



ASSIGNMENT -1

COURSE: DevOps

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MODULE: EBS.S3

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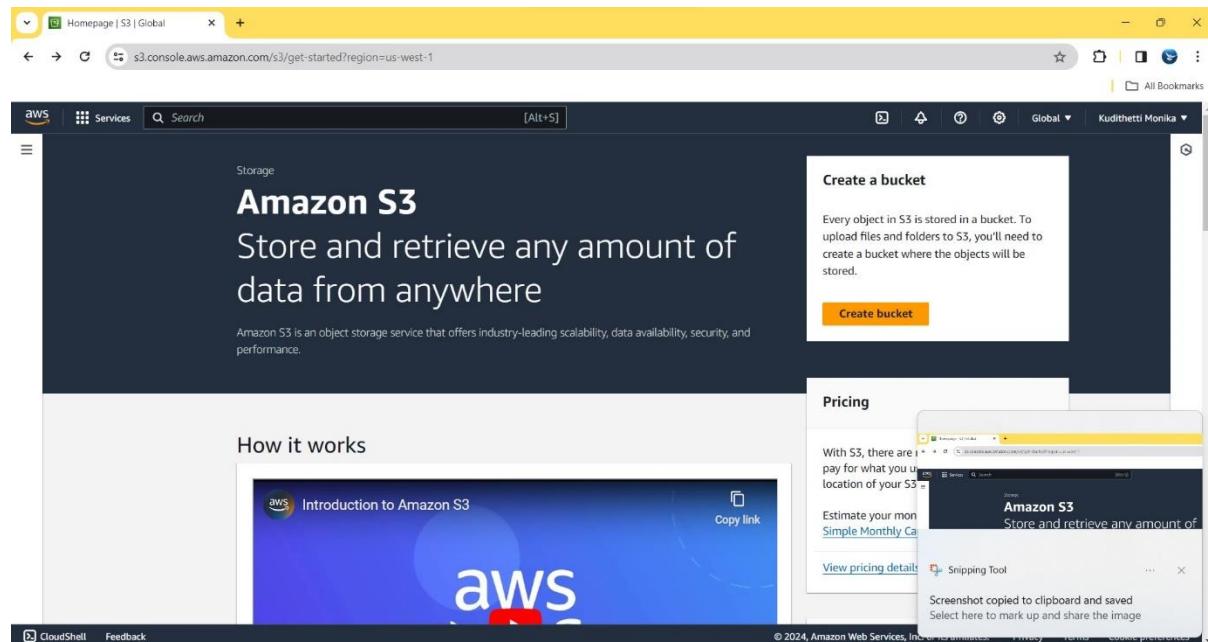
TRAINER: Mr. Madhukar

Batch no: 120 - 5pm

Date: 20-02-2024

1. Creation of s3 bucket and enabling Cross Region Replication for two buckets in different regions.

Step 1: Go to AWS console and search for s3 bucket then click on 'Create bucket'.



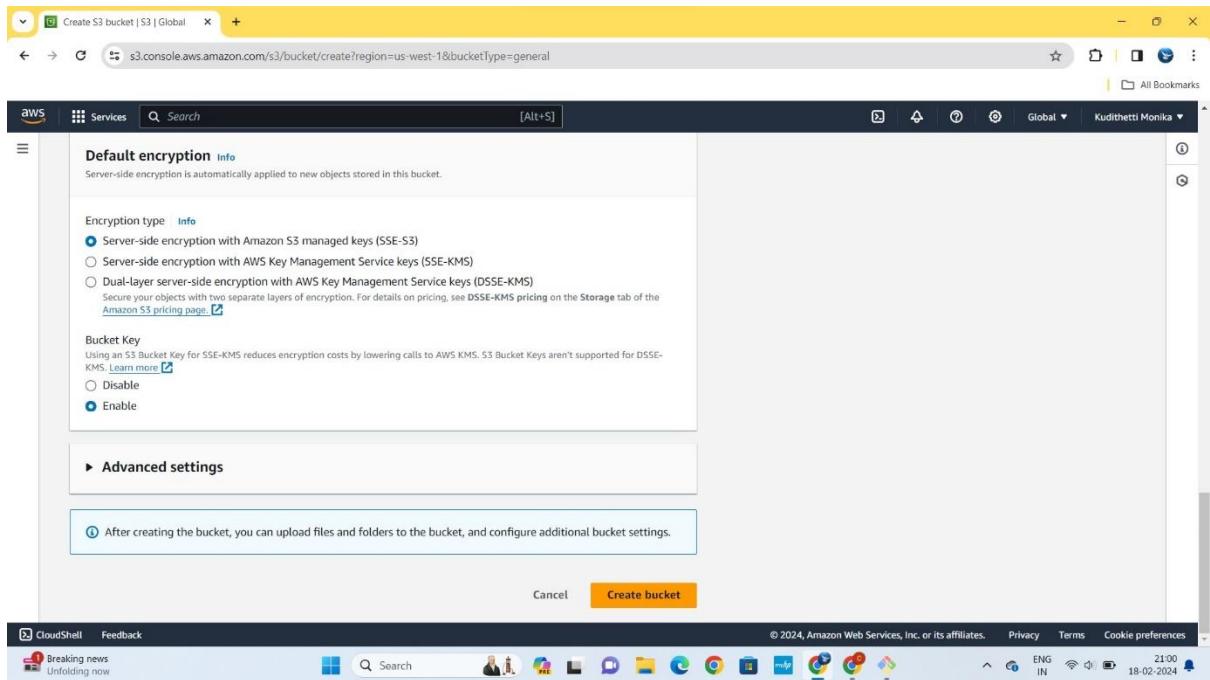
Step 2: Create a source bucket from which the data need to be uploaded. Also choose the required region as source bucket as shown below.

The screenshot shows the 'Create bucket' page in the AWS S3 console. In the 'General configuration' section, the 'Bucket name' field is filled with 'source-bucket-california'. In the 'Object Ownership' section, it states: 'Control ownership of objects written to this bucket from other AWS accounts and the use of access control lists (ACLs). Object ownership determines who can specify access to objects.' At the bottom of the page, there are links for CloudShell, Feedback, and various AWS services like Lambda, CloudWatch, and SNS.

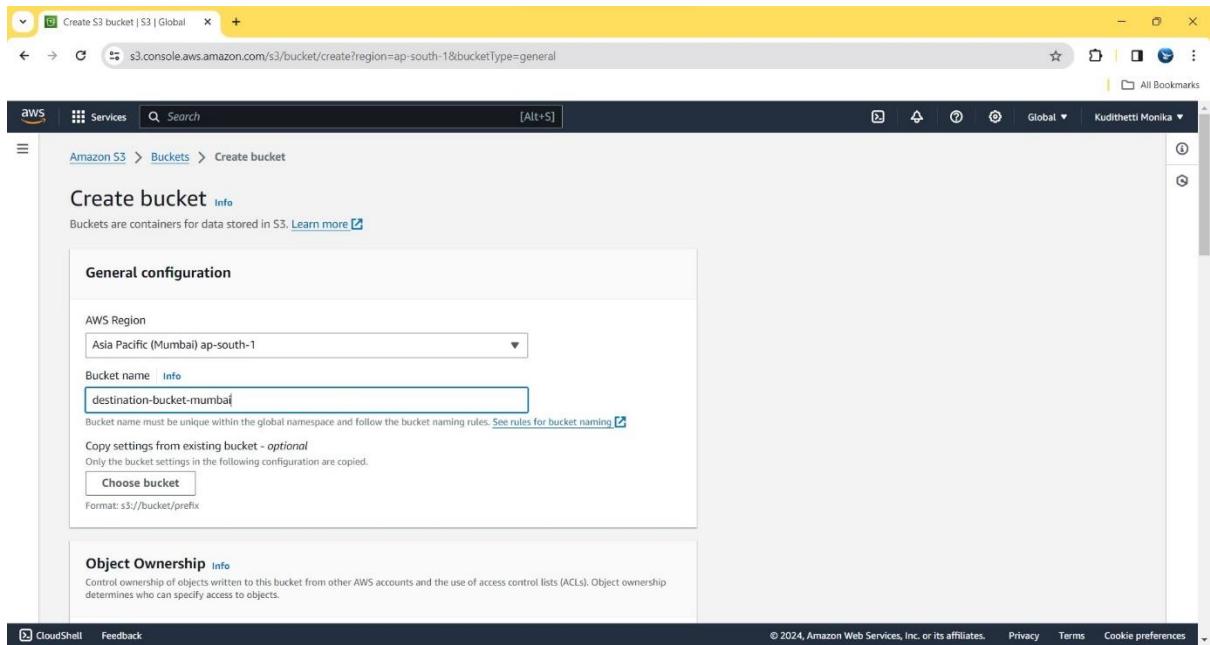
Step 3: Enable ‘Versioning’ . Versioning is mandatory for both the source and destination buckets to perform CRR.

The screenshot shows the 'Create bucket' page with the 'Bucket Versioning' section selected. The 'Enable' radio button is selected. Below this, there is a 'Tags - optional (0)' section with a note about using tags to track storage costs and organize buckets. There is also a 'Default encryption' section indicating 'Server-side encryption is automatically applied to new objects stored in this bucket' using 'Server-side encryption with Amazon S3-managed keys (SSE-S3)'. The page includes standard navigation links for CloudShell, Feedback, and other AWS services.

Step 4: Finally click on Create bucket to get the source bucket.



Step 5: Similarly create another bucket as 'Destination bucket' to which the files need to be reflected from source bucket ,also choose the different Region from the source bucket region to perform this.



Step 6: Make sure to enable Versioning in the second bucket too.

Create S3 bucket | S3 | Global

s3.console.aws.amazon.com/s3/bucket/create?region=ap-south-1&bucketType=general

aws Services Search [Alt+S]

Bucket Versioning

Versioning is a means of keeping multiple variants of an object in the same bucket. You can use versioning to preserve, retrieve, and restore every version of every object stored in your Amazon S3 bucket. With versioning, you can easily recover from both unintended user actions and application failures. [Learn more](#)

Bucket Versioning

Disable

Enable

Tags - optional (0)

You can use bucket tags to track storage costs and organize buckets. [Learn more](#)

No tags associated with this bucket.

Add tag

Default encryption [Info](#)

Server-side encryption is automatically applied to new objects stored in this bucket.

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Step 7: Go to buckets ,where we can see the both buckets we have created.

S3 buckets | S3 | Global

s3.console.aws.amazon.com/s3/buckets?region=us-west-1&bucketType=general®ion=us-west-1

aws Services Search [Alt+S]

Amazon S3 > Buckets

▶ Account snapshot

Storage lens provides visibility into storage usage and activity trends. [Learn more](#)

View Storage Lens dashboard

General purpose buckets [Info](#)

Buckets are containers for data stored in S3. [Learn more](#)

Find buckets by name

Name	AWS Region	Access	Creation date
destination-bucket-mumbai	Asia Pacific (Mumbai) ap-south-1	Bucket and objects not public	February 18, 2024, 21:03:18 (UTC+05:30)
source-bucket-california	US West (N. California) us-west-1	Bucket and objects not public	February 18, 2024, 21:01:26 (UTC+05:30)

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Step 8: Click on source bucket and then click on Management.

The screenshot shows the AWS S3 console for the bucket 'source-bucket-california'. The 'Management' tab is selected. In the 'Lifecycle rules' section, there is a table header with columns: Lifecycle rule name, Status, Scope, Current version acti..., Noncurrent version..., Expired object delet..., and Incomplete multipa...'. Below the table, it says 'No lifecycle rules' and 'There are no lifecycle rules for this bucket.' A 'Create lifecycle rule' button is present. In the 'Replication rules' section, it says '(0)' and 'Use replication rules to define options you want Amazon S3 to apply during replication such as server-side encryption, replica ownership, transitioning replicas to another storage class, and more.' A 'Create replication rule' button is shown. The bottom navigation bar includes CloudShell, Feedback, and links for © 2024, Amazon Web Services, Inc. or its affiliates., Privacy, Terms, and Cookie preferences.

Step 9: Click on Create Replication rule.

The screenshot shows the AWS S3 console for the bucket 'source-bucket-california'. The 'Management' tab is selected. In the 'Replication rules' section, it says '(0)' and 'Use replication rules to define options you want Amazon S3 to apply during replication such as server-side encryption, replica ownership, transitioning replicas to another storage class, and more.' A 'Create replication rule' button is shown. In the 'Inventory configurations' section, it says '(0)' and 'You can create inventory configurations on a bucket to generate a flat file list of your objects and metadata. These scheduled reports can include all objects in the bucket or be limited to a shared prefix.' A 'Create inventory configuration' button is present. The bottom navigation bar includes CloudShell, Feedback, and links for © 2024, Amazon Web Services, Inc. or its affiliates., Privacy, Terms, and Cookie preferences.

Step 10: Give a replication rule name and click on apply to all objects in the bucket.

Create replication rule - S3 buck... x

s3.console.aws.amazon.com/s3/management/source-bucket-california/replication/create?region=us-west-1&bucketType=general

aws Services Search [Alt+S]

Replication rule name
california-source-rule

Up to 255 characters. In order to be able to use CloudWatch metrics to monitor the progress of your replication rule, the replication rule name must only contain English characters.

Status
Choose whether the rule will be enabled or disabled when created.
 Enabled
 Disabled

Priority
The priority value resolves conflicts that occur when an object is eligible for replication under multiple rules to the same destination. The rule is added to the configuration at the highest priority and the priority can be changed on the replication rules table.
0

Source bucket

Source bucket name
source-bucket-california

Source Region
US West (N. California) us-west-1

Choose a rule scope
 Limit the scope of this rule using one or more filters
 Apply to all objects in the bucket

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Step 11: Choose the destination path as below.

Create replication rule - S3 buck... x

s3.console.aws.amazon.com/s3/management/source-bucket-california/replication/create?region=us-west-1&bucketType=general

aws Services Search [Alt+S]

Destination
You can replicate objects across buckets in different AWS Regions (Cross-Region Replication) or you can replicate objects to access buckets in the same AWS Region (Same-Region Replication). You can also specify a different bucket for each rule in the configuration. [Learn more](#)

Choose a bucket in this account

Choose a bucket

S3 Buckets

Buckets (2)

Find buckets by name

Name	AWS Region
<input checked="" type="radio"/> destination-bucket-mumbai	Asia Pacific (Mumbai) ap-south-1
<input type="radio"/> source-bucket-california	US West (N. California) us-west-1

Cancel Choose path

Encryption

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Step 12: Now choose to create a new IAM role.

Create replication rule - S3 bucket

s3.console.aws.amazon.com/s3/management/source-bucket-california/replication/create?region=us-west-1&bucketType=general

aws Services Search [Alt+S]

Bucket name
Choose the bucket that will receive replicated objects.
destination-bucket-mumbai Browse S3

Destination Region
Asia Pacific (Mumbai) ap-south-1

IAM role

Choose from existing IAM roles Enter IAM role ARN

IAM role Create new role View

Encryption

Server-side encryption protects data at rest.

Replicate objects encrypted with AWS Key Management Service (AWS KMS)
Replicate SSE-KMS and DSSE-KMS encrypted objects.

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Step 13: Click on RTC check box.

Create replication rule - S3 bucket

s3.console.aws.amazon.com/s3/management/source-bucket-california/replication/create?region=us-west-1&bucketType=general

aws Services Search [Alt+S]

Destination storage class

Amazon S3 offers a range of storage classes designed for different use cases. Learn more or see Amazon S3 pricing

Change the storage class for the replicated objects

Additional replication options

Replication Time Control (RTC)
Replication Time Control replicates 99.99% of new objects within 15 minutes and includes replication metrics. Additional fees will apply. Learn more

Replication metrics
With replication metrics, you can monitor the total number and size of objects that are pending replication, and the maximum replication time to the destination Region. You can also view and diagnose replication failures. CloudWatch metrics fees apply. Learn more or see Amazon CloudWatch pricing

To publish event notifications to a destination whenever replication events occur, set S3 event notifications or CloudWatch alarms before replication begins. Learn more

Delete marker replication
Delete markers created by S3 delete operations will be replicated. Delete markers created by lifecycle rules are not replicated. Learn more

Replica modification sync
Replicate metadata changes made to replicas from the destination bucket to the source bucket. Learn more

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Step 14: Confirm to replicate existing objects.

The screenshot shows the AWS S3 management console for a bucket named "source-bucket-california". A modal dialog box titled "Replicate existing objects?" is displayed, containing two options: "No, do not replicate existing objects." (unchecked) and "Yes, replicate existing objects." (checked). At the bottom right of the modal are "Cancel" and "Submit" buttons, with "Submit" being orange and outlined.

Step 15: Confirm again the destination path.

The screenshot shows the "Create replication job" page in the AWS S3 management console. In the "Completion report" section, the "Generate completion report" checkbox is checked, and the "All tasks" radio button is selected. The "Completion report destination" field contains the URL "s3://destination-bucket-monika". Below this, the "Permissions" section is visible, containing a note about choosing an IAM role and a link to "View IAM role policy template and IAM trust policy".

Step 16: Choose again the new IAM role and click on Save.

The screenshot shows the AWS S3 management console for creating a replication job. The 'Completion report destination' field is set to 's3://destination-bucket-mumbai'. Under 'Permissions', the option 'Choose from existing IAM roles' is selected. At the bottom, there are 'Cancel' and 'Save' buttons.

Step 17: Go to source bucket and upload any required files or folders.

The screenshot shows the AWS S3 console for the 'source-bucket-california' bucket. The 'Objects' tab is selected, showing a list of objects with a count of 0. There is a prominent 'Upload' button at the top right of the object list area.

Step 18: The file has been successfully uploaded in source bucket.

The screenshot shows the AWS S3 console with a green header bar indicating "Upload succeeded". Below it, a summary table shows one file uploaded to "s3://source-bucket-california" with a success rate of 100.00%. A table below lists the uploaded file: "Nee-Prema-..." with type "audio/mpeg" and size "3.4 MB", marked as "Succeeded".

Destination	Succeeded	Failed
s3://source-bucket-california	1 file, 3.4 MB (100.00%)	0 files, 0 B (0%)

Name	Folder	Type	Size	Status	Error
Nee-Prema-...	-	audio/mpeg	3.4 MB	Succeeded	-

Step 19: Go to the destination bucket and check for the file you have uploaded in source bucket. If you are unable to see the file ,try to refresh the objects.

The screenshot shows the AWS S3 console for the "destination-bucket-mumbai" bucket. It displays one object named "job-adb74449-aed2-46f0-8553-e0d2f5fb25e7/" with a size of 3.4 MB. The "Actions" dropdown menu is visible above the object list.

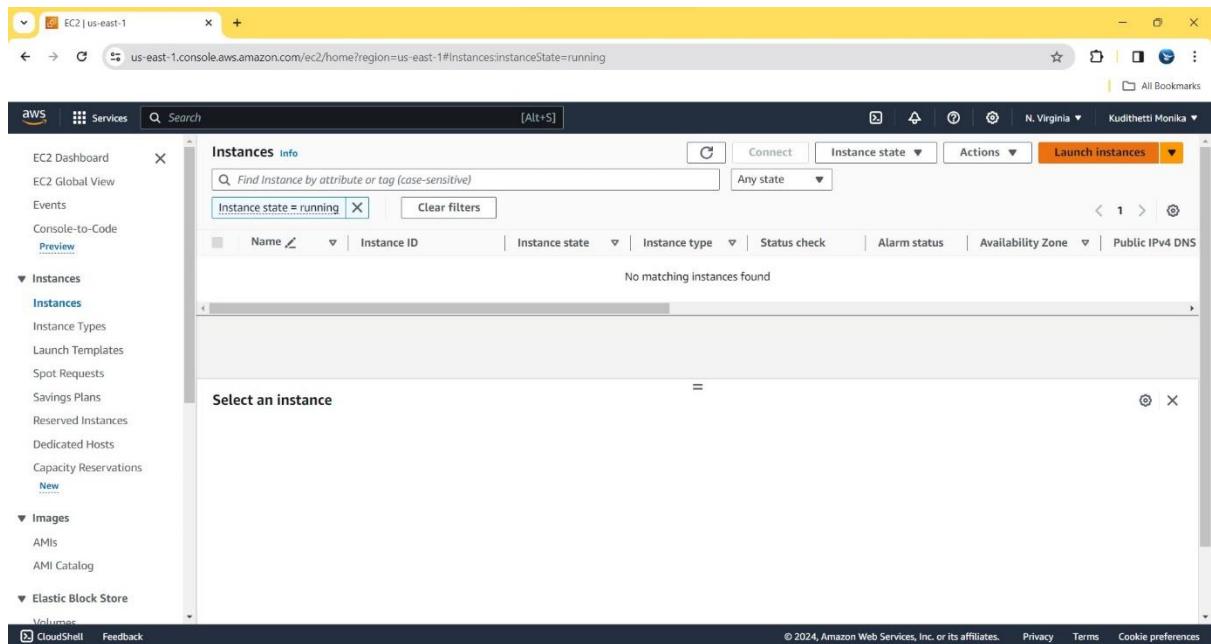
Step 20: The file has been copied to the destination bucket successfully.

The screenshot shows the AWS S3 console interface. The top navigation bar includes the AWS logo, a search bar with placeholder text '[Alt+S]', and a 'Global' dropdown menu. The main content area displays the 'destination-bucket-mumbai' bucket under the 'Amazon S3 > Buckets' path. The left sidebar contains links for 'Buckets', 'Access Grants', 'Access Points', 'Object Lambda Access Points', 'Multi-Region Access Points', 'Batch Operations', 'IAM Access Analyzer for S3', 'Block Public Access settings for this account', 'Storage Lens' (with 'Dashboards', 'Storage Lens groups', and 'AWS Organizations settings' sub-links), and a 'Feature spotlight' section. The right panel shows the 'destination-bucket-mumbai' details, with tabs for 'Objects' (selected), 'Properties', 'Permissions', 'Metrics', 'Management', and 'Access Points'. The 'Objects' tab displays two items: a folder named 'job-adb74449-aed2-46f0-8553-e0d2f3fb25e7/' and a file named 'Nee-Prema-Entho-Entho-Madhuram.mp3'. The file details are: Name: Nee-Prema-Entho-Entho-Madhuram.mp3, Type: mp3, Last modified: February 18, 2024, 21:10:14 (UTC+05:30), Size: 3.4 MB, Storage class: Standard. Action buttons include 'Actions' (with options like Copy S3 URI, Copy URL, Download, Open, Delete), 'Create folder', and 'Upload'.

Name	Type	Last modified	Size	Storage class
job-adb74449-aed2-46f0-8553-e0d2f3fb25e7/	Folder	-	-	-
Nee-Prema-Entho-Entho-Madhuram.mp3	mp3	February 18, 2024, 21:10:14 (UTC+05:30)	3.4 MB	Standard

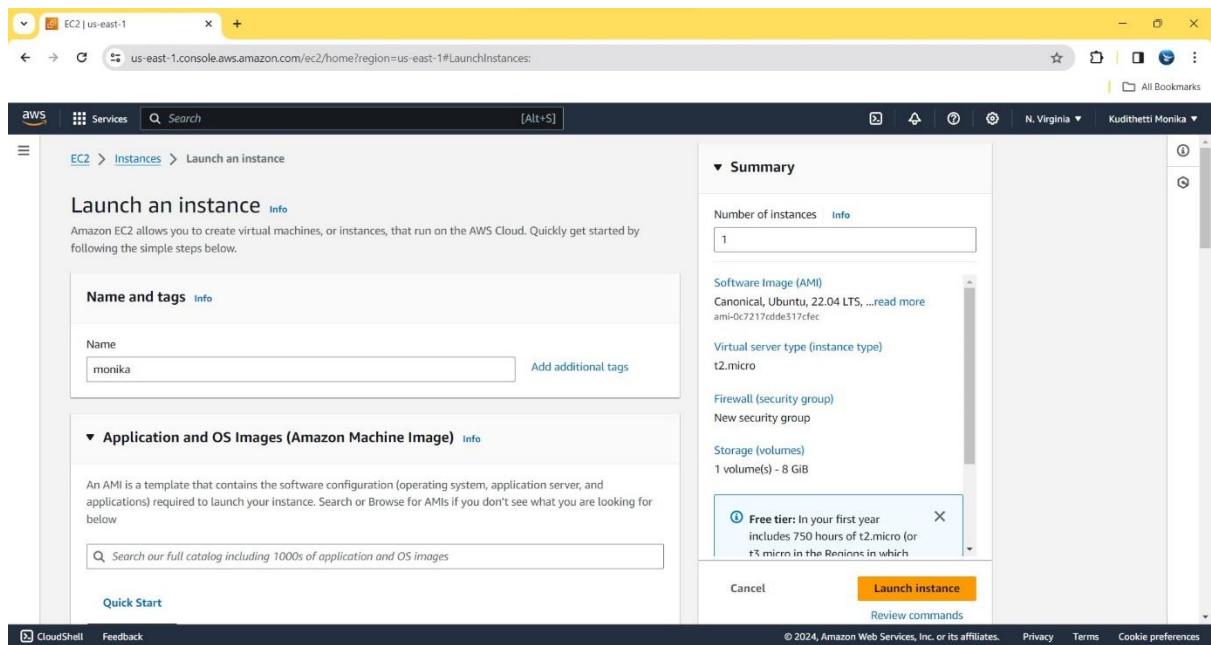
3. Attaching volume to an instance and unmounting the volume and attaching to another instance.

Step 1: Go to EC2 instance and create a new instance at a particular region as following.



The screenshot shows the AWS EC2 Instances page. The left sidebar is expanded, showing sections for Instances, Images, and Elastic Block Store. The main content area has a search bar and filters for Instance state (set to 'running') and Instance type. A message says 'No matching instances found'. A modal window titled 'Select an instance' is open at the bottom. The top right corner shows the region as 'N. Virginia' and the user's name as 'Kudithetti Monika'.

Step 2: Give any name to the instance.



The screenshot shows the 'Launch an instance' wizard. The first step, 'Name and tags', has a 'Name' field containing 'monika'. The second step, 'Application and OS Images (Amazon Machine Image)', has a search bar and a 'Quick Start' button. On the right, the 'Summary' section shows 1 instance being launched, using the 'ami-0c7217cdde517cfec' AMI, t2.micro instance type, and a 1-volume 8 GiB storage. A 'Free tier' message is displayed. The bottom right has 'Launch instance' and 'Review commands' buttons. The top right corner shows the region as 'N. Virginia' and the user's name as 'Kudithetti Monika'.

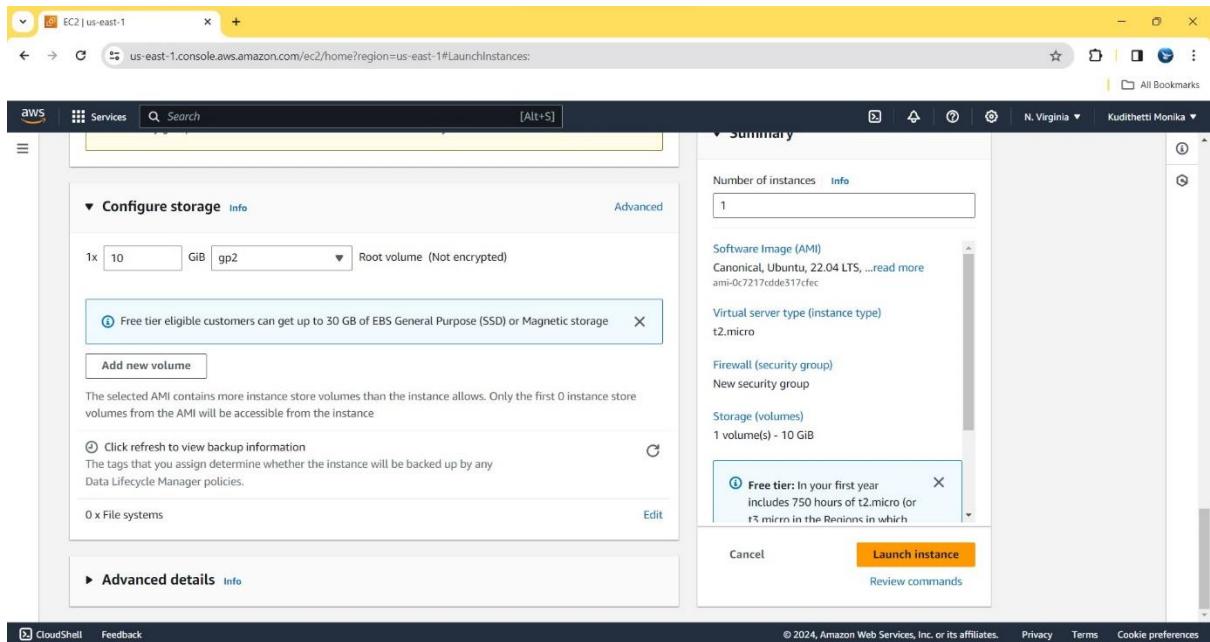
Step 3: Select any of the Amazon Machine Image displayed.

The screenshot shows the AWS EC2 Launch Instances page. In the 'Amazon Machine Image (AMI)' section, the 'Ubuntu Server 22.04 LTS (HVM), SSD Volume Type' AMI is selected. A tooltip for the 'Free tier eligible' badge indicates it includes 750 hours of t2.micro or t3.micro in the Regions in which it's used. Below the AMI, the instance type is set to 't2.micro'. The 'Launch instance' button is highlighted in orange at the bottom right.

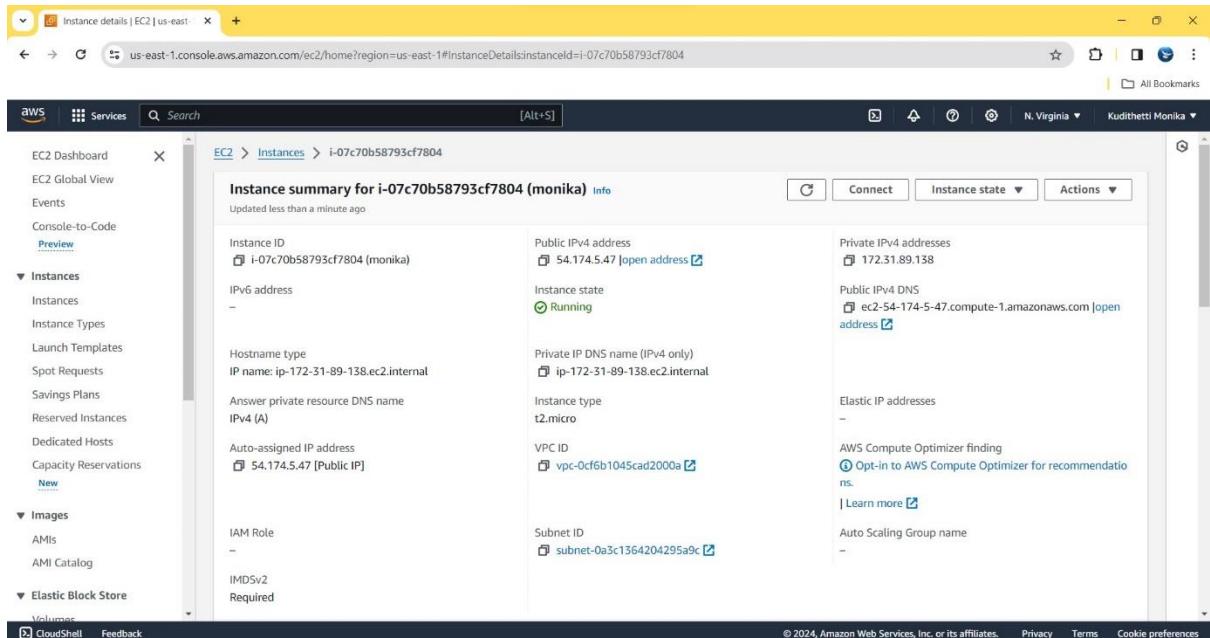
Step 4: Create any key pair with a unique name.

The screenshot shows the continuation of the EC2 launch process. A new key pair named 'keyv' is being created. In the 'Network settings' section, a new security group is being configured with the name 'launch-wizard-2'. A tooltip for the 'Free tier' badge is visible, stating it includes 750 hours of t2.micro or t3.micro in the Regions in which it's used. The 'Launch instance' button is again highlighted in orange.

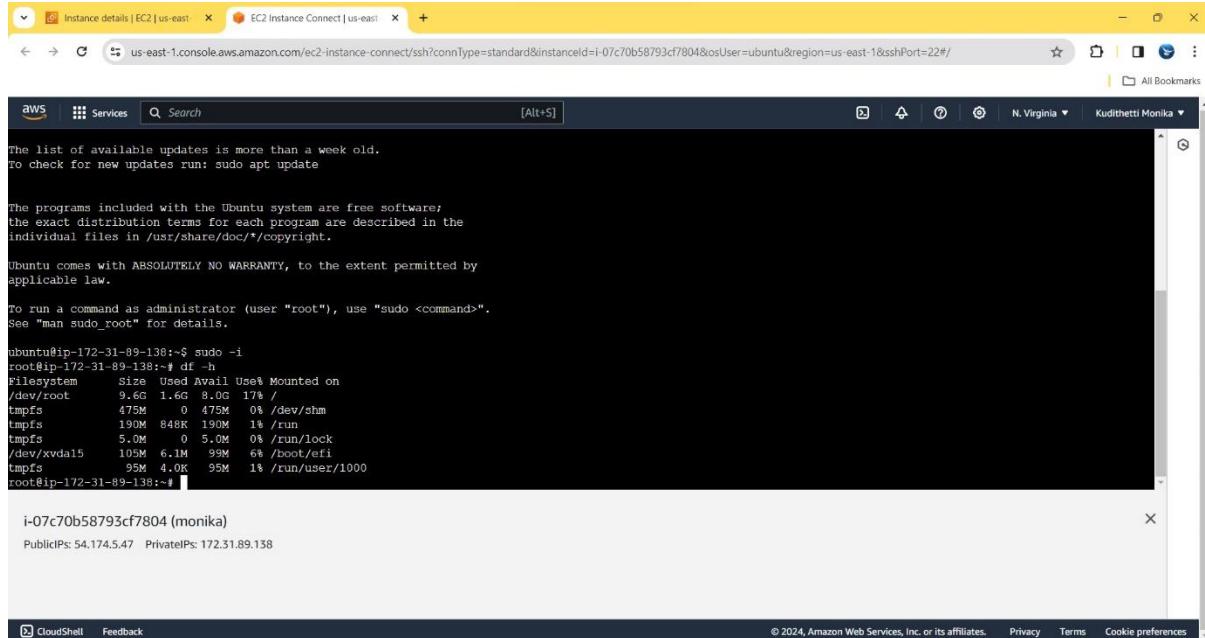
Step 5: You can also select any size of instance before launching it.



Step 6: The instance has been created. Now connect it in the web or Gitbash.



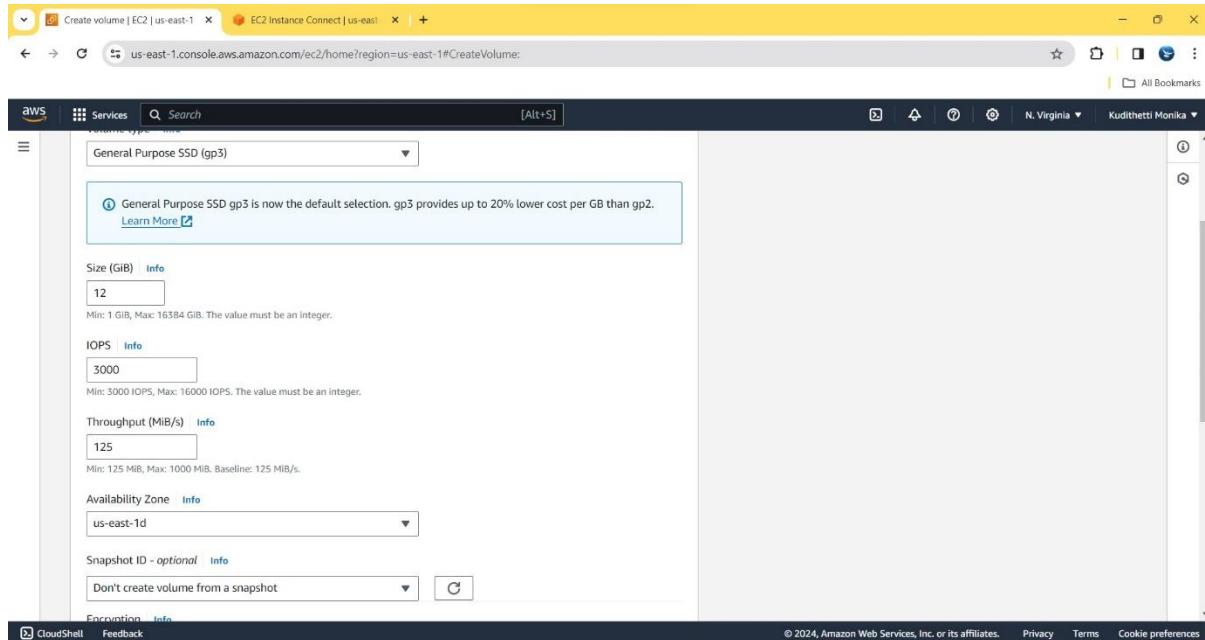
Step 7: To know the available free space in the disk of each directory use the command 'lsblk'.



```
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-172-31-89-138:~$ sudo -i  
root@ip-172-31-89-138:~# df -h  
Filesystem      Size  Used Avail Use% Mounted on  
/dev/zroot     9.6G  1.6G  8.0G  17% /  
tmpfs          475M    0  475M   0% /dev/shm  
tmpfs          190M  848K  190M   1% /run  
tmpfs           5.0M    0  5.0M   0% /run/lock  
/dev/xvda15    108M  6.1M  99M   6% /boot/efi  
tmpfs          98M   4.0K  95M   1% /run/user/1000  
root@ip-172-31-89-138:~#
```

i-07c70b58793cf7804 (monika)
PublicIPs: 54.174.5.47 PrivateIPs: 172.31.89.138

Step 8: Now go to volumes down below and create a new volume in the same region as the instance was created.



Create volume | EC2 | us-east-1 | EC2 Instance Connect | us-east-1

General Purpose SSD (gp3)

General Purpose SSD gp3 is now the default selection. gp3 provides up to 20% lower cost per GB than gp2. [Learn More](#)

Size (GiB) Min: 1 GiB, Max: 16384 GiB. The value must be an integer.

IOPS Min: 3000 IOPS, Max: 16000 IOPS. The value must be an integer.

Throughput (MiB/s) Min: 125 MiB, Max: 1000 MiB. Baseline: 125 MiB/s.

Availability Zone

Snapshot ID - optional

Encryption [Info](#)

CloudShell Feedback

Step 9: Now attach this volume to the firstly created instance.

The screenshot shows the AWS EC2 Volumes page. A green banner at the top says "Successfully created volume vol-089bcda4388923a08." Below it is a table titled "Volumes (1/2) Info" with one row. The row contains a checkbox (checked), a minus sign, the Volume ID "vol-089bcda4388923a08", the Type "gp3", Size "12 GiB", IOPS "3000", Throughput "125", and a Snapshot link "snap-091a". To the right of the table is a context menu with options like "Actions", "Create volume", "Modify volume", etc. At the bottom of the page, there are tabs for "Details", "Status checks", "Monitoring", and "Tags".

Step 10: Select the created instance from the list displayed.

The screenshot shows the "Attach volume" page. It has a breadcrumb navigation: EC2 > Volumes > vol-03380ba93bef29e04 > Attach volume. The main section is titled "Attach volume" with a "Basic details" sub-section. Under "Basic details", there is a "Volume ID" field with "vol-03380ba93bef29e04" selected. Below it is an "Availability Zone" field set to "us-east-1d". The "Instance" field contains a dropdown menu with two entries: "i-07c70b58793cf7804 (monika) (running)" and "i-07c70b58793cf7804 (root) (stopped)". A note below the dropdown says "Recommended device names for Linux: /dev/sda1 for root volume, /dev/sel[f-p] for data volumes." A tooltip at the bottom of the dropdown says "Newer Linux kernels may rename your devices to /dev/xvdf through /dev/xvdp internally, even when the device name entered here (and shown in".

Step 11: Now go to instances and reboot the instance to obtain the volume added.

The screenshot shows the AWS EC2 Instances page. On the left, there's a sidebar with navigation links like EC2 Dashboard, EC2 Global View, Events, Console-to-Code, Instances, Images, AMIs, and Elastic Block Store. The main area displays a table of instances. One instance is selected, named "monika" with the ID i-07c70b58793cf7804. The instance details show it's running, is a t2.micro type, and is located in the us-east-1d availability zone. It has a public IPv4 address of 54.174.5.47 and a private IPv4 address of 172.31.89.138.

Step 12: Now connect the instance to the web as follows.

The screenshot shows the AWS CloudShell interface. The terminal window displays the output of the 'lsblk' command, which lists the following disk and partition information:

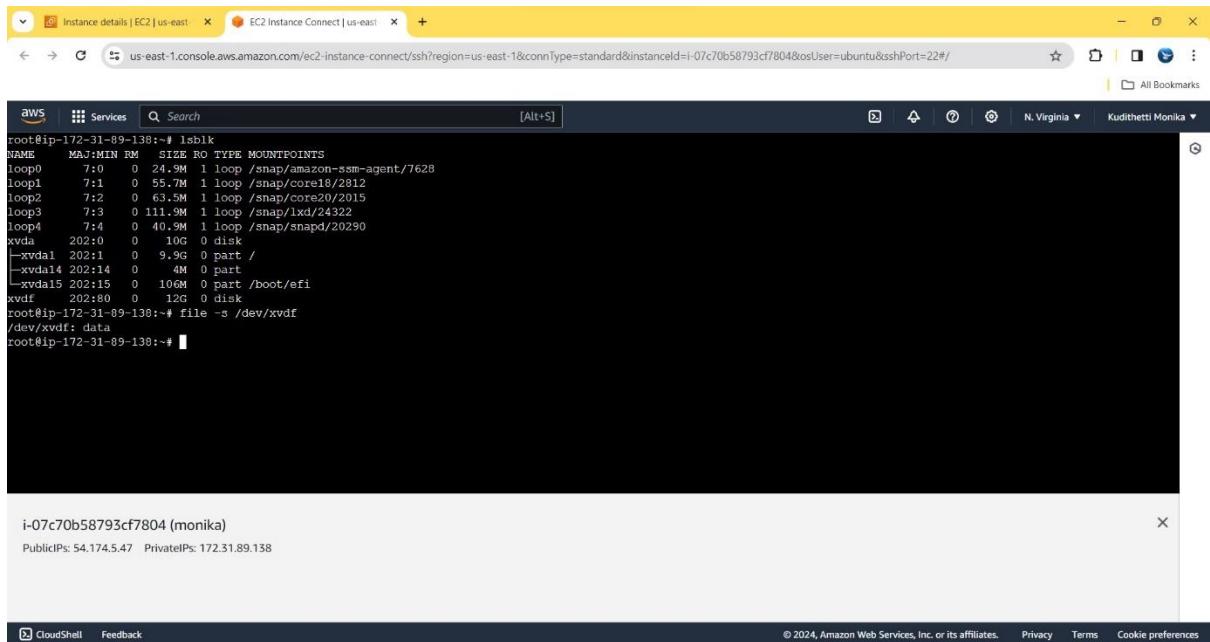
```

root@ip-172-31-89-138:~# 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    0 111.9M 1 loop /snap/lxd/24322
loop4    7:4    0 40.9M  1 loop /snap/snapd/20290
xvda   202:0    0   10G  0 disk 
└─xvda1 202:1    0   9.9G 0 part /
└─xvda4 202:14   0   4M  0 part
└─xvda5 202:15   0  106M 0 part /boot/efi
xvdf   202:80   0   12G  0 disk

```

Below the terminal, a modal window shows the instance details for "i-07c70b58793cf7804 (monika)". It lists the PublicIPs as 54.174.5.47 and the PrivateIPs as 172.31.89.138.

Step 13: Again display the blocks available in the instance to check whether the volume block is added or not. And also check for any file systems present in the instance.

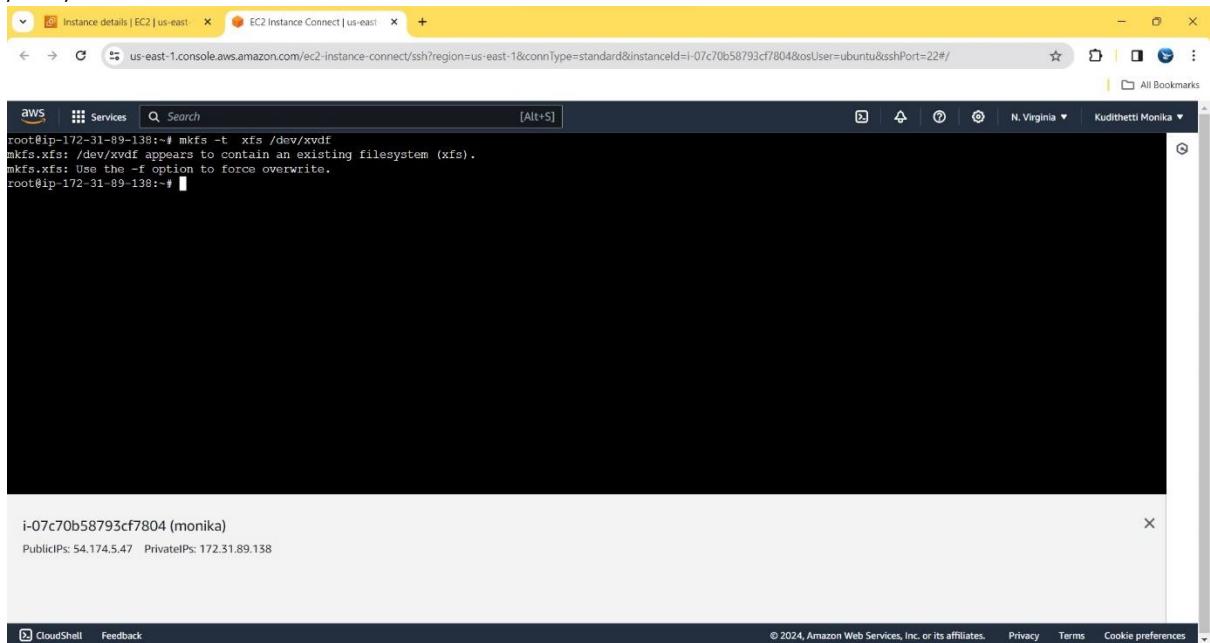


```
aws Services Search [Alt+S] N. Virginia Kudithetti Monika
root@ip-172-31-89-138:~# lsblk
NAME   MAJ:MIN RM  SIZE RO TYPE MOUNTPOINTS
loop0    7:0    0 24.9M  1 loop /snap/amazon-ssm-agent/7628
loop1    7:1    0 55.7M  1 loop /snap/core18/2812
loop2    7:2    0 63.5M  1 loop /snap/core20/2015
loop3    7:3    0 111.9M 1 loop /snap/1xd/24322
loop4    7:4    0 40.9M  1 loop /snap/snapd/20290
xvda   202:0    0   10G  0 disk
└─xvda1 202:1    0   9.9G 0 part /
  └─xvda14 202:14   0     4M 0 part
  └─xvda15 202:15   0   106M 0 part /boot/efi
xvdf   202:80   0   12G  0 disk
root@ip-172-31-89-138:~# file -s /dev/xvdf
/dev/xvdf: data
root@ip-172-31-89-138:~#
```

i-07c70b58793cf7804 (monika)
PublicIPs: 54.174.5.47 PrivateIPs: 172.31.89.138

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Step 14: If there is no file system ,use the command ‘mkfs -t xfs /dev/xvdf’.

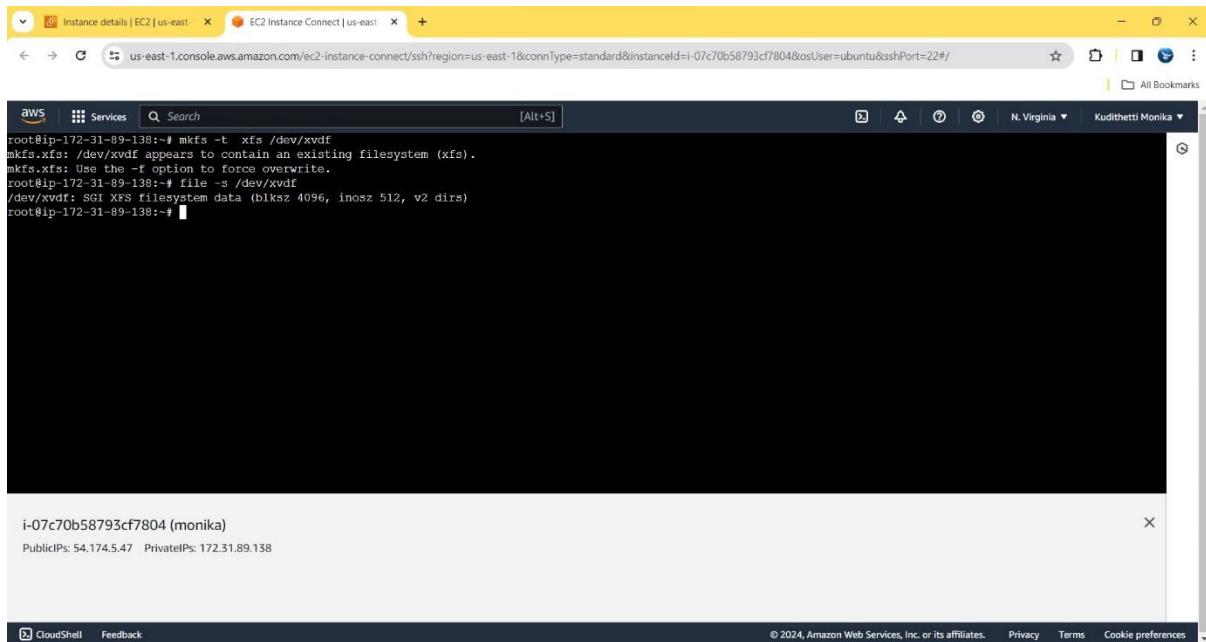


```
aws Services Search [Alt+S] N. Virginia Kudithetti Monika
root@ip-172-31-89-138:~# mkfs -t xfs /dev/xvdf
mkfs.xfs: /dev/xvdf appears to contain an existing filesystem (xfs).
mkfs.xfs: Use the -f option to force overwrite.
root@ip-172-31-89-138:~#
```

i-07c70b58793cf7804 (monika)
PublicIPs: 54.174.5.47 PrivateIPs: 172.31.89.138

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Step 15: The file system is created.



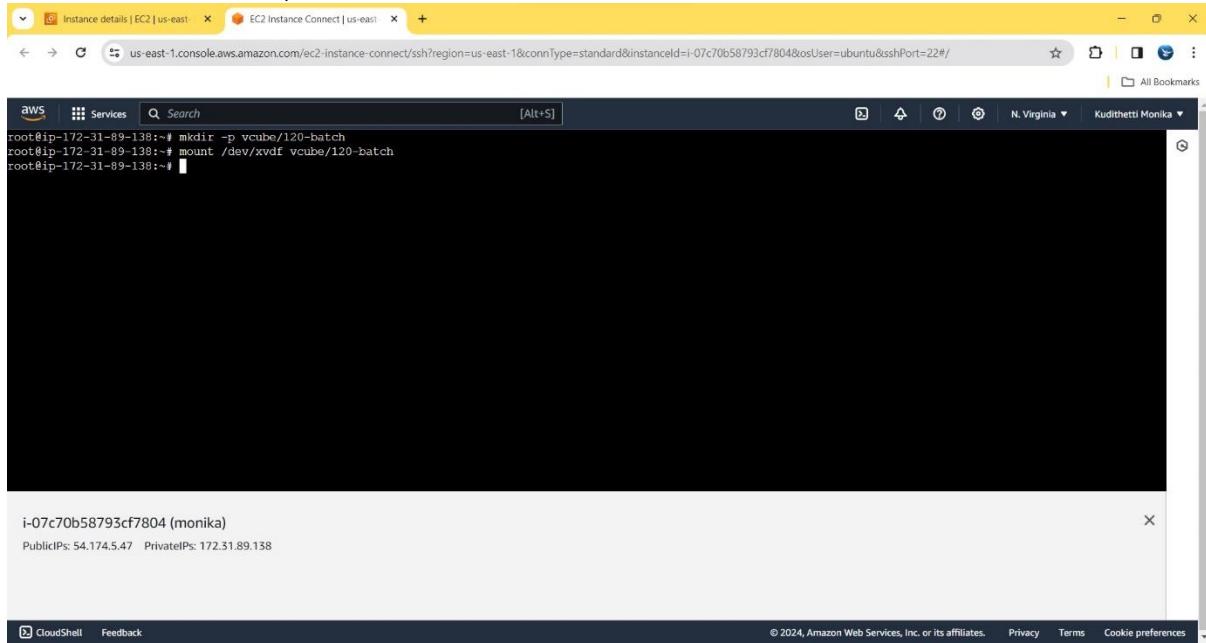
```
aws Services Search [Alt+S] Instance details | EC2 | us-east-1 EC2 Instance Connect | us-east-1 + us-east-1.console.aws.amazon.com/ec2-instance-connect/ssh?region=us-east-1&connType=standard&instanceId=i-07c70b58793cf7804&osUser=ubuntu&sshPort=22/ All Bookmarks N. Virginia Kudithetti Monika [ ]
```

```
root@ip-172-31-89-138:~# mkfs -t xfs /dev/xvdf
mkfs.xfs: /dev/xvdf appears to contain an existing filesystem (xfs).
mkfs.xfs: Use the -f option to force overwrite.
root@ip-172-31-89-138:~# file -s /dev/xvdf
/dev/xvdf: SGI XFS filesystem data (blksz 4096, inosz 512, v2 dirs)
root@ip-172-31-89-138:~#
```

i-07c70b58793cf7804 (monika)
PublicIPs: 54.174.5.47 PrivateIPs: 172.31.89.138

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Step 16: To add directories to the file system, use the following command. And then mount this volume to that directory.



```
aws Services Search [Alt+S] Instance details | EC2 | us-east-1 EC2 Instance Connect | us-east-1 + us-east-1.console.aws.amazon.com/ec2-instance-connect/ssh?region=us-east-1&connType=standard&instanceId=i-07c70b58793cf7804&osUser=ubuntu&sshPort=22/ All Bookmarks N. Virginia Kudithetti Monika [ ]
```

```
root@ip-172-31-89-138:~# mkdir -p vcube/120-batch
root@ip-172-31-89-138:~# mount /dev/xvdf vcube/120-batch
root@ip-172-31-89-138:~#
```

i-07c70b58793cf7804 (monika)
PublicIPs: 54.174.5.47 PrivateIPs: 172.31.89.138

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Step 17: Now check the free space in the disk as follows. Here we can observe the 12Gb volume that we have added.

The screenshot shows the AWS CloudShell interface. The terminal window displays the following commands and output:

```
root@ip-172-31-89-138:~# mkdir -p vcube/120-batch
root@ip-172-31-89-138:~# mount /dev/xvdf vcube/120-batch
root@ip-172-31-89-138:~# df -h
Filesystem      Size  Used Avail Use% Mounted on
/dev/root       9.6G  1.6G  8.0G  17% /
tmpfs          475M    0  475M   0% /dev/shm
tmpfs          190M  876K  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       12G  118M  12G   1% /root/vcube/120-batch
root@ip-172-31-89-138:~#
```

Below the terminal, the instance details are shown:

i-07c70b58793cf7804 (monika)
PublicIPs: 54.174.5.47 PrivateIPs: 172.31.89.138

At the bottom, there are CloudShell and Feedback buttons, and a footer with copyright information.

Step 18: Now add some files as required in the volume of the 1st instance that has been created.

The screenshot shows the AWS CloudShell interface. The terminal window displays the following commands and output:

```
root@ip-172-31-89-138:~# mkdir -p vcube/120-batch
root@ip-172-31-89-138:~# mount /dev/xvdf vcube/120-batch
root@ip-172-31-89-138:~# df -h
Filesystem      Size  Used Avail Use% Mounted on
/dev/root       9.6G  1.6G  8.0G  17% /
tmpfs          475M    0  475M   0% /dev/shm
tmpfs          190M  876K  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       12G  118M  12G   1% /root/vcube/120-batch
root@ip-172-31-89-138:~# cd vcube/120-batch
root@ip-172-31-89-138:~/vcube/120-batch# ls
root@ip-172-31-89-138:~/vcube/120-batch# mkdir books classes students
root@ip-172-31-89-138:~/vcube/120-batch# vi file1
```

Below the terminal, the instance details are shown:

i-07c70b58793cf7804 (monika)
PublicIPs: 54.174.5.47 PrivateIPs: 172.31.89.138

At the bottom, there are CloudShell and Feedback buttons, and a footer with copyright information.

Step 19: Now select the added volume and detach it from the 1st instance.

The screenshot shows the AWS EC2 Volumes page. The top navigation bar includes tabs for 'Volumes | EC2 | us-east-1' and 'EC2 Instance Connect | us-east'. The main content area displays a table titled 'Volumes (1/2) Info' with one row. The row details a volume with Volume ID 'vol-03380ba93bef29e04' attached to instance 'i-07c70b58793cf7804'. The volume is type 'gp3', size '12 GiB', IOPS '3000', throughput '125', and snapshot 'snap-091a'. The Actions menu on the right offers options like 'Modify volume', 'Create snapshot', and 'Detach volume'. Below the table, a detailed view for 'Volume ID: vol-03380ba93bef29e04' shows fields such as Volume ID, Size, Type, Volume state, IOPS, Throughput, KMS key ID, and KMS key ARN. The status is 'Okay'. The bottom of the page includes standard AWS footer links.

Step 20: Now go to the instance and create another instance with different name as follows.

The screenshot shows the AWS EC2 Instances page. The top navigation bar includes tabs for 'Instances | EC2 | us-east-1' and 'EC2 Instance Connect | us-east'. The main content area displays a table titled 'Instances (1) Info' with one row. The row details an instance named 'monika' with Instance ID 'i-07c70b58793cf7804', which is currently 'Stopped'. The instance type is 't2.micro'. The Actions menu on the right offers options like 'Launch instances'. Below the table, a 'Select an instance' dialog is open, listing the same instance 'monika'. The bottom of the page includes standard AWS footer links.

Step 21: Select the recently created instance from the instances.

The screenshot shows the AWS EC2 Instances page. The left sidebar includes links for EC2 Dashboard, EC2 Global View, Events, Console-to-Code, Instances (selected), Images, AMIs, AMI Catalog, and Elastic Block Store. The main content area displays a table of instances:

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IPv4
monika2	i-08f1dff5f4514997c	Running	t2.micro	Initializing	View alarms	us-east-1d	ec2-18-206-123-34.compute-1.amazonaws.com
monika	i-07c7058793cf7804	Stopped	t2.micro	-	View alarms	us-east-1d	-

A modal window titled "Select an instance" is open, listing the two instances: "monika2" and "monika".

Step 22: Connect it with the web.

The screenshot shows the AWS EC2 Instance details page for instance i-08f1dff5f4514997c (monika2). The left sidebar is identical to the previous screenshot. The main content area displays the instance summary:

Instance ID	Public IPv4 address	Private IPv4 addresses
i-08f1dff5f4514997c (monika2)	18.206.123.34	172.31.80.143
IPv6 address	Instance state	Public IPv4 DNS
-	Running	ec2-18-206-123-34.compute-1.amazonaws.com
Hostname type	Private IP DNS name (IPv4 only)	Elastic IP addresses
IP name: ip-172-31-80-143.ec2.internal	ip-172-31-80-143.ec2.internal	-
Answer private resource DNS name	Instance type	AWS Compute Optimizer finding
IPv4 (A)	t2.micro	Opt-in to AWS Compute Optimizer for recommendations.
Auto-assigned IP address	VPC ID	Learn more
18.206.123.34 [Public IP]	vpc-0cf6b1045cad2000a	
IAM Role	Subnet ID	Auto Scaling Group name
-	subnet-0a3c1364204295a9c	-
IMDSv2		
Required		

Step 23: Check for the available blocks in this instance. Here we can see that there is no extra volume added.

```

Instance details | EC2 | us-east-1 | EC2 Instance Connect | us-east-1 | +
us-east-1.console.aws.amazon.com/ec2-instance-connect/ssh?region=us-east-1&connType=standard&instanceId=i-08f1dff5f4514997c&osUser=ubuntu&sshPort=22#
All Bookmarks
AWS Services Search [Alt+S]
N. Virginia Kudithetti Monika
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-172-31-80-143:~$ sudo -i
root@ip-172-31-80-143:~# 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  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-172-31-80-143:~# 

i-08f1dff5f4514997c (monika2)
Public IPs: 18.206.123.34 Private IPs: 172.31.80.143
CloudShell Feedback
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```

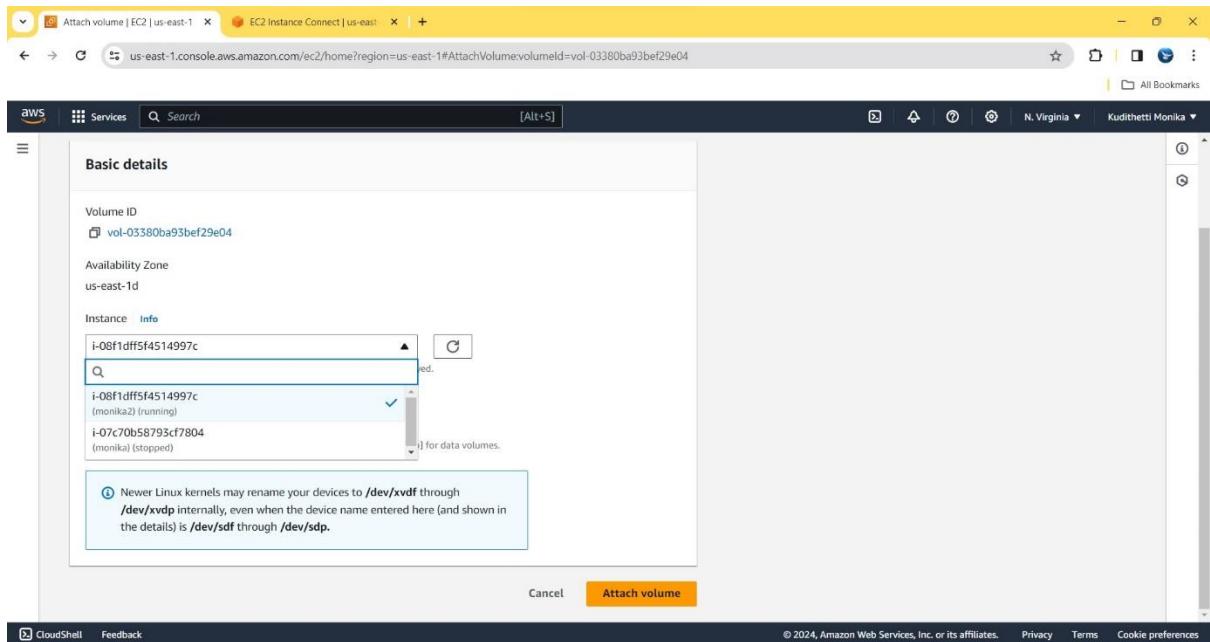
Step 24: Go to the firstly created volume and attach it to the second instance.

Name	Volume ID	Type	Size	IOPS	Throughput	Snapshot
-	vol-0f3f1fc61829a7516	gp2	10 GiB	100	-	snap-091a
<input checked="" type="checkbox"/>	vol-03380ba93bef29e04	gp3	12 GiB	3000	125	-

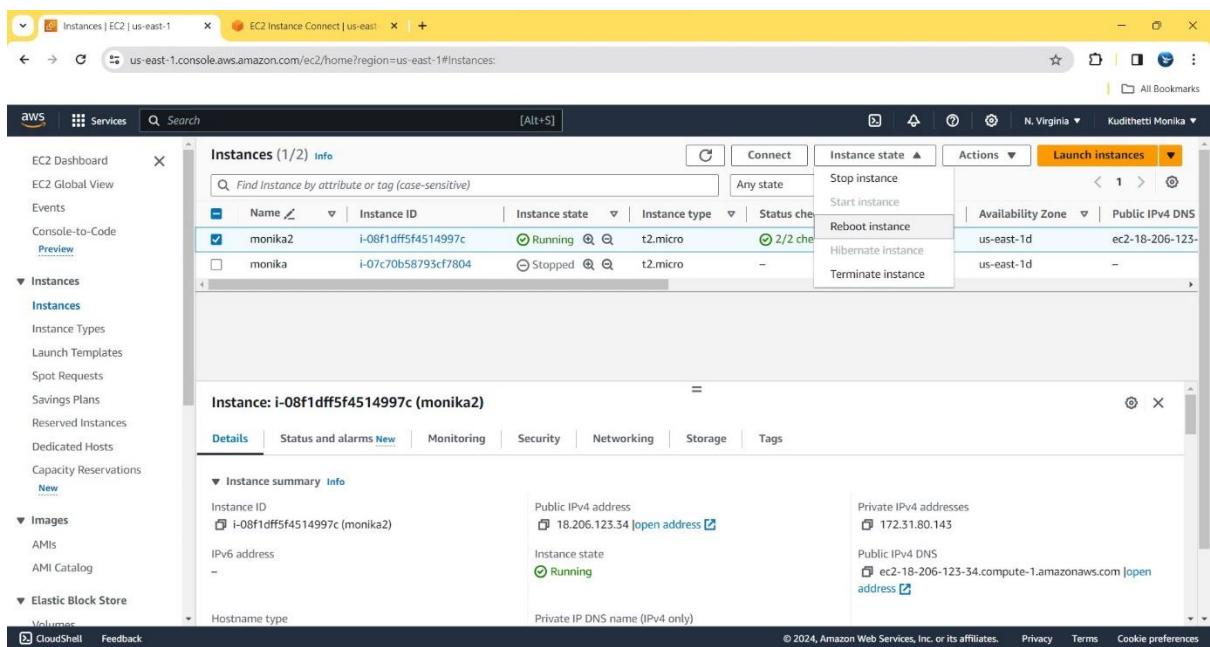
Volume ID: vol-03380ba93bef29e04

Details	Status checks	Monitoring	Tags
Volume ID vol-03380ba93bef29e04	Size 12 GiB	Type gp3	Volume status Okay
AWS Compute Optimizer finding <small>Opt-in to AWS Compute Optimizer for recommendations. Learn more</small>	Volume state Available	IOPS 3000	Throughput 125
Encryption Not encrypted	KMS key ID -	KMS key alias -	KMS key ARN -

Step 25: Select the second instance from the displayed instances.



Step 26: Once again go to the instances and reboot the secondly created instance.



Step 27: Select the secondly created instance from the list of instances

The screenshot shows the AWS EC2 Instances page. On the left, there's a navigation sidebar with links like EC2 Dashboard, EC2 Global View, Events, Console-to-Code, Instances (selected), Instances Types, Launch Templates, Spot Requests, Savings Plans, Reserved Instances, Dedicated Hosts, Capacity Reservations, Images, AMIs, and Elastic Block Store. The main area displays a table of instances. One instance, 'monika2' (ID: i-08f1dff5f4514997c), is selected and shown in a detailed view below. This view includes tabs for Details, Status and alarms, Monitoring, Security, Networking, Storage, and Tags. Under the Details tab, it shows the Instance ID, Public IPv4 address (18.206.123.34), Private IPv4 addresses (172.31.80.143), Instance state (Running), Public IPv4 DNS (ec2-18-206-123-34.compute-1.amazonaws.com), and Private IP DNS name (IPv4 only). At the bottom of the main area, there's a URL bar with the address https://us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#Instances... and a footer with copyright information.

Step 28: Now connect it with the web.

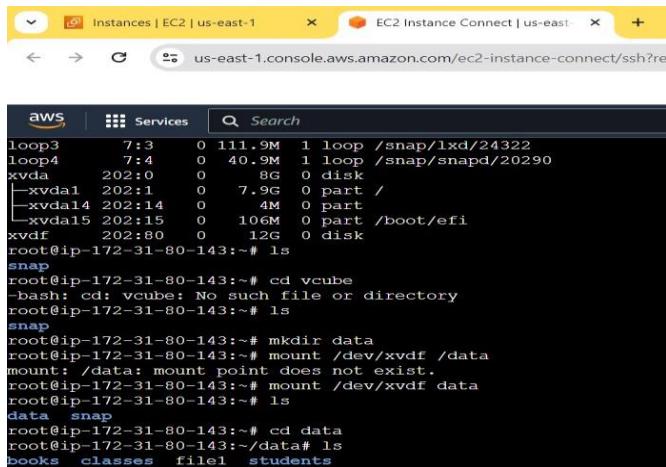
The screenshot shows the AWS CloudShell interface. It displays the output of the 'lsblk' command on the EC2 instance. The output lists various block devices with their sizes and mount points. Below the terminal window, there's a summary card for the instance 'i-08f1dff5f4514997c (monika2)' showing its Public IPs (18.206.123.34) and Private IPs (172.31.80.143). The footer of the CloudShell window includes links for CloudShell, Feedback, and copyright information.

```

root@ip-172-31-80-143:~# 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    0 111.9M 1 loop /snap/1xd/24322
loop4    7:4    0 40.9M  1 loop /snap/snapd/20290
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  12G  0 disk
root@ip-172-31-80-143:~#

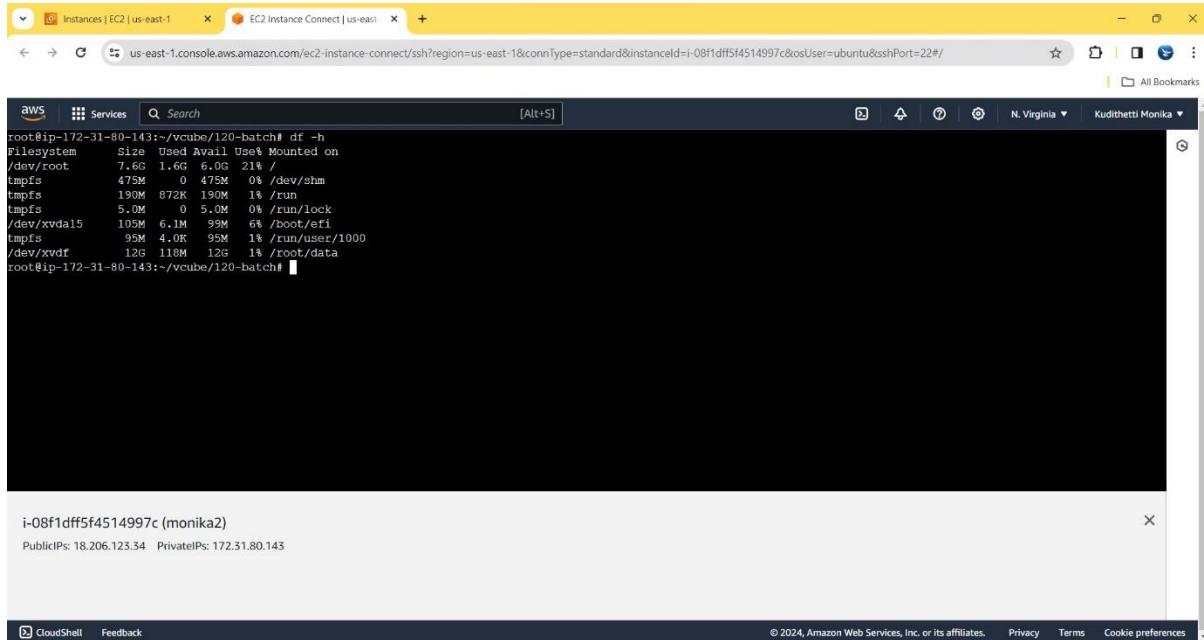
```

Step 29: Use the following commands to know the blocks in the instance, and create a new directory and mount the data of the previous volume into this instance as follows. The previous volume's data is successfully displayed.



```
aws | Services | Search
loop3    7:3      0 111.9M  1 loop   /snap/lxd/24322
loop4    7:4      0 40.9M  1 loop   /snap/snapd/20290
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  12G  0 disk
root@ip-172-31-80-143:~# ls
snap
root@ip-172-31-80-143:~# cd vcube
-bash: cd: vcube: No such file or directory
root@ip-172-31-80-143:~# ls
snap
root@ip-172-31-80-143:~# mkdir data
root@ip-172-31-80-143:~# mount /dev/xvdf /data
mount: /data: mount point does not exist.
root@ip-172-31-80-143:~# mount /dev/xvdf data
root@ip-172-31-80-143:~# ls
data snap
root@ip-172-31-80-143:~# cd data
root@ip-172-31-80-143:~/data# ls
books classes file1 students
```

Step 30: Once again check the size of the instance. The size of the instance has been successfully increased without any loss of data from the volume.



```
aws | Services | Search
[Alt+S]
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  872K  190M  1% /run
tmpfs       5.0M   0  5.0M  0% /run/lock
/dev/xvda15 105M  6.1M  95M  6% /boot/efi
tmpfs       95M  4.0K  95M  1% /run/user/1000
/dev/xvdf   12G  118M  12G  1% /root/data
root@ip-172-31-80-143:~/vcube/120-batch#
```

i-08f1dff5f4514997c (monika2)
Public IPs: 18.206.123.34 Private IPs: 172.31.80.143

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