Department of Computer Science & Engineering
Premier University.

CSE 482: Contemporary Course of Computer Science Laboratory.

Lab 4: Working with Amazon Elastic Block Store (EBS)

Submitted By:

Name	**Sajjad Hosen Emon**
ID	**0222310005101105**
Section	**C**
Semester	**7th**
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Remarks

Lab 4: Working with Amazon Elastic Block Store (EBS)

Objective

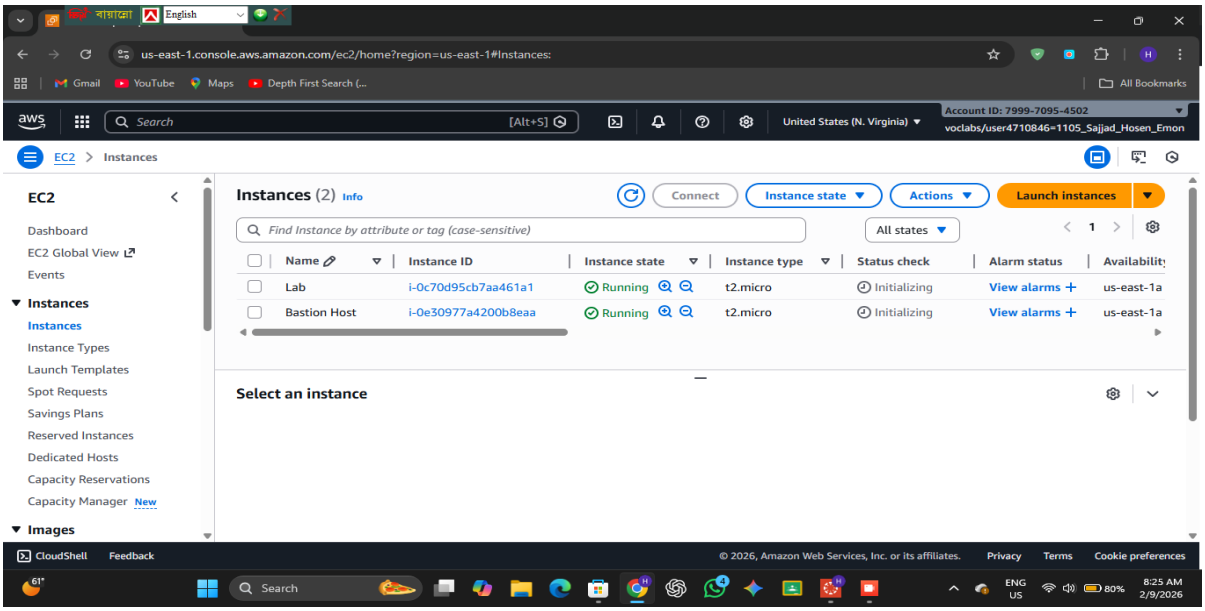
The objective of this lab is to develop practical knowledge about Amazon Elastic Block Store (EBS) by creating a storage volume, attaching it to an Amazon EC2 instance, configuring a file system, and performing data backup using snapshots. This lab also demonstrates how data can be restored from a snapshot to ensure storage reliability and persistence in a cloud computing environment.

Scenario

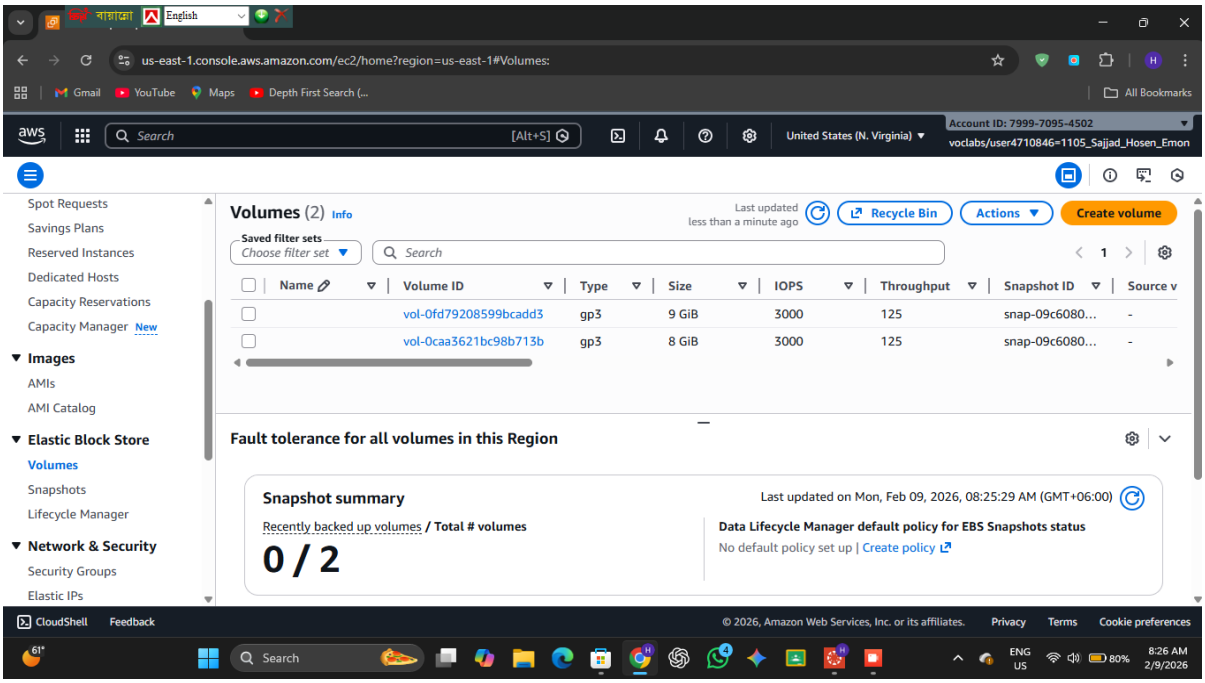
Amazon Elastic Block Store (EBS) is a block-level storage service designed for use with Amazon EC2 instances. It provides persistent storage that remains available even after an instance is stopped. In this lab, a running EC2 instance requires additional storage. Therefore, a new EBS volume is created and attached to the instance. After formatting and mounting the volume, data is written to it. A snapshot is then created to back up the stored data. Finally, the snapshot is used to create a new volume, which is attached and mounted to verify that the data has been successfully restored.

Working Procedure

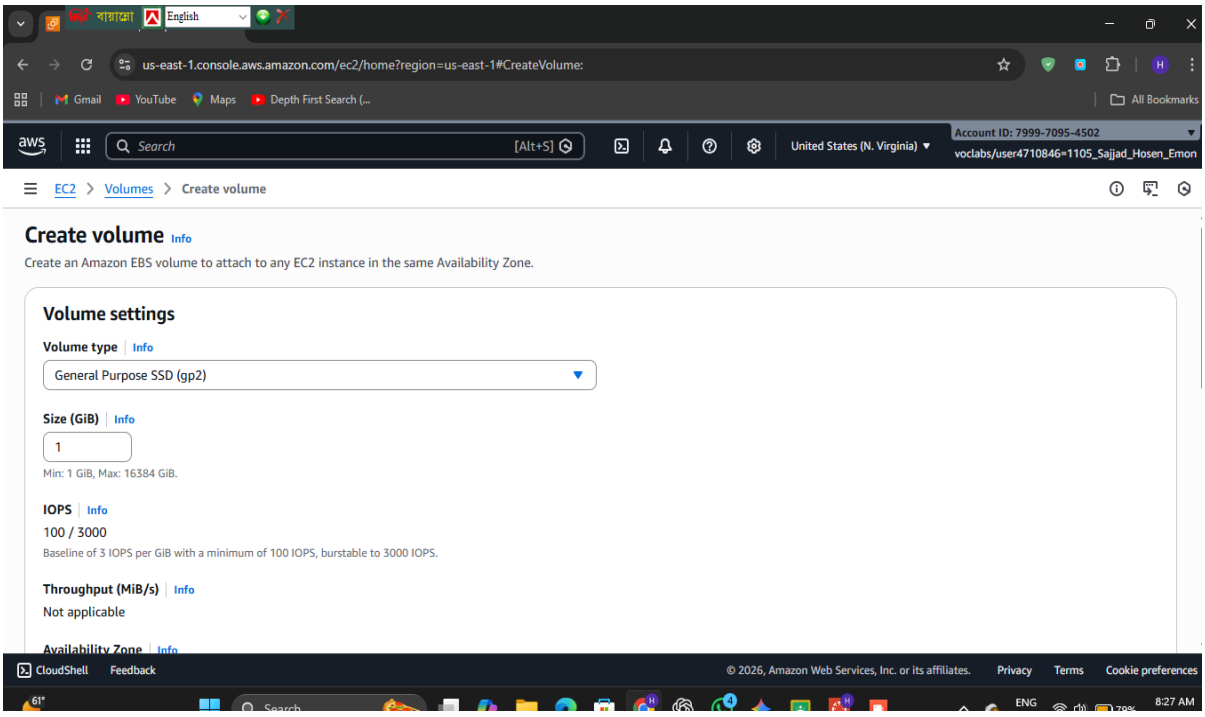
1. Logged in to the AWS Management Console and opened the EC2 Dashboard.



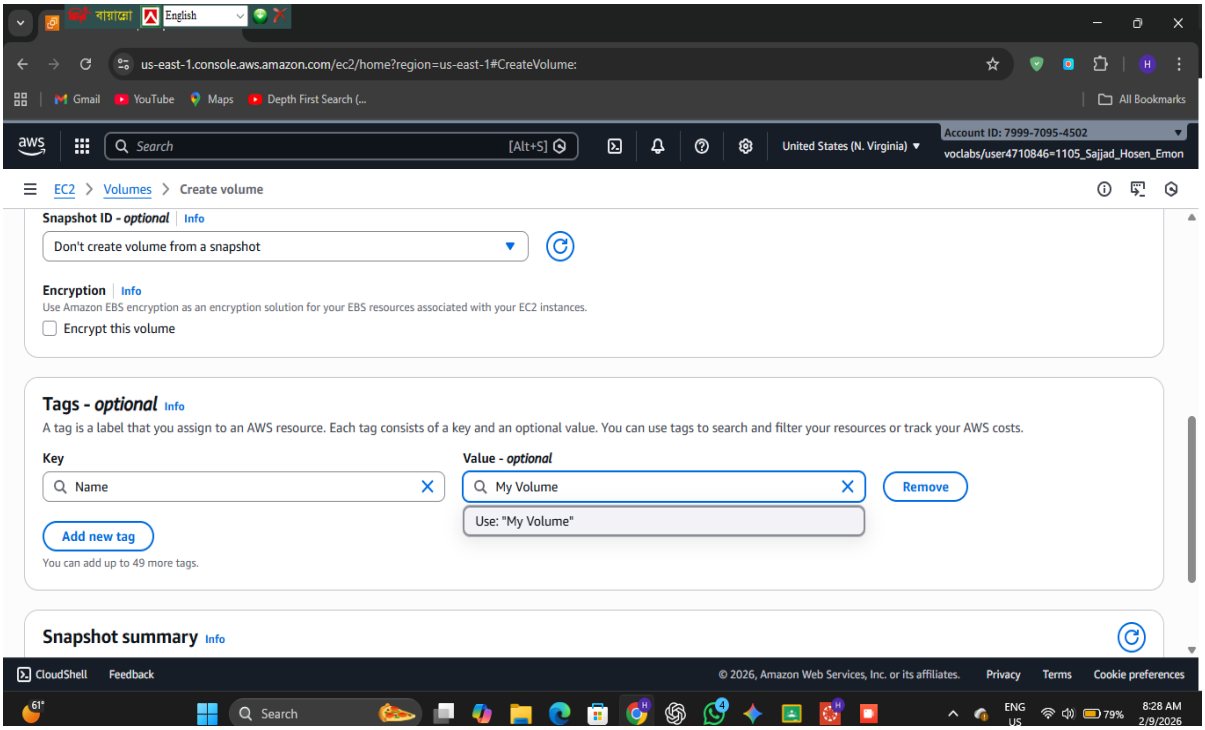
2. Navigated to the Volumes section and selected Create Volume.



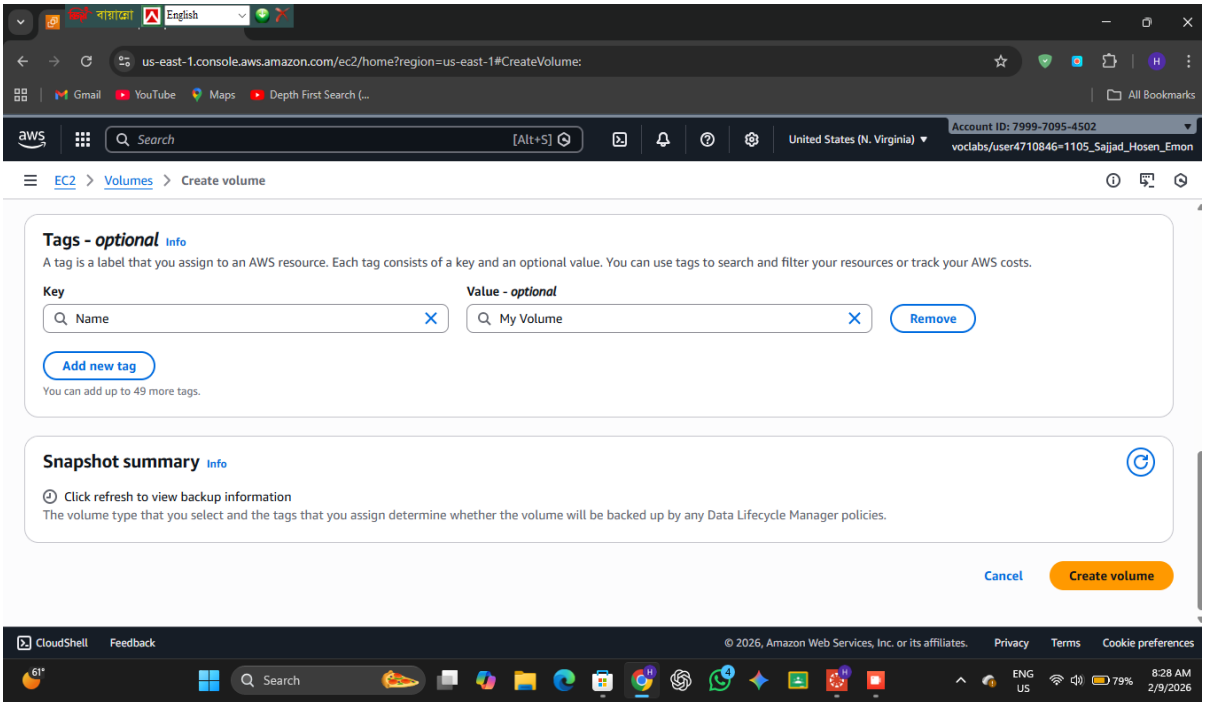
3. Selected **General Purpose SSD (gp2)** as the volume type.
4. Set the volume size to **1 GiB**.



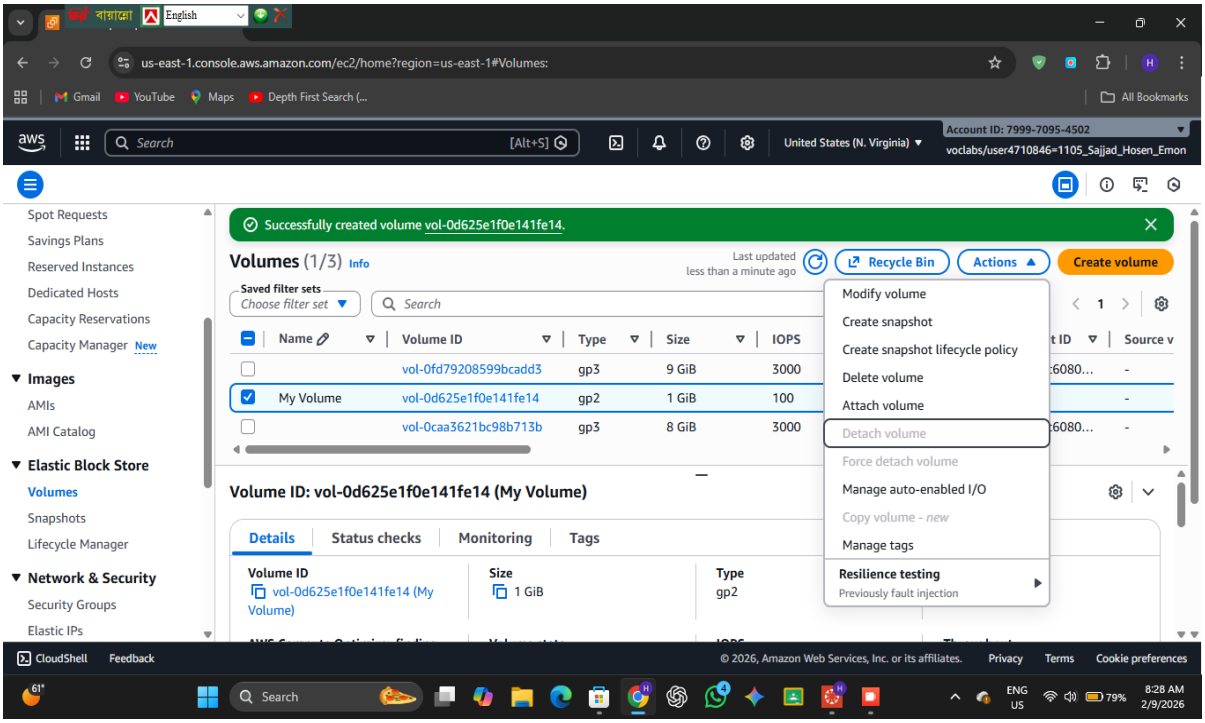
5. Chose the same Availability Zone as the running EC2 instance.
6. Added a tag with the **name My Volume** for identification.



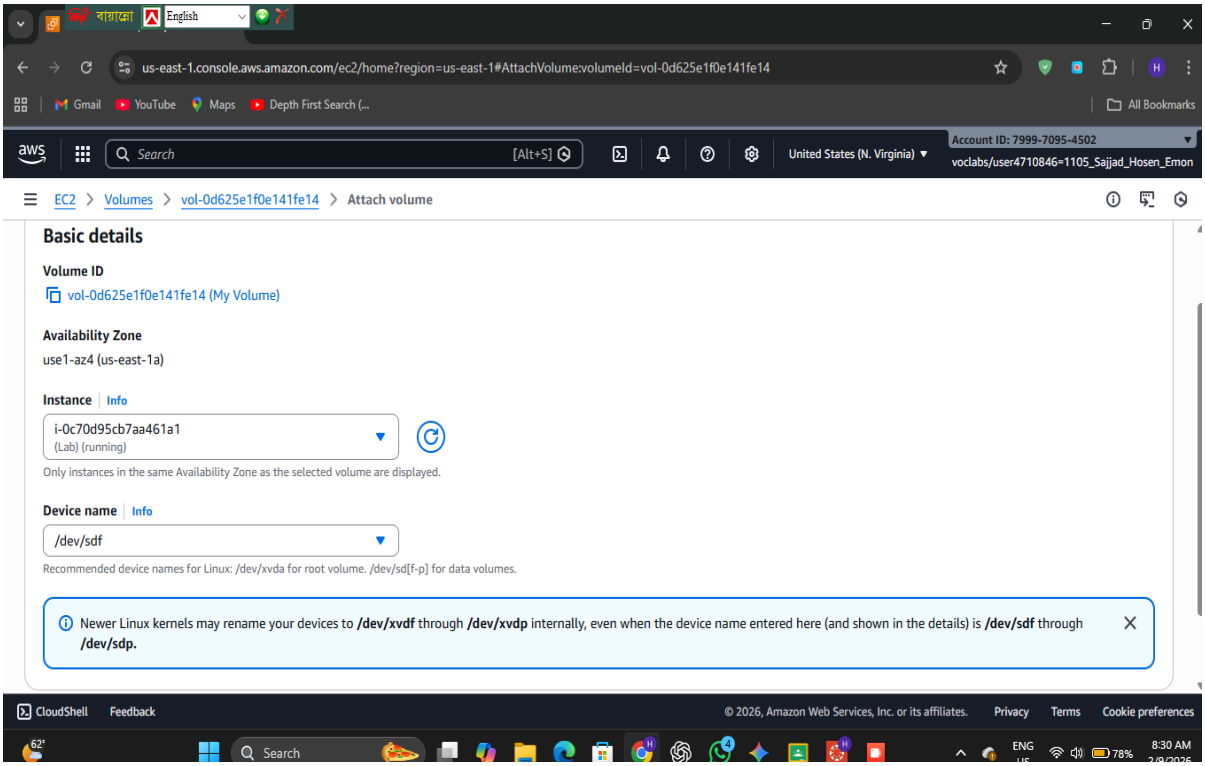
7. Created the volume and waited until its status became Available.



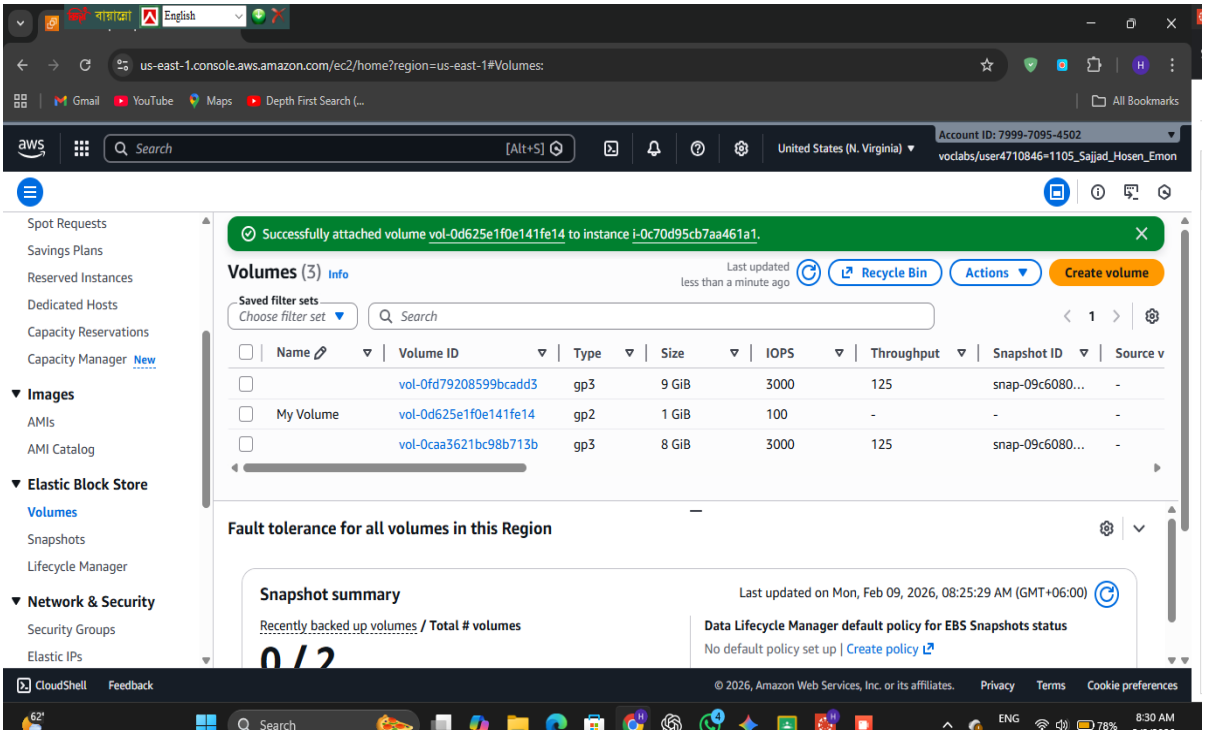
8. Selected the newly created volume and clicked Attach Volume.



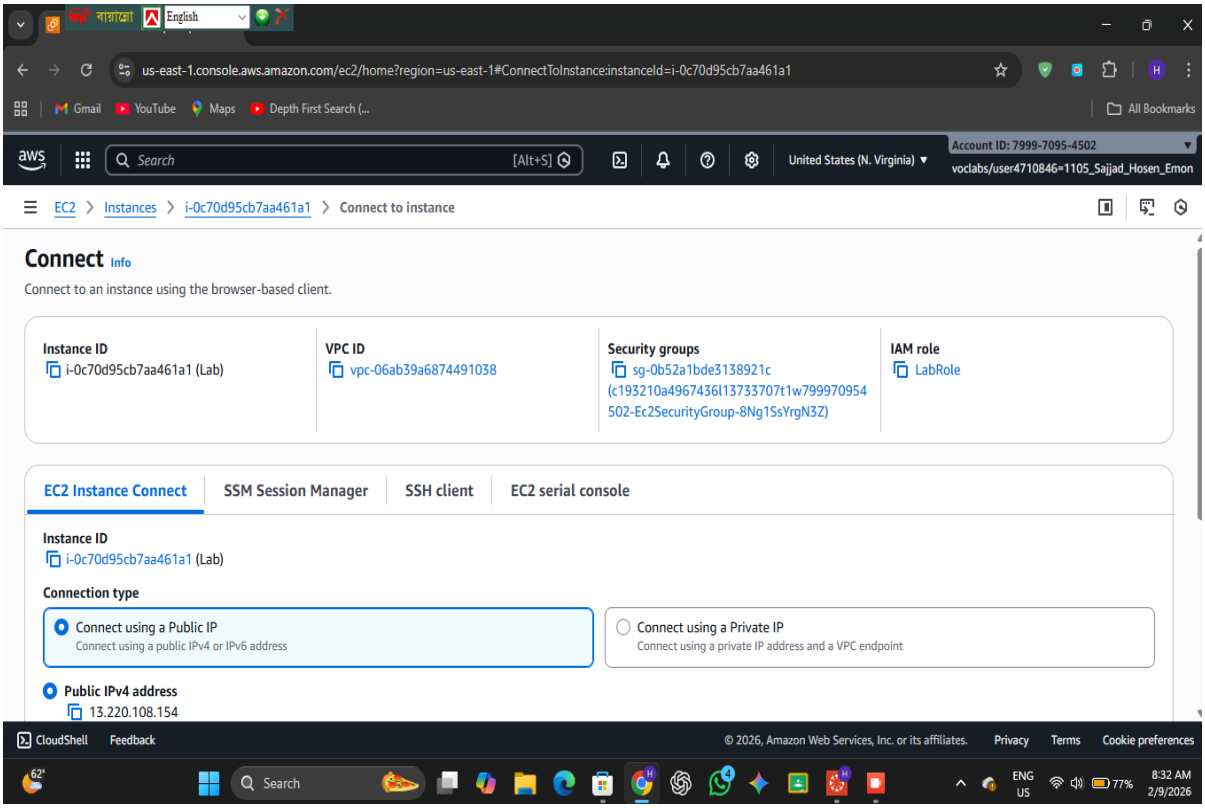
9. Chose the Lab EC2 instance and assigned the device name **/dev/sdf.**



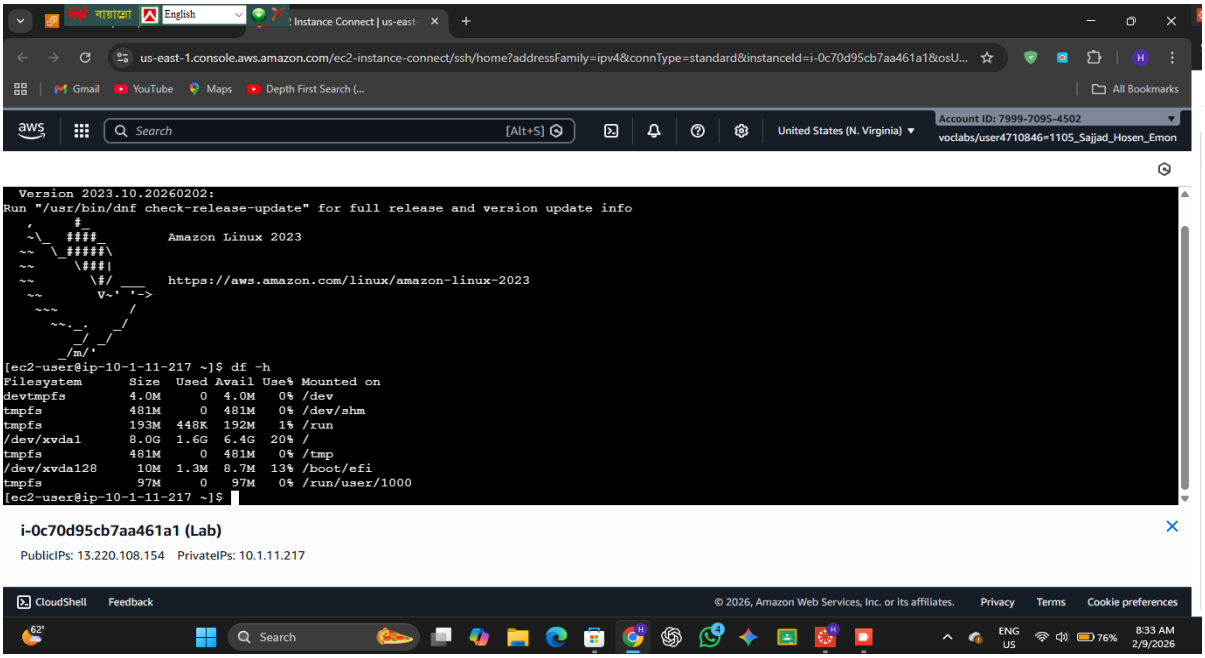
10. Attached the volume successfully and confirmed the status changed to In-use.



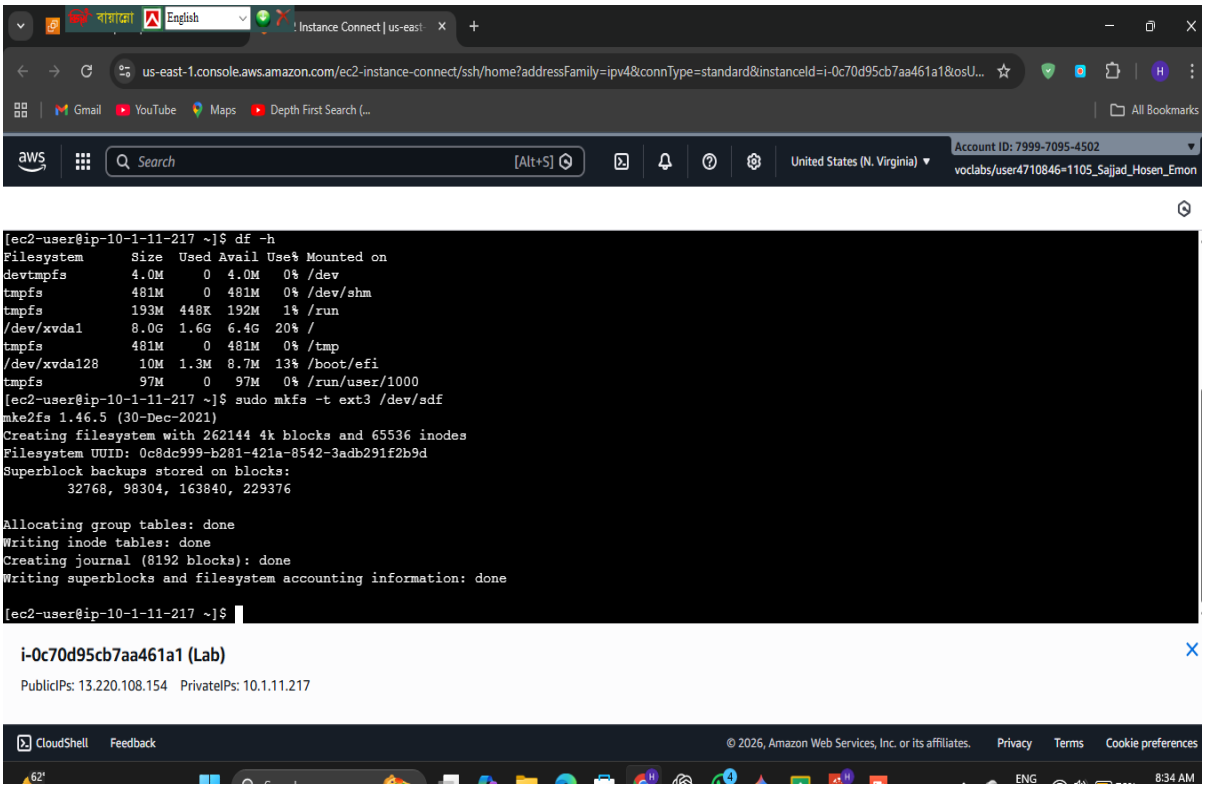
11. Opened the Instances section and connected to the EC2 instance using EC2 Instance **Connect**.



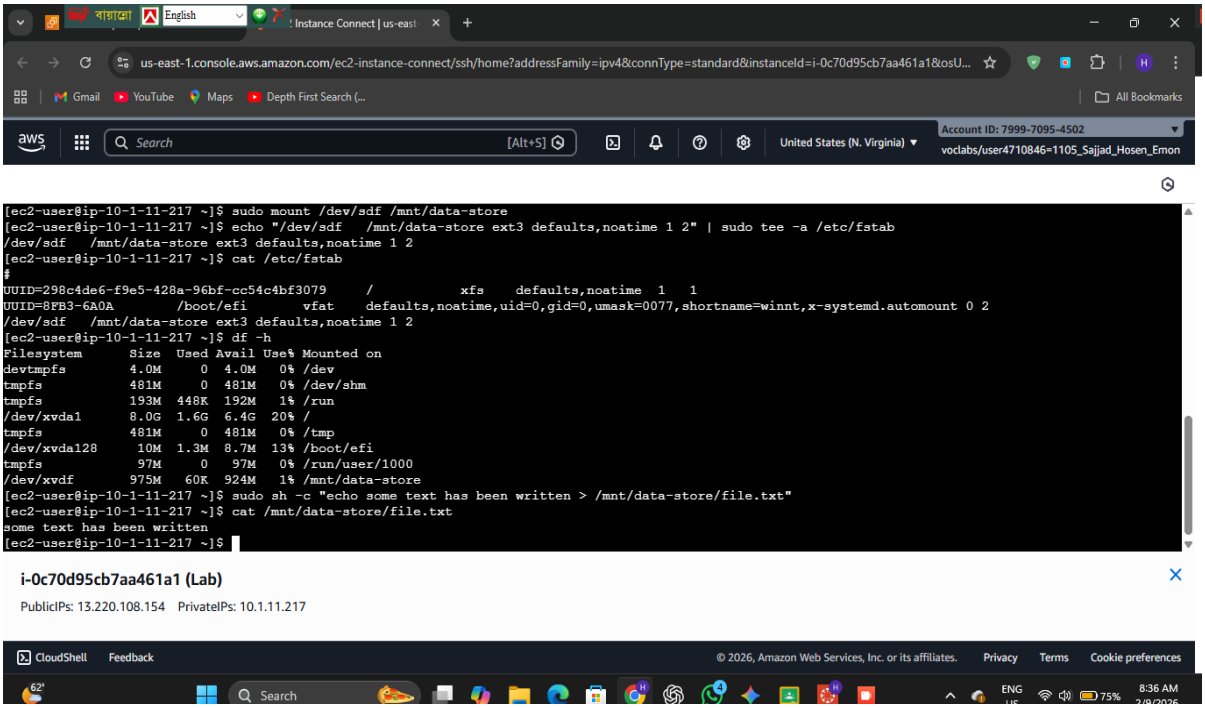
12. Checked the available storage using the df -h command.



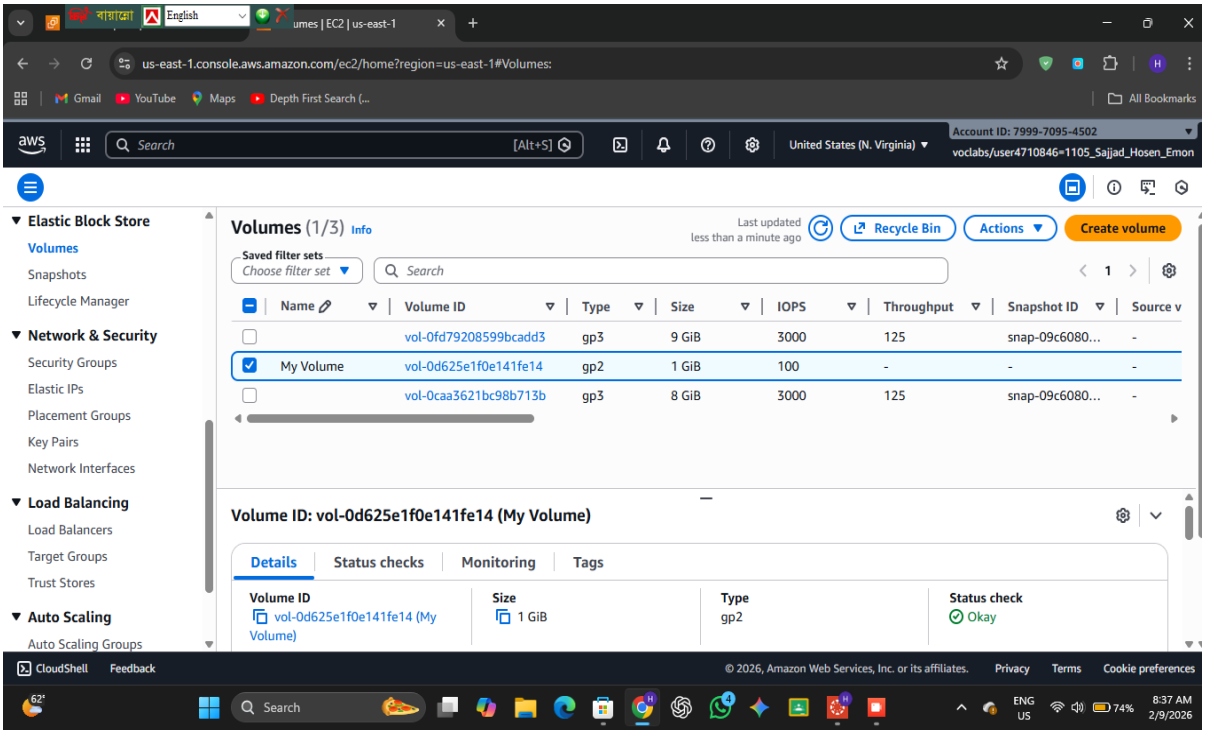
13. Created a file system on the new volume using sudo mkfs -t ext3 /dev/sdf.



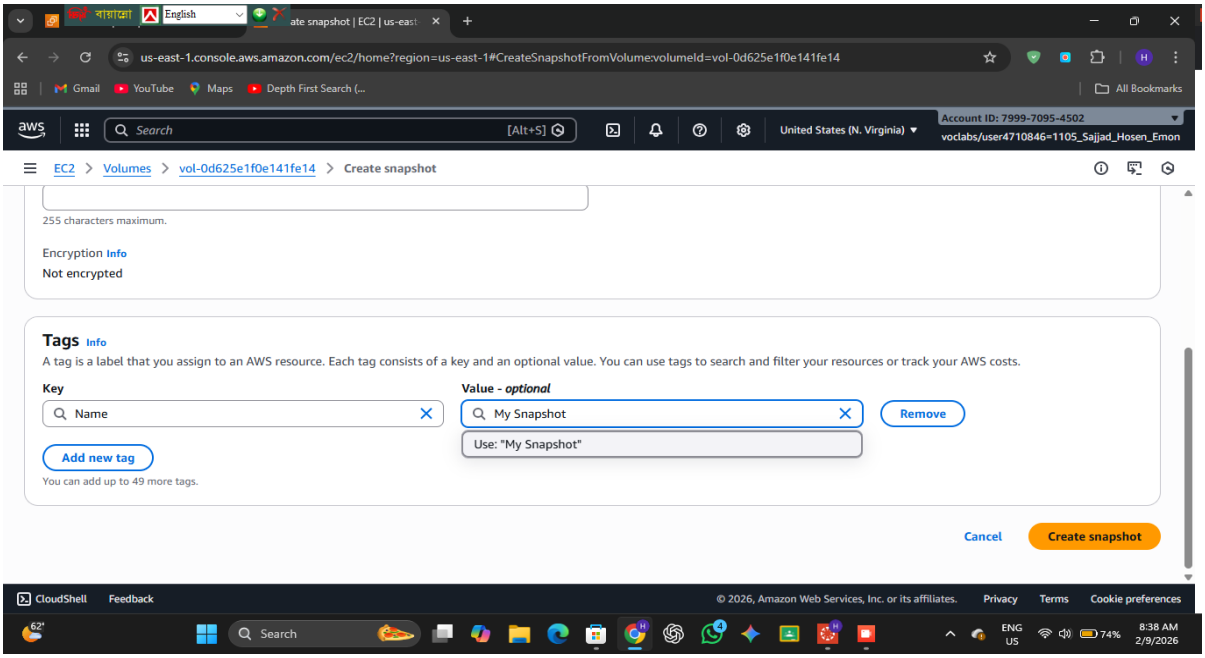
14. Created a directory /mnt/data-store to use as a mount point.
15. Mounted the volume to the directory using sudo mount /dev/sdf /mnt/data-store.
16. Updated the /etc/fstab file to enable automatic mounting after reboot.
17. Created a text file inside the mounted volume to store data.



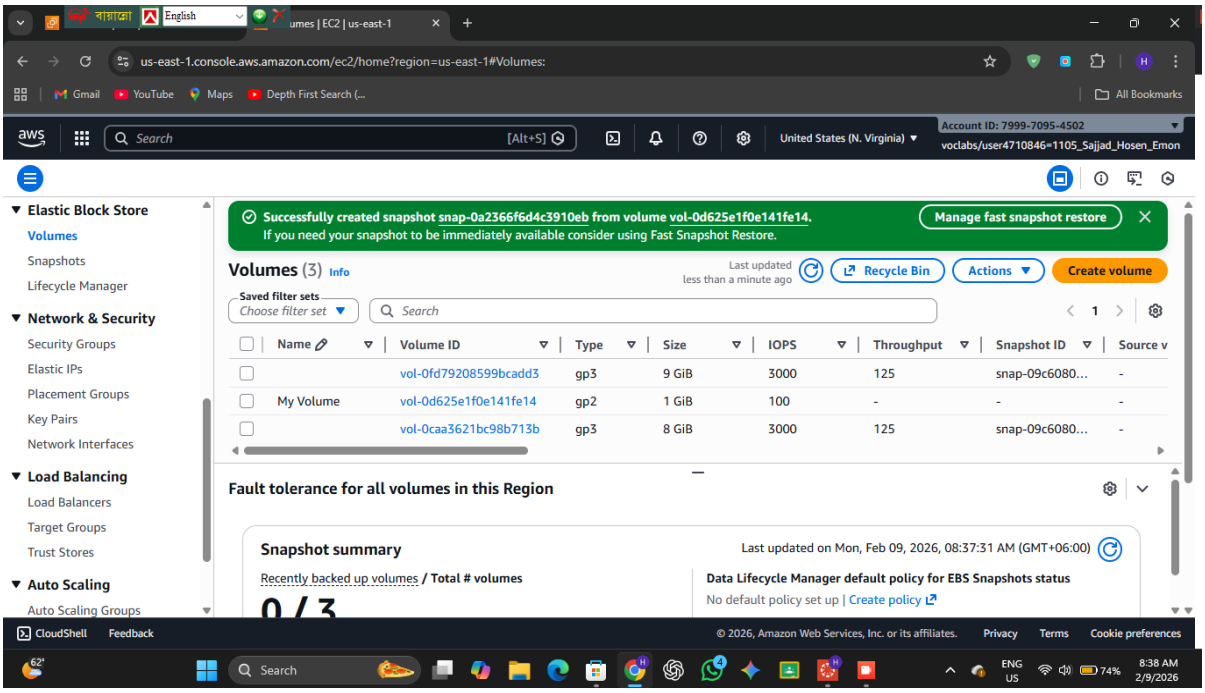
18. Verified the file to confirm that data was written successfully.
19. • Returned to the EC2 console and selected the previously created volume **My Volume**.



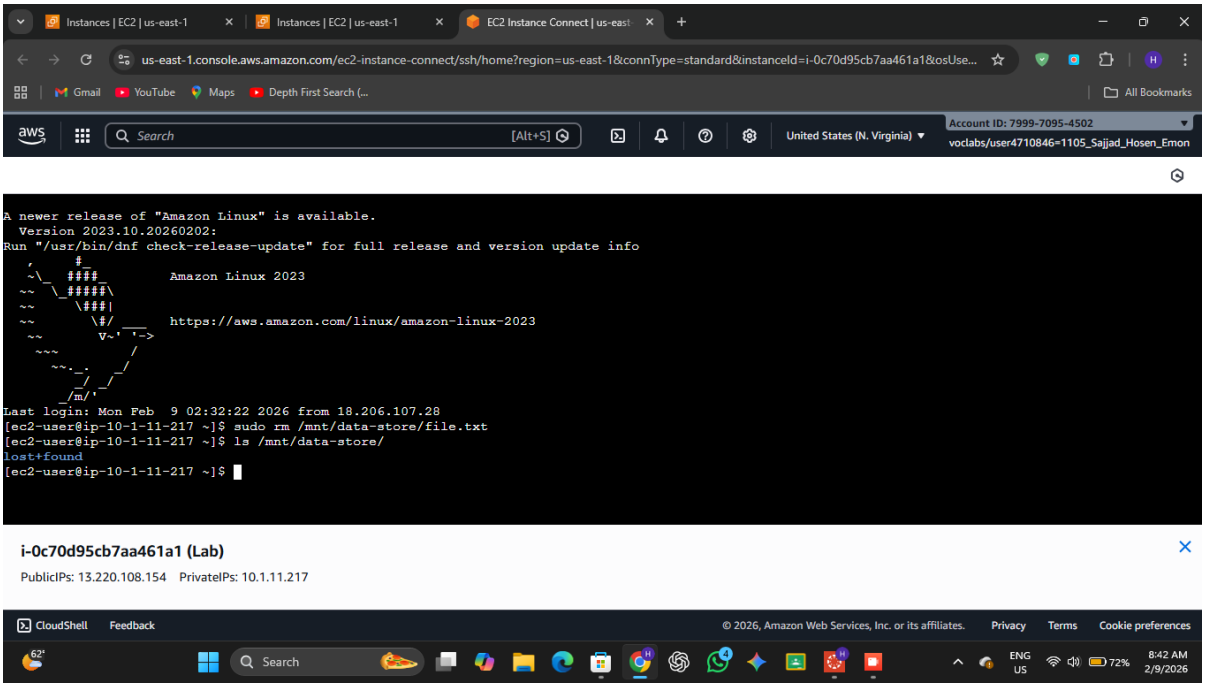
20. • Clicked on **Actions → Create Snapshot** to create a backup of the volume.



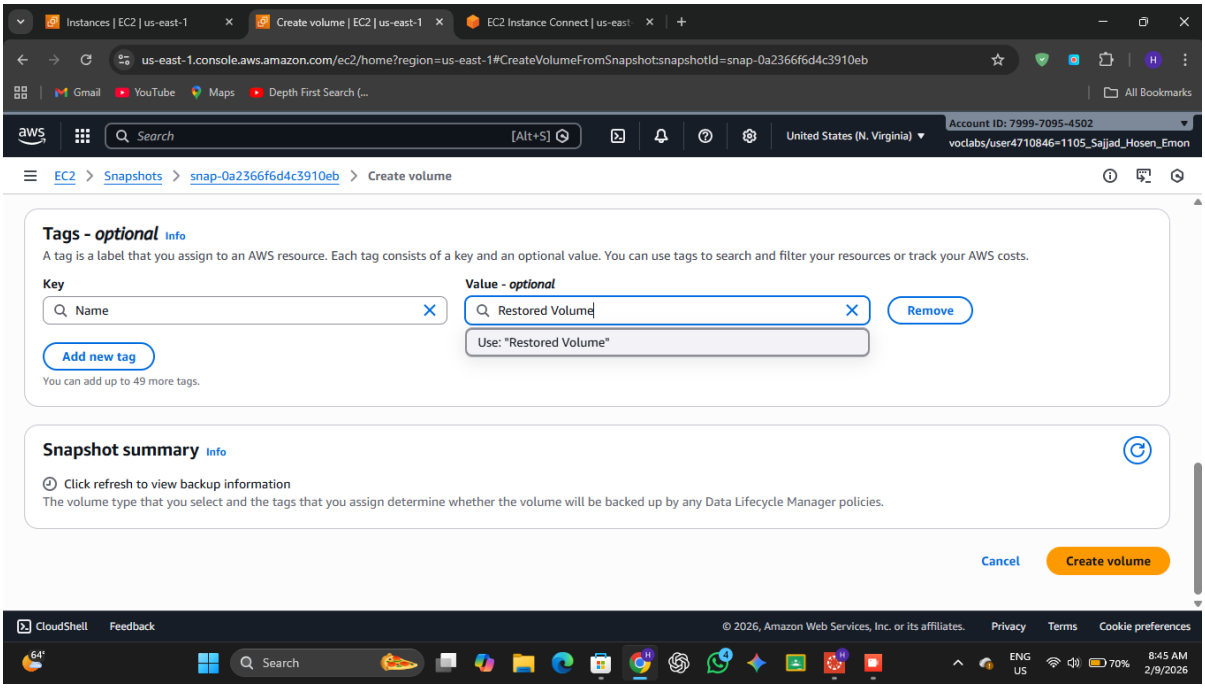
21. • Provided the snapshot name **My Snapshot** for easy identification.
22. • Initiated the snapshot creation process and waited until the status changed from **Pending** to **Completed**.



23. • After the snapshot was created, connected back to the EC2 instance terminal.
24. • Deleted the previously created file from the original volume to simulate data loss.
25. • Verified that the file was successfully deleted from the directory.

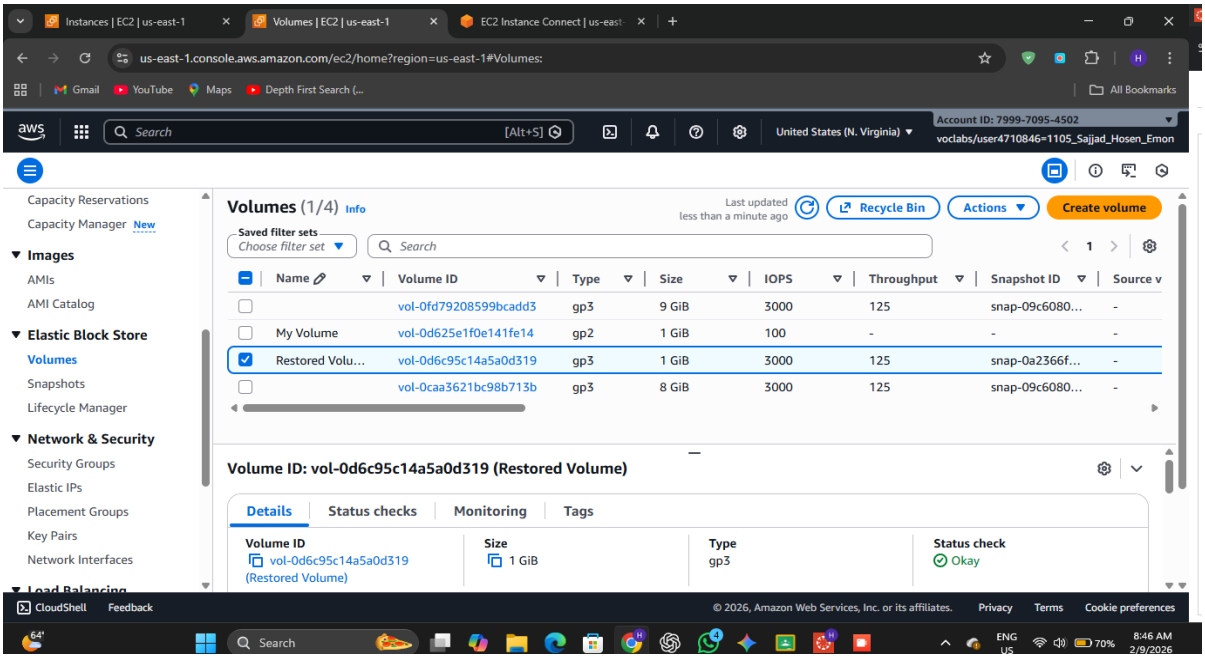


26. • Navigated to the **Snapshots** section in the EC2 console.
27. • Selected **My Snapshot** and clicked **Create Volume from Snapshot**.
28. • Chose the same Availability Zone as the EC2 instance to ensure compatibility.
29. • Entered the name **Restored Volume** for the new volume.

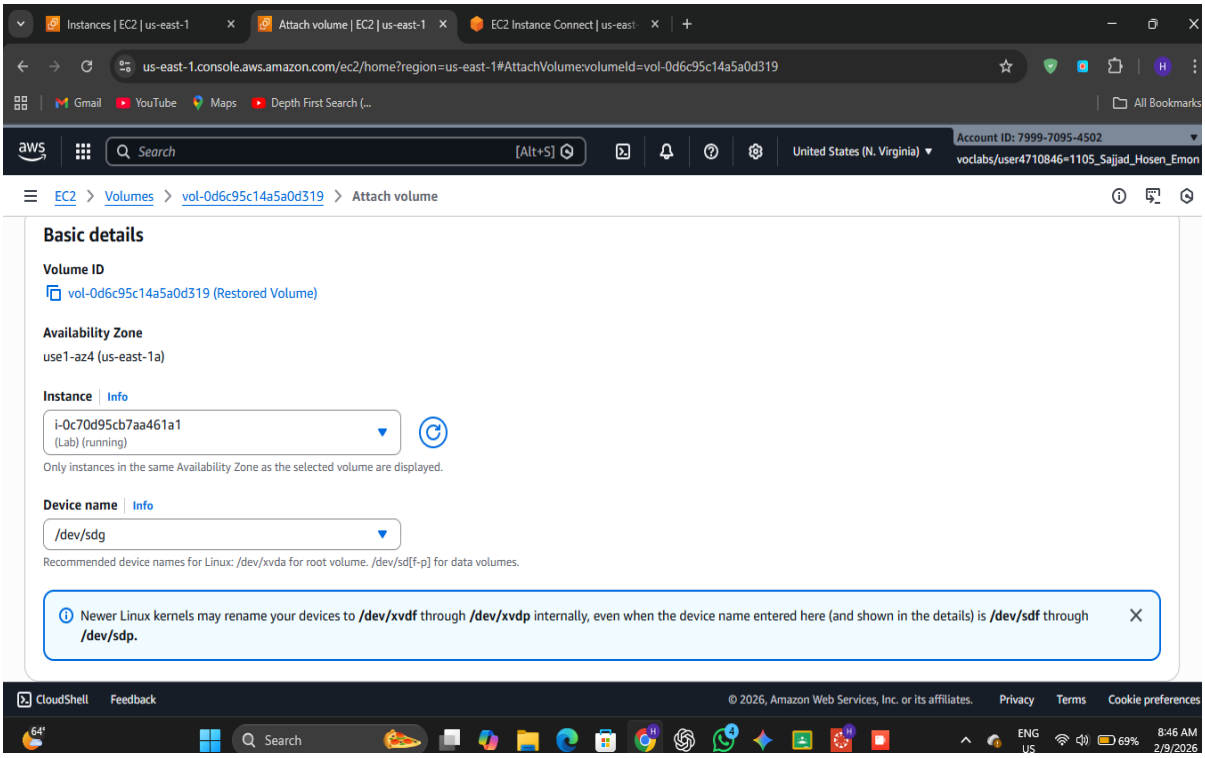


30. • Created the new volume from the snapshot.

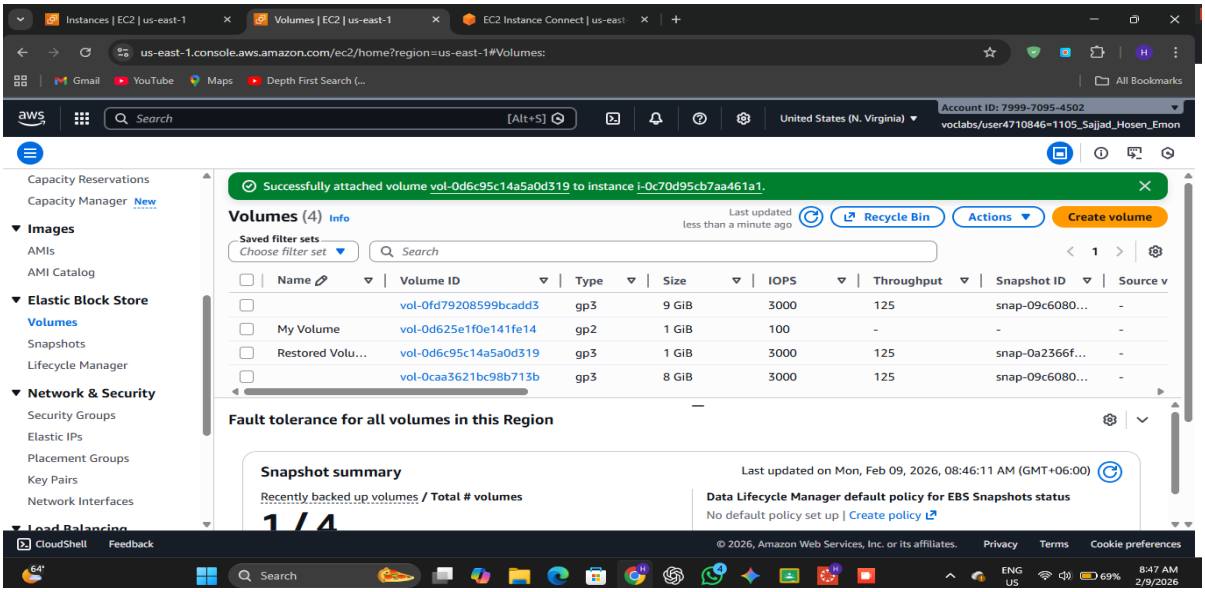
31. • Selected the restored volume and clicked **Attach Volume**.



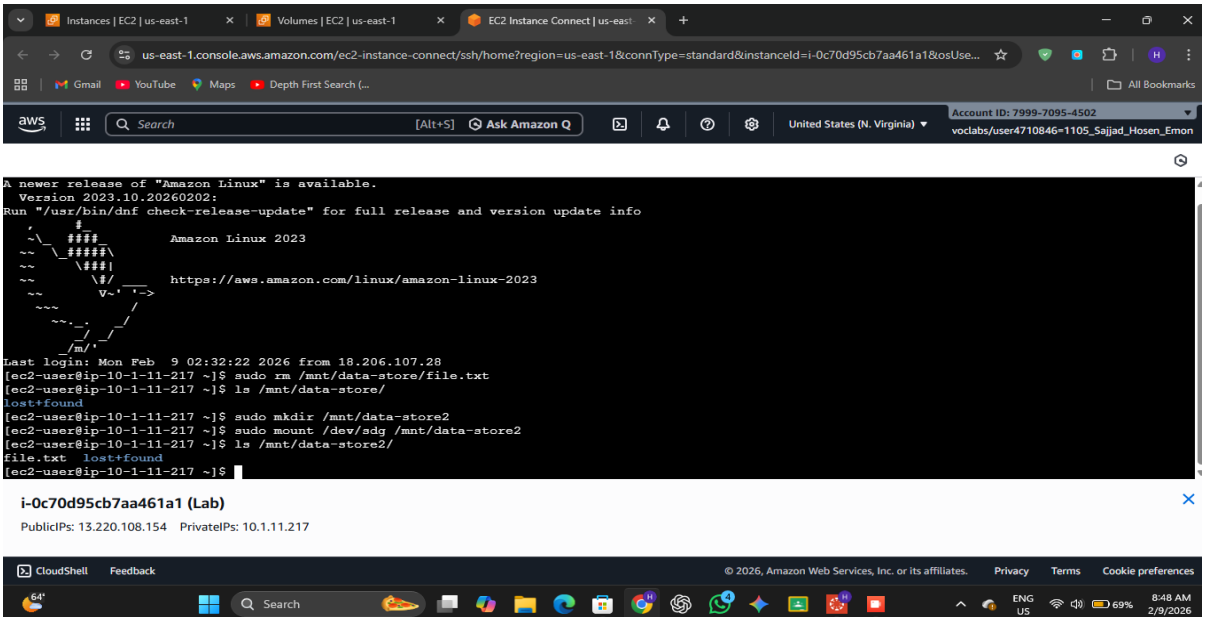
32. • Chose the Lab EC2 instance and assigned the device name `/dev/sdg`.



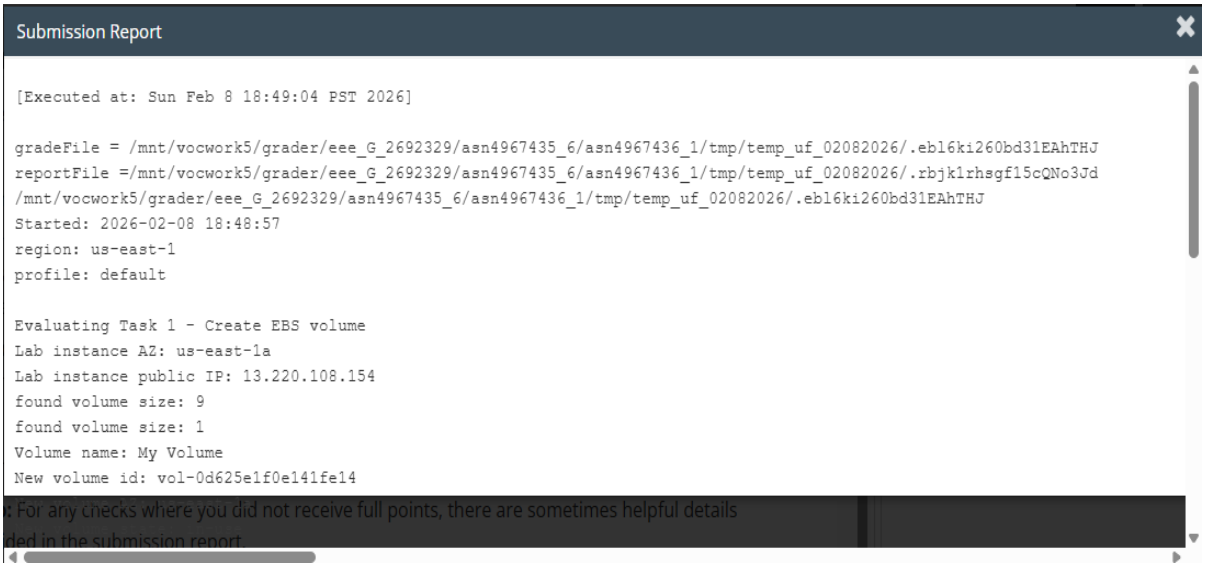
33. • Confirmed that the restored volume status changed to **In-use**.

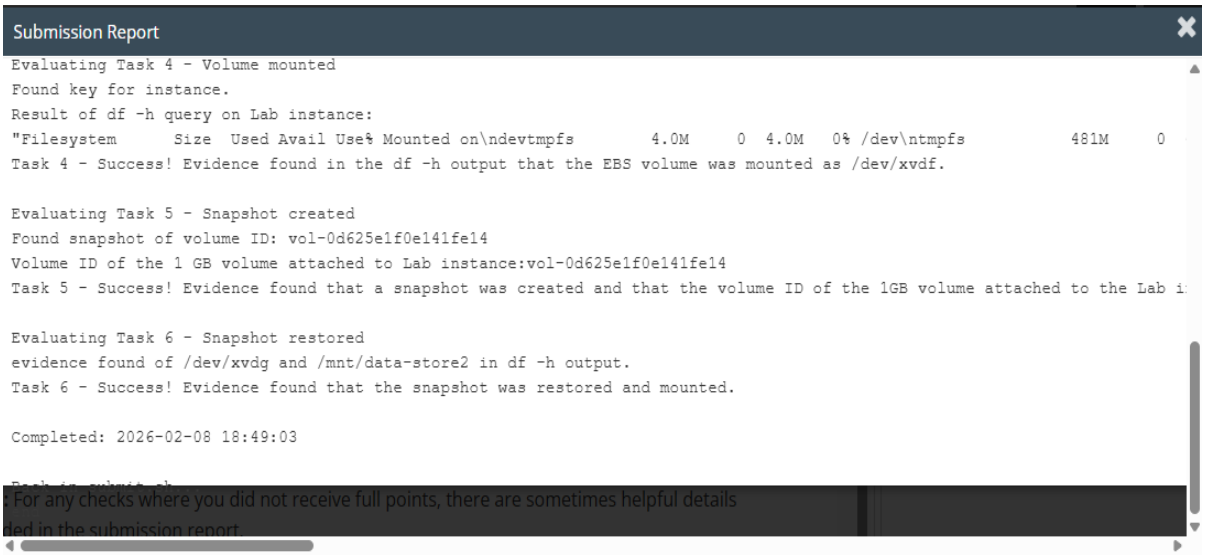


34. • Opened the EC2 terminal again to configure the restored storage.
35. • Created a new directory `/mnt/data-store2` to serve as the mount point.
36. • Mounted the restored volume using the command `sudo mount /dev/sdg /mnt/data-store2`.
37. • Listed the files in the mounted directory to verify the restoration process.
38. • Confirmed that **file.txt** was recovered successfully, proving that the snapshot restoration worked correctly.
39. Created a new directory /mnt/data-store2 for mounting the restored volume.
40. Mounted the restored volume using sudo mount /dev/sdg /mnt/data-store2.
41. Checked the directory and verified that the previously stored file was successfully recovered.

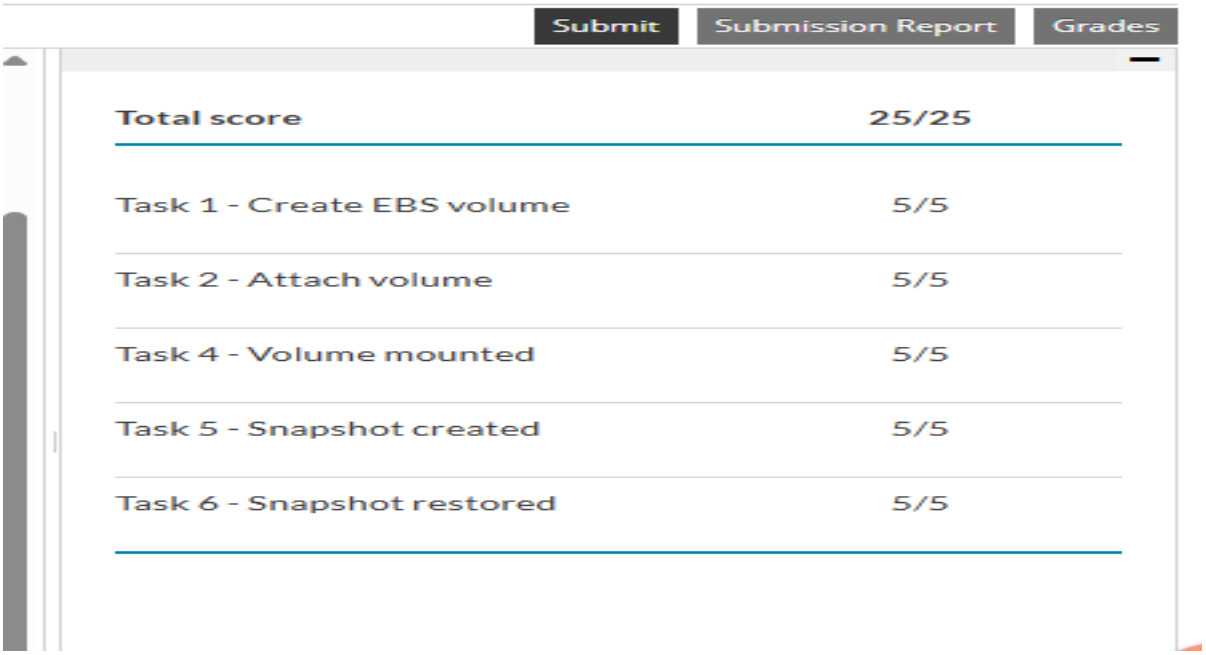


42. Submission report:





43. Total score

44. 

Conclusion

In this lab, Amazon EBS was used to create persistent storage for an EC2 instance. The volume was successfully attached, formatted, and mounted for data storage. A snapshot was created to ensure backup, and the data was restored by creating a new volume from the snapshot. This lab highlighted the importance of Amazon EBS in providing reliable, scalable, and durable storage solutions in cloud computing.