1. Describe the use cases each of EBS, S3, EFS Storage Services.

Use cases of Amazon Elastic Block Storage

It provides the feature of building users SAN in the cloud for the Input and Output intensive applications.

Amazon Elastic Block Storage helps in migrating mid-range, on-premises storage area network (SAN) workloads to the cloud. It Attaches high-performance and high-availability block storage for mission-critical applications.

It runs relational or NoSQL databases.

Amazon Elastic Block Storage helps in deploying and scaling users' choice of databases including the famous SAP HANA, Oracle, Microsoft SQL Server, MySQL, Cassandra, and MongoDB.

It provides the right size of big data analytics engines to the users.
Amazon Elastic Block Storage easily resizes clusters for the big data analytics engines such as Hadoop and Spark and further freely detach and re-attach volumes.

It provides Cost-effective services.
Amazon Elastic Block Storage are cost-effective and ideal for frequent backups. Users can use tools such as AWS Cost Explorer to track the Amazon EBS snapshot usage and spend, and further optimize the storage costs as needed. It helps in saving up to 75% in the Amazon EBS snapshot storage costs by using EBS Snapshots Archive for the long-term retention (over 90 days) of seldom-accessed snapshots.

It provides Security.
Amazon Elastic Block Security offers a simple encryption solution for users of Amazon EBS resources that does not require users to build, maintain, and secure their key management infrastructure. It can be easily configured using the AWS account to enforce encryption of any new EBS volumes and snapshots users create, including snapshots of the on-premises data.

Use cases of S3

1. Backup File System
    - Backup is among the most popular use cases for Amazon S3. Storage claims 99.999999999% durability and distribution of three copies of each file between its data centers in different regions. This means crucial backup files you need to store will not be destroyed by human error or even region-level natural disaster.
    - With the price of $0,023 per GB at the first usage tier in the N. Virginia region, you get a reliable and cost-effective offsite solution.
2. Infrequent Access, Reduced Redundancy & Archival Storage
    - Amazon S3 is divided by Standard, Standard IA Z-IA, RRS, and Glacier. In Standard I/A and Z-IA classes the accessibility of an object is reduced, therefore it poorly suits for files that can be requested by the websites or applications.
    - The Reduced Redundancy Storage (RRS) class assumes the higher probability of losing an object, so it’s not wise to store crucial data there. Use it for tons of user images or for files that have another copy stored locally instead.
    - Amazon Glacier is also described as an Amazon S3 class by AWS, but in fact represents a standalone archival storage for data that is almost never accessed: older backup versions, family archives, etc. Archiving helps users to reduce the overall storage cost and get rid of the outdated files.

3. Host Static Website
    - Amazon S3 is a silver bullet for site administrators because it's suitable for almost each and every webmaster's need. First of all, it can be used as a hosting service. With the same $0.0300 price for a hosted GB/Month, it surpasses the hosting market average $2.75/month, but only to the point where your static website is below 100 GB in total.
    - Backup CMS Data
        - ➔ If the thought of losing your blog posts makes you wince, backup is worth taking a look. There are a few plugins that can be integrated into the WordPress system, like BackupBuddy, that can store pages, files, directories, plugins, tables, user accounts and comments in Amazon S3 account on schedule.
    - Downloadable Content Storage
        - ➔ Amazon S3 can significantly boost website's performance, with the helping hand from the CloudFront content delivery network. If you're planning to use content distribution on a regular basis, remember that requests to your data are $0.004/10.000 requests. Because of its price, Amazon S3 is extremely useful for large content distributions.
    - Video Stream Source
        - ➔ You can host your streams and live broadcasting using both Amazon S3 and CloudFront. While there are a lot of protocols available for it, most of the users stay on RTMP, which delivers media to the common Adobe Flash Player.
4. Create Private Local Repository
    - Amazon S3 can be used to create your own private local Git, Yum or Maven repository. This helps in the situation when you want to save some time and avoid complicated scripting. Instead of running multiple servers you just store the master file in the cloud (making S3 bucket a root directory) and push commits through plug-ins like Jgit.
5. Improve File Sharing
    - Amazon S3 can be also used as a cheap file sharing solution or a network drive and be integrated into your environment. The first use case is similar to Dropbox (which was built on the top of Amazon S3 previously) — you configure ACL policy to allow access to the bucket for some users and upload files to do some teamwork.

Use cases of EFS

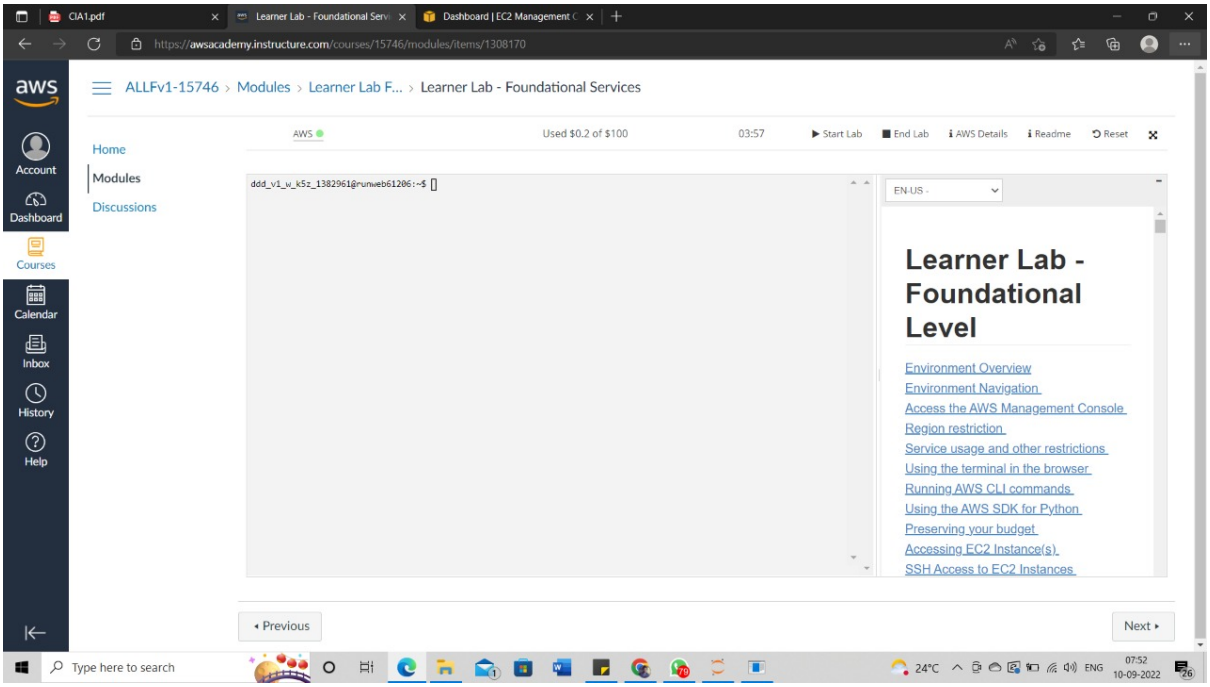
- Web serving and content management
- Enterprise application usage
- Media and entertainment

- Shared and home directories
- Database backups
- Developer and application tools
- Container storage
- Big data analytics
- Other applications where you need to connect a common data source to a single server or multiple servers

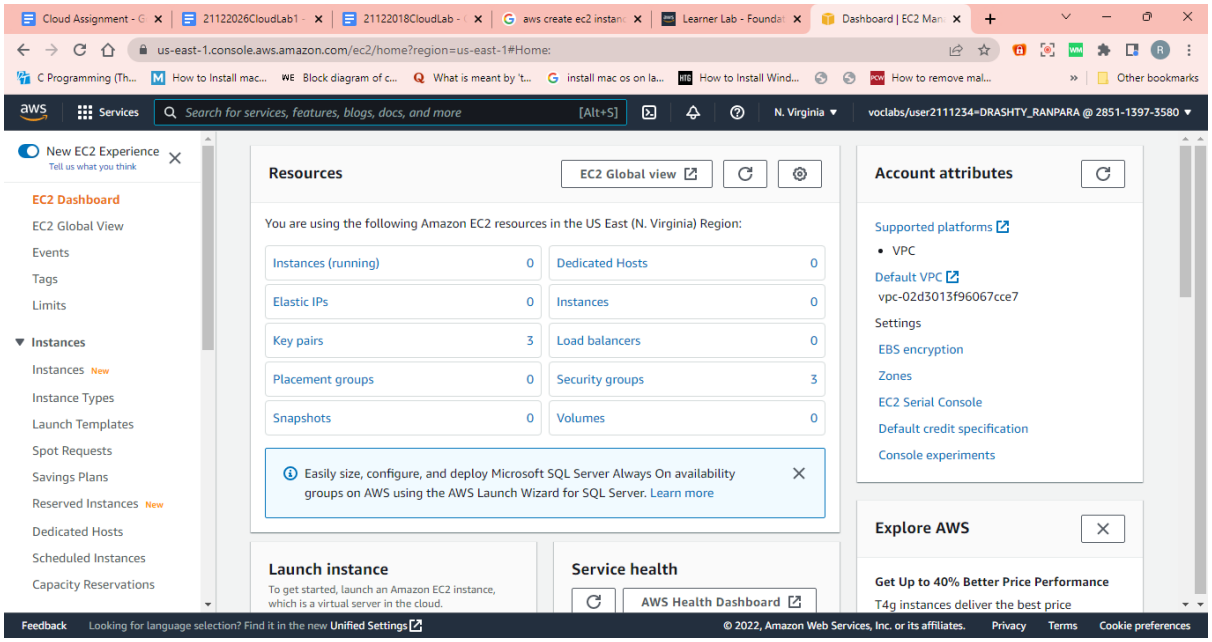
2. Create an Amazon EBS volume. After you create the volume, you will attach the volume to an Amazon EC2 instance, configure the instance to use a virtual disk, create a snapshot and then restore from the snapshot.

Launch EC2 Instance for Windows

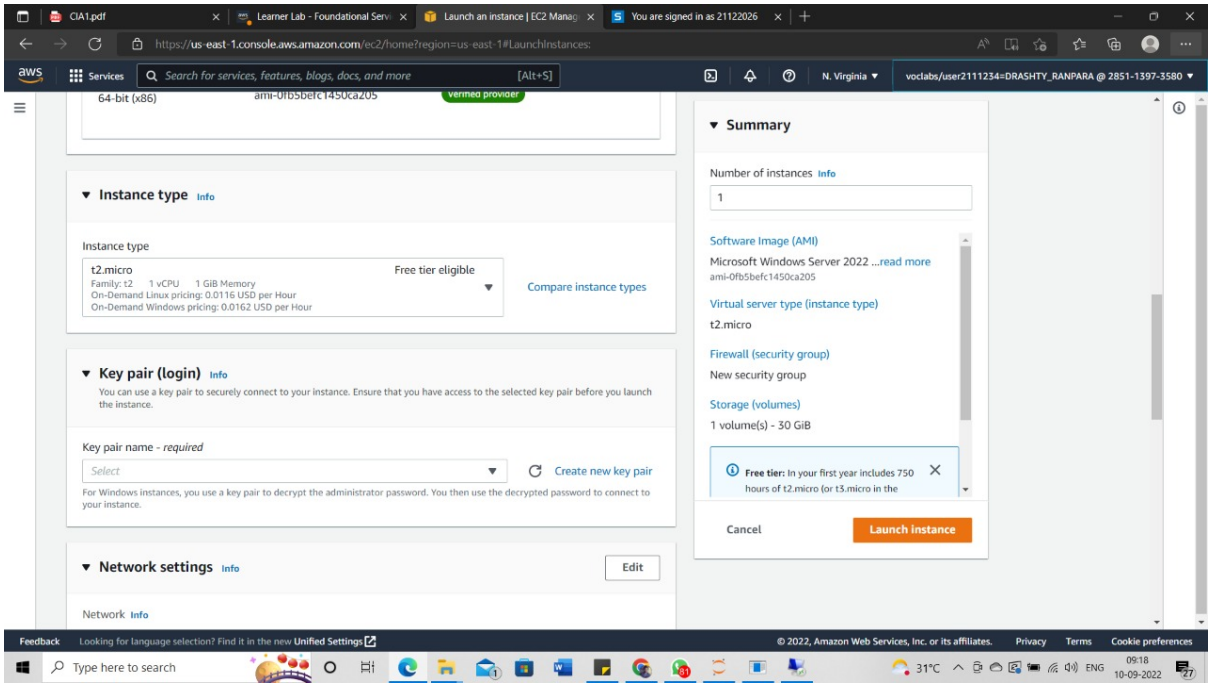
1. Login to AWS Portal. Go to the Learner Lab program and click on the **start lab** button. It should show a green signal beside the AWS link.



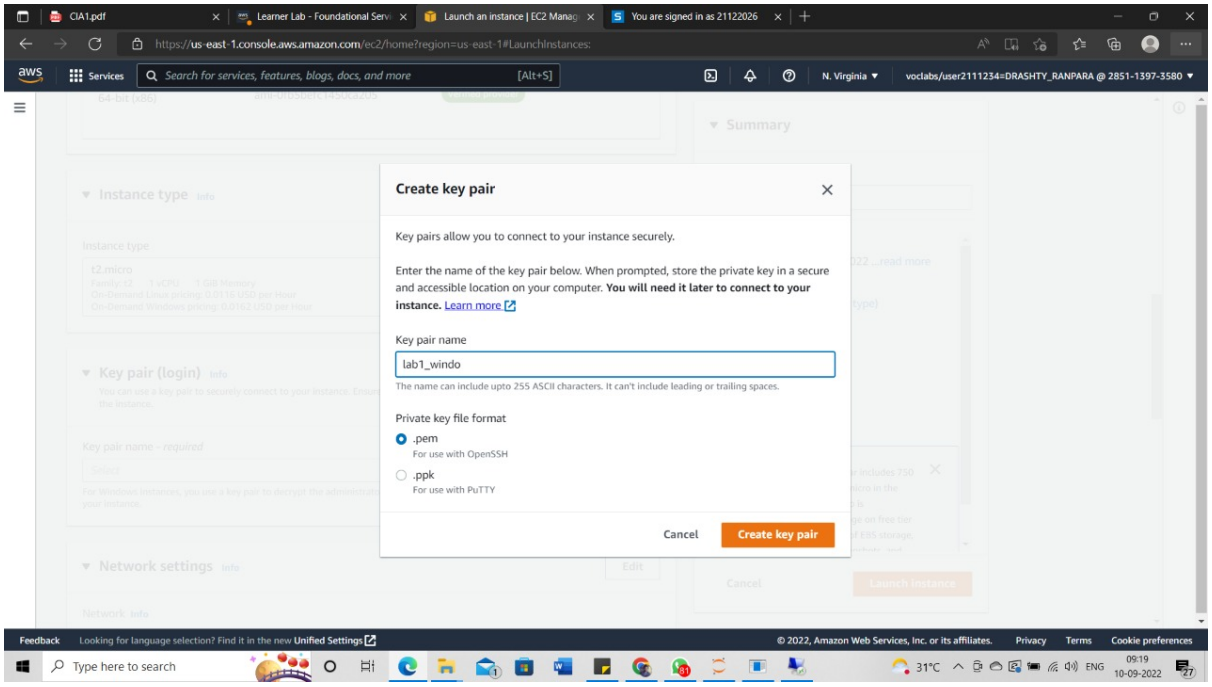
2. Navigate to **EC2 Dashboard** and click on **Launch Instance.**



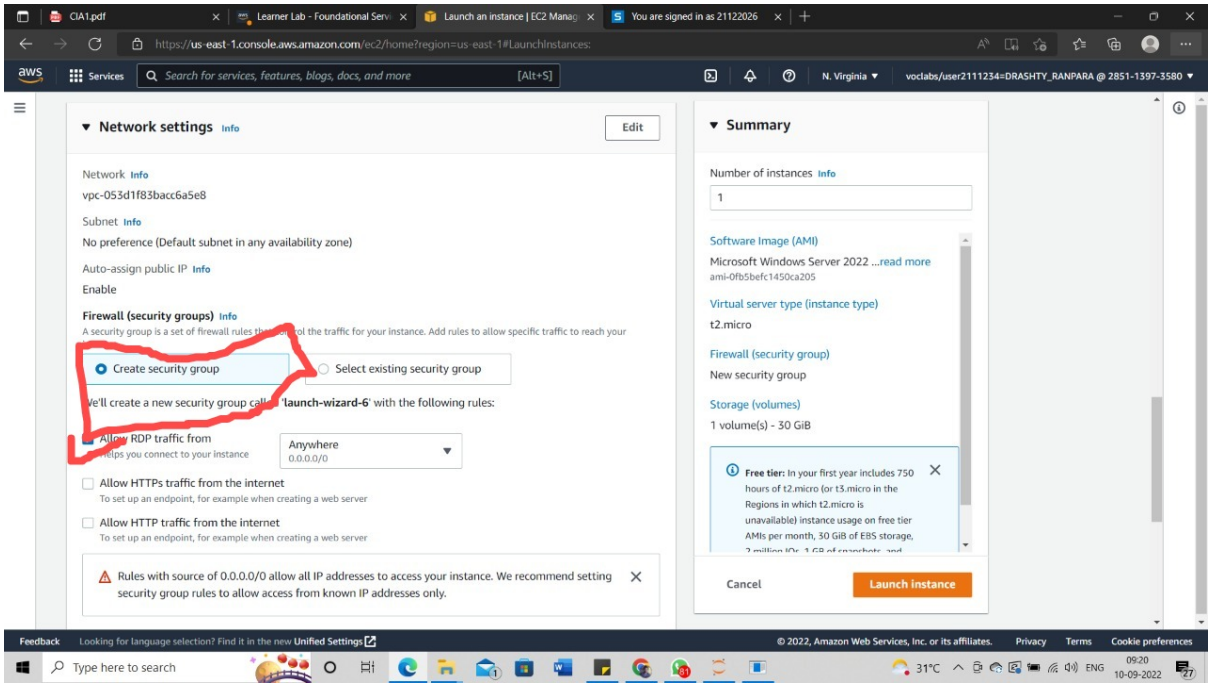
3. Provide with Name and tags - for instance, lab1. Furthermore, select the necessary operating system based on your requirement. In our case, we go for **Windows** and opt for **free tier eligibility.**



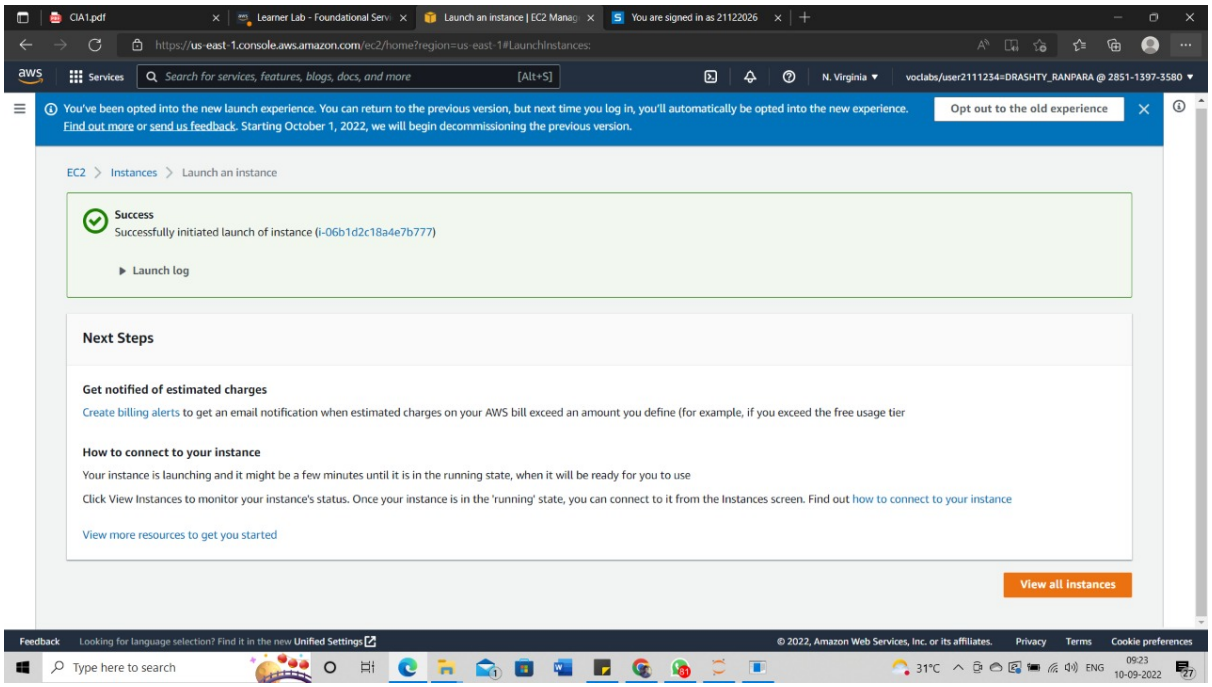
4. Select the necessary **instance type** and click on **Create new key pair.** From the dialogue box that appeared, give the Key pair name and under the Key pair type select **RSA** furthermore, under the Private key file format select **.ppk**(for Linux). Finally, click on **Create key pair** button.

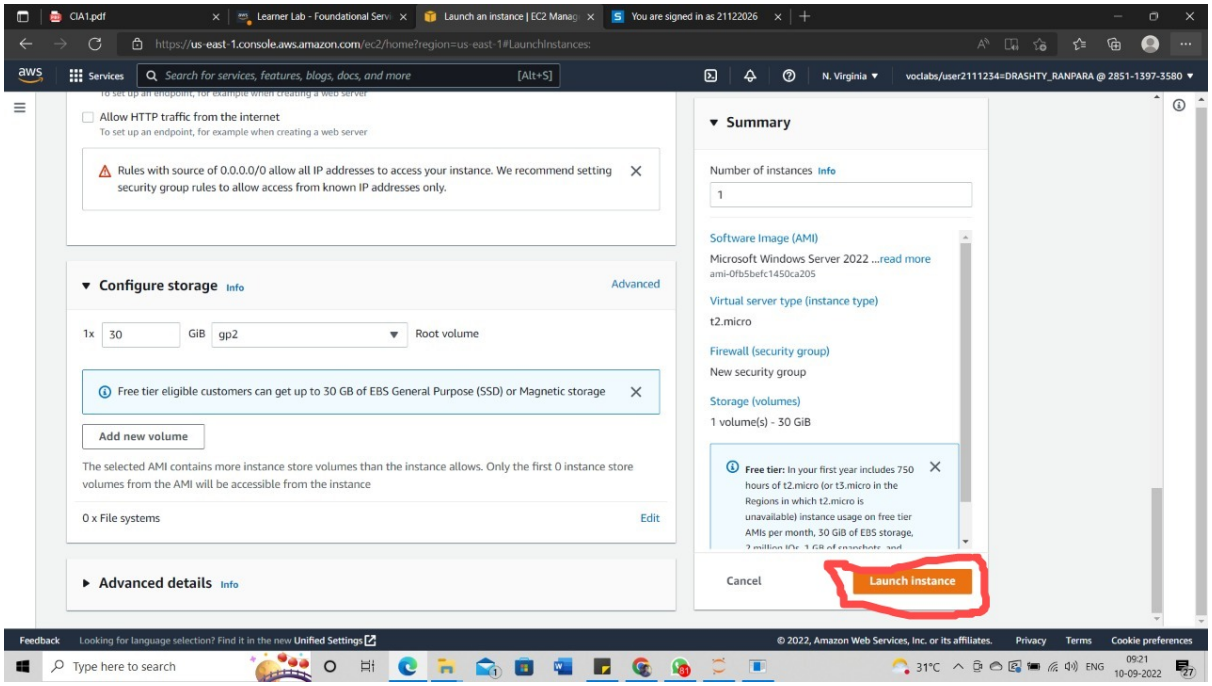


5. After creating key pair under Network Settings select the radio button and **Create security group**. If you already have an **existing security group** kindly go for that option. Next, select the checkbox **Allow RDP traffic from**.



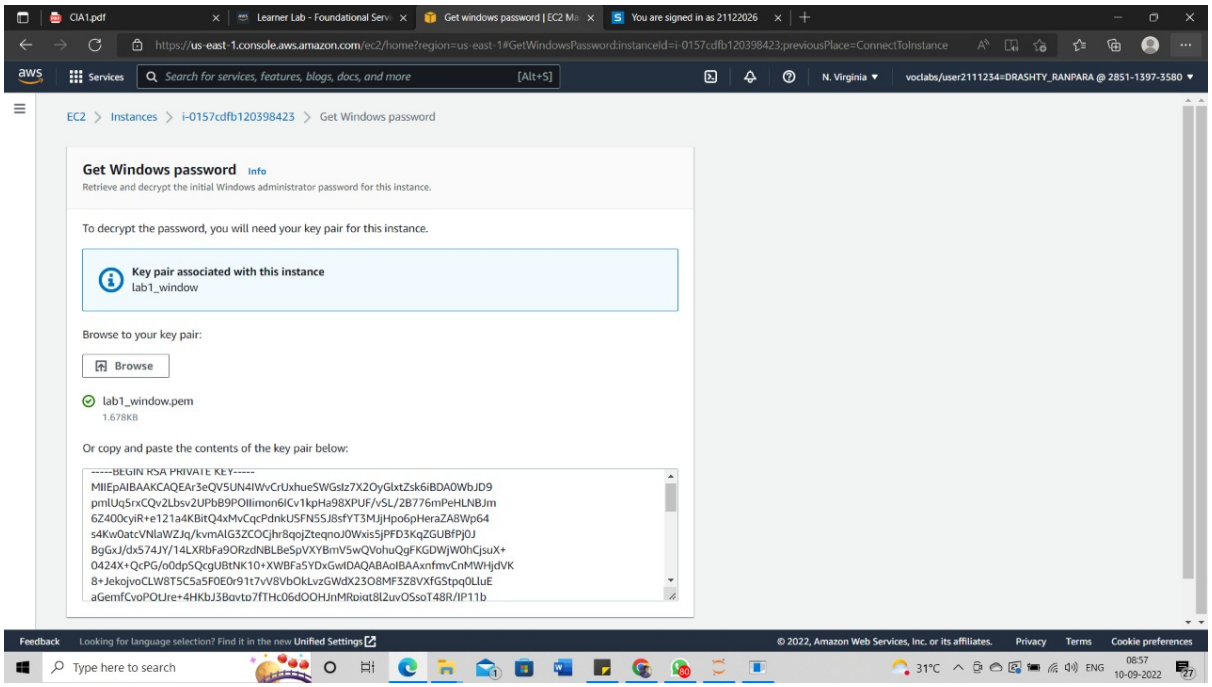
6. According to your requirements go for Configure storage. Here I opt for default storage which is already given. After that, click on the **Launch instance** button.



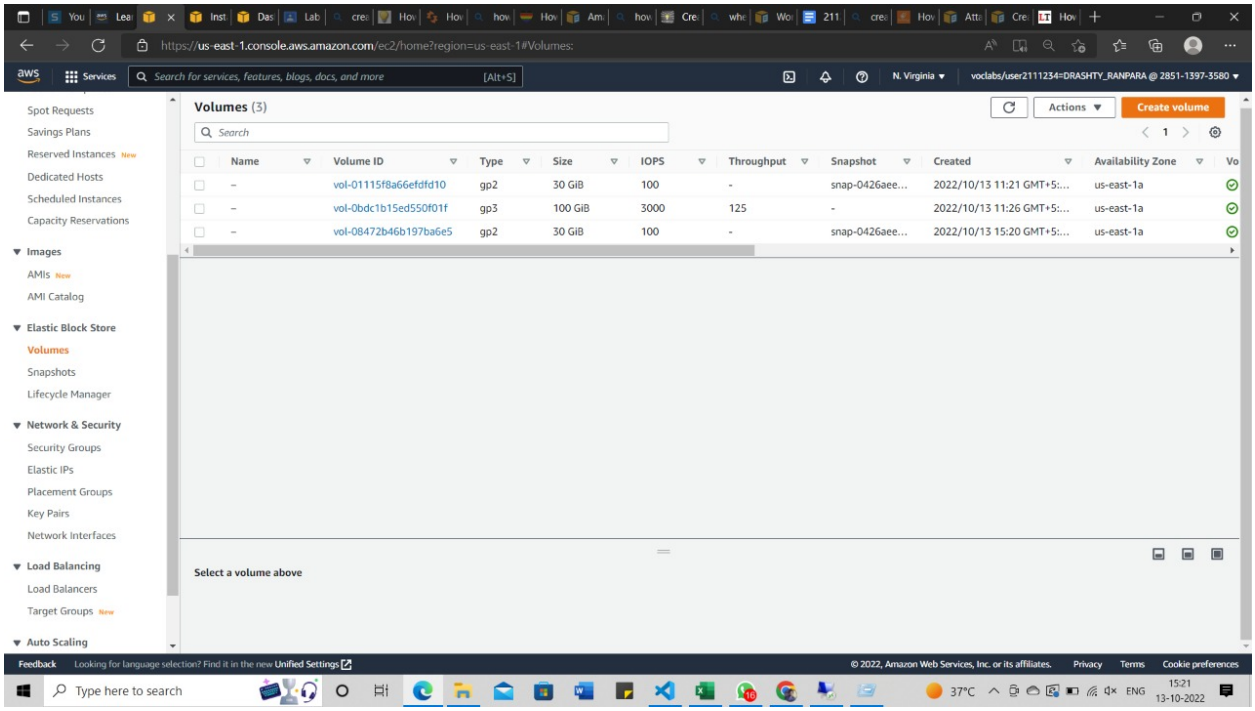


7. A **Success** message will be popped once you launch the instance.

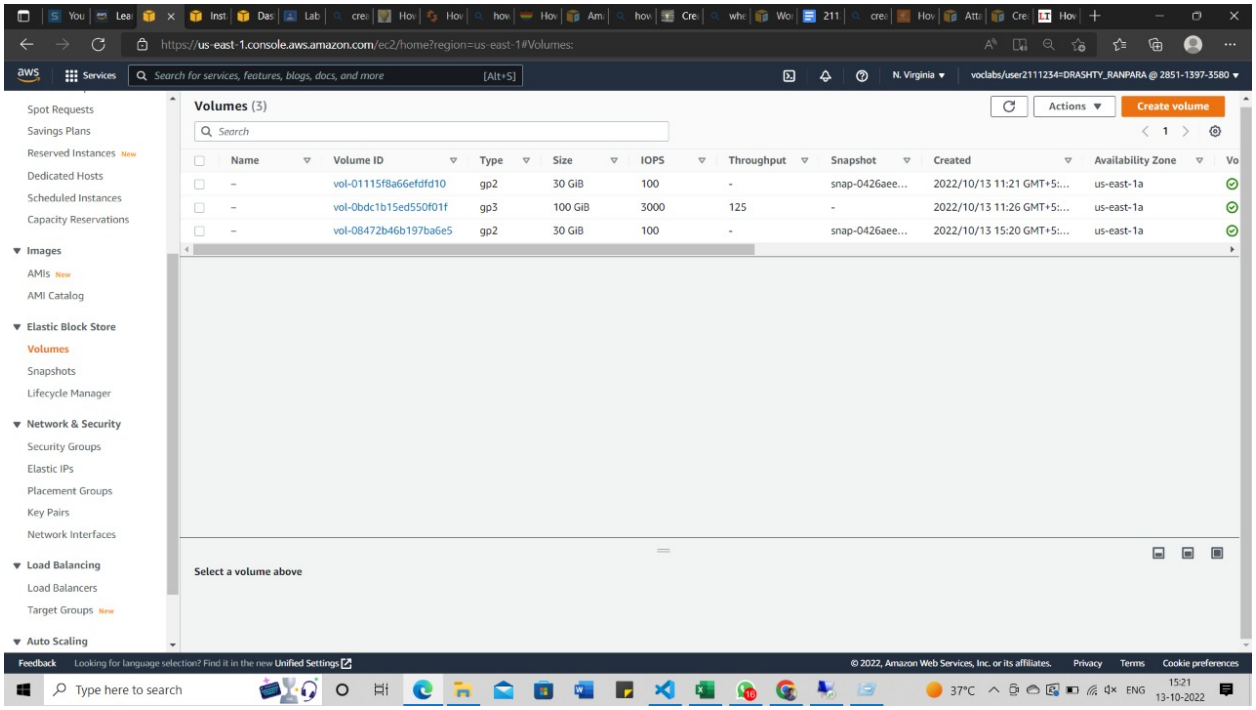
8. Furthermore, click on **Get Password.**

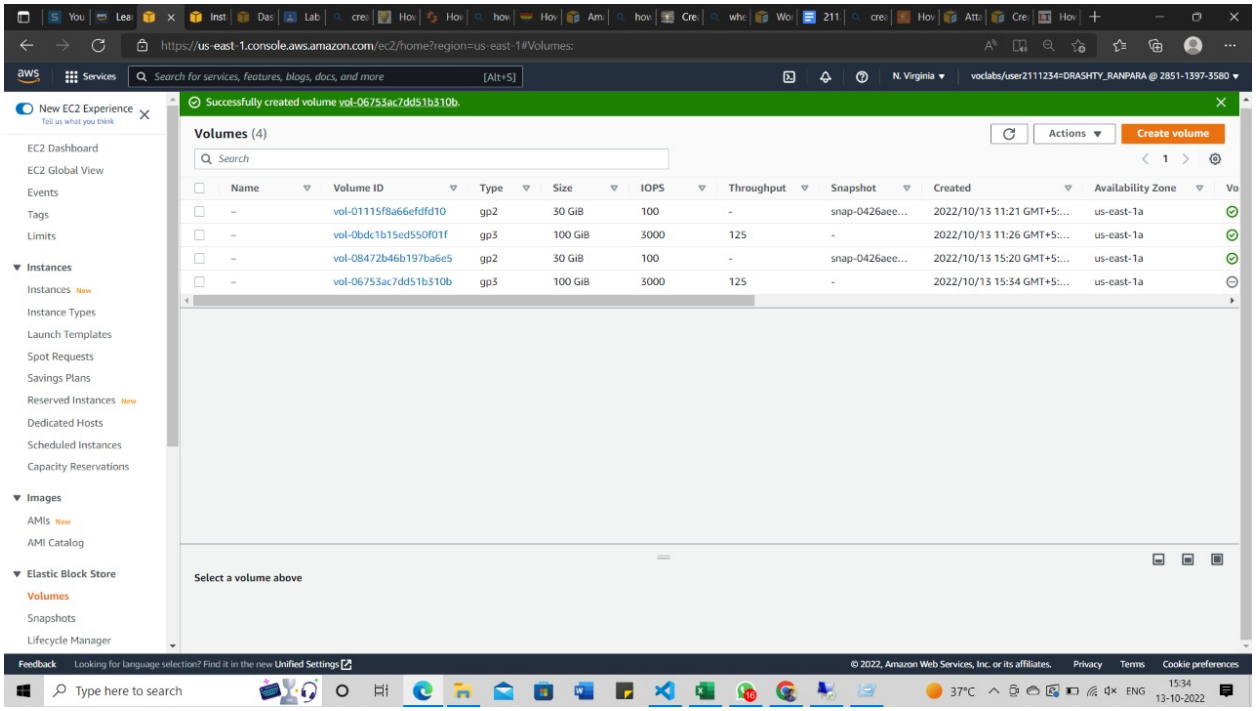


9. Navigate to Elastic Block Store → Volumes. Click on create volume.

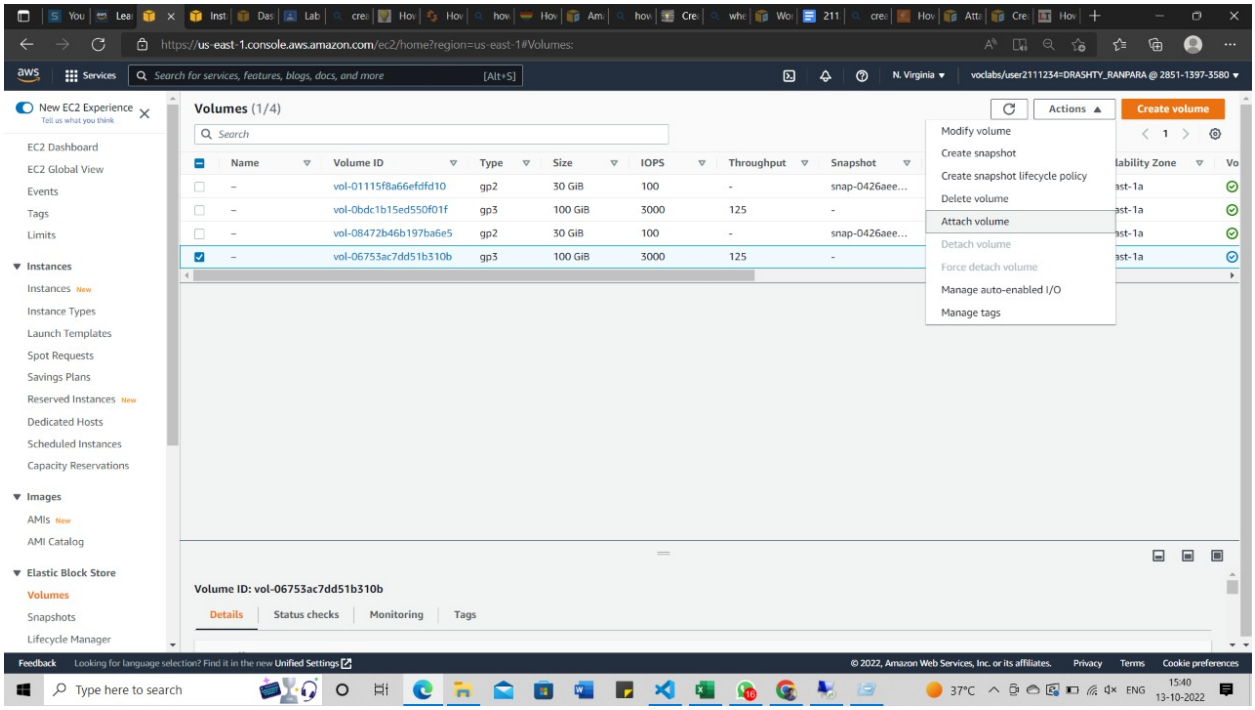


10. Change Volume Type and other variables according to your needs and click on create volume.

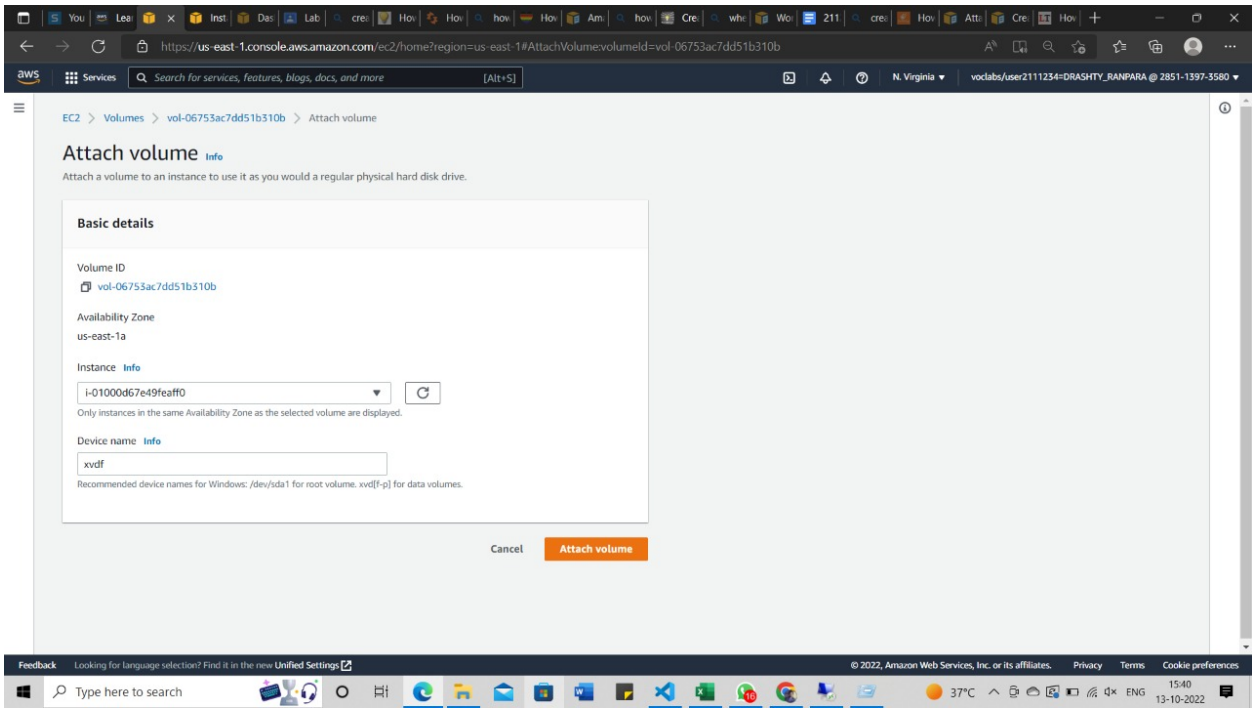




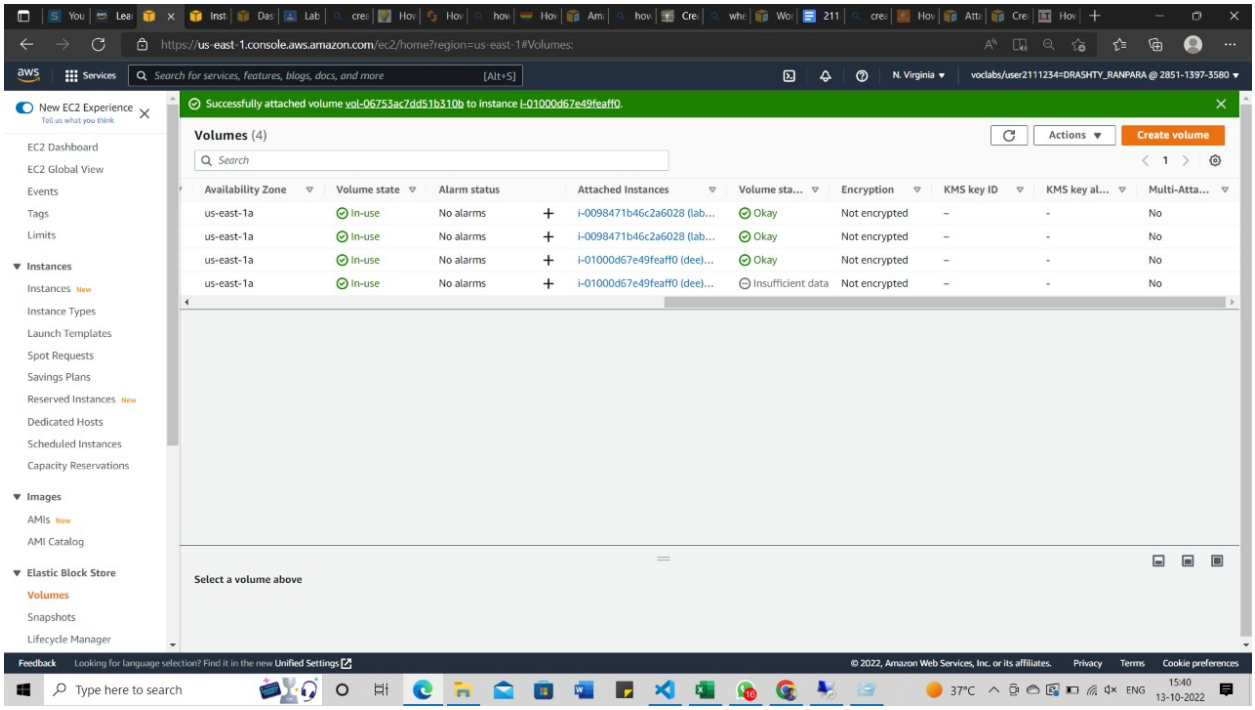
11. Select the checkbox of the newly created volume. Furthermore, go to the Actions tab and click Attach volume.



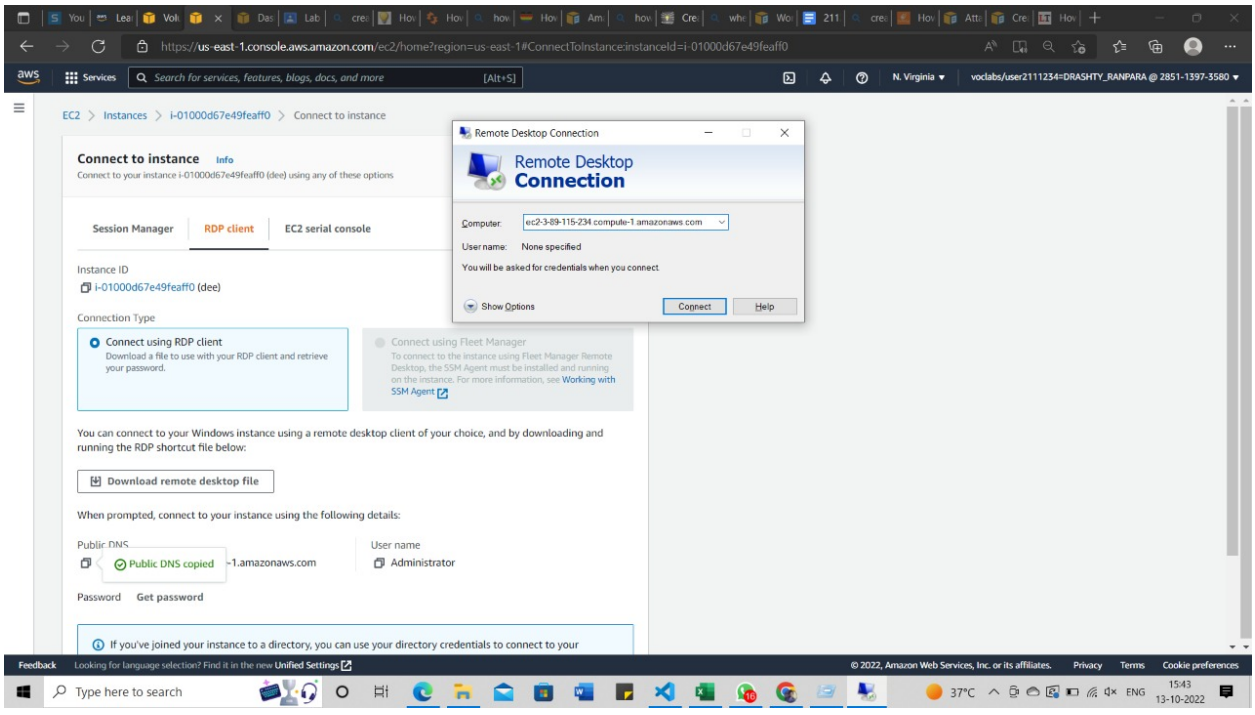
12. Select your previously created instance to be allocated to the particular volume and click on Attach volume button.

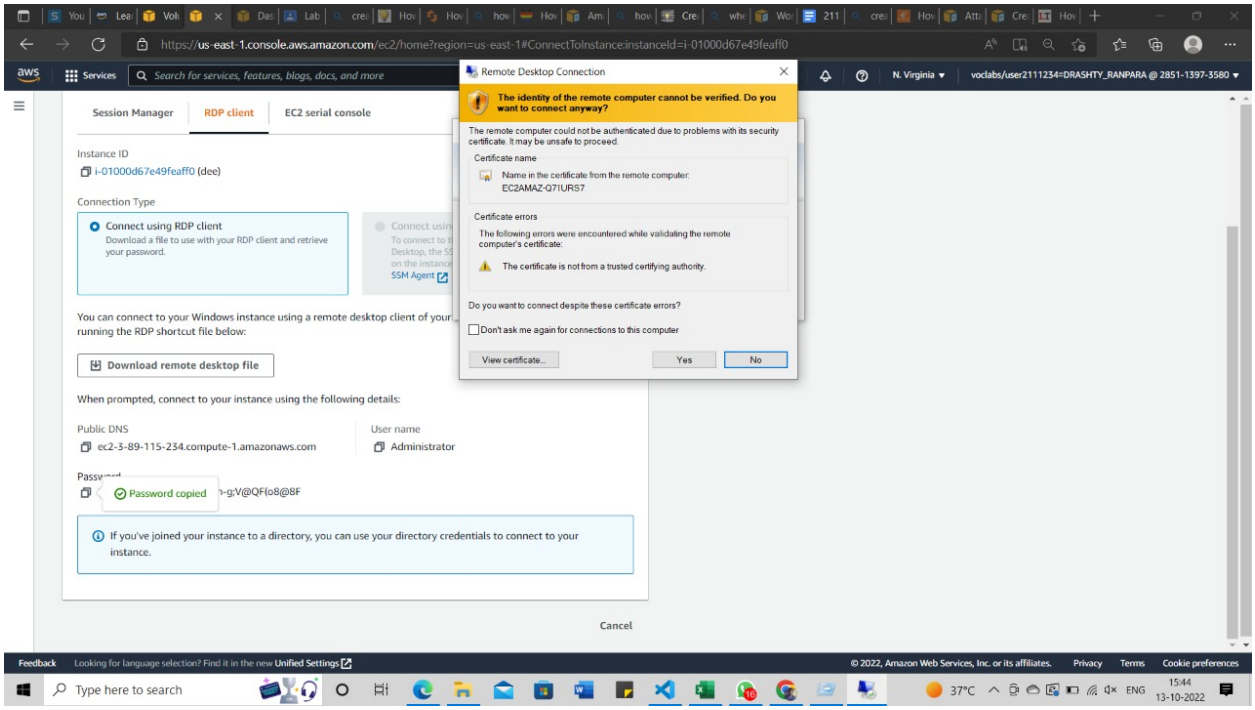


13. Cross check whether the volume is attached to instance or not under the Attached instance tab.

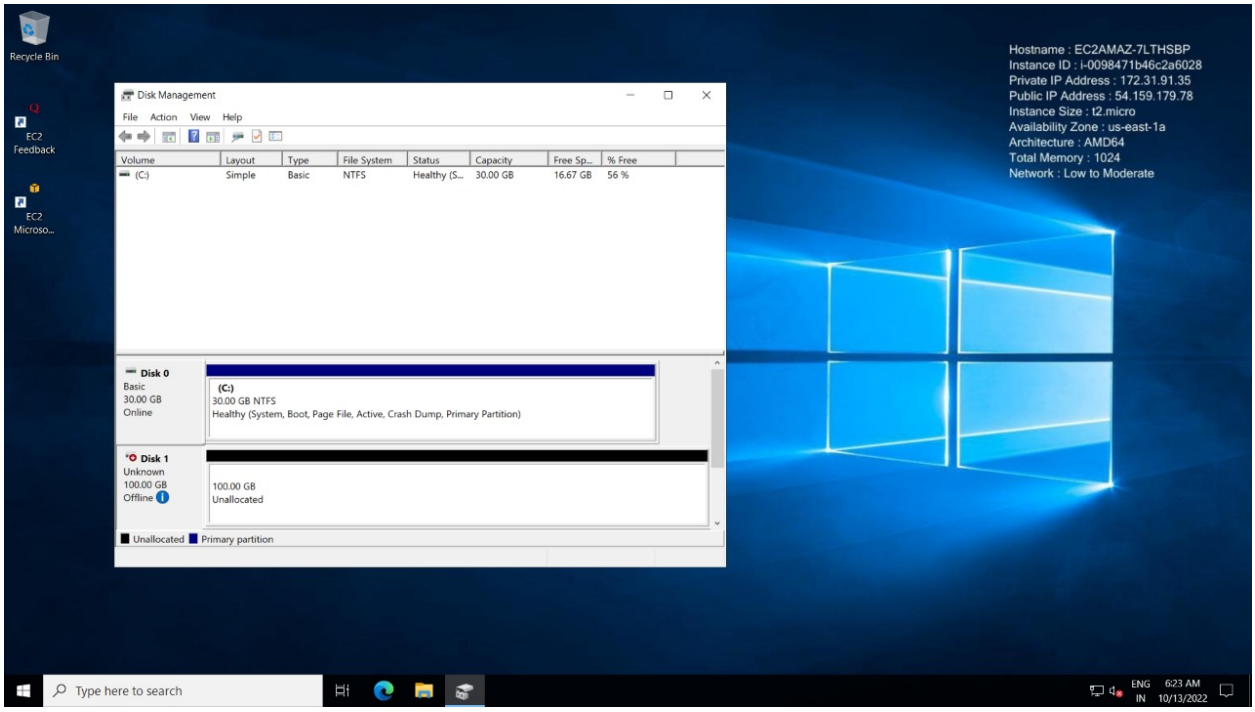


14. Connect your instance with RDP client.

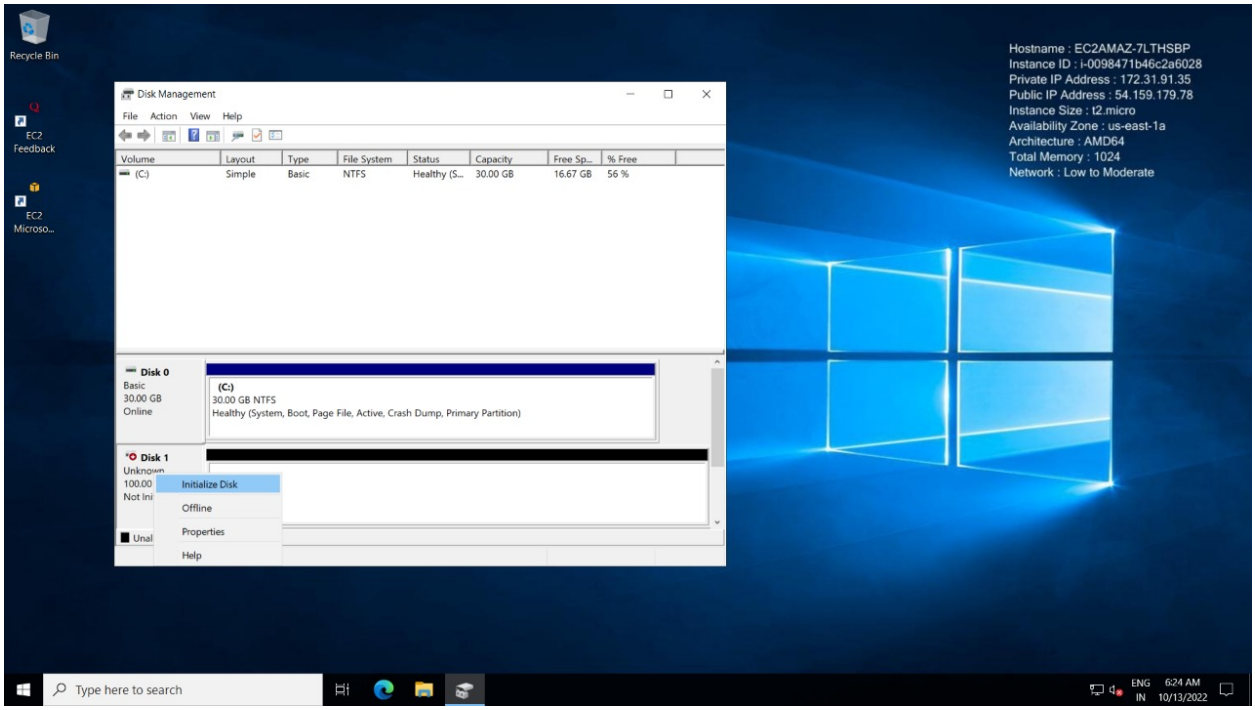




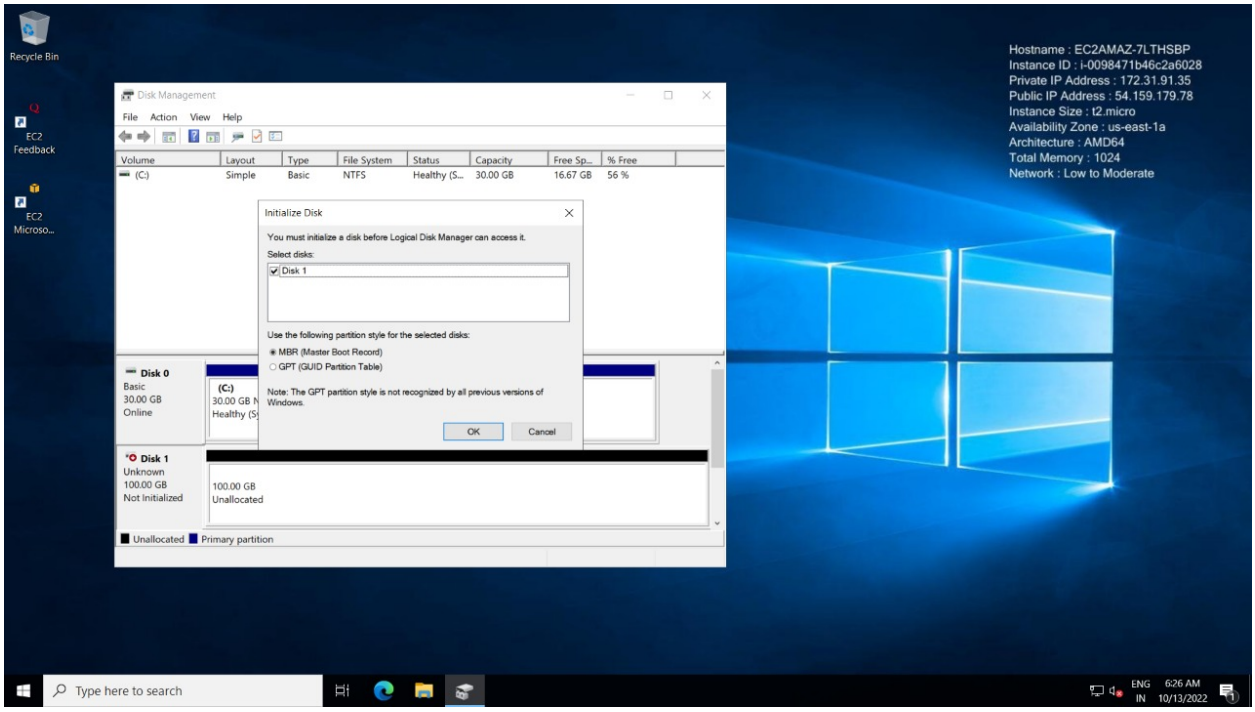
15. In your instance open Disk Management.



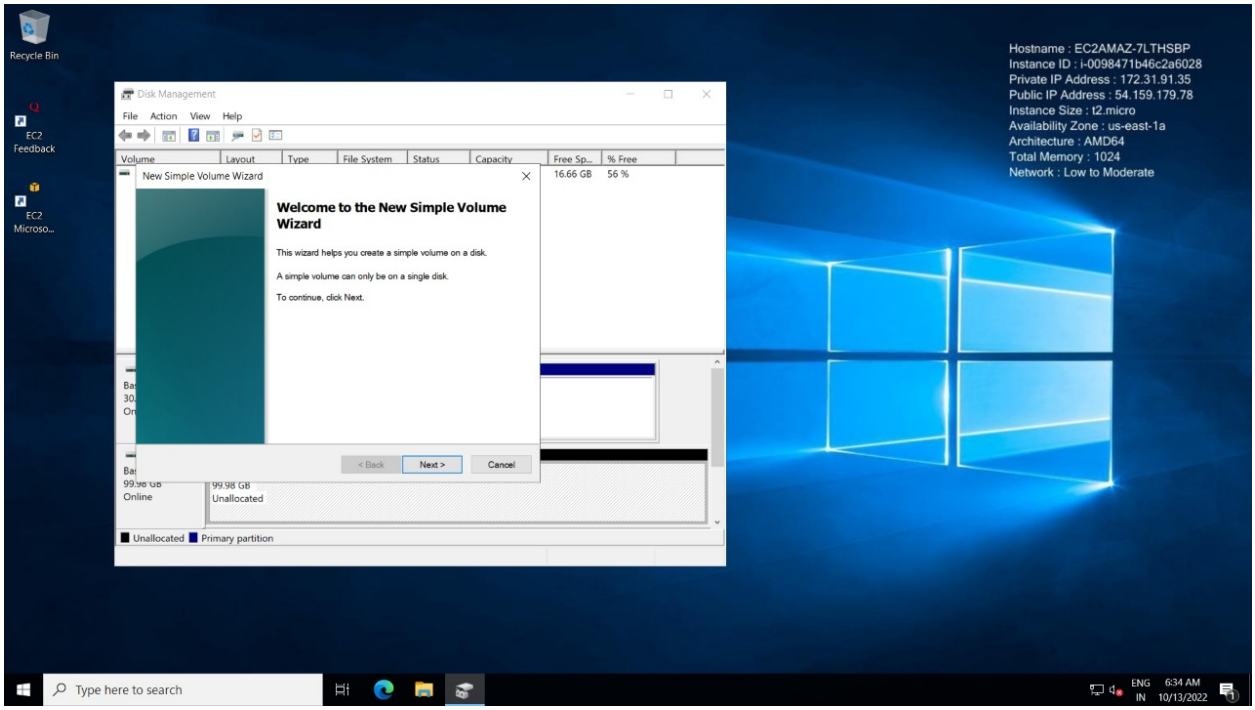
16. Right click on Disk 1 click online option. Next, again right click on Disk 1 and select Initialize Disk.

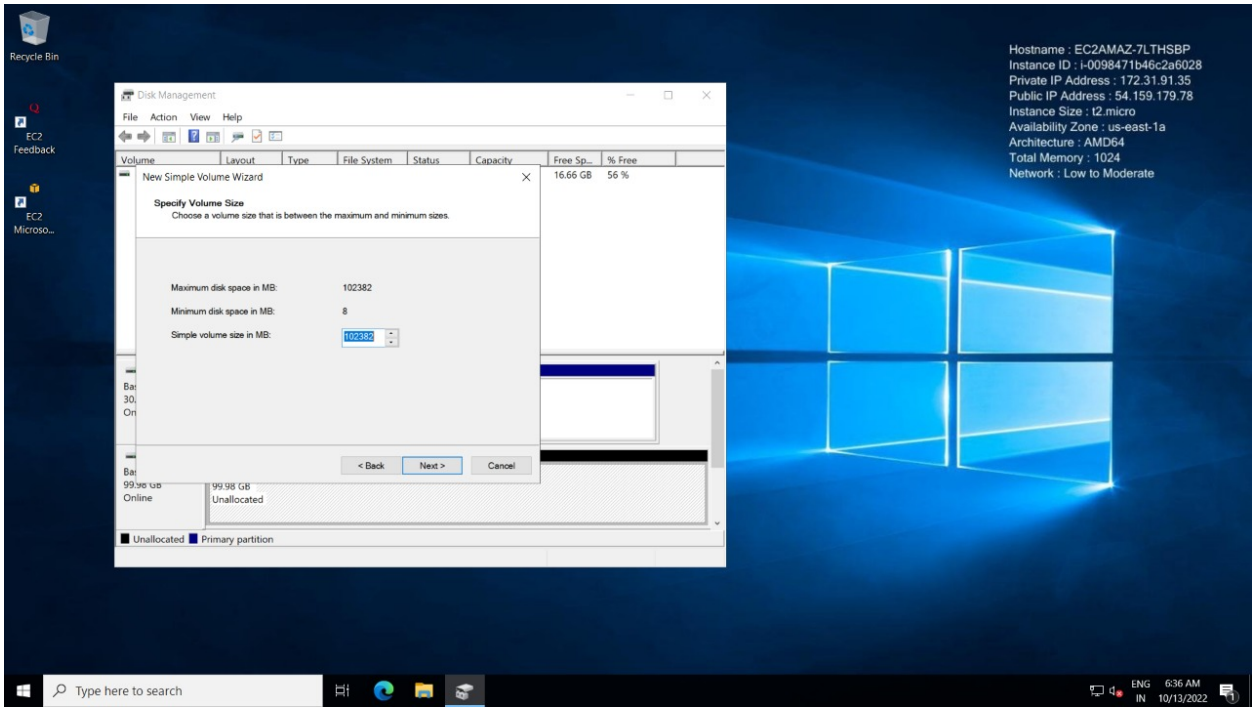


17. In the Initialize Disk window choose the GPT radio button → OK.

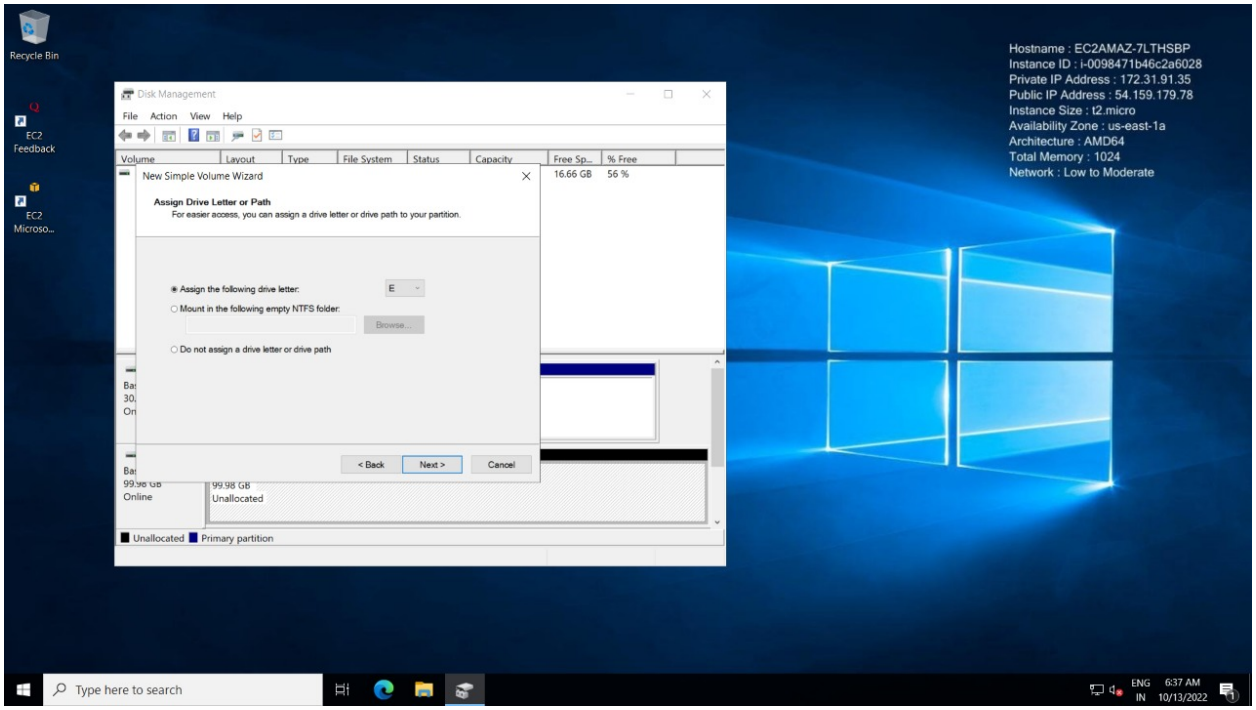


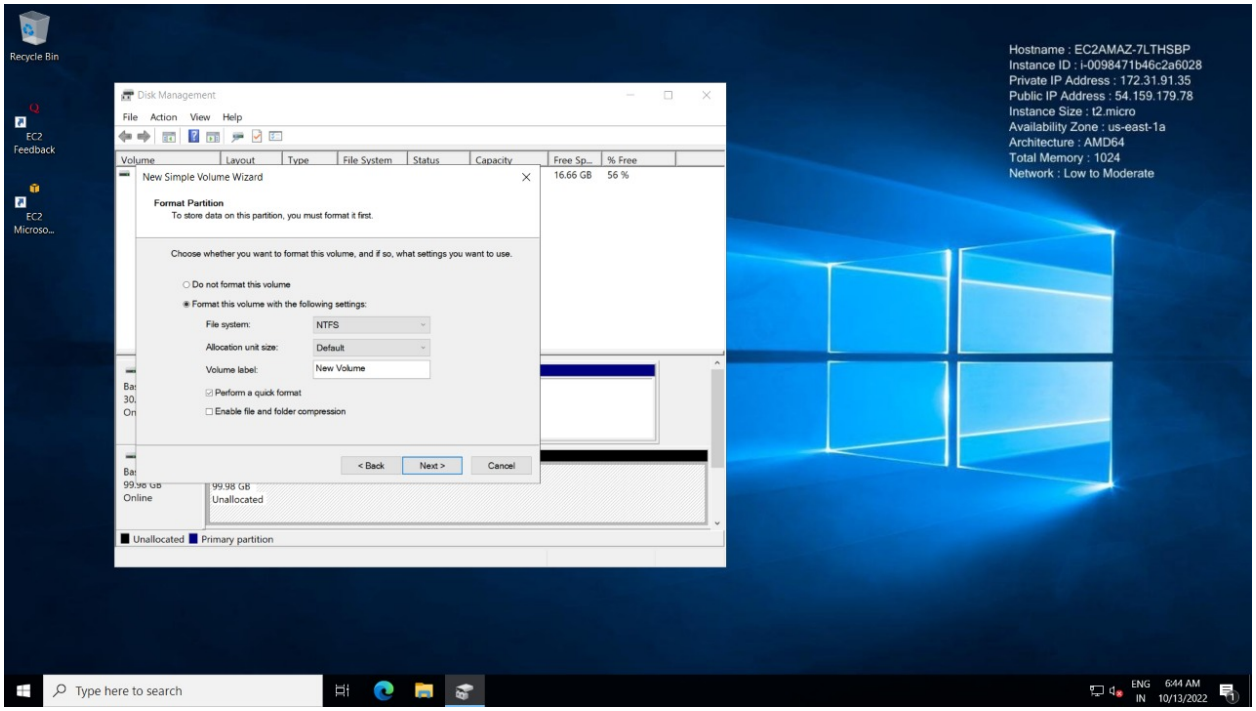
18. Right click on unallocated and select New Simple Volume and this will direct you to the Wizard screen and allocate space according to your requirements click on Next.

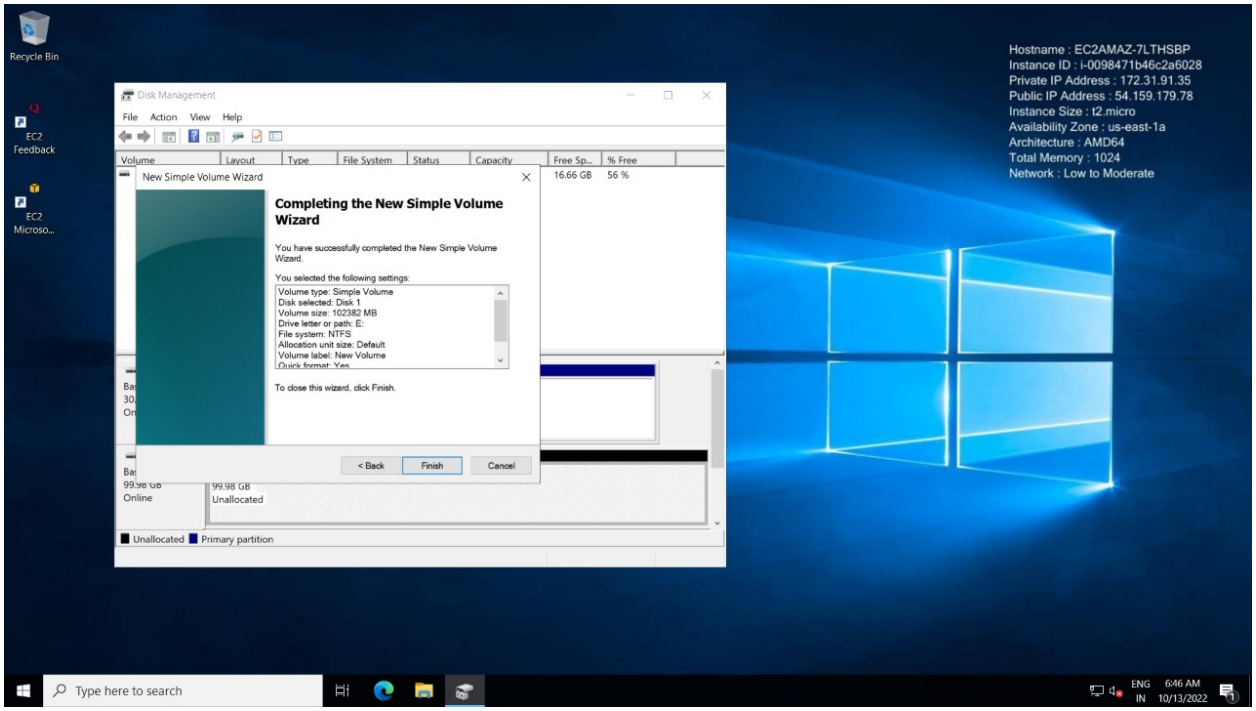




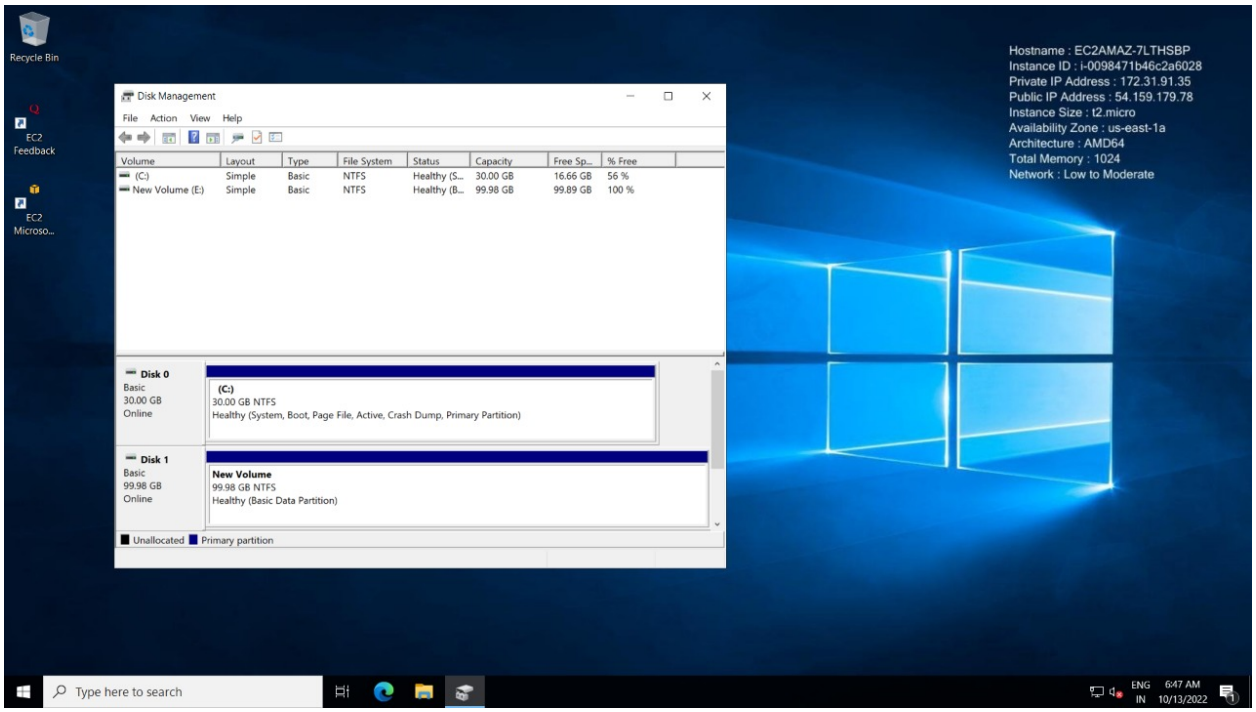
19. Select your disk name and click next and finish.


Recycle Bin
EC2 Feedback
EC2 Microso...
Disk Management
File Action View Help
Volume Layout Type File System Status Capacity Free Sp... % Free
16.66 GB 56 %
New Simple Volume Wizard
Assign Drive Letter or Path
For easier access, you can assign a drive letter or drive path to your partition.
Assign the following drive letter: E
Mount in the following empty NTFS folder:
Browse...
Do not assign a drive letter or drive path
< Back Next > Cancel
99.98 GB
Online
Unallocated
Unallocated Primary partition
Hostname : EC2AMAZ-7LTHSBP
Instance ID : i-0098471b46c2a6028
Private IP Address : 172.31.91.35
Public IP Address : 54.159.179.78
Instance Size : t2.micro
Availability Zone : us-east-1a
Architecture : AMD64
Total Memory : 1024
Network : Low to Moderate
Type here to search
ENG IN 6:37 AM 10/13/2022

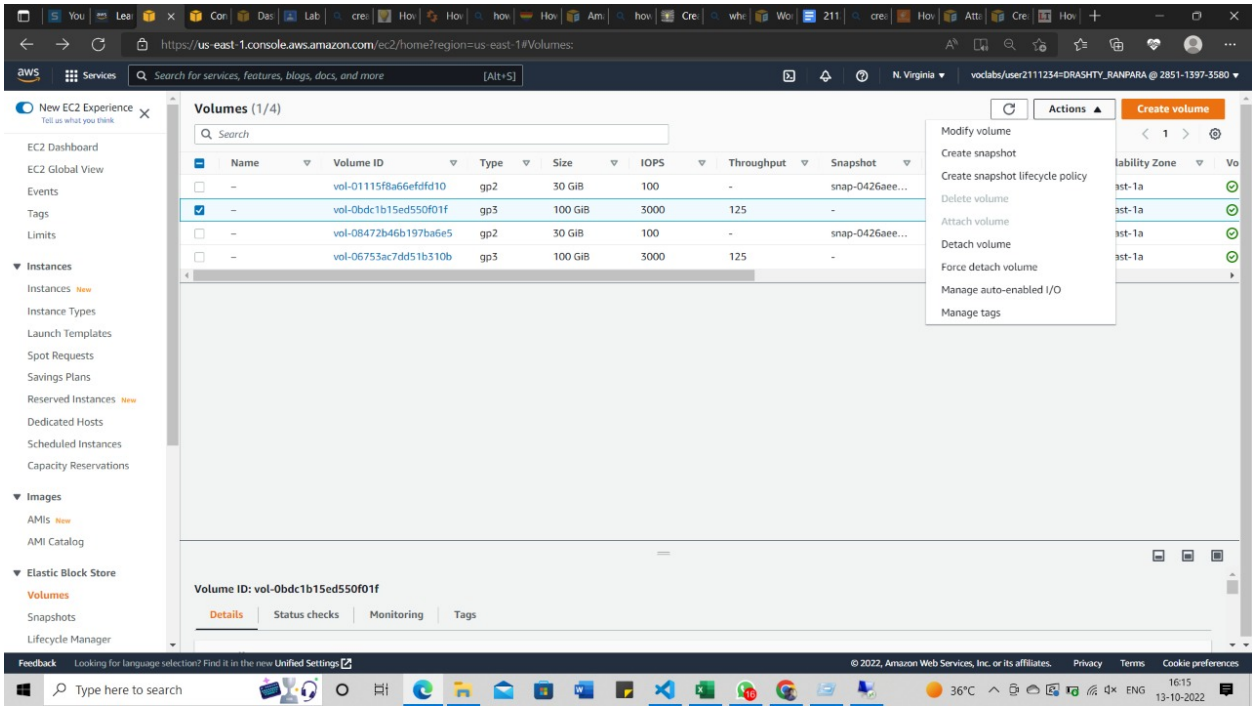

Recycle Bin
EC2 Feedback
EC2 Microso...
Disk Management
File Action View Help
Volume Layout Type File System Status Capacity Free Sp... % Free
16.66 GB 56 %
New Simple Volume Wizard
Format Partition
To store data on this partition, you must format it first.
Choose whether you want to format this volume, and if so, what settings you want to use.
Do not format this volume
Format this volume with the following settings:
File system: NTFS
Allocation unit size: Default
Volume label: New Volume
Perform a quick format
Enable file and folder compression
< Back Next > Cancel
99.98 GB
Online
Unallocated
Unallocated Primary partition
Hostname : EC2AMAZ-7LTHSBP
Instance ID : i-0098471b46c2a6028
Private IP Address : 172.31.91.35
Public IP Address : 54.159.179.78
Instance Size : t2.micro
Availability Zone : us-east-1a
Architecture : AMD64
Total Memory : 1024
Network : Low to Moderate
Type here to search
ENG IN 6:44 AM 10/13/2022



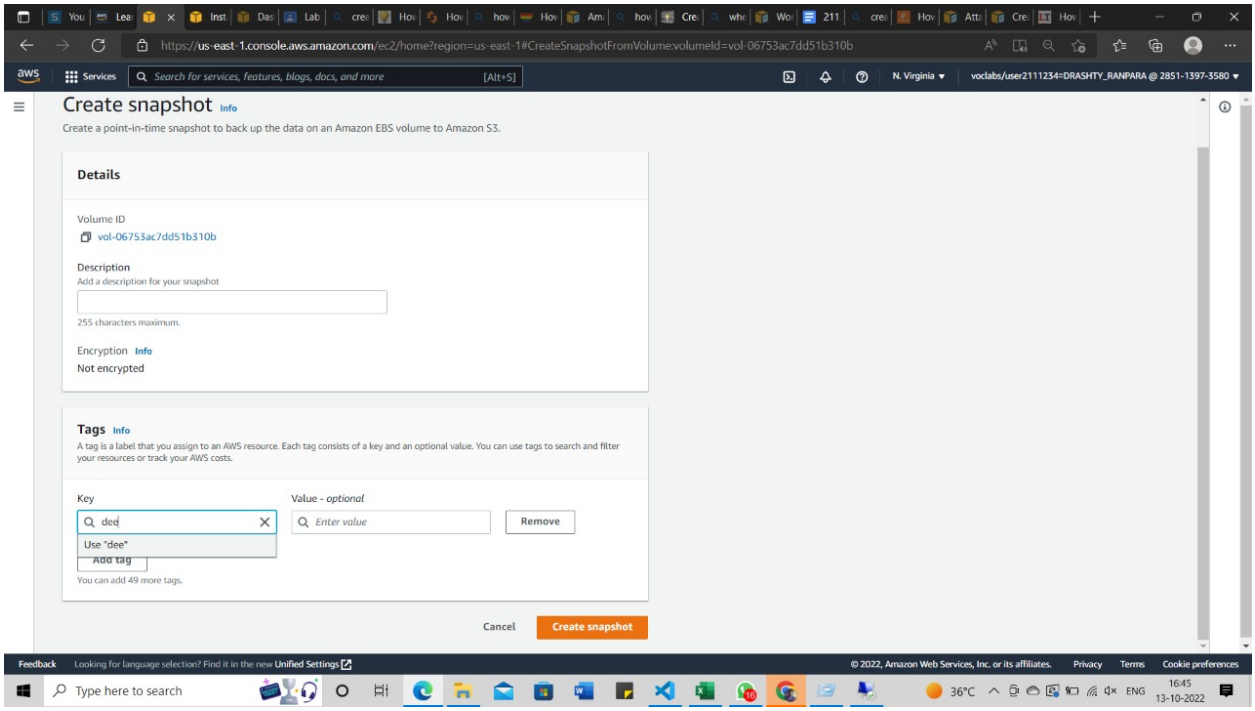
20. To confirm the volume addition in the instance environment. Go to file manager and check the Drive 1 i.e. C Drive partition which is now allocated.



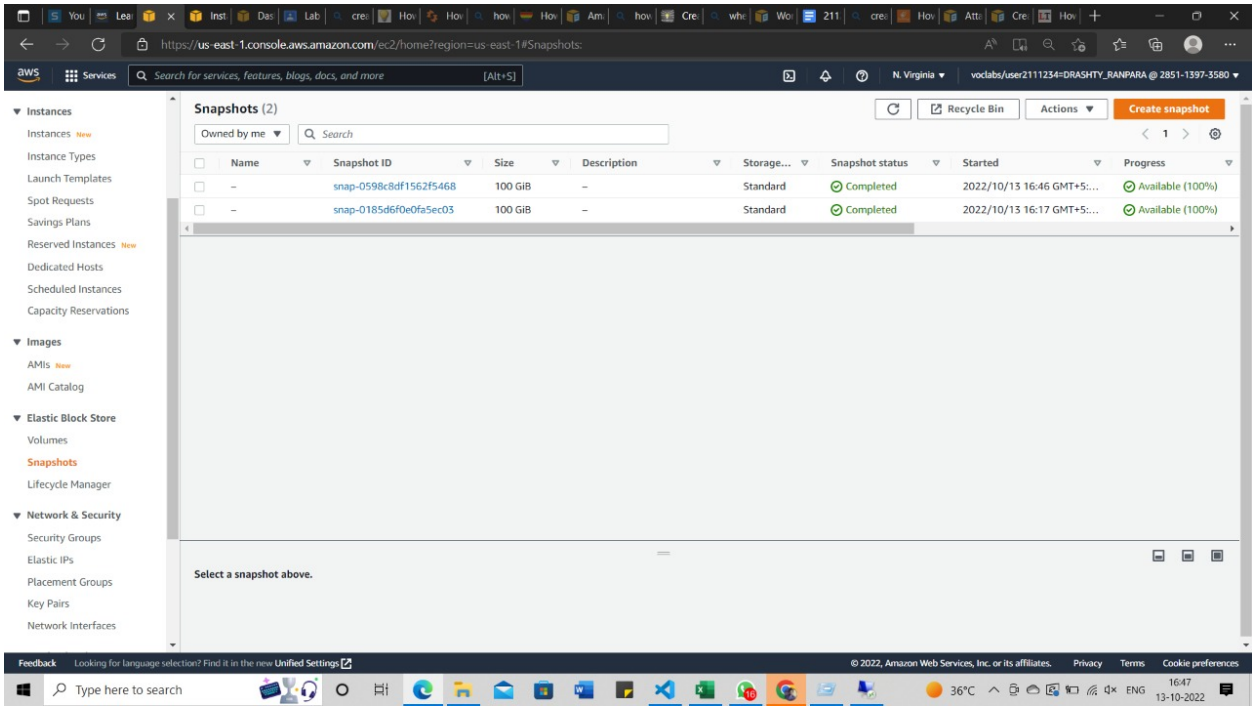
21. Navigate to the Volumes and select the volume for which you want to make a snapshot. Go to Actions tab and select Create snapshot.



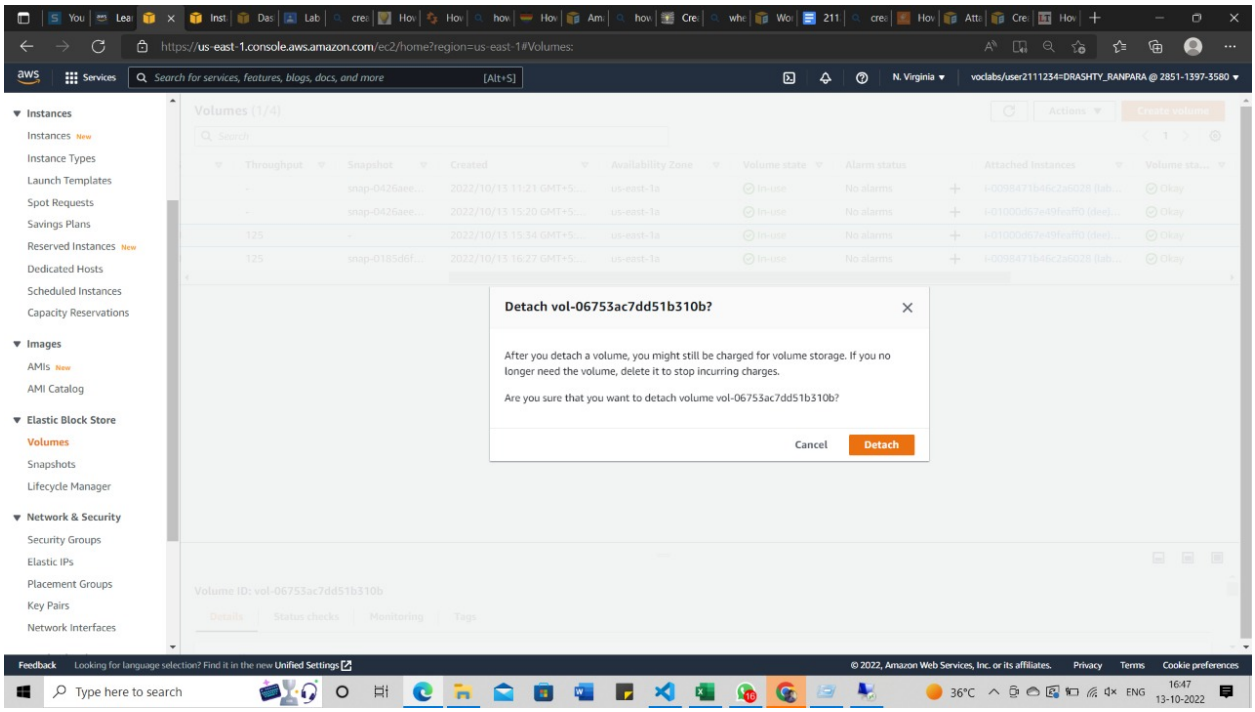
22. During creation of the snapshot give the description and click create snapshot button.



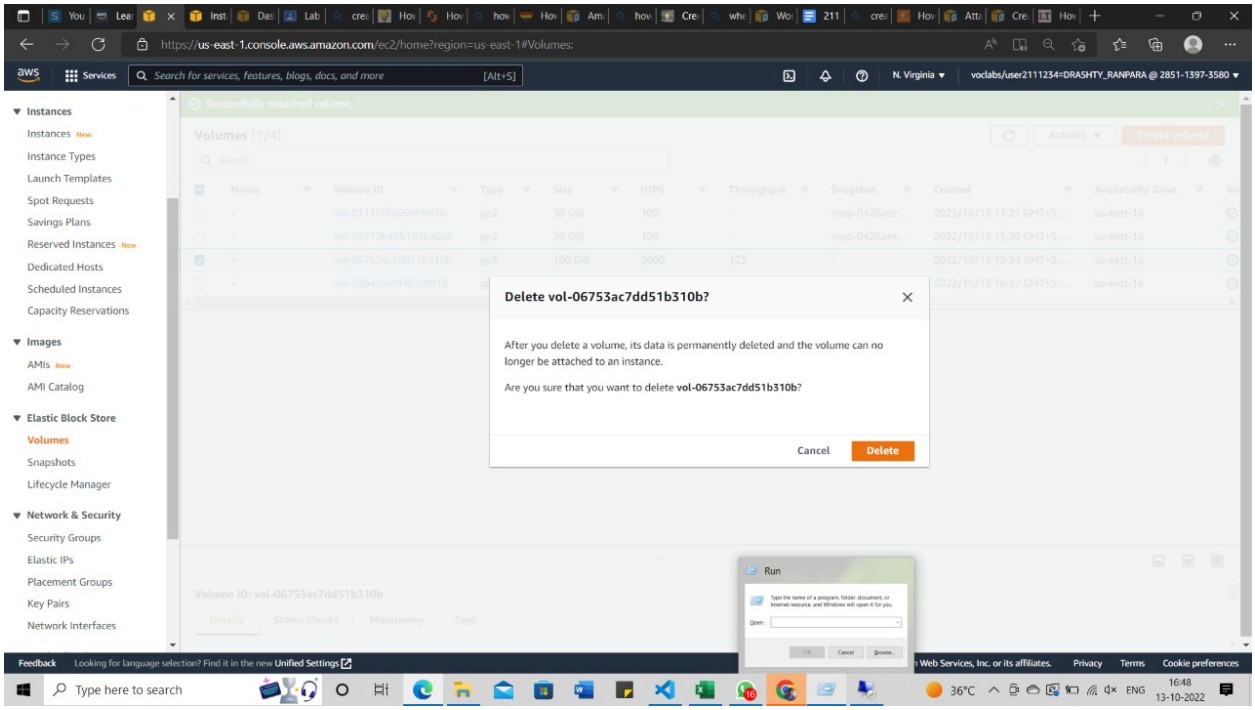
23. Under the snapshots see whether it is created or not.



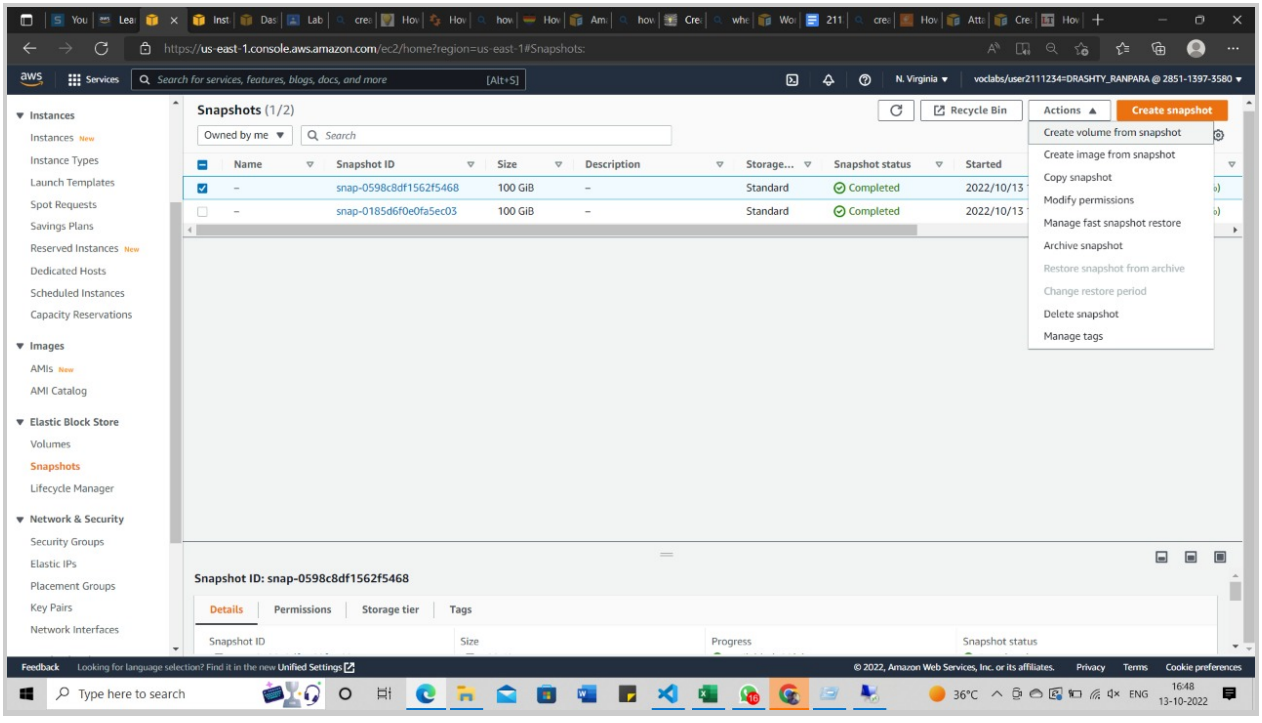
24. Now Detach the volume from which you created the snapshot.



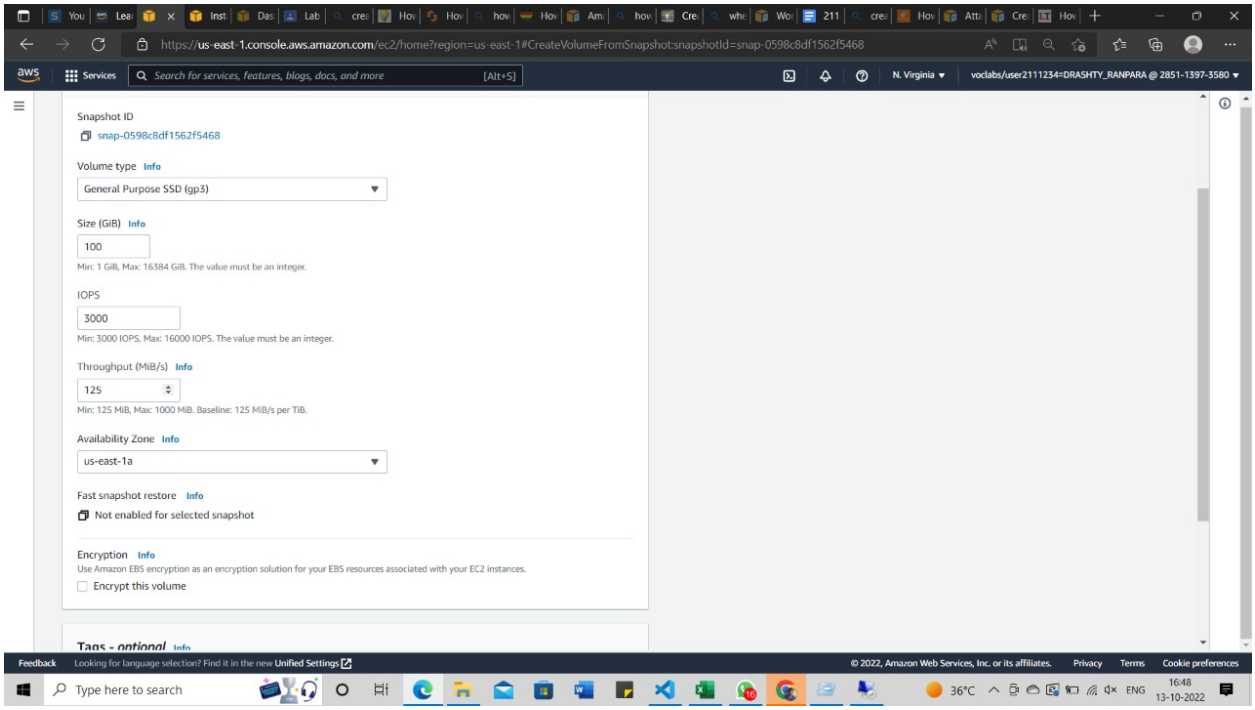
25. Then Delete the volume from Actions tab → Delete Volume which you created the snapshot.



26. Navigate again to Snapshots tab from left pane and from Actions tab → Create volume from snapshot

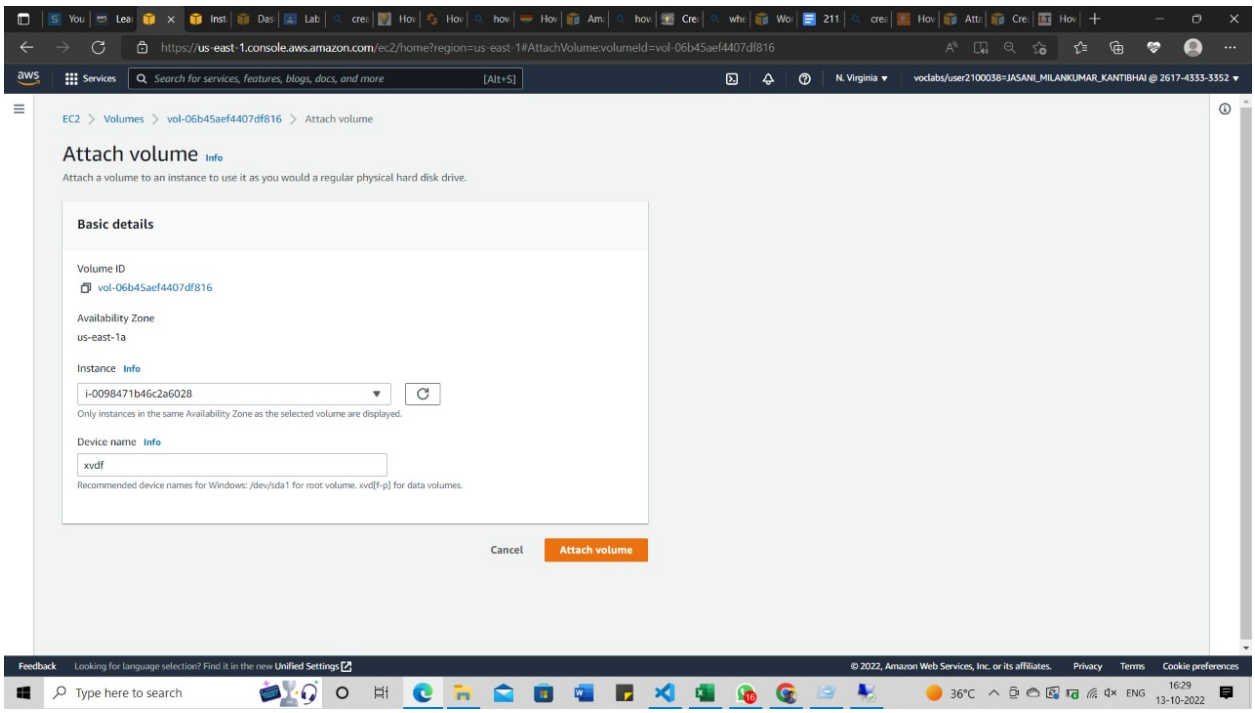


27. Now you can see the volume is created/ restored from the snapshot which was created earlier.



3. Attach an Instance store volume to the existing EC2 instance.

28. The newly created volume can be visible in the Volumes section now. Now, tick the newly created volume and from Actions tab → Attach volume. Eventually, attach the Instance stored volume from EC2 instance.



29. That's all! Enjoy around the other new technologies of the cloud :)