsize=4096   ascii-ci=0, ftype=1  
log       =                   bsize=4096   blocks=15872, version=2  
=                               sectsz=512   sunit=0 blks, lazy-count=1  
realtime  =none              extsz=4096   blocks=0, rtextents=0  
root@ip-172-31-17-192:~# mkdir -p aws/v1&v2  
[1] 1994  
v2: command not found  
[1]+  Done                  mkdir -p aws/v1  
root@ip-172-31-17-192:~# cd aws/  
root@ip-172-31-17-192:~/aws# ls  
v1  
root@ip-172-31-17-192:~/aws# cd  
root@ip-172-31-17-192:~# mount /dev/xvdf aws/v1  
root@ip-172-31-17-192:~# df -h  
Filesystem      Size  Used Avail Use% Mounted on  
/dev/root       7.6G  1.6G  6.0G  21% /  
tmpfs           475M    0  475M   0% /dev/shm  
tmpfs           190M  852K  190M   1% /run  
tmpfs           5.0M    0   5.0M   0% /run/lock  
/dev/xvda15     105M  6.1M   99M   6% /boot/efi  
tmpfs           95M   4.0K   95M   1% /run/user/1000  
/dev/xvdf       124G  918M  124G   1% /root/aws/v1  
root@ip-172-31-17-192:~# |
```

Now, you should have successfully created a file system on the EBS volume and mounted it to the desired directory on the instance.

Now detach the volume and attach it to another ebs-2 instance



Attach to the second volume.



Now check whether the file system is created or not.

```
root@ip-172-31-23-68: ~
Are you sure you want to continue connecting (yes/no/[fingerprint])
? yes
Warning: Permanently added 'ec2-54-174-82-129.compute-1.amazonaws.com' (ED25519) to the list of known hosts.
Welcome to Ubuntu 22.04.3 LTS (GNU/Linux 6.2.0-1017-aws x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:    https://landscape.canonical.com
 * Support:       https://ubuntu.com/advantage

System information as of Sat Feb 10 04:28:41 UTC 2024

System load:  0.00830078125   Processes:           100
Usage of /:   20.6% of 7.57GB   Users logged in:     0
Memory usage: 20%            IPv4 address for eth0: 172.31.23.68
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

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-172-31-23-68:~$ sudo -i
root@ip-172-31-23-68:~#
```

And check whether the file system is created or not.

```
root@ip-172-31-23-68: ~
To check for new updates run: sudo apt update

Last login: Sat Feb 10 06:11:01 2024 from 103.88.236.42
ubuntu@ip-172-31-23-68:~$ sudo -i
root@ip-172-31-23-68:~# df -h
Filesystem      Size  Used Avail Use% Mounted on
/dev/root        7.6G  1.8G  5.8G  24% /
tmpfs           475M    0  475M   0% /dev/shm
tmpfs           190M  848K  190M   1% /run
tmpfs           5.0M    0   5.0M   0% /run/lock
/dev/xvda15     105M   6.1M   99M   6% /boot/efi
tmpfs           95M   4.0K   95M   1% /run/user/1000

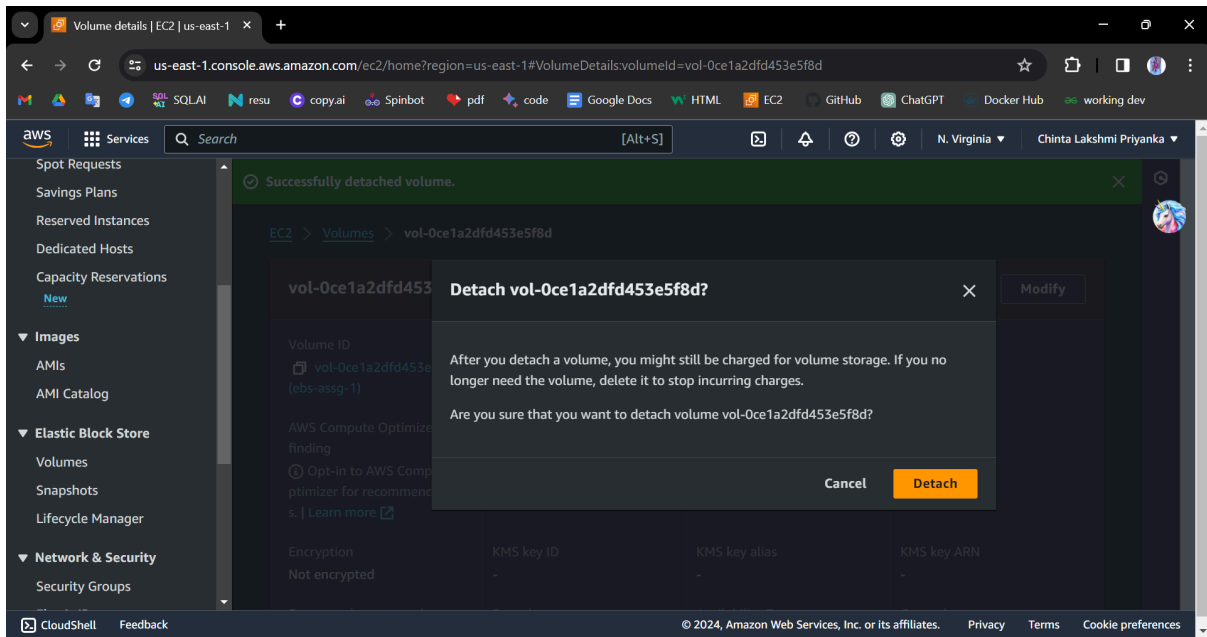
root@ip-172-31-23-68:~# s1blk
Command 's1blk' not found, did you mean:
  command 'lsblk' from deb util-linux (2.37.2-4ubuntu3)
Try: apt install <deb name>
root@ip-172-31-23-68:~# lsblk
NAME        MAJ:MIN RM  SIZE RO TYPE MOUNTPOINTS
loop0        7:0    0   24.9M  1 loop /snap/amazon-ssm-agent/7628
loop1        7:1    0   55.7M  1 loop /snap/core18/2812
loop2        7:2    0   63.5M  1 loop /snap/core20/2015
loop3        7:3    0   63.9M  1 loop /snap/core20/2105
loop4        7:4    0  111.9M  1 loop /snap/lxd/24322
loop5        7:5    0    87M   1 loop /snap/lxd/27037
loop6        7:6    0   40.9M  1 loop /snap/snapd/20290
loop7        7:7    0   40.4M  1 loop /snap/snapd/20671
xvda        202:0    0    8G   0 disk
├─xvda1     202:1    0   7.9G   0 part /
├─xvda14    202:14   0     4M   0 part
└─xvda15    202:15   0   106M  0 part /boot/efi
xvdf        202:80   0  124G   0 disk

root@ip-172-31-23-68:~# file -s /dev/xvdf
/dev/xvdf: SGI XFS filesystem data (blksz 4096, inosz 512, v2 dirs)
root@ip-172-31-23-68:~#
```

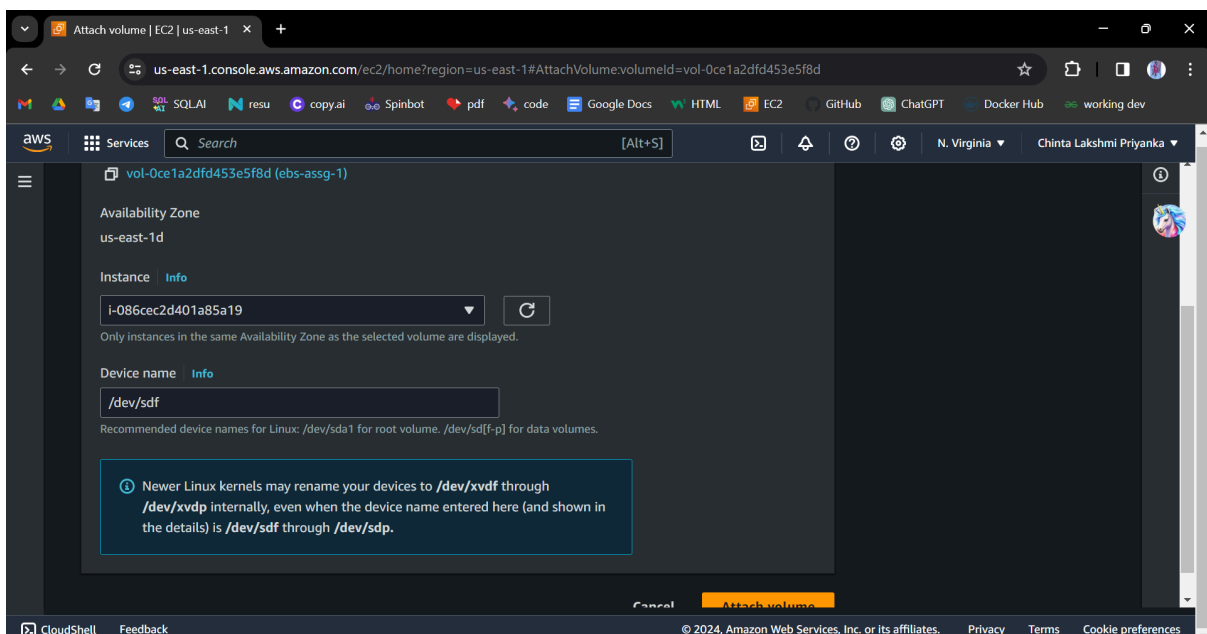
It was created. It shows that the already file exists.

Let's detach this volume and attach it to another to the third volume.





Now attach it to the third volume.



Now connect the instance and check whether the file exists or not.

```
root@ip-172-31-29-234: ~
Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status

*** System restart required ***
Last login: Sat Feb 10 05:35:56 2024 from 103.88.236.42
ubuntu@ip-172-31-29-234:~$ sudo -i
root@ip-172-31-29-234:~# df -h
Filesystem      Size  Used Avail Use% Mounted on
/dev/root        7.6G  2.3G  5.3G  31% /
tmpfs            475M   0  475M   0% /dev/shm
tmpfs            190M  864K  190M   1% /run
tmpfs            5.0M   0   5.0M   0% /run/lock
/dev/xvda15      105M   6.1M   99M   6% /boot/efi
tmpfs            95M   4.0K   95M   1% /run/user/1000
root@ip-172-31-29-234:~# lsblk
NAME        MAJ:MIN RM  SIZE RO TYPE MOUNTPOINTS
loop0        7:0    0   24.9M  1 loop /snap/amazon-ssm-agent/7628
loop1        7:1    0   55.7M  1 loop /snap/core18/2812
loop2        7:2    0   63.5M  1 loop /snap/core20/2015
loop3        7:3    0   63.9M  1 loop /snap/core20/2105
loop4        7:4    0  111.9M  1 loop /snap/lxd/24322
loop5        7:5    0    87M   1 loop /snap/lxd/27037
loop6        7:6    0   40.9M  1 loop /snap/snapd/20290
loop7        7:7    0   40.4M  1 loop /snap/snapd/20671
xvda        202:0    0    8G   0 disk
└─xvda1      202:1    0    7.9G   0 part /
└─xvda14     202:14   0     4M   0 part
└─xvda15     202:15   0   106M   0 part /boot/efi
xvdf         202:80   0   124G   0 disk
root@ip-172-31-29-234:~# file -s /dev/xvdf
/dev/xvdf: SGI XFS filesystem data (blksz 4096, inosz 512, v2 dirs)
root@ip-172-31-29-234:~#
```

It shows that the already file exists.

## 2. create efs and attach ebs to 3 different instances in 3 different availability zones.

To create an EFS (Elastic File System) and attach an EBS (Elastic Block Store) volume to 3 different instances in 3 different availability zones, Sign in to the AWS Management Console.

### 1. Open the Amazon EFS console at

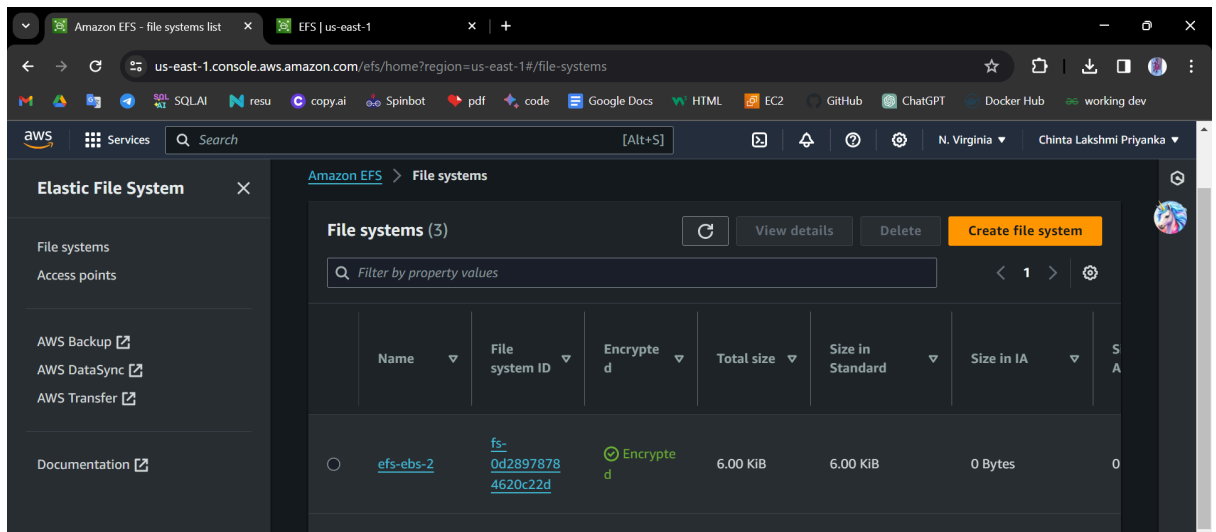
<https://console.aws.amazon.com/efs/>.

2. Click the "Create file system" button.

3. In the "Create file system" wizard, configure the file system settings:

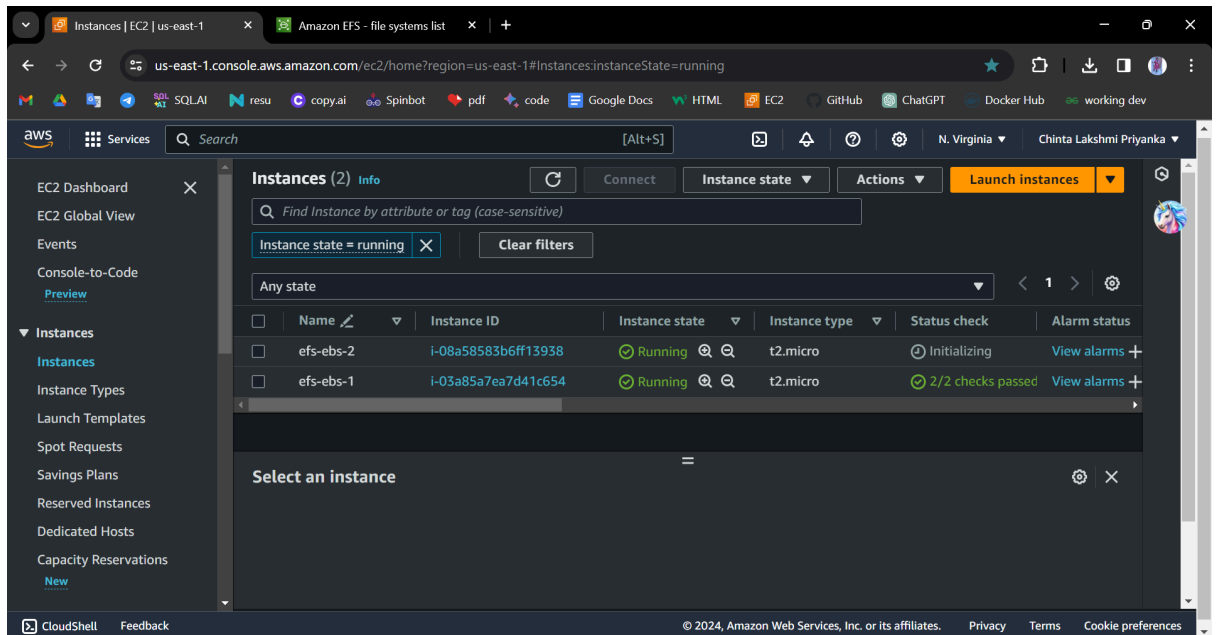
- Choose the desired VPC and specify the appropriate settings for your application(in this the vpc in default mode).

- Select the availability zones for each mount target you want to create by checking the corresponding checkboxes.
  - Configure the appropriate file system settings for throughput and performance.
4. Click the "Create file system" button to create the EFS file system.

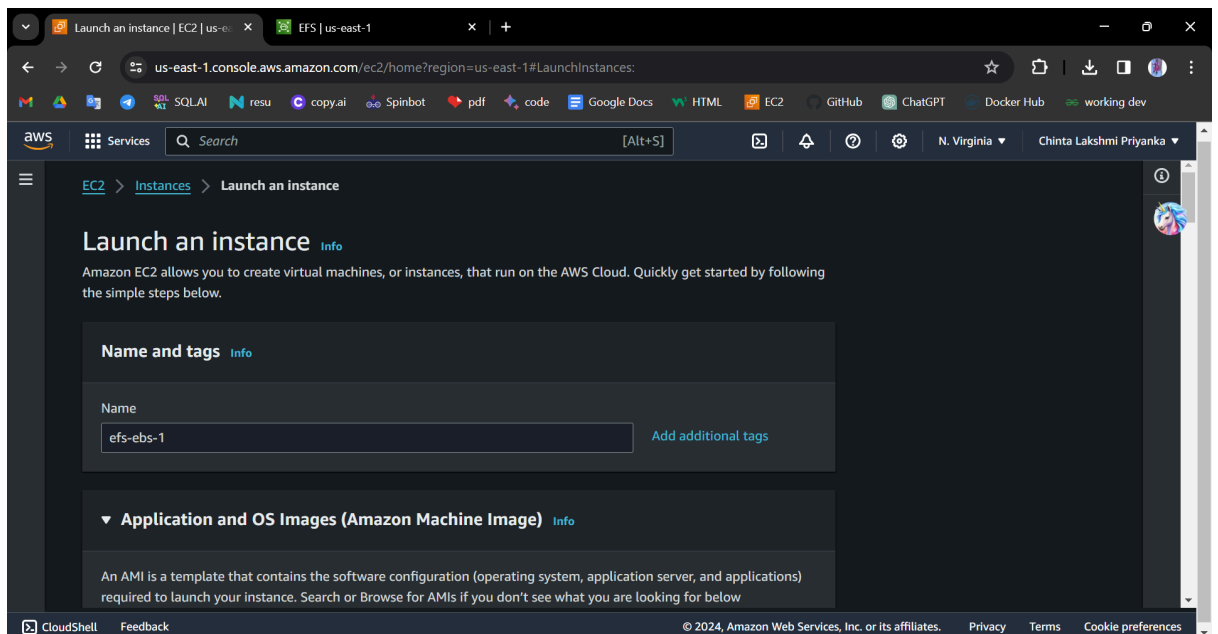


5. Once the file system is created, select it, and note down the file system ID.

Now create 3 instances connect them to the instances and create file systems in different zones.



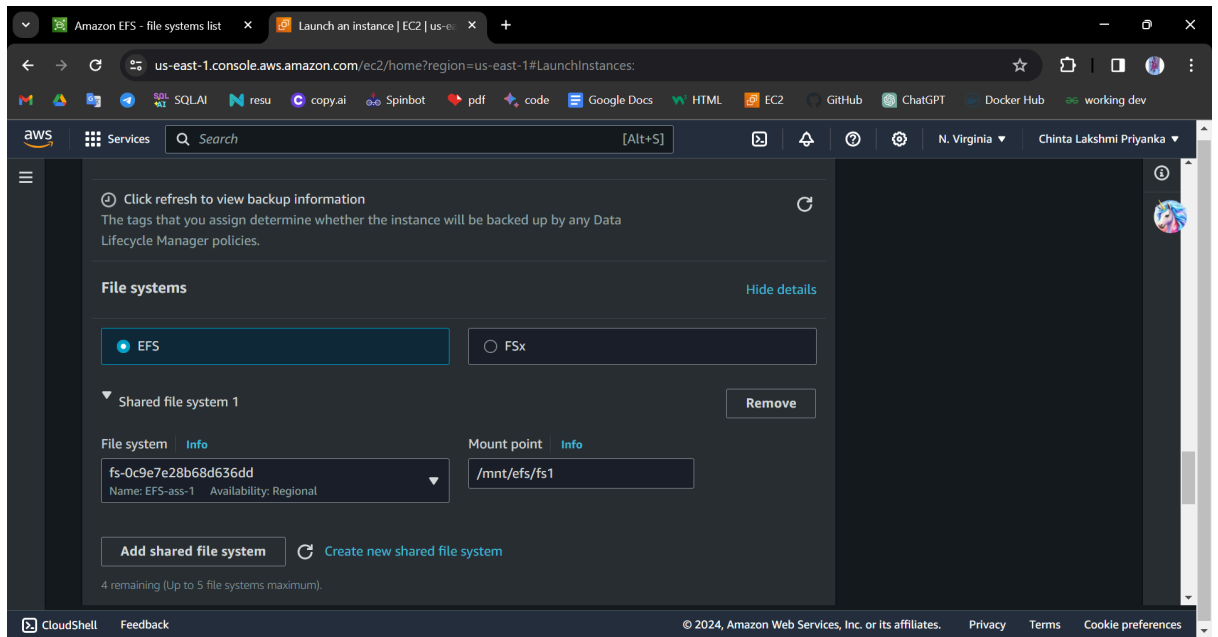
Connect to the instances.



Now choose the subnet in the availability zone as us-east-1d.

And then edit network settings. In that choose the subnet add the security group and add the file system we created in the past

Note the mount point: `/mnt/efs/fs1`



Launch the instance and connect to the instance

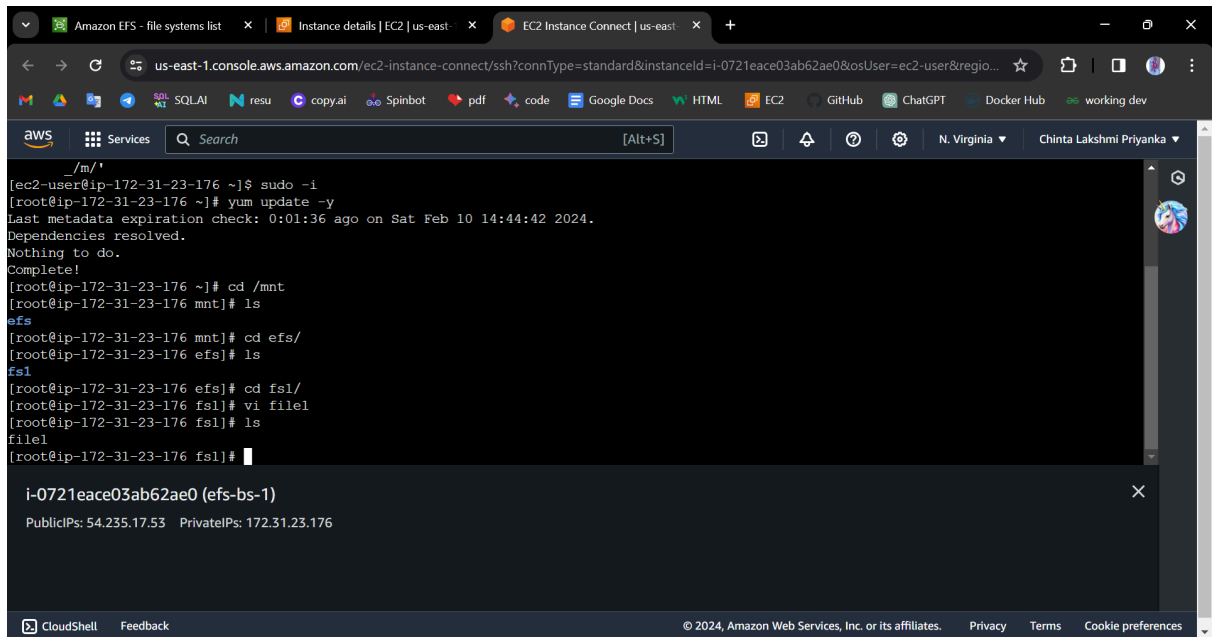
Now create a file system

Connect to the instance using `sudo -i`

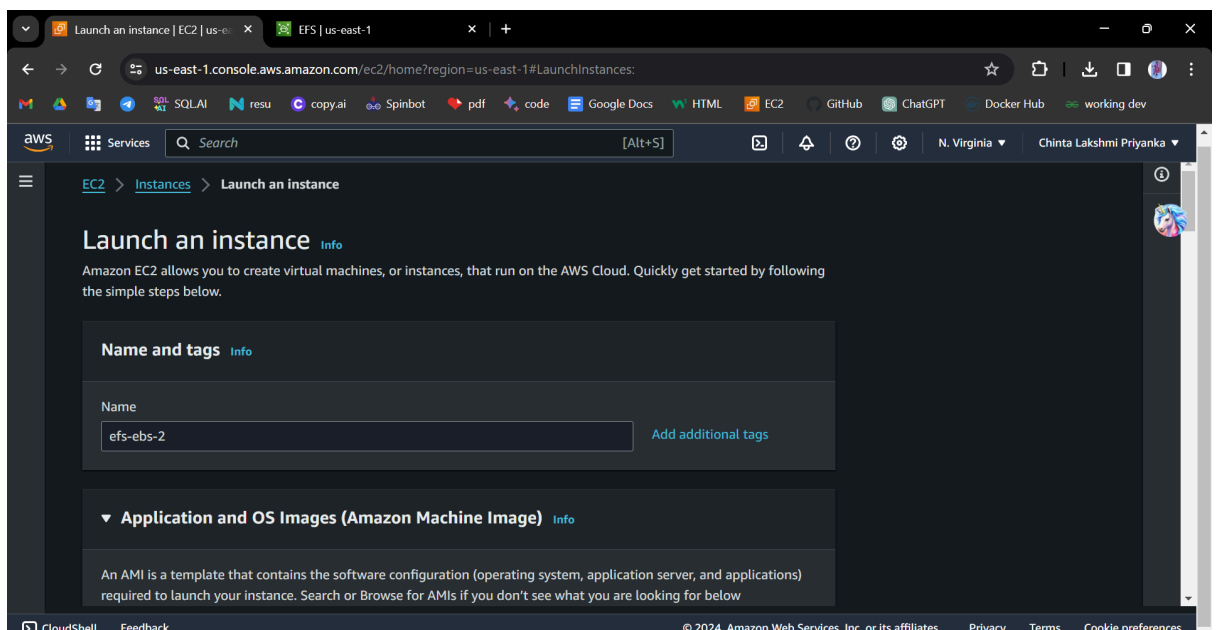
`Cd /mnt/efs/fs1`

`Vi file`

Now create a file in fs1 and it is reflected in the second efs instance

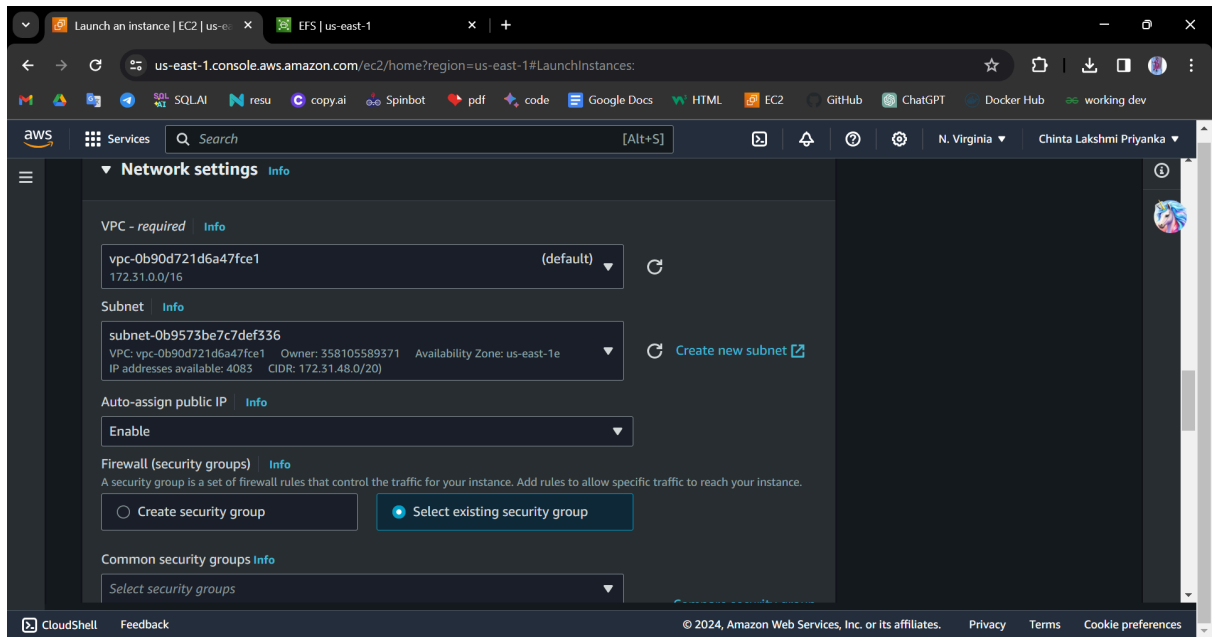


Now create another instance and connect the instance.

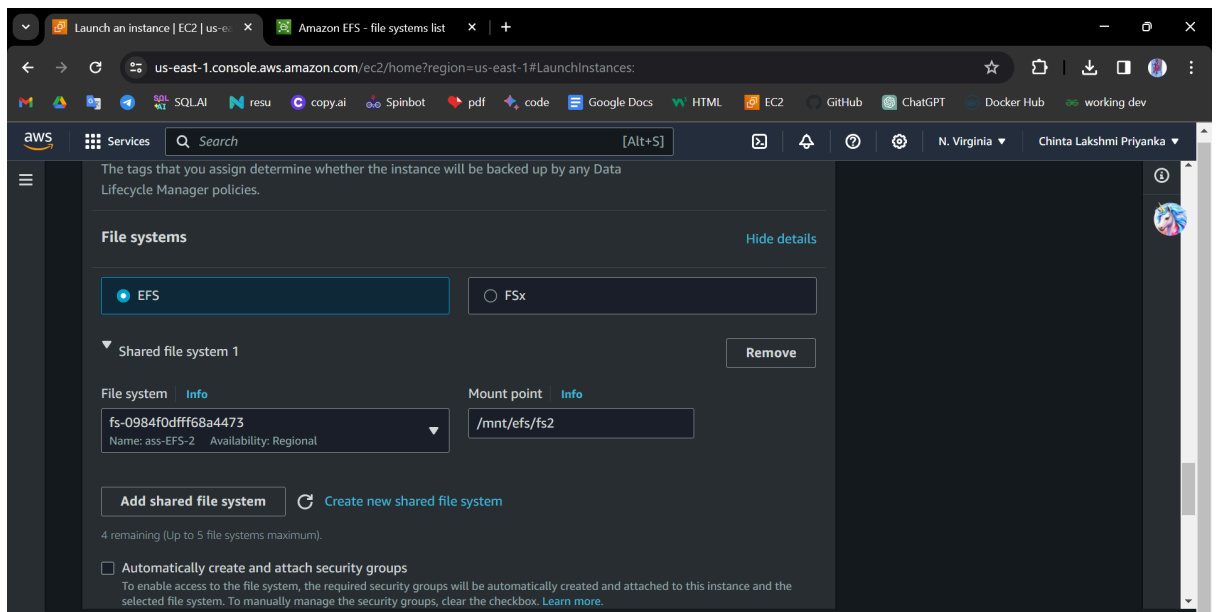


Add existing security group.and edit network settings

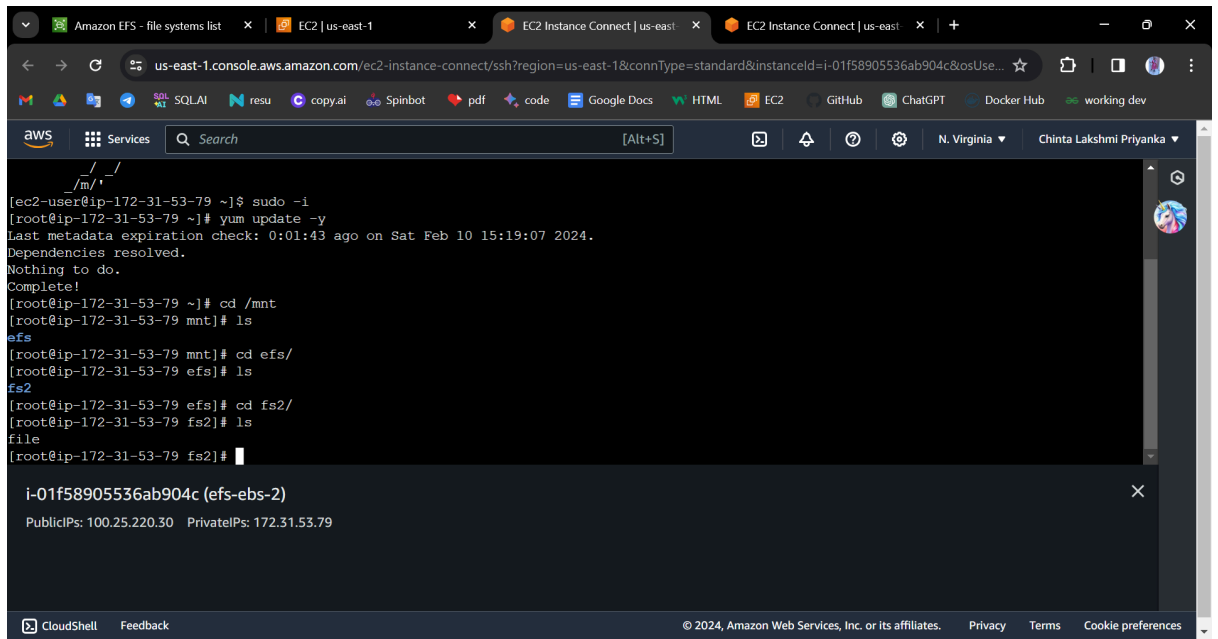
And choose the availability subnet.



Now add the shared file system



And launch the instance. connect the instance.



```
[ec2-user@ip-172-31-53-79 ~]$ sudo -i
[root@ip-172-31-53-79 ~]# yum update -y
Last metadata expiration check: 0:01:43 ago on Sat Feb 10 15:19:07 2024.
Dependencies resolved.
Nothing to do.
Complete!
[root@ip-172-31-53-79 ~]# cd /mnt
[root@ip-172-31-53-79 mnt]# ls
efs
fs2
[root@ip-172-31-53-79 mnt]# cd efs/
[root@ip-172-31-53-79 efs]# ls
fs2
[root@ip-172-31-53-79 efs]# cd fs2/
[root@ip-172-31-53-79 fs2]# ls
file
[root@ip-172-31-53-79 fs2]#
```

i-01f58905536ab904c (efs-ebs-2)

PublicIPs: 100.25.220.30 PrivateIPs: 172.31.53.79

In this we have not created any file, but in instance -1 we have created the file. that file is reflected in this instance fs2.

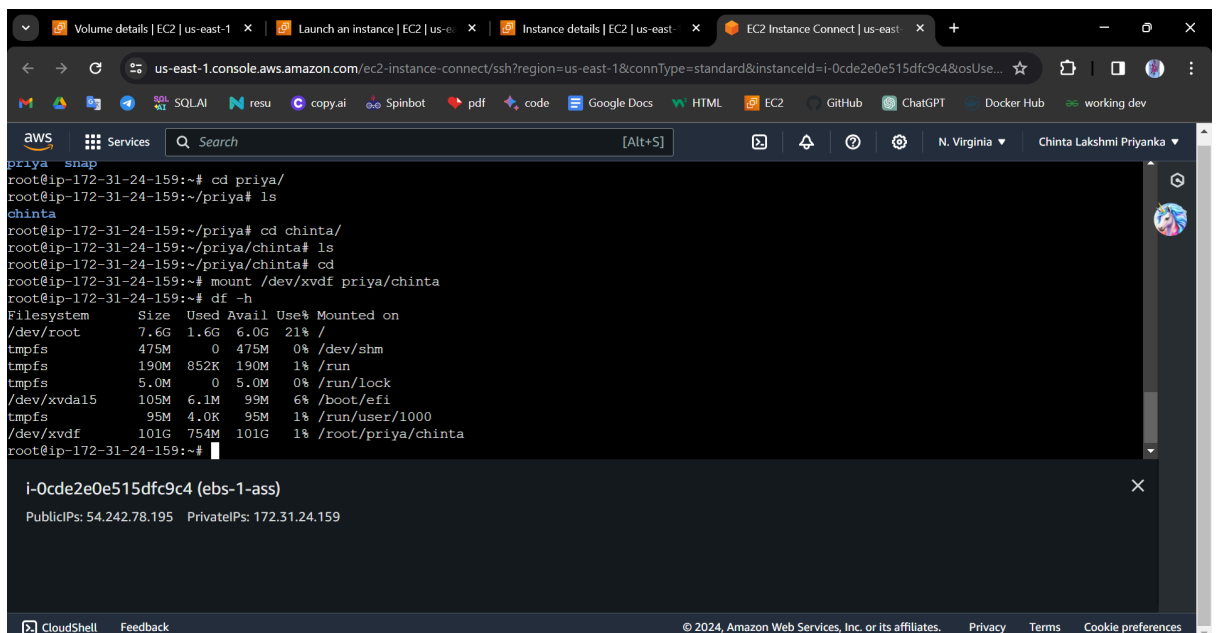
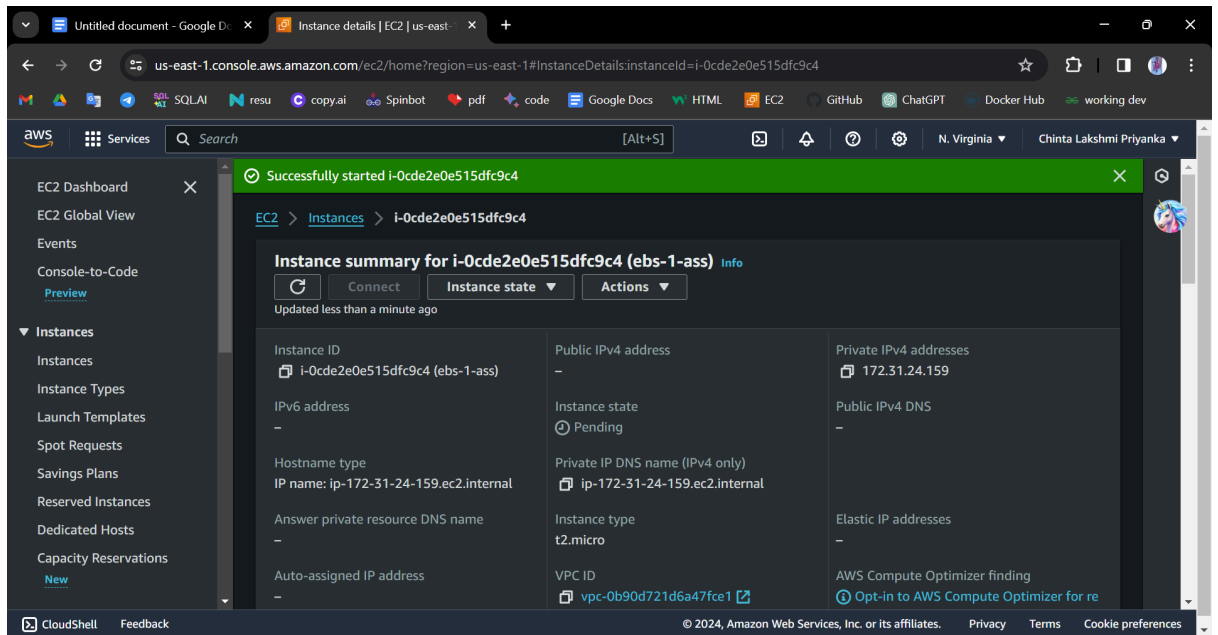
Same as the shown these 2 instances. we have to create a third instance like this.

Now we have to create 3 ebs instances and check whether the file exists in another 2 instances or not.

Now launch the first instance and connect the instance.

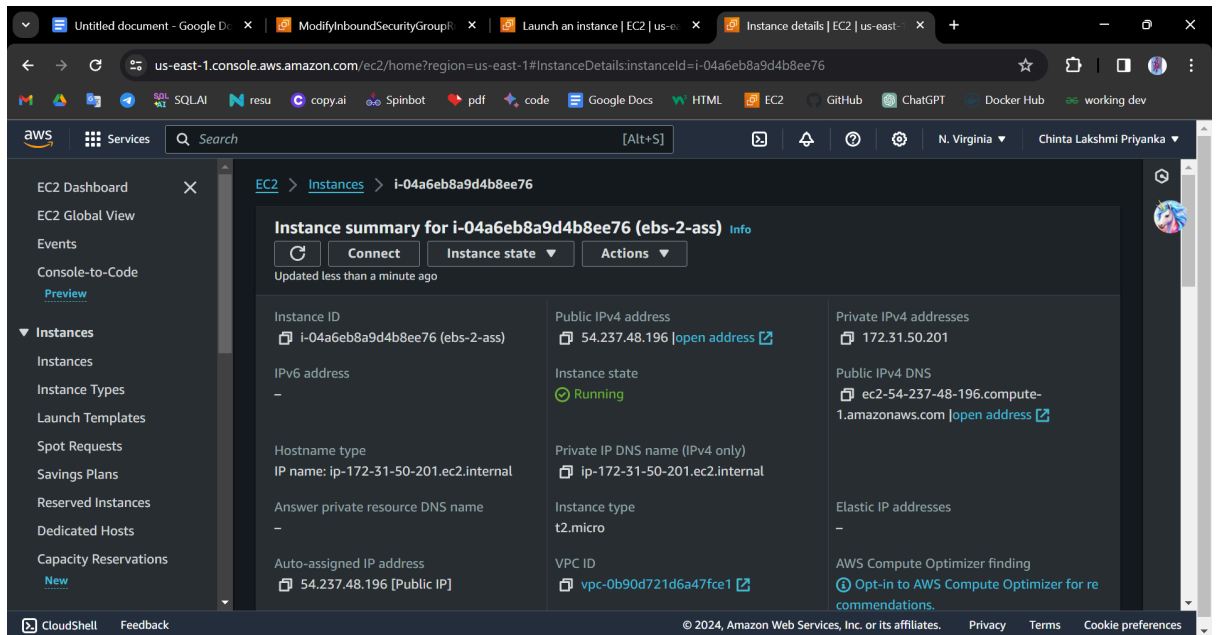
Now connect the instance





In this we have created a file system Now check if it was reflected to another or not.

Create a second instance

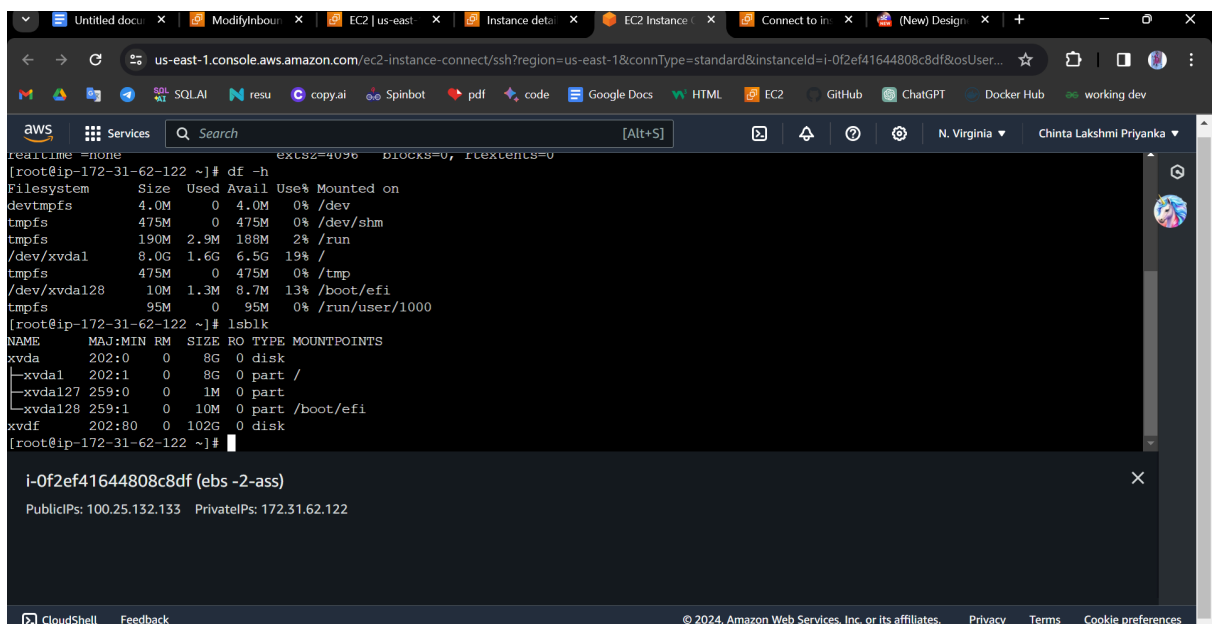


Now we have to check if there is any existing file in the system

Using file -s /dev/xvdf .is it does not exist it will go to the next step

if not

We have to create a file system.



In this, the file was not reflected . we have to create a file system

Now as the 2 instances we have to create a third instance

And check whether the file system is created or not

It was not created.

**CONCLUSION:** Only in EFS did we have to create a file system and it was reflected in another instance. But in the EBS it was not reflected in another instance we had to create a new file system.

----- **THE-END** -----

