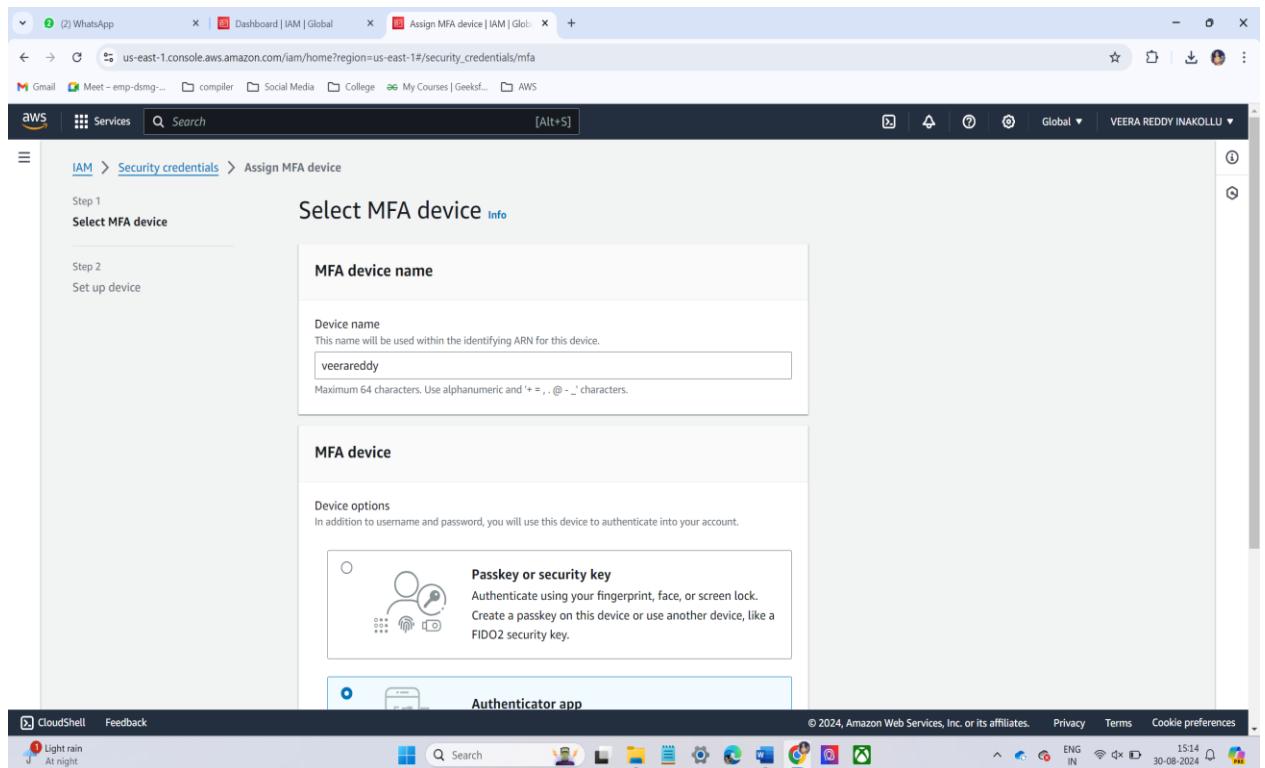


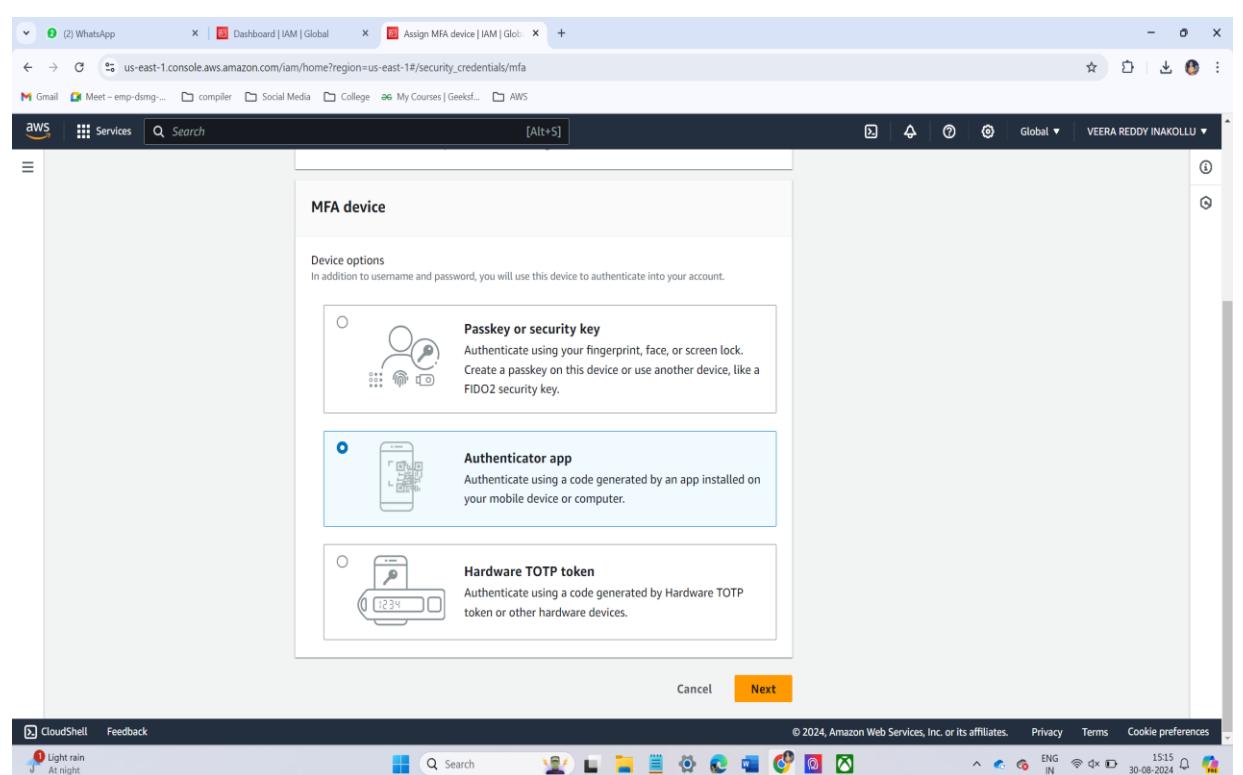
LAB-1 ---> IAM HANDS-ON

- Setup the MFA for root user

- Choose device name



- Select the device Options. I have chosen Authenticator App.



- Then scan the **QR code**
- Then it will show a code and then enter the code in 1st code and after 30sec it will show another code then enter 2nd code.
- And then click **Add MFA**.

The screenshot shows the 'Assign MFA device' step 1: Set up device page. It provides instructions for using an Authenticator app, showing a QR code to scan, and a text input field for entering consecutive MFA codes. The page also includes links to compatible applications and a secret key.

- I have successfully created the MFA for root user.

The screenshot shows the 'Security credentials' page under the IAM service. It displays account details and the multi-factor authentication (MFA) section, which shows one MFA device assigned to the root user.

Type	Identifier	Certifications	Created on
Virtual	arn:aws:iam::284286001151:mfa/veerareddy	Not Applicable	Fri Aug 30 2024

➤ Steps to create IAM user with console access.

- Sign in to **AWS account**.
- Navigate to **IAM Service**.

The screenshot shows the AWS IAM Dashboard. On the left, there's a navigation menu with options like Dashboard, Access management, and Access reports. The main area has sections for Security recommendations (with a note about root user MFA), IAM resources (showing 0 User groups, 0 Users, 13 Roles, 4 Policies, and 0 Identity providers), and What's new. To the right, there's a sidebar for the AWS Account (Account ID: 284286001151, Account Alias: ivreddy1422) and a Quick Links section for My security credentials.

- On IAM service on the left-hand menu, select user and click **Add user**.
- Specify the user details like username and access type.

The screenshot shows the 'Specify user details' step in the IAM User creation wizard. It's Step 1 of 3. The user name is set to 'ivreddy0511'. There are checkboxes for providing access to the AWS Management Console and generating programmatic access keys. At the bottom are 'Cancel' and 'Next' buttons.

- Attach policies
- I have chosen only **EC2 full access permissions** and then click next then create.

The screenshot shows the AWS IAM Policies search results for 'EC2'. The 'AmazonEC2FullAccess' policy is selected, highlighted with a blue border. Other policies listed include 'AmazonEC2ContainerRegistryFullAccess', 'AmazonEC2ContainerRegistryPower...', 'AmazonEC2ContainerRegistryReadO...', 'AmazonEC2ContainerServiceAutosca...', 'AmazonEC2ContainerServiceEventsR...', 'AmazonEC2ContainerServiceforEC2...', and 'AmazonEC2ContainerServiceRole'.

Policy name	Type	Attached entities
AmazonEC2ContainerRegistryFullAccess	AWS managed	0
AmazonEC2ContainerRegistryPower...	AWS managed	0
AmazonEC2ContainerRegistryReadO...	AWS managed	0
AmazonEC2ContainerServiceAutosca...	AWS managed	0
AmazonEC2ContainerServiceEventsR...	AWS managed	0
AmazonEC2ContainerServiceforEC2...	AWS managed	0
AmazonEC2ContainerServiceRole	AWS managed	0
AmazonEC2FullAccess	AWS managed	0
AmazonEC2ReadOnlyAccess	AWS managed	0
AmazonEC2RoleforAWSCodeDeploy	AWS managed	0
AmazonEC2RoleforAWSCodeDeploy...	AWS managed	0
AmazonEC2RoleforDataPipelineRole	AWS managed	0
AmazonEC2RoleforSSM	AWS managed	0

The screenshot shows the AWS IAM User creation confirmation page. It displays a green success message: 'User created successfully'. Below the message, it says 'You can view and download the user's password and email instructions for signing in to the AWS Management Console.' A 'View user' button is visible.

Identity and Access Management (IAM)

User created successfully

You can view and download the user's password and email instructions for signing in to the AWS Management Console.

IAM > Users

Users (1) Info

An IAM user is an identity with long-term credentials that is used to interact with AWS in an account.

User name	Path	Group	Last activity	MFA	Password age	Console last sign-in
ivreddy0511	/	0				

➤ Login into IAM user account.

The screenshot shows the AWS Console Home page. On the left, a sidebar titled "Service menu" lists "IAM", "EC2", and "Billing and Cost Management". Below it are "Welcome to AWS" and "AWS Health". On the right, the "Applications" section displays a table with one row: "us-east-1 (Current Region)" with the status "Access denied". A "Create application" button is at the top right of the table. The bottom of the screen shows the Windows taskbar with various pinned icons and system status.

➤ Create S3 bucket in IAM Account.

The screenshot shows the Amazon S3 landing page. The main heading is "Amazon S3" with the subtext "Store and retrieve any amount of data from anywhere". It includes a brief description of S3's features and a "Create a bucket" button. To the left is a sidebar with links like "Buckets", "Access Grants", "Access Points", etc. At the bottom, there's a "How it works" section with a video thumbnail and a "Pricing" section with a link to the AWS Simple Monthly Calculator. The bottom of the screen shows the Windows taskbar.

- Whenever I try to create bucket its show an error.
- Its shows an error like CreateBucket permission is required. Because when I am created the I am user i have given only ec2 permissions.

The screenshot shows the 'Create S3 bucket' wizard on the AWS S3 console. In the 'Bucket Key' section, the 'Enable' radio button is selected. Below it, a note says: 'After creating the bucket, you can upload files and folders to the bucket, and configure additional bucket settings.' A prominent error message box is displayed, stating: 'Failed to create bucket' with a red 'X' icon. It says: 'To create a bucket, the s3:CreateBucket permission is required.' It also provides a link to 'View your permissions in the IAM console' and 'Identity and Access Management in Amazon S3'. At the bottom right of the error box is a 'Diagnose with Amazon Q' button. At the very bottom of the page are 'Cancel' and 'Create bucket' buttons.

- Now I am giving **full permissions** to the IAM user

The screenshot shows the 'Permissions policies' page in the AWS IAM console. A search bar at the top has 'ad' typed into it. The results table shows a single item: 'AdministratorAccess' under the 'Policy name' column. The 'Type' column indicates it is 'AWS managed - job function'. The 'Attached entities' column shows a value of '0'. The table includes columns for 'Policy name', 'Type', and 'Attached entities'. At the bottom of the page are 'CloudShell' and 'Feedback' buttons, along with a standard browser footer with copyright information and language settings.

- Now I am creating S3 bucket after given the administrator access.
- after given the administrator access the S3 bucket is successfully created

The screenshot shows the AWS S3 buckets console in a web browser. A green success message at the top states: "Successfully created bucket 'veera1422'. To upload files and folders, or to configure additional bucket settings, choose View details." Below this, an "Account snapshot - updated every 24 hours" section displays storage usage and activity trends. The main table lists "General purpose buckets (2)" with columns for Name, AWS Region, IAM Access Analyzer, and Creation date. Two buckets are listed: "elasticbeanstalk-us-east-1-284286001151" (Region: us-east-1) and "veera1422" (Region: us-east-1). The bottom of the screen shows a Windows taskbar with various icons and system status.

LAB – 2 -> BILLING ALARM

- Go to the **Billing and cost management** home.

The screenshot shows the AWS Billing and Cost Management home page in a web browser. The left sidebar includes links for Home, Billing and Payments, Cost Analysis, and Cost Organization. The main content area features a "Cost summary" section with metrics like Month-to-date cost (\$0.15), Last month's cost for same time period (\$0.06), Total forecasted cost for current month (\$0.15), and Last month's total cost (\$0.19). It also includes a "Cost monitor" section showing Budgets status (OK) and Cost anomalies status (MTD) with 1 detected. The bottom of the screen shows a Windows taskbar with various icons and system status.

- On the left-hand side, under **Billing preferences**, enable the checkbox next to **Receive Billing Alerts**.

The screenshot shows the AWS Billing Preferences page. On the left sidebar, under 'Billing Preferences', there is a checkbox labeled 'Receive Billing Alerts'. A green success message at the top right of the main content area states 'Your alert preferences were updated successfully.' The 'Alert preferences' section contains two items: 'AWS Free Tier alerts' (Delivered to Root user email address) and 'CloudWatch billing alerts' (Delivered).

- Then go to cloud watch and click alarms.

The screenshot shows the AWS CloudWatch Alarms page. On the left sidebar, under 'Billing', there is a link to 'Alarms'. The main content area displays the 'Billing alarms (0)' section. It includes search filters for Name, State, Last state update (UTC), Conditions, and Actions. A descriptive text explains that CloudWatch can help monitor charges on the AWS bill by sending email alerts. A prominent orange 'Create alarm' button is located at the bottom of the list.

- Under **Create Alarm**, click **Select metric**.
- In the new window, click **Billing** from the list.
- Select **Total Estimated Charge**. This tracks the total estimated charges for your account.

The screenshot shows the AWS CloudWatch Billing alarms interface. On the left, there's a navigation sidebar with options like Favorites and recent dashboards, Alarms (0), Billing (selected), Logs, Metrics, X-Ray traces, Events, Application Signals, and Network monitoring. The main area is titled "Billing alarms (0)" and contains a search bar and filters for Alarm state, Alarm type, and Actions status. A prominent orange "Create alarm" button is located at the top right of this section. Below it, there's a message from Amazon CloudWatch about monitoring charges and creating billing alarms. At the bottom of the main content area, there's another "Create alarm" button. The footer includes standard AWS links for Privacy, Terms, and Cookie preferences, along with system status icons.

➤ I have choose threshold value is \$1

The screenshot shows the "Create alarm" configuration process. The current step is "Conditions". It starts with a dropdown for the time period (set to "6 hours"). Below that is a "Threshold type" section with two options: "Static" (selected) and "Anomaly detection". Under "Static", it says "Use a value as a threshold". Then, it asks "Whenever EstimatedCharges is... Define the alarm condition." There are four radio button options: "Greater > threshold" (selected), "Greater/Equal >= threshold", "Lower/Equal <= threshold", and "Lower < threshold". Below this, there's a field for the threshold value with "1" entered and "USD" selected. A note says "Must be a number". At the bottom of the "Conditions" section is a "► Additional configuration" link. At the very bottom of the screen, there are "Cancel" and "Next" buttons, along with the standard Windows taskbar.

➤ Give alarm name(your choice)

The screenshot shows the 'Add name and description' step of the 'Create alarm' wizard. On the left, a sidebar lists steps: Step 1 (Specify metric and conditions), Step 2 (Configure actions), Step 3 (Add name and description), and Step 4 (Preview and create). The main area is titled 'Name and description'. It contains a 'Alarm name' input field with 'Alarm name' typed in, and an 'Alarm description - optional' text area with the following content:

```
# This is an H1
**double asterisks will produce strong character**
This is [an example](https://example.com/) inline link.
```

Below the text area, a note states: 'Up to 1024 characters (0/1024)'. A tooltip explains: 'Markdown formatting is only applied when viewing your alarm in the console. The description will remain in plain text in the alarm notifications.'

At the bottom right are 'Cancel', 'Previous', and 'Next' buttons, with 'Next' being orange.

The screenshot shows the 'CloudWatch' dashboard with the 'Alarms' section selected. A green success message at the top says 'Successfully created alarm billing'. Below it, the 'Billing alarms (1)' table is displayed:

Name	State	Last state update (UTC)	Conditions	Actions
<u>billing</u>	Insufficient data	2024-08-30 11:15:54	EstimatedCharges > 1 for 1 datapoints within 6 hours	Actions enabled Warnin

The left sidebar includes sections for Dashboards, Alarms (0), All alarms, Billing, Logs, Metrics, X-Ray traces, Events, Application Signals, and Network monitoring. At the bottom, there's a 'CloudShell' feedback bar.

LAB- 3 → S3 BUCKET

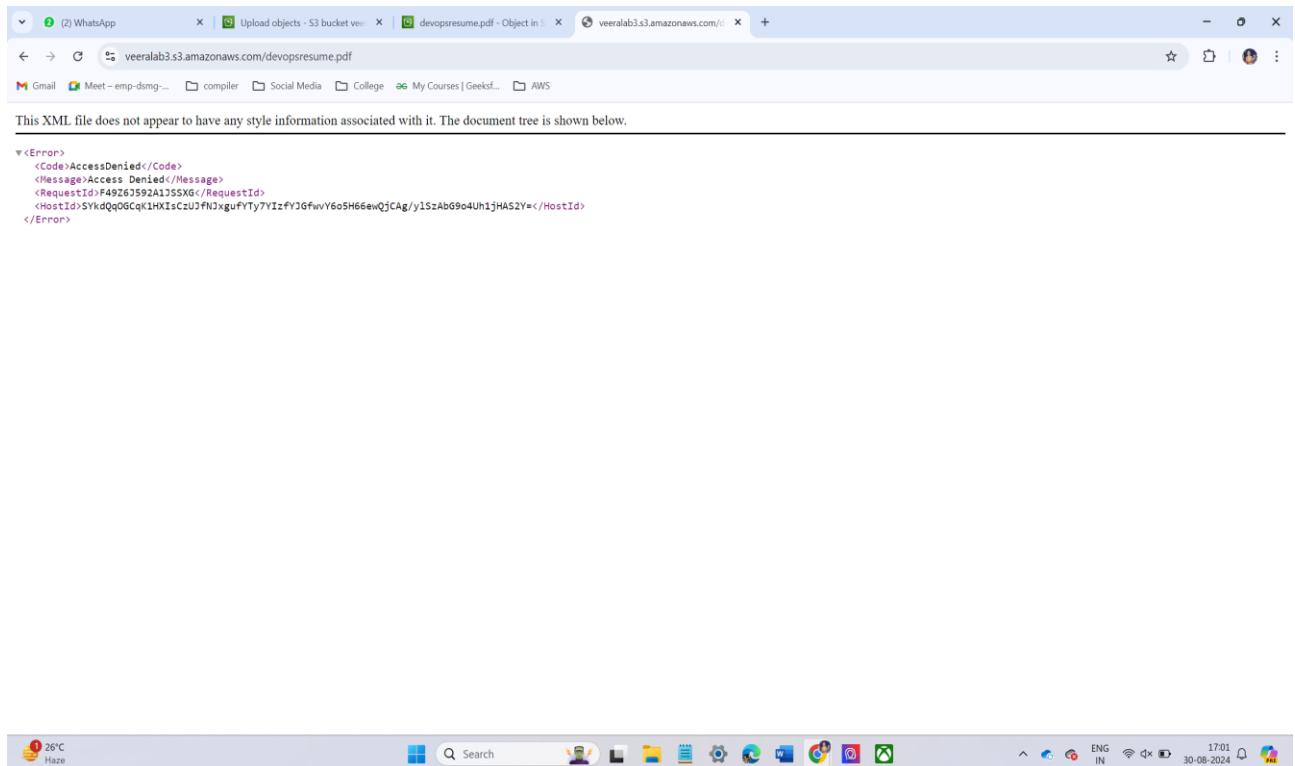
- Create S3 bucket. Make sure that to give unique name

The screenshot shows the AWS S3 buckets page. A green success message at the top states: "Successfully created bucket 'veeralab3'. To upload files and folders, or to configure additional bucket settings, choose View details." Below this, the "General purpose buckets" section lists two buckets: "elasticbeanstalk-us-east-1-284286001151" (created on June 24, 2024) and "veeralab3" (created on August 30, 2024). The "Create bucket" button is visible on the right.

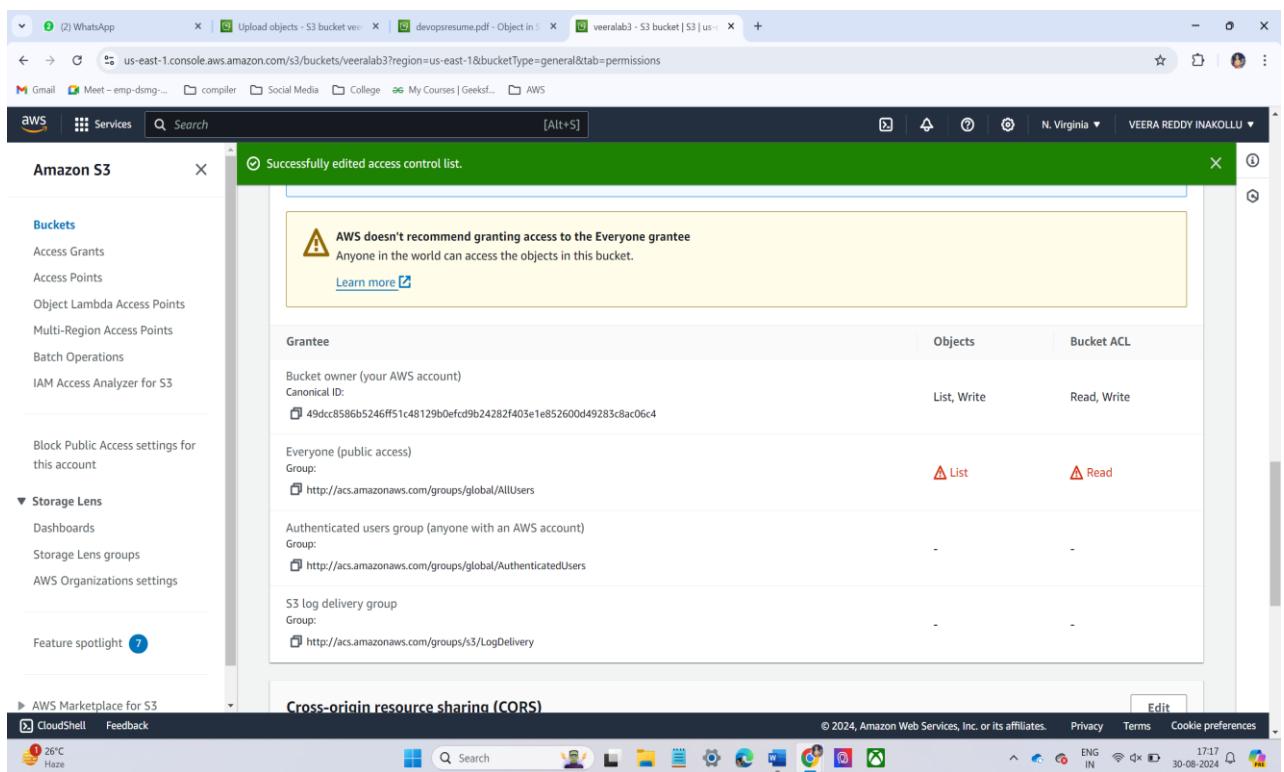
- Upload some text files into the created bucket.

The screenshot shows the AWS S3 "Upload objects" page for the "veeralab3" bucket. A green success message at the top says: "Upload succeeded. View details below." Below this, a summary table shows the upload results: "Destination s3://veeralab3" with "Succeeded" (1 file, 207.7 KB (100.00%)) and "Failed" (0 files, 0 B (0%)). The "Files and folders" section shows a single file named "devopsresu..." with a size of 207.7 KB and a status of "Succeeded". The left sidebar includes options like Buckets, Access Grants, and Storage Lens.

- Just copy the file url and browse the click it shows an error. Because the file is not public access permissions.



- Now give the permissions
- First give permissions to the bucket. Go to bucket under bucket go to permissions tab. In permissions tab disabled **block public access**. Then scroll down to up to **Access control list (ACLs)**, then click edit give public access.



- Now go to inside the bucket click the file and go to permission tab give the public access

Grantee	Objects	Object ACL
Object owner (your AWS account)	<input checked="" type="checkbox"/> Read <input checked="" type="checkbox"/> Write	
Canonical ID: 49dcc8586b5246ff51c481 29b0efcd9b24282f403e1e8526 00d49283c8ac064		
Everyone (public access) Group: http://acs.amazonaws.com/groups/global/AllUsers	<input checked="" type="checkbox"/> Read <input type="checkbox"/> Write	
Authenticated users group (anyone with an AWS account) Group: http://acs.amazonaws.com/groups/global/AuthenticatedUsers	<input type="checkbox"/> Read <input type="checkbox"/> Write	

⚠ When you grant access to the Everyone or Authenticated users group grantees, anyone in the world can access this object.
[Learn more](#)

- Now copy the file url and browse the url it will display.

NAME: VEERA REDDY INAKOLU **Mobile:** 9347713242
Gmail : reddyinakolu1422@gmail.com **LinkedIn:** [veerareddy-inakolu/](https://www.linkedin.com/in/veerareddy-inakolu/)

SUMMARY:
 Passionate and motivated fresher seeking opportunities in the software industry to kickstart a dynamic career. A quick learner with a strong desire to contribute to innovative projects and teams. Possesses an initiative-taking attitude, excellent communication skills, and a dedication to continuous learning and professional growth. Eager to leverage my academic background and enthusiasm for technology to make meaningful contributions to the organization.

SKILLS:

Programming Skills & Databases	C, Python, Java, SQL.
Operating system	Linux (Redhat, Ubuntu), Windows.
Cloud Platforms	AWS (EC2, Route53, EKS, ELB, S3, IAM, RDS, SNS, EBS, Lambda).
CI / CD Tools	CI/CD, Jenkins, Jenkinsfile.
SCM/Scripting	Git/Groovy, Python.
Container platforms	KUBERNETES, Docker.
Web Technologies	HTML, CSS.
IaC/Configuration	Ansible, Terraform, Helm.
Other Skills	MATLAB, VIVADO, ANSYS, Microsoft Word, Excel, Good communication skills, Problem Solving, Critical Thinking, Analytical Thinking, Organizational Skills.

EDUCATION

- Lakireddy Bali Reddy College of Engineering, Mylavaram.
 o B. Tech in Electronics and Communication Engineering
 2020 - 2024 | CGPA: 8.45

Step – 2:

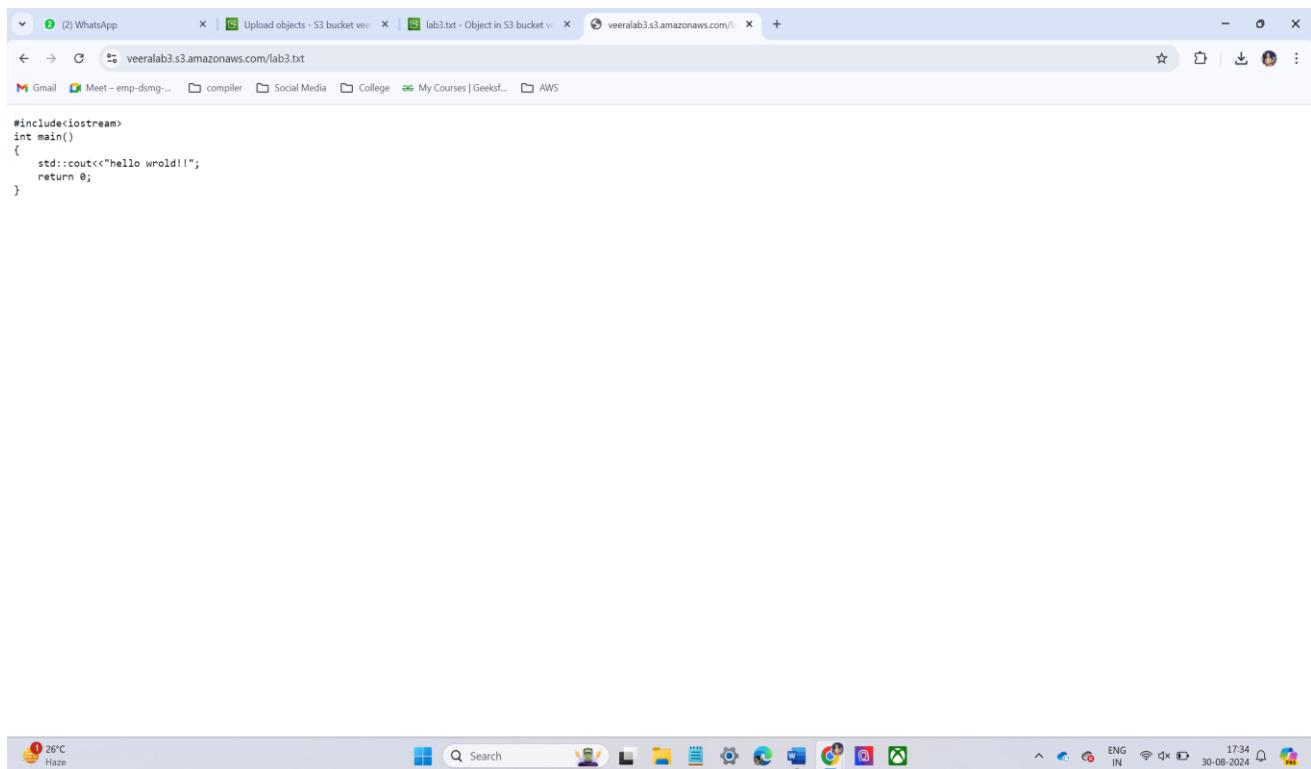
- Enable the **versioning** of the excited bucket.

The screenshot shows the 'Edit Bucket Versioning' page for the 'veeralab3' bucket. On the left, there's a sidebar with various S3-related options like Buckets, Access Grants, and Storage Lens. The main content area is titled 'Bucket Versioning'. It contains a section about versioning, a status indicator showing 'Enable' selected, and a note about updating lifecycle rules. Below this is a section for 'Multi-factor authentication (MFA) delete' which is currently 'Disabled'. At the bottom right are 'Cancel' and 'Save changes' buttons.

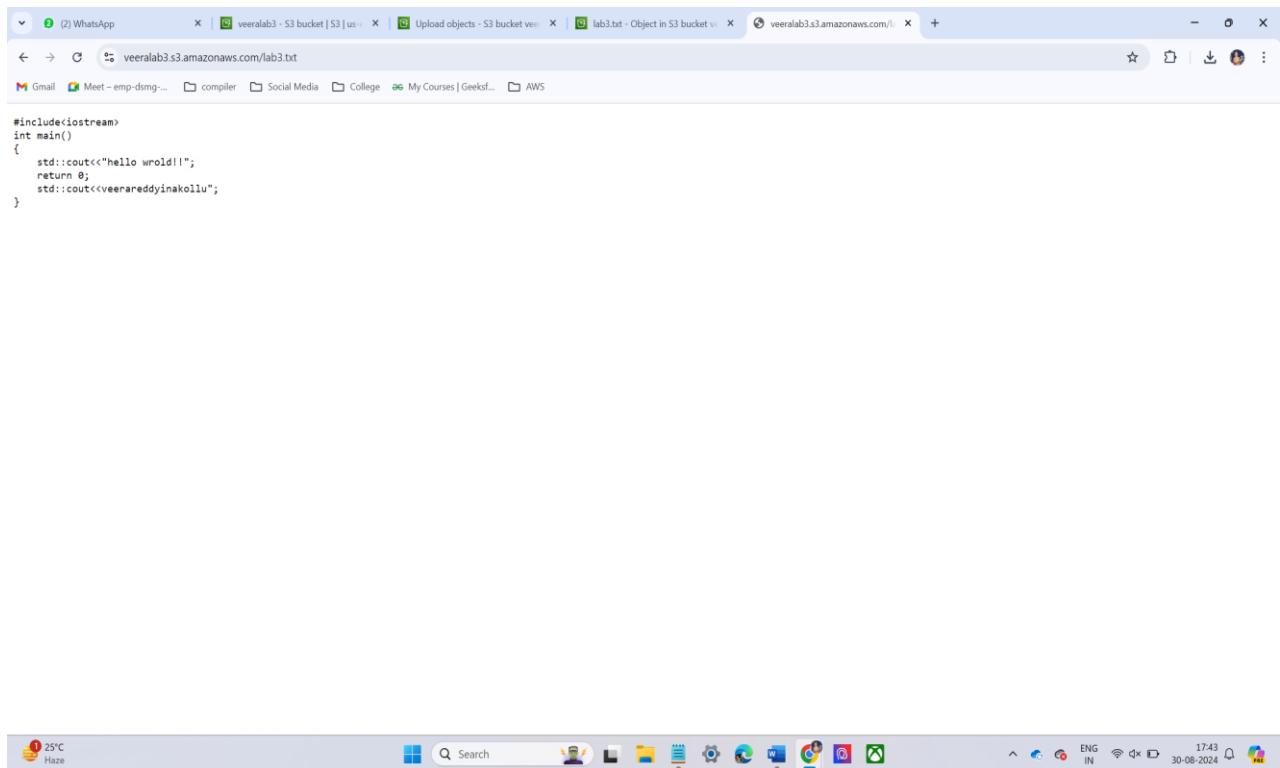
- Upload the some text file in the versioning bucket.

The screenshot shows the 'Upload objects - S3 bucket veeralab3' page. A green success message at the top states 'Upload succeeded'. Below it, a summary table shows one file uploaded successfully. The 'Files and folders' tab is selected, displaying a table of one file named 'lab3.txt' with details like type 'text/plain' and size '84.0 B'. The status column shows 'Succeeded'. At the bottom right are 'CloudShell' and 'Feedback' buttons.

- Now copy the file url and browse the url.



- Now edit the file and update the file and upload the file again and now check the updated content.



Step-3

- Delete text file from the bucket.

The screenshot shows the AWS S3 console interface. At the top, there are tabs for 'Services' and 'Search'. Below the tabs, a green header bar displays the message 'Successfully deleted objects' and 'View details below.' A note below the bar states: 'The information below will no longer be available after you navigate away from this page.' Under the 'Summary' section, it shows 'Source s3://veeralab3' and 'Successfully deleted 1 object, 121.0 B'. It also shows 'Failed to delete 0 objects'. Below this, there are tabs for 'Failed to delete' (which is selected) and 'Configuration'. The 'Failed to delete' tab shows a table with one row: 'No objects failed to delete.' The bottom of the screen shows the Windows taskbar with various icons and system status.

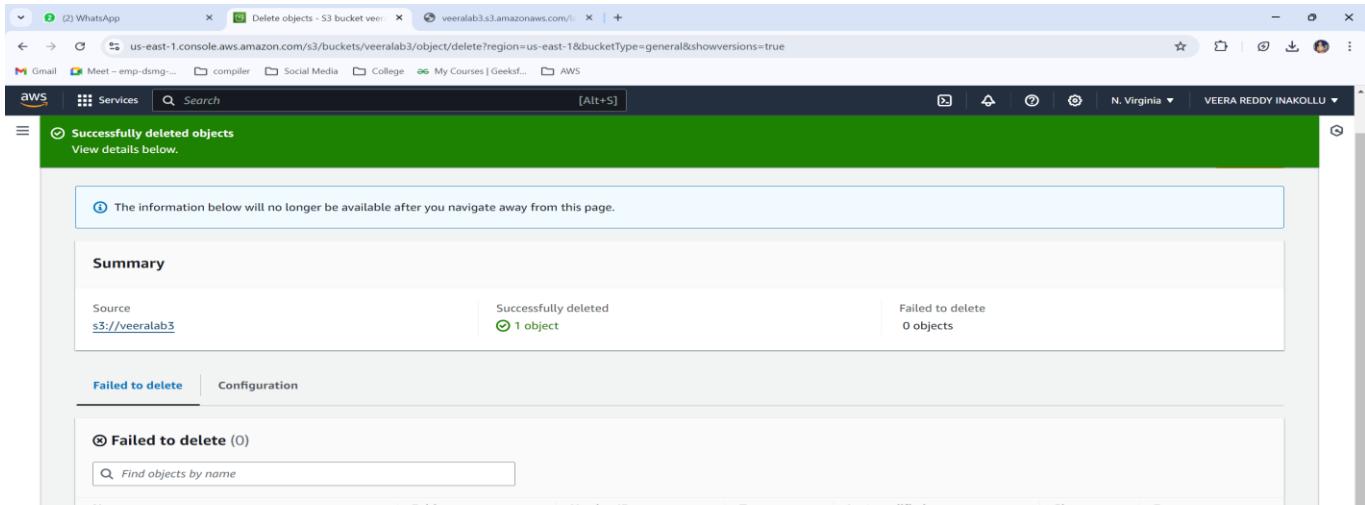
- Then Browse the previous URL it's shown an error.

The screenshot shows a browser window displaying an XML error response. The URL in the address bar is 'veeralab3.s3.amazonaws.com/lab3.txt'. The page content starts with the text 'This XML file does not appear to have any style information associated with it. The document tree is shown below.' followed by a code block:

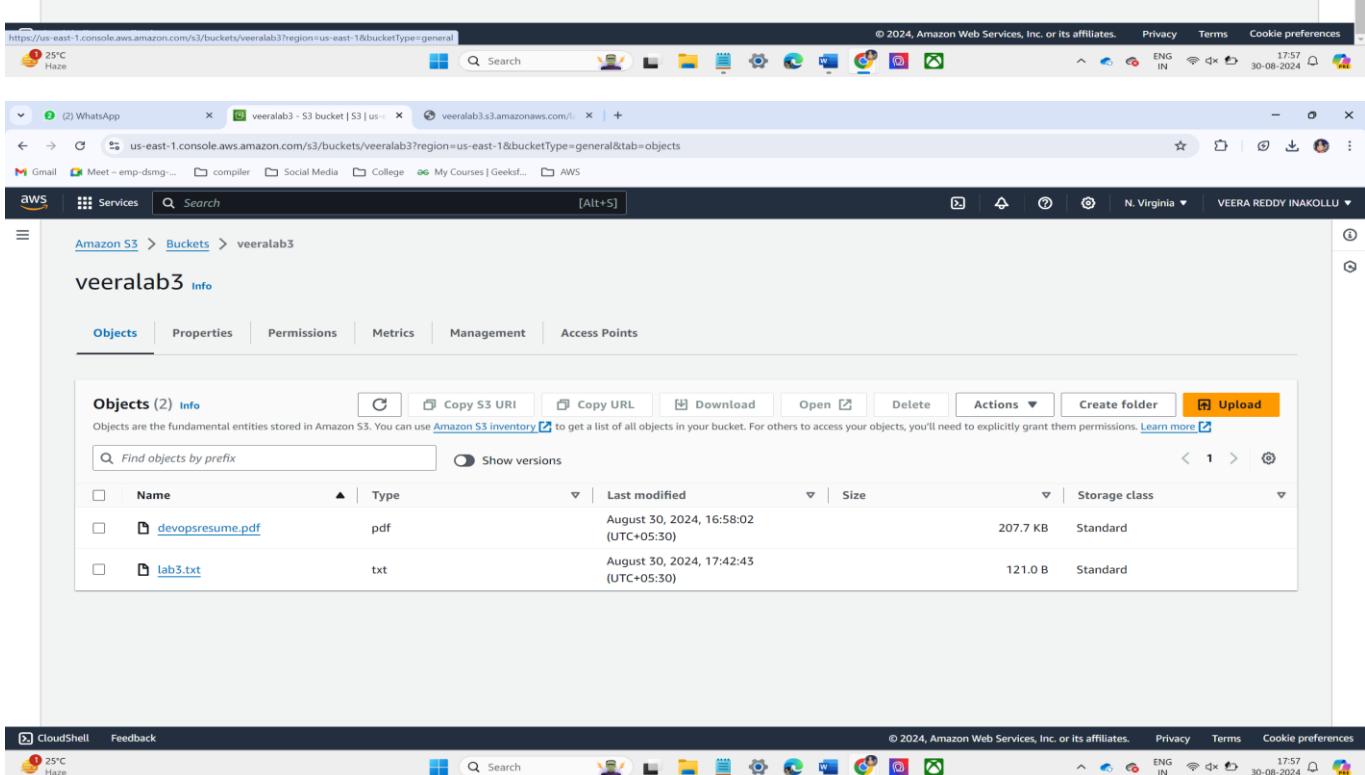
```
<Error>
<Code>NoSuchKey</Code>
<Message>The specified key does not exist.</Message>
<Key>lab3.txt</Key>
<RequestId>HJ7721H1B9853T4</RequestId>
<HostId>zawW6d56oZ0P528ou1CIET7iCdMyNruGwsmuy1mle3PnQcLGmpt4zrR0kiExqVgk4GMElQ/INcxhb+BcQmH/izg==</HostId>
</Error>
```

The bottom of the screen shows the Windows taskbar with various icons and system status.

- To recover the deleted file by using version technology. We are previously added versions in the bucket.
- Then enable the version. In that place we have seen the deleted files then select the file and deleting it will restore the last updated file.
- Then browse the URL it will display the content of the file.



The screenshot shows the AWS S3 console with a green header bar indicating "Successfully deleted 1 object". Below this, a summary table shows the deletion status: "Source s3://veeralab3" has "Successfully deleted 1 object" and "Failed to delete 0 objects". A "Failed to delete" tab is selected, showing a table with zero entries: "No objects failed to delete."



The screenshot shows the AWS S3 console with the path "Amazon S3 > Buckets > veeralab3". The "Objects" tab is selected, displaying two files: "devopsresume.pdf" (pdf, 207.7 KB, Standard storage) and "lab3.txt" (txt, 121.0 B, Standard storage). The objects are listed with columns for Name, Type, Last modified, Size, and Storage class.

```
#include<iostream>
int main()
{
    std::cout<<"Hello world!";
    return 0;
    std::cout<<veerareddyinakollu";
}
```

LAB – 4 EC2 INSTANCE

- Go to ec2 console and launch ec2 instance.

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

Gmail | Meet - emp-dsmg... | compiler | Social Media | College | My Courses | Geeks... | AWS

aws Services Search [Alt+S]

EC2 > Instances > Launch an instance

Launch an instance info

Amazon EC2 allows you to create virtual machines, or instances, that run on the AWS Cloud. Quickly get started by following the simple steps below.

Name and tags info

Name: Lab4 Add additional tags

Application and OS Images (Amazon Machine Image) info

An AMI is a template that contains the software configuration (operating system, application server, and applications) required to launch your instance. Search or Browse for AMIs if you don't see what you are looking for below.

Search our full catalog including 1000s of application and OS images

Recents Quick Start

Summary

Number of instances: Info 1

Software Image (AMI): Amazon Linux 2023.5.2... read more ami-066784287e558dad1

Virtual server type (instance type): t2.micro

Firewall (security group): New security group

Storage (volumes): 1 volume(s) - 8 GiB

ⓘ Free tier: In your first year includes 750 hours of t2.micro (or t3.micro in the Regions in which t2.micro is unavailable) instance

Cancel Launch instance Review commands

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➤ Now I have select Ubuntu operating system.

The screenshot shows the AWS Cloud9 interface. In the top navigation bar, the URL is `us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#LaunchInstances`. The main content area displays the "Application and OS Images (Amazon Machine Image)" section. Under the "Quick Start" tab, there is a grid of icons for various operating systems: Amazon Linux, macOS, Ubuntu, Windows, Red Hat, and SUSE Linux. A search bar at the top says "Search our full catalog including 1000s of application and OS images". To the right, a "Summary" panel shows "Number of instances" set to 1. Below it, "Software Image (AMI)" is listed as Canonical, Ubuntu, 22.04 LTS. The "Virtual server type (instance type)" is selected as t2.micro. Other settings include Firewall (New security group), Storage (1 volume(s) - 8 GiB), and a note about the Free tier. At the bottom right of the summary panel is a prominent orange "Launch instance" button.

➤ Instance type t2.micro

This screenshot continues from the previous one, focusing on the "Instance type" configuration. The "t2.micro" instance type is selected, showing details like 1 vCPU, 1 GiB Memory, and Current generation: true. It also lists On-Demand and On-Demand SUSE base pricing. A note states that additional costs apply for AMIs with pre-installed software. Below this, the "Key pair (login)" section is shown, with a note that you can use a key pair to securely connect to your instance. A "Key pair name" field is present, with a required indicator. The right side of the screen shows the same "Summary" panel as before, including the "Launch instance" button.

➤ Allow required port in the **security group** it can access from the outside.

The screenshot shows the AWS EC2 Launch Wizard interface. In the 'Inbound Security Group Rules' section, there is one rule defined:

- Type: ssh
- Protocol: TCP
- Port range: 22
- Source type: Anywhere
- Description: e.g. SSH for admin desktop

A yellow warning box is present, stating: "Rules with source of 0.0.0.0/0 allow all IP addresses to access your instance. We recommend setting security group rules to allow access from known IP addresses only." Below this, there is a button labeled "Add security group rule".

In the summary section, it shows:

- Number of instances: 1
- Software Image (AMI): Canonical, Ubuntu, 22.04 LTS, ...read more
- Virtual server type (instance type): t2.micro
- Firewall (security group): New security group
- Storage (volumes): 1 volume(s) - 8 GiB

At the bottom right, there is a prominent orange "Launch Instance" button.

➤ Now Launch instance

The screenshot shows the AWS EC2 Instances page. The main table displays one instance:

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone
Lab4	i-0db5e6fbcb379fedf	Running	t2.micro	Initializing	View alarms	us-east-1d

A modal window titled "Select an instance" is open at the bottom, showing the same instance details: Name: Lab4, Instance ID: i-0db5e6fbcb379fedf, Instance state: Running, Instance type: t2.micro, Status check: Initializing, and Availability Zone: us-east-1d.

- Now I have access instance using ppk file in **putty** software.

```

ubuntu@ip-172-31-94-114:~ 
login as: ubuntu
Authenticating with public key "lab4"
Welcome to Ubuntu 22.04.4 LTS (GNU/Linux 6.5.0-1022-aws x86_64)

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

System information as of Sat Aug 31 09:38:41 UTC 2024

System load: 0.0          Processes:      98
Usage of /: 20.7% of 7.57GB   Users logged in:    0
Memory usage: 21%           IPv4 address for eth0: 172.31.94.114
Swap usage:  0%             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-172-31-94-114:~$ 

```

LAB – 5 SECURITY GROUPS

- Create new **security group**
- Goto ec2 console and click security groups and select new security group
- Choose the name of the **security group**.
- And select **your VPC**.

CreateSecurityGroup | EC2 | us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#CreateSecurityGroup:

Gmail Meet – emp-dsmg... compiler Social Media College My Courses | Geeksf... AWS

EC2 Services Search [Alt+S] N. Virginia VEERA REDDY INAKOLU

[EC2](#) > [Security Groups](#) > Create security group

Create security group [Info](#)

A security group acts as a virtual firewall for your instance to control inbound and outbound traffic. To create a new security group, complete the fields below.

Basic details

Security group name [Info](#)
mynewsbg
Name cannot be edited after creation.

Description [Info](#)
Allows SSH access to developers

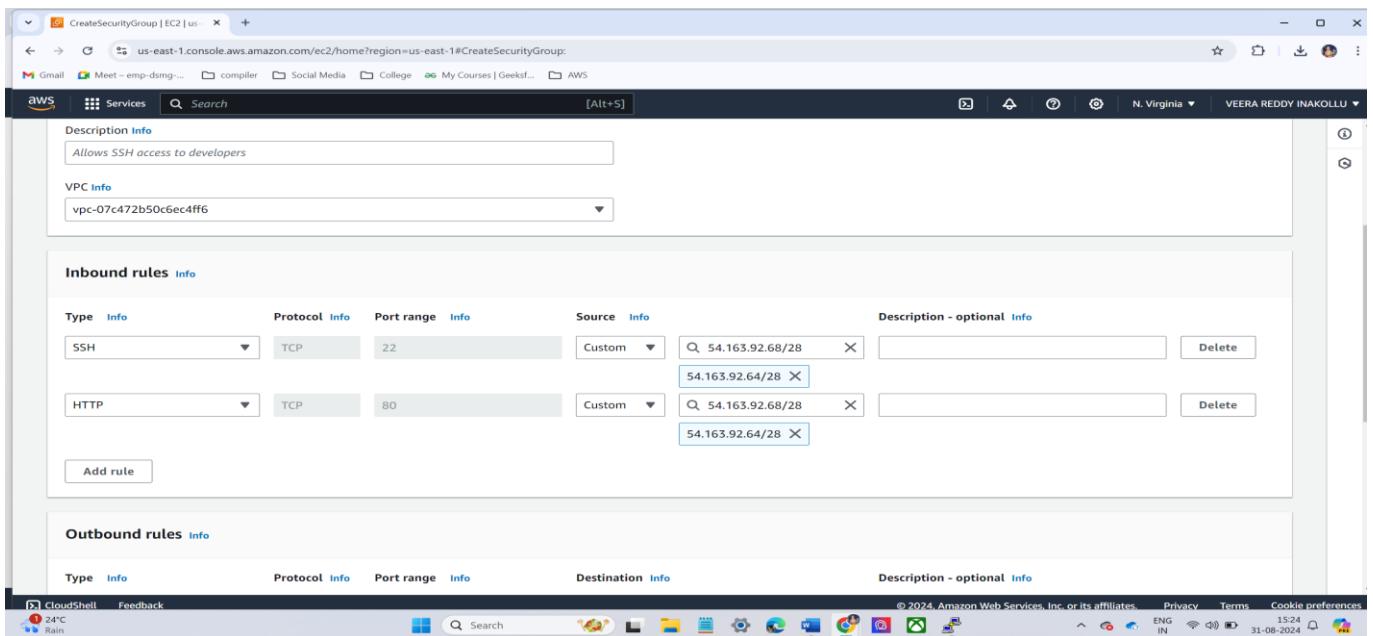
VPC [Info](#)
vpc-07c472b50c6ec4ff6

Inbound rules [Info](#)

Type	Protocol	Port range	Source	Description - optional
SSH	TCP	22	Custom	54.163.92.68/28

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- Allow Inbound Port 80 and 22 from IP Address (IP/28 Range)
- Click **Edit Inbound Rules**.
- Add rules:
 - **Type:** SSH
 - **Protocol:** TCP
 - **Port Range:** 22
 - **Source:** Select **My IP** and adjust to **IP/28** range (for dynamic IP changes). For example, if IP is 54.163.92.68 use 54.163.92.68/28.
 - **Type:** HTTP
 - **Protocol:** TCP
 - **Port Range:** 80
 - **Source:** Set the same IP range (e.g., 54.163.92.68/28).



- Now the new security group add to the existing EC2 instance.
- Go to **EC2 Dashboard**.
- Click **Instances** and select the instance you want to modify.
- Under **Actions**, select **Networking → Change Security Groups**.

The screenshot shows the 'Change security groups' page for an EC2 instance. In the 'Associated security groups' section, a search bar contains 'Select security groups'. Below it, a table lists a single security group: 'Security group name: launch-wizard-78' and 'Security group ID: sg-01d388a34823c8704'. A 'Remove' button is next to the security group ID.

- Attach **mynewsg** to your instance and apply the changes.

The screenshot shows the 'Change security groups' page for an EC2 instance. In the 'Associated security groups' section, a search bar contains 'sg-0c2d032c144654912'. Below it, a table lists two security groups: 'Security group name: launch-wizard-78' and 'Security group ID: sg-01d388a34823c8704', and 'Security group name: mynewsg' and 'Security group ID: sg-0c2d032c144654912'. Both have a 'Remove' button next to their respective IDs. At the bottom right of the form, there are 'Cancel' and 'Save' buttons, with 'Save' being highlighted.

- Access the Server via **SSH**.
 - Open a terminal (or SSH client).
 - Use the SSH command to connect to EC2 instance.

```

ubuntu@ip-172-31-94-114: ~
login as: ubuntu
Authenticating with public key "lab4"
Welcome to Ubuntu 22.04.4 LTS (GNU/Linux 6.5.0-1022-aws x86_64)

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

System information as of Sat Aug 31 10:02:46 UTC 2024

System load: 0.0          Processes:      99
Usage of /: 21.1% of 7.57GB  Users logged in:    0
Memory usage: 22%          IPv4 address for eth0: 172.31.94.114
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
New release '24.04.1 LTS' available.
Run 'do-release-upgrade' to upgrade to it.

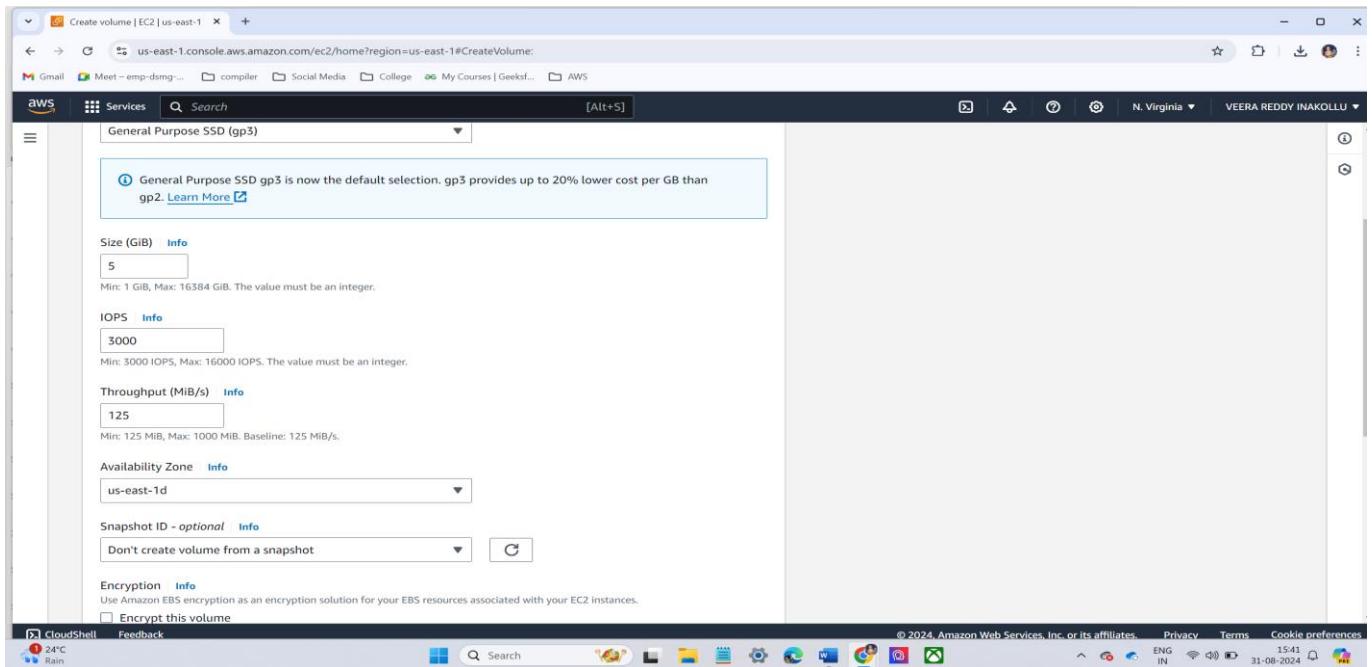
Last login: Sat Aug 31 09:38:43 2024 from 103.160.27.107
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

ubuntu@ip-172-31-94-114: ~

```

LAB – 6 -VOLUMES AND SNAPSHOTS

- Create a 5GB Volume and Attach It to the Running EC2 Instance
- Navigate to **EC2 Dashboard**.
- On the left-hand side, click on **Volumes** under **Elastic Block Store (EBS)**.
- Click **Create Volume**.
 - **Size:** 5 GiB
 - **Availability Zone:** Select the same Availability Zone as your running EC2 instance.



- Volume created successfully.

The screenshot shows the AWS EC2 Volumes page in the US East (N. Virginia) region. A green success message at the top states "Successfully created volume vol-02b29151a494dd031." Below this, a table lists two volumes. The second volume, "vol-02b29151a494dd031", is selected and highlighted with a blue border. The table columns include Name, Volume ID, Type, Size, IOPS, Throughput, Snapshot ID, Created, and Availability Zone. The volume details show it is a gp3 type, 5 GiB in size, with 3000 IOPS and 125 throughput. It was created on 2024/08/31 15:41 GMT+5:30 from snapshot snap-07e55c5... in the us-east-1 region. The status is "Available".

- Once the volume is created, select the volume from the list and click **Actions** → **Attach Volume**.

The screenshot shows the "Attach volume" dialog box. The "Basic details" section is visible, containing fields for Volume ID (set to vol-02b29151a494dd031), Availability Zone (set to us-east-1d), Instance (set to i-03804ab5420898968), and Device name (set to /dev/sdf). A note below the device name field states: "Only instances in the same Availability Zone as the selected volume are displayed." A callout box provides a tip: "Newer Linux kernels may rename your devices to /dev/xvdf through /dev/xvdp internally, even when the device name entered here (and shown in the details) is /dev/sdf through /dev/sdp." At the bottom right of the dialog are "Cancel" and "Attach volume" buttons. The status bar at the bottom indicates the volume is now attached.

- Put some data in this volume like some testing files
- Connect the ec2 instance in the terminal using ssh command.

```

ec2-user@ip-172-31-86-42 ~ % 
Microsoft Windows [Version 10.0.22631.4037]
(c) Microsoft Corporation. All rights reserved.

C:\Users\jawah>cd Socialprchar
C:\Users\jawah\Socialprchar>cd "veera reddy"
C:\Users\jawah\Socialprchar\veera reddy>cd keys

C:\Users\jawah\Socialprchar\veera reddy>ssh -i "devops.pem" ec2-user@ec2-18-204-198-128.compute-1.amazonaws.com
The authenticity of host 'ec2-18-204-198-128.compute-1.amazonaws.com (18.204.198.128)' can't be established.
ED25519 key fingerprint is SHA256:zDONy6YFuXAbdsxrJuACEbrisWG56gYZ1glE8P34.
This key is not known by any other names
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added 'ec2-18-204-198-128.compute-1.amazonaws.com' (ED25519) to the list of known hosts.

# 
#_###_ Amazon Linux 2
##_\###\ AL2 End of Life is 2025-06-30.
##_###_ 
##_###_ A newer version of Amazon Linux is available!
##_###_ / Amazon Linux 2023, GA and supported until 2028-03-15.
##_###_ https://aws.amazon.com/linux/amazon-linux-2023/
/m/ 

[ec2-user@ip-172-31-86-42 ~]$ 

```

- Run the following command to check if the volume is attached
 - Lsblk

```

ec2-user@ip-172-31-86-42 ~ % 
Microsoft Windows [Version 10.0.22631.4037]
(c) Microsoft Corporation. All rights reserved.

C:\Users\jawah>cd Socialprchar
C:\Users\jawah\Socialprchar>cd "veera reddy"
C:\Users\jawah\Socialprchar\veera reddy>cd keys

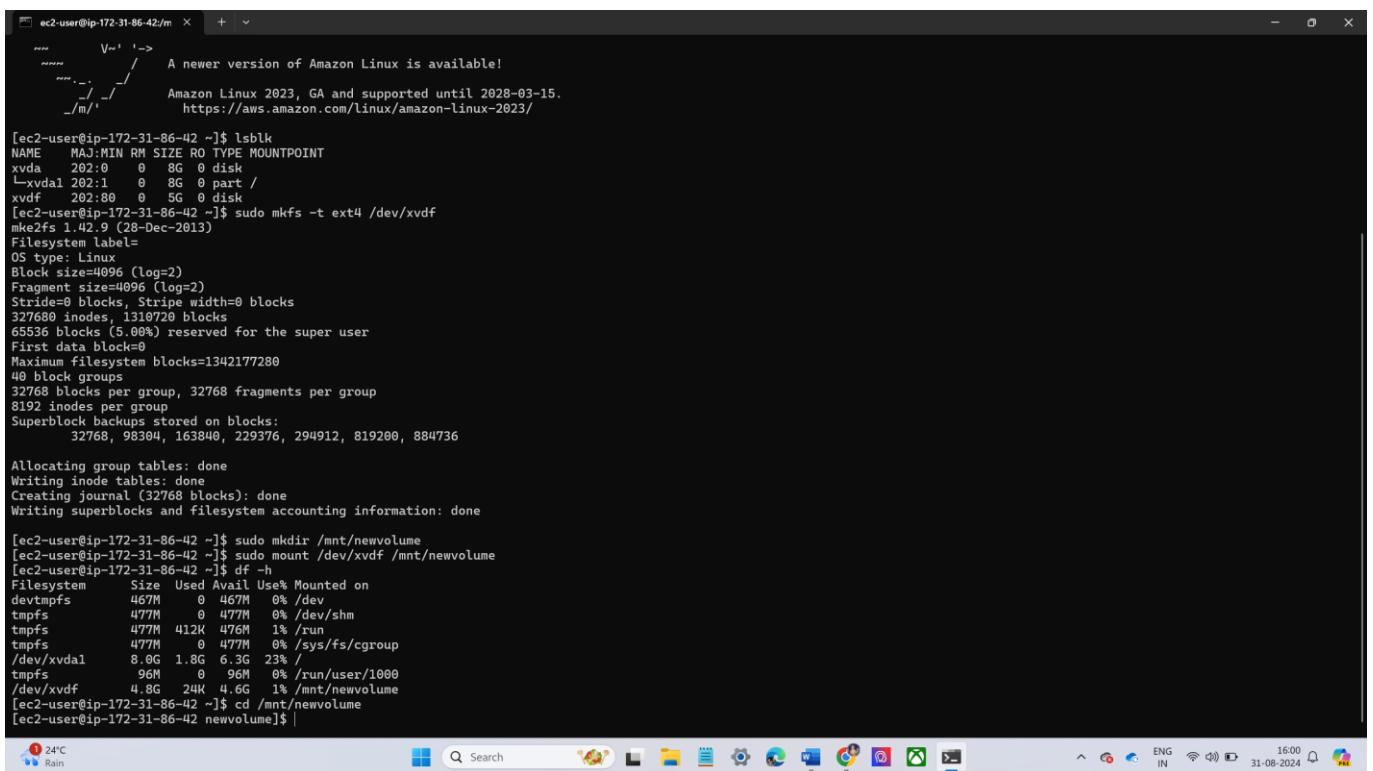
C:\Users\jawah\Socialprchar\veera reddy>ssh -i "devops.pem" ec2-user@ec2-18-204-198-128.compute-1.amazonaws.com
Last login: Sat Aug 31 10:21:55 2024 from 103.160.27.107

# 
#_###_ Amazon Linux 2
##_\###\ AL2 End of Life is 2025-06-30.
##_###_ 
##_###_ A newer version of Amazon Linux is available!
##_###_ / Amazon Linux 2023, GA and supported until 2028-03-15.
##_###_ https://aws.amazon.com/linux/amazon-linux-2023/
/m/ 

[ec2-user@ip-172-31-86-42 ~]$ lsblk
NAME   MAJ:MIN RM SIZE RO TYPE MOUNTPOINT
xvda   202:0    0   8G  0 disk
└─xvdal 202:1    0   8G  0 part /
xvdf   202:88   0   5G  0 disk
[ec2-user@ip-172-31-86-42 ~]$ 

```

- Create a mount point
- Mount the new volume
- Verify the volume is mounted



```

ec2-user@ip-172-31-86-42:~$ lsblk
NAME  MAJ:MIN RM SIZE RO TYPE MOUNTPOINT
xvda  202:0    0   8G  0 disk 
└─xvdal 202:1    0   8G  0 part /
xvdf  202:80   0   5G  0 disk 
[ec2-user@ip-172-31-86-42 ~]$ sudo mkfs -t ext4 /dev/xvdf
mke2fs 1.42.9 (28-Dec-2013)
Filesystem label=
OS type: Linux
Block size=4096 (log=2)
Fragment size=4096 (log=2)
Stride=0 blocks, Stripe width=0 blocks
327680 inodes, 1310720 blocks
65536 blocks (5.00%) reserved for the super user
First data block=0
Maximum filesystem blocks=1342177280
40 block groups
32768 blocks per group, 32768 fragments per group
8192 inodes per group
Superblock backups stored on blocks:
 32768, 98304, 163840, 229376, 294912, 819200, 884736

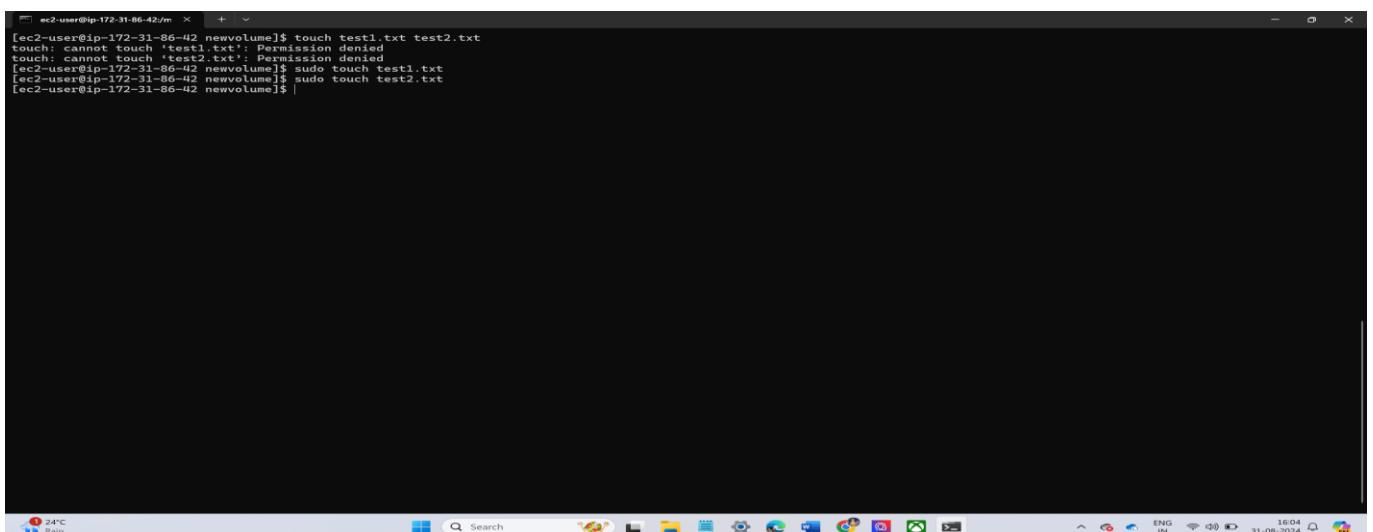
Allocating group tables: done
Writing inode tables: done
Creating journal (32768 blocks): done
Writing superblocks and filesystem accounting information: done

[ec2-user@ip-172-31-86-42 ~]$ sudo mkdir /mnt/newvolume
[ec2-user@ip-172-31-86-42 ~]$ sudo mount /dev/xvdf /mnt/newvolume
[ec2-user@ip-172-31-86-42 ~]$ df -h
Filesystem      Size  Used Avail Use% Mounted on
devtmpfs        467M   0  467M  0% /dev
tmpfs          477M   0  477M  0% /dev/shm
tmpfs          477M  412K 476M  1% /run
tmpfs          477M   0  477M  0% /sys/fs/cgroup
/dev/xvda     8.0G  6.3G 23% /run/user/1000
tmpfs          96M   0  96M  0% /run/user/1000
/dev/xvdf     4.8G  24K 4.6G  1% /mnt/newvolume
[ec2-user@ip-172-31-86-42 ~]$ cd /mnt/newvolume
[ec2-user@ip-172-31-86-42 newvolume]$ 

```

The screenshot shows a Windows desktop environment with a terminal window open. The terminal displays the output of several commands: `lsblk` showing the disk layout, `mkfs -t ext4 /dev/xvdf` creating a new ext4 file system on the device, `mkdir /mnt/newvolume` creating a mount point, `mount /dev/xvdf /mnt/newvolume` mounting the new volume, and finally `df -h` showing the available disk space. The desktop taskbar at the bottom includes icons for weather (24°C Rain), search, file explorer, task manager, and other system utilities.

- Put Some Data in the Volume
- Go to the Mount directory.
- Create a some text files using touch command.
- When I am creating files in first time I didn't use sudo. They show an error be permission denied
- Then after I use sudo it was created.



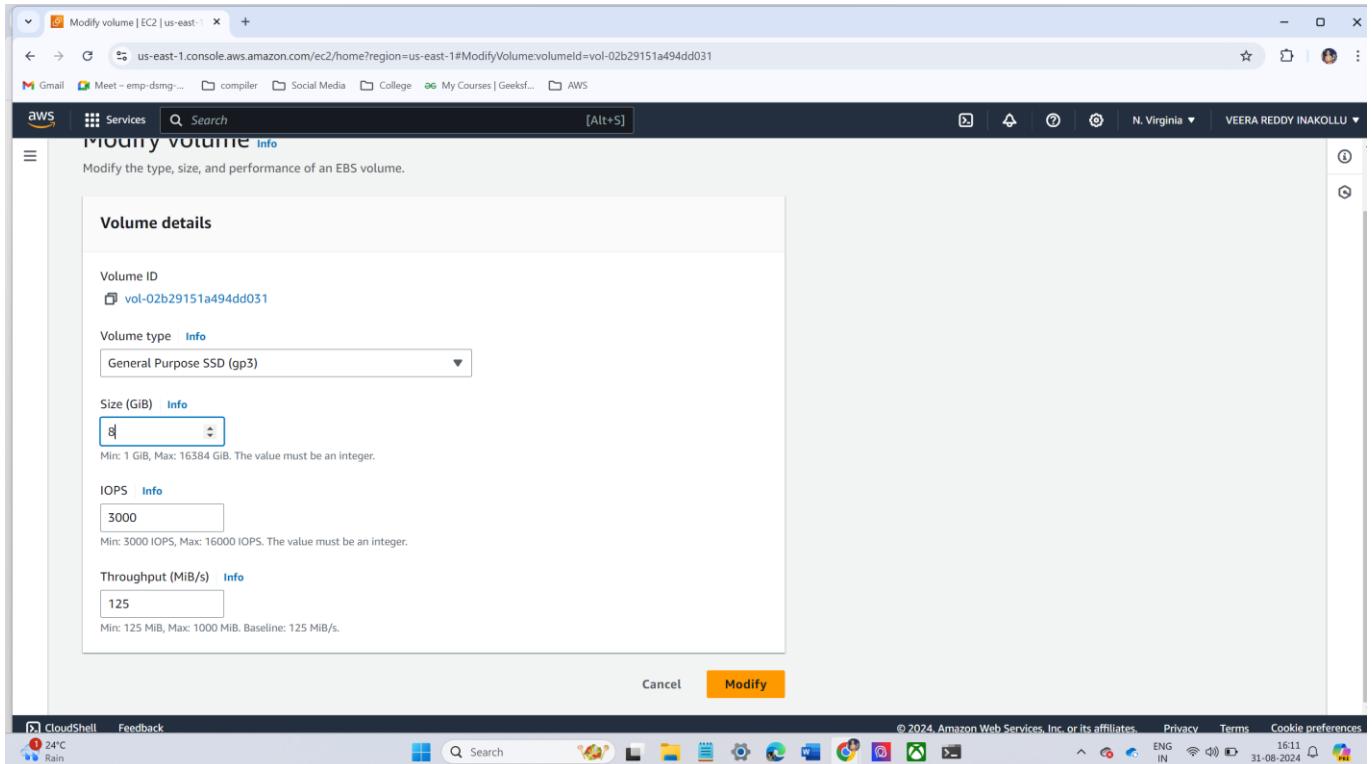
```

[ec2-user@ip-172-31-86-42 newvolume]$ touch test1.txt test2.txt
touch: cannot touch 'test1.txt': Permission denied
touch: cannot touch 'test2.txt': Permission denied
[ec2-user@ip-172-31-86-42 newvolume]$ sudo touch test1.txt
[ec2-user@ip-172-31-86-42 newvolume]$ sudo touch test2.txt
[ec2-user@ip-172-31-86-42 newvolume]$ 

```

This screenshot shows a terminal window on a Windows desktop. It demonstrates attempting to create files without `sudo` (resulting in permission denied errors) and then successfully creating them with `sudo`. The desktop taskbar at the bottom is visible, showing various application icons.

- Now add some content to the file
- Increase the Size of the Volume to 8GB.
- Select the volume created (5 GiB) and click **Actions → Modify Volume**.
- Change the size to **8 GiB** and click **Modify**.



- Inside the EC2 instance, run the following command to ensure the volume size is updated:lsblk

```
ec2-user@ip-172-31-86-42:~ % lsblk
[ec2-user@ip-172-31-86-42 newvolume]$ lsblk
NAME   MAJ:MIN RM  SIZE RO TYPE MOUNTPOINT
xvda  202:0    0   8G  0 disk
└─xvda1 202:1    0   8G  0 part /
xvdf  202:80   0   8G  0 disk /mnt/newvolume
[ec2-user@ip-172-31-86-42 newvolume]$ |
```

- Extend the Size of the Volume Inside the Linux Machine
- Extend the file system to use the full 8GB: sudo resize2fs /dev/xvdf

```
[ec2-user@ip-172-31-86-42:~]$ lsblk
NAME   MAJ:MIN RM SIZE RO TYPE MOUNTPOINT
xvda    202:0    0 8G  0 disk 
└─xvda1 202:1    0 8G  0 part /
xvdf    202:80   0 8G  0 disk /mnt/newvolume
[ec2-user@ip-172-31-86-42 newvolume]$ sudo resize2fs /dev/xvdf
resize2fs 1.42.9 (28-Dec-2013)
Filesystem at /dev/xvdf is mounted on /mnt/newvolume; on-line resizing required
old_desc_blocks = 1, new_desc_blocks = 1
The filesystem on /dev/xvdf is now 2097152 blocks long.

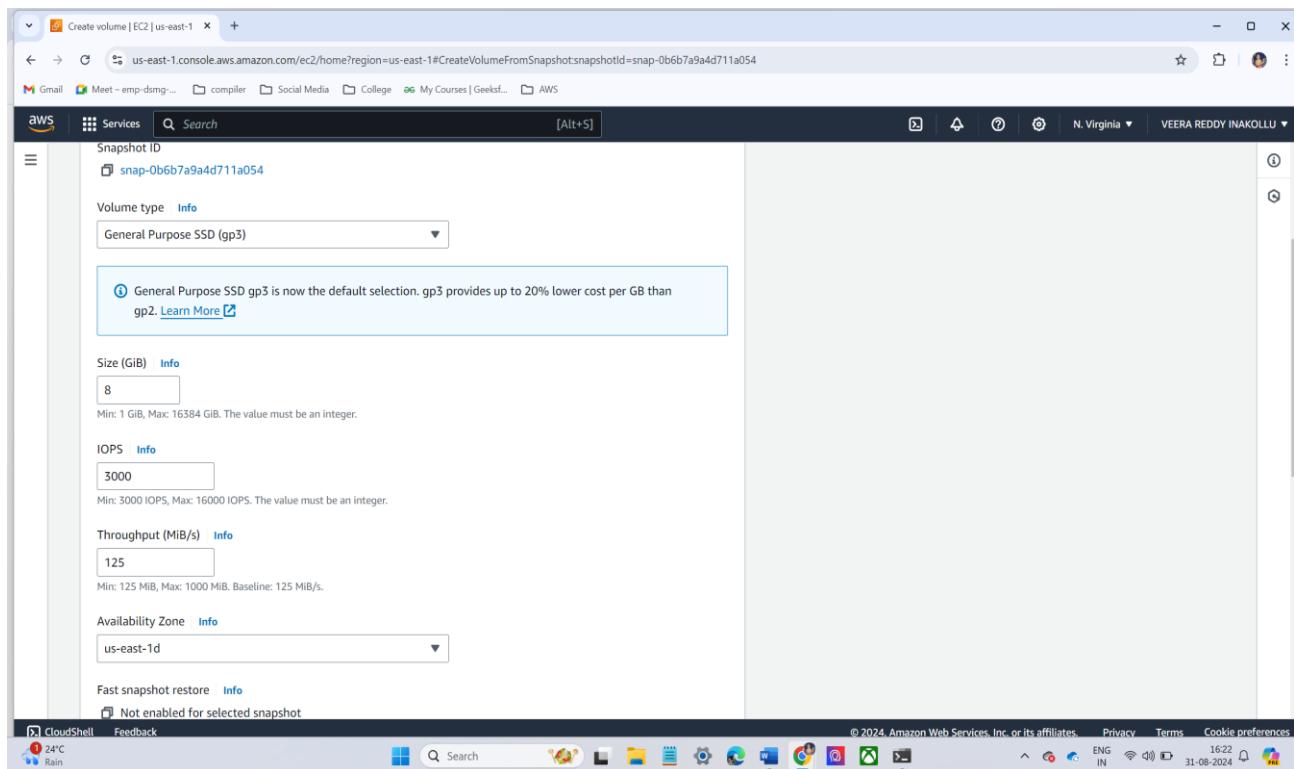
[ec2-user@ip-172-31-86-42 newvolume]$ |
```

- Take a Screenshot of the Volume and Delete It

```
[ec2-user@ip-172-31-86-42 newvolume]$ lsblk
NAME   MAJ:MIN RM SIZE RO TYPE MOUNTPOINT
xvda    202:0    0 8G  0 disk 
└─xvda1 202:1    0 8G  0 part /
xvdf    202:80   0 8G  0 disk /mnt/newvolume
[ec2-user@ip-172-31-86-42 newvolume]$ sudo resize2fs /dev/xvdf
resize2fs 1.42.9 (28-Dec-2013)
Filesystem at /dev/xvdf is mounted on /mnt/newvolume; on-line resizing required
old_desc_blocks = 1, new_desc_blocks = 1
The filesystem on /dev/xvdf is now 2097152 blocks long.

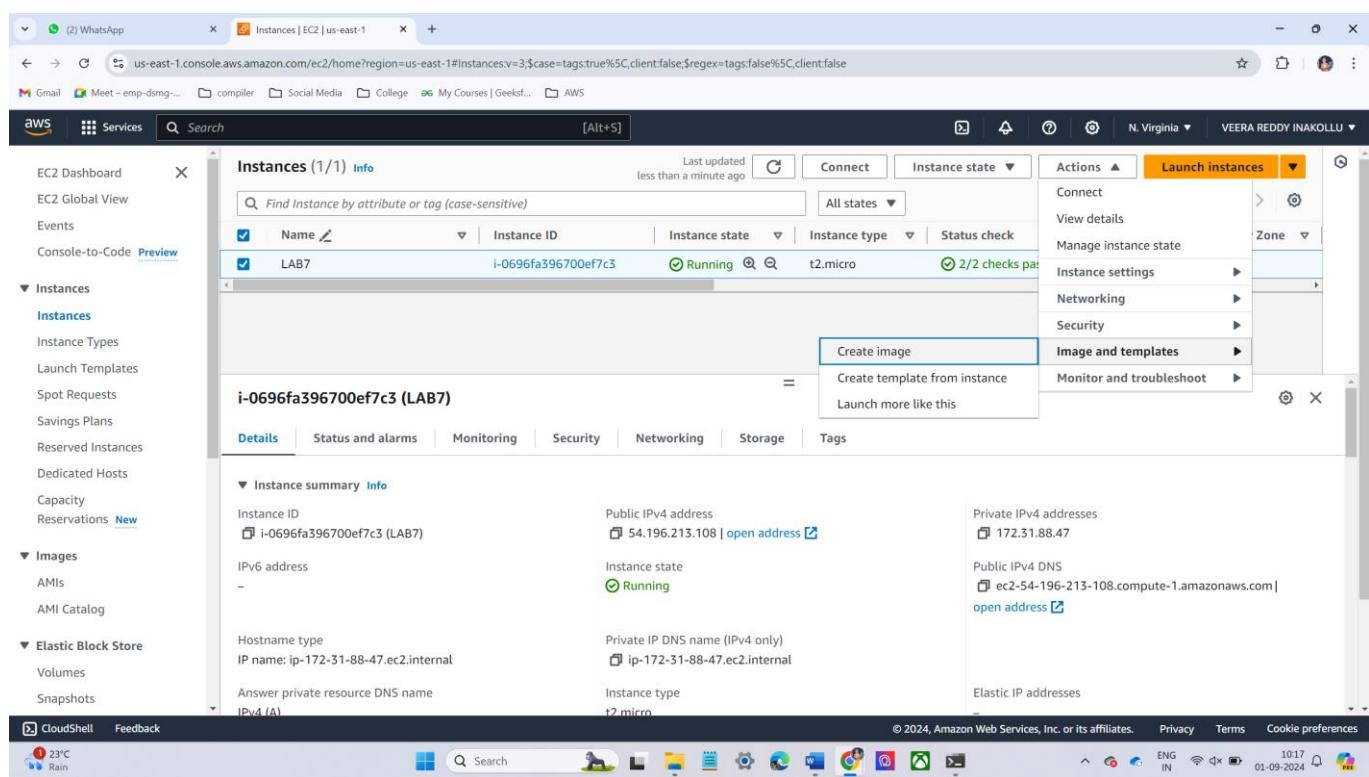
[ec2-user@ip-172-31-86-42 newvolume]$ df -h
Filesystem      Size  Used Avail Use% Mounted on
devtmpfs        467M   0  467M  0% /dev
tmpfs          477M   0  477M  0% /dev/shm
tmpfs          477M  412K  476M  1% /run
tmpfs          477M   0  477M  0% /sys/fs/cgroup
/dev/xvda       8.0G  1.8G  6.3G 23% /
tmpfs          96M   0   96M  0% /run/user/1000
/dev/xvdf       7.8G  32K  7.4G  1% /mnt/newvolume
[ec2-user@ip-172-31-86-42 newvolume]$ |
```

- Create a New Volume with the Snapshot and Attach It to the Server.



LAB – 7 – AMI

- Select the instance that you want to create an AMI of by clicking the check box next to it.
- After selecting instance click **actions** button at the top of the page.
- Under the **image and template** section, select the create image.



- Configure the image settings
- Enter the image name and description. Choose if you want to include volumes.
- Then click create image.

Create image [Info](#)

An image (also referred to as an AMI) defines the programs and settings that are applied when you launch an EC2 instance. You can create an image from the configuration of an existing instance.

Storage type	Device	Snapshot	Size	Volume type	IOPS	Throughput	Delete on termination	Encrypted

- Create image successfully.

Instances (1/1) [Info](#)

Find Instance by attribute or tag (case-sensitive)

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone
LAB7	i-0696fa396700ef7c3	Running	t2.micro	2/2 checks passed	View alarms	us-east-1d

i-0696fa396700ef7c3 (LAB7)

[Details](#) [Status and alarms](#) [Monitoring](#) [Security](#) [Networking](#) [Storage](#) [Tags](#)

Instance summary [Info](#)

Instance ID	Public IPv4 address
i-0696fa396700ef7c3 (LAB7)	54.196.213.108 open address
IPv6 address	Instance state
-	Running
Hostname type	Private IP DNS name (IPv4 only)
IP name: ip-172-31-88-47.ec2.internal	ip-172-31-88-47.ec2.internal
Answer private resource DNS name	Instance type
ip-172-31-88-47.ec2.internal	t2.micro

- Once the image status is marked as **available**, the AMI can be used to launch new instances with the exact configuration of the original.

LAB – 8 – LOAD BALANCERS

- Launch Two EC2 Instances

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, and Instances. Under Instances, it lists Instance Types, Launch Templates, Spot Requests, Savings Plans, Reserved Instances, Dedicated Hosts, Capacity, and Reservations. Below that are sections for Images (AMIs, AMI Catalog) and Elastic Block Store (Volumes, Snapshots). The main content area is titled "Instances (2/2) Info". It shows two instances: "server2" (i-01cd41d545f66115) and "Server1" (i-0fbfb9f31a737d07f9), both in the "Running" state with "t2.micro" instance type. A message at the bottom says "2 instances selected". Below the instances, there's a monitoring section with CPU utilization, network in, network out, and network packets metrics. The bottom of the screen shows the Windows taskbar with various icons and the date/time as 04-09-2024.

- After launching instances install httpd and git and clone the two application each one having one application.

```
ec2-user@ip-172-31-26-99: ~]$ sudo yum install httpd -y
Loaded plugins: extras_suggestions, langpacks, priorities, update-motd
Resolving Dependencies
--> Running transaction check
--> Package httpd.x86_64 0:2.4.62-1.amzn2.0.2 will be installed
--> Processing Dependency: httpd-filesystem = 2.4.62-1.amzn2.0.2 for package: httpd-2.4.62-1.amzn2.0.2.x86_64
--> Processing Dependency: httpd-tools = 2.4.62-1.amzn2.0.2 for package: httpd-2.4.62-1.amzn2.0.2.x86_64
--> Processing Dependency: /etc/mime.types for package: httpd-2.4.62-1.amzn2.0.2.x86_64
--> Processing Dependency: httpd-filesystem for package: httpd-2.4.62-1.amzn2.0.2.x86_64
--> Processing Dependency: mod_http2 for package: httpd-2.4.62-1.amzn2.0.2.x86_64
--> Processing Dependency: system-logos-httdp for package: httpd-2.4.62-1.amzn2.0.2.x86_64
--> Processing Dependency: libapr-1.so.0()(64bit) for package: httpd-2.4.62-1.amzn2.0.2.x86_64
--> Processing Dependency: libaputil-1.so.0()(64bit) for package: httpd-2.4.62-1.amzn2.0.2.x86_64
--> Running transaction check
--> Package apr.x86_64 0:1.7.2-1.amzn2 will be installed
--> Package apr-util.x86_64 0:1.6.3-1.amzn2.0.1 will be installed
--> Processing Dependency: apr-util-bdb(x86-64) = 1.6.3-1.amzn2.0.1 for package: apr-util-1.6.3-1.amzn2.0.1.x86_64
--> Package generic-logos-httdp.noarch 0:18.0.0-4.amzn2 will be installed
--> Package httpd-filesystem.noarch 0:2.4.62-1.amzn2.0.2 will be installed
--> Package httpd-tools.x86_64 0:2.4.62-1.amzn2.0.2 will be installed
```

```

ec2-user@ip-172-31-26-99:~$ ec2-user@ip-172-31-6-53:~$ 
Installing : apr-util-bdb-1.6.3-1.amzn2.0.1.x86_64
Installing : httpd-filesystem-2.4.62-1.amzn2.0.2.noarch
Installing : generic-logos-httdp-18.0.0-4.amzn2.noarch
Installing : mailcap-2.1.41-2.amzn2.noarch
Installing : mod_http2-1.15.19-1.amzn2.0.2.x86_64
Installing : modutil-bdb-1.6.3-1.amzn2.0.1.x86_64
Verifying : httpd-filesystem-2.4.62-1.amzn2.0.2.noarch
Verifying : httpd-2.4.62-1.amzn2.0.2.x86_64
Verifying : apr-1.7.2-1.amzn2.x86_64
Verifying : mod_http2-1.15.19-1.amzn2.0.2.x86_64
Verifying : modutil-bdb-1.6.3-1.amzn2.0.1.x86_64
Verifying : mailcap-2.1.41-2.amzn2.noarch
Verifying : generic-logos-httdp-18.0.0-4.amzn2.noarch
Verifying : httpd-tools-2.4.62-1.amzn2.0.2.x86_64
Verifying : httpd-filesystem-2.4.62-1.amzn2.0.2.noarch
Installed:
  httpd.x86_64 0:2.4.62-1.amzn2.0.2

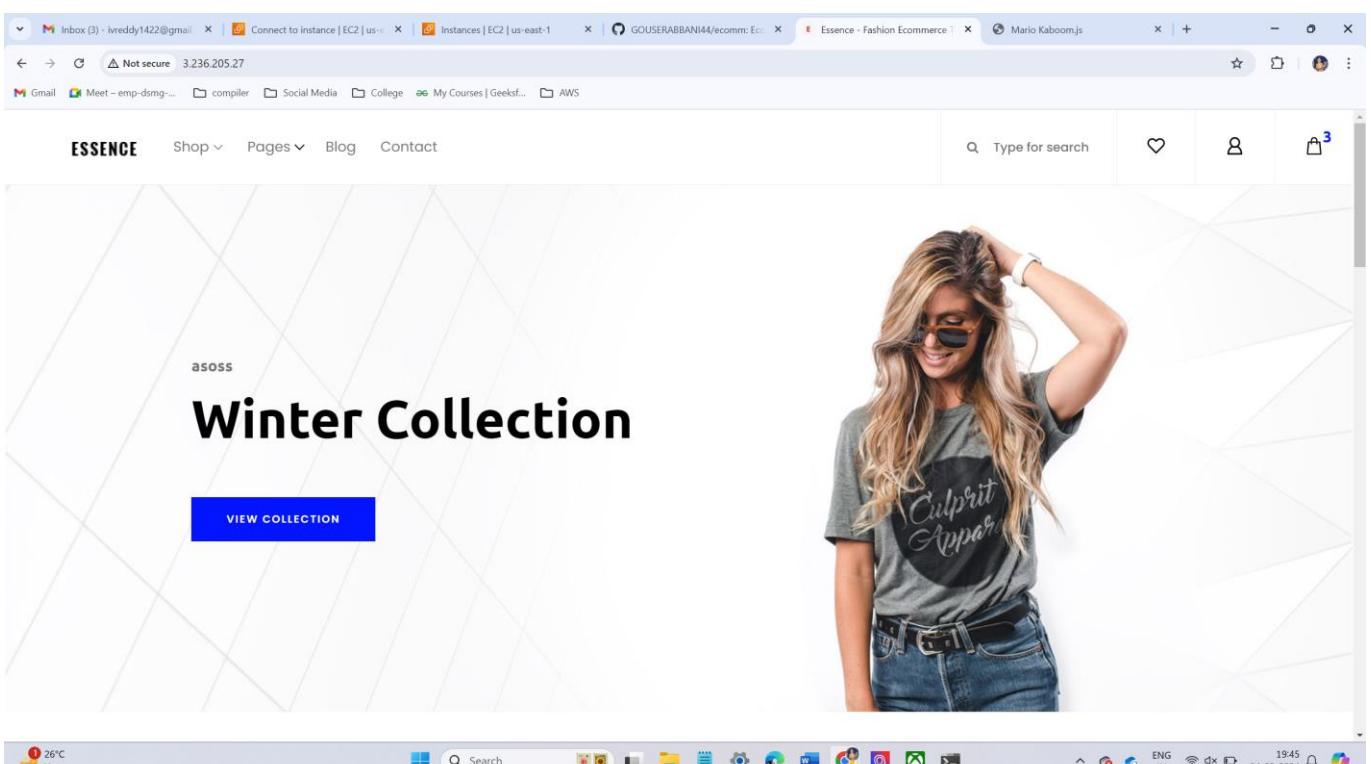
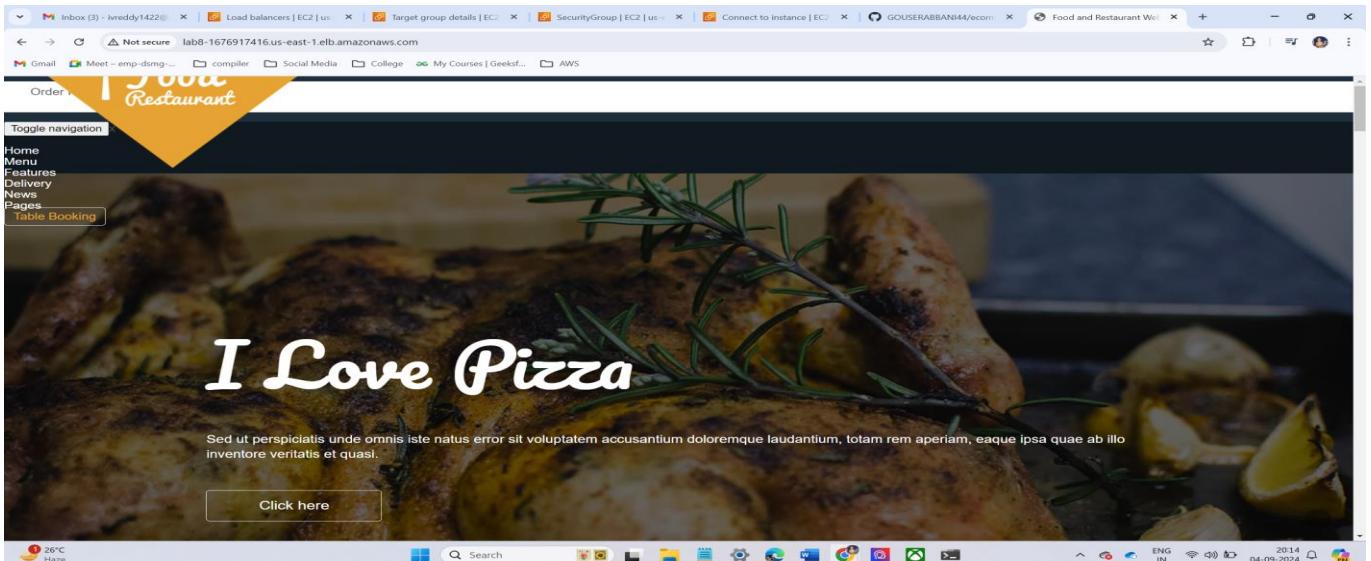
Dependency Installed:
  apr.x86_64 0:1.7.2-1.amzn2           apr-util.x86_64 0:1.6.3-1.amzn2.0.1   apr-util-bdb.x86_64 0:1.6.3-1.amzn2.0.1   generic-logos-httdp.noarch 0:18.0.0-4.amzn2
  httpd-filesystem.noarch 0:2.4.62-1.amzn2.0.2   httpd-tools.x86_64 0:2.4.62-1.amzn2.0.2   mailcap.noarch 0:2.1.41-2.amzn2
  mod_http2.x86_64 0:1.15.19-1.amzn2.0.2

Complete!
[ec2-user@ip-172-31-6-53 ~]$ sudo systemctl start httpd
[ec2-user@ip-172-31-6-53 ~]$ sudo systemctl enable httpd
Created symlink from /etc/systemd/system/multi-user.target.wants/httpd.service to /usr/lib/systemd/system/httpd.service.
[ec2-user@ip-172-31-6-53 ~]$ sudo systemctl status httpd
● httpd.service - The Apache HTTP Server
  Loaded: loaded (/usr/lib/systemd/system/httpd.service; enabled; vendor preset: disabled)
  Active: active (running) since Wed Sep 04 2024-09-04 14:11:35 UTC; 14s ago
    Docs: man:httpd.service(8)
Main PID: 3423 (httpd)
  Status: "Total requests: 0; Idle/Busy workers 100/0;Requests/sec: 0; Bytes served/sec: 0 B/sec"
 CGroup: /system.slice/httpd.service
        ├─3423 /usr/sbin/httpd -DFOREGROUND
        ├─3424 /usr/sbin/httpd -DFOREGROUND
        ├─3425 /usr/sbin/httpd -DFOREGROUND
        ├─3426 /usr/sbin/httpd -DFOREGROUND
        ├─3427 /usr/sbin/httpd -DFOREGROUND
        └─3428 /usr/sbin/httpd -DFOREGROUND

Sep 04 14:11:34 ip-172-31-6-53.ec2.internal systemd[1]: Starting The Apache HTTP Server...
Sep 04 14:11:35 ip-172-31-6-53.ec2.internal systemd[1]: Started The Apache HTTP Server.
[ec2-user@ip-172-31-6-53 ~]$ 

```

- The two servers are hosted successfully.



- Create a load balancer.
- Choose application load balancer.
- Configure the load balancer, name of the load balancer, scheme internet-facing, Listeners http on port 80,vpc choose default vpc availability zones : select the instances availability zones.

Basic configuration

Load balancer name
Name must be unique within your AWS account and can't be changed after the load balancer is created.

A maximum of 32 alphanumeric characters including hyphens are allowed, but the name must not begin or end with a hyphen.

Scheme [Info](#)
Scheme can't be changed after the load balancer is created.
 Internet-facing
An internet-facing load balancer routes requests from clients over the internet to targets. Requires a public subnet. [Learn more](#)
 Internal
An internal load balancer routes requests from clients to targets using private IP addresses. Compatible with the IPv4 and Dualstack IP address types.

Load balancer IP address type [Info](#)
Select the front-end IP address type to assign to the load balancer. The VPC and subnets mapped to this load balancer must include the selected IP address types. Public IPv4 addresses have an additional cost.
 IPv4
Includes only IPv4 addresses.
 Dualstack
Includes IPv4 and IPv6 addresses.
 Dualstack without public IPv4
Includes a public IPv6 address, and private IPv4 and IPv6 addresses. Compatible with **internet-facing** load balancers only.

Network mapping [Info](#)
The load balancer routes traffic to targets in the selected subnets, and in accordance with your IP address settings.

VPC [Info](#)
The load balancer will exist and scale within the selected VPC. The selected VPC is also where the load balancer targets must be hosted unless routing to Lambda or on-premises targets, or if using VPC peering. To confirm the VPC for your targets, view [target groups](#). For a new VPC, [create a VPC](#).

vpc-07c472b50c6ec4ff6
IPv4 VPC CIDR: 172.31.0.0/16

Mappings [Info](#)
Select at least two Availability Zones and one subnet per zone. The load balancer routes traffic to targets in these Availability Zones only. Availability Zones that are not supported by the load balancer or the VPC are not available for selection.

Availability Zones
 us-east-1a (use1-az4)
Subnet

 IPv4 subnet CIDR: 172.31.16.0/20

us-east-1b (use1-az6)
Subnet

Security groups Info

A security group is a set of firewall rules that control the traffic to your load balancer. Select an existing security group, or you can [create a new security group](#).

Security groups

Select up to 5 security groups

default sg-06c94ecdd597c8a68 VPC: vpc-07c472b50c6ec4ff6 **LAB8** sg-0cff5dd44538f88ed VPC: vpc-07c472b50c6ec4ff6

Listeners and routing Info

A listener is a process that checks for connection requests using the port and protocol you configure. The rules that you define for a listener determine how the load balancer routes requests to its registered targets.

Listener HTTP:80

Protocol	Port	Default action	Info
HTTP	:80 1-65535	Forward to	lab8 Target type: Instance, IPv4
Create target group			

Listener tags - optional

Consider adding tags to your listener. Tags enable you to categorize your AWS resources so you can more easily manage them.

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Successfully created load balancer: LAB8

It might take a few minutes for your load balancer to fully set up and route traffic. Targets will also take a few minutes to complete the registration process and pass initial health checks.

EC2 Dashboard **EC2 Global View** **Events** **Console-to-Code** [Preview](#)

Instances

- Instances
- Instance Types
- Launch Templates
- Spot Requests
- Savings Plans
- Reserved Instances
- Dedicated Hosts
- Capacity
- Reservations [New](#)

Images

- AMIs
- AMI Catalog

Elastic Block Store

- Volumes
- Snapshots

EC2 [Load balancers](#) **LAB8**

Details

Load balancer type	Status	VPC	Load balancer IP address type
Application	Provisioning	vpc-07c472b50c6ec4ff6	IPv4
Scheme	Hosted zone	Availability Zones	Date created
Internet-facing	Z35SXDOTRQ7X7K	subnet-0b4b5b4cf28dbac37 us-east-1c (use1-az1)	September 4, 2024, 19:50 (UTC+05:30)
		subnet-0ca8501655d19b9b1 us-east-1a (use1-az4)	
		subnet-0ef0a58abe3a81fe2 us-east-1d (use1-az2)	
		subnet-0c5fb3a474eb381cb us-east-1f (use1-az5)	
		subnet-0f2d928532e2f3ca us-east-1e (use1-az3)	

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- Access the load balancer link over the browser and hit it a couple of times. Check if the webpages (nginx/Apache) are visible alternatively)

Inbox (3) · ivreddy1422@gmail.com | Load balancers | EC2 | us-east-1 | Target group details | EC2 | us-east-1 | SecurityGroup | EC2 | us-east-1 | Connect to instance | EC2 | us-east-1 | Gouserabbani44/ecommerce | Essence - Fashion Ecomm

Not secure lab8-1676917416.us-east-1.elb.amazonaws.com

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Inbox (3) · ivreddy1422@gmail.com | Load balancers | EC2 | us-east-1 | Target group details | EC2 | us-east-1 | SecurityGroup | EC2 | us-east-1 | Connect to instance | EC2 | us-east-1 | Gouserabbani44/ecommerce | Food and Restaurant Website

Not secure lab8-1676917416.us-east-1.elb.amazonaws.com

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Order Now! I Love Pizza Restaurant

Toggle navigation

- Home
- Menu
- Features
- Delivery
- News
- Pages
- Table Booking

I Love Pizza

Sed ut perspiciatis unde omnis iste natus error sit voluptatem accusantium doloremque laudantium, totam rem aperiam, eaque ipsa quae ab illo inventore veritatis et quasi.

Click here

26°C Haze

Search

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LAB – 9 – Auto Scaling Group and Launch Templates

- Create a launch template with Ubuntu Server.
 - Navigate to EC2 dashboard
 - On the left-hand menu, click **Launch Templates** under **Instances**.
 - Click on **Create launch template**.
 - Fill in the required details
 - **Launch template name:** Ubuntu-Server-Template

The screenshot shows the 'Create launch template' wizard on the AWS EC2 console. The current step is 'Launch template name and description'. The 'Launch template name - required' field contains 'Ubuntu-Server-Template'. A note below it states: 'Must be unique to this account. Max 128 chars. No spaces or special characters like '&', ',', '@'.' The 'Template version description' field contains 'A proud my app'. Below these fields are sections for 'Auto Scaling guidance' (checkbox for 'Provide guidance to help me set up a template that I can use with EC2 Auto Scaling') and 'Template tags' and 'Source template' options. To the right, a 'Summary' panel shows the selected software image (Ubuntu Server 20.04 LTS (HVM)), virtual server type (t2.micro), and storage (1 volume(s) - 8 GiB). A tooltip for the free tier is displayed, stating: 'Free tier: In your first year includes 750 hours of t2.micro (or t3.micro in the Regions in which t2.micro is unavailable) instance usage on free tier AMIs per month, 750 hours of public IPv4 address usage per month, 30 GiB of EBS storage, 2 million IOs, 1 GB of snapshots, and 100 GB of bandwidth to the internet.'

- **AMI:Ubuntu**

The screenshot shows the 'Search for AMI' interface on the AWS EC2 console. The search bar at the top contains 'Ubuntu Server 20.04 LTS (HVM)'. The results table shows one item: 'Ubuntu Server 20.04 LTS (HVM) with SQL Server 2022 Standard'. The table includes columns for Name, Description, Image ID, Catalog, Published, Architecture, Virtualization, Root device type, and ENA Enabled. The 'Name' row shows 'Ubuntu Server 20.04 LTS (HVM) with SQL Server 2022 Standard'. The 'Description' row shows 'Microsoft SQL Server 2022 Standard edition on Ubuntu Server 20.04 LTS.'. The 'Image ID' row shows 'ami-032346ab877c418af'. The 'Catalog' row shows 'Quick Start AMIs'. The 'Published' row shows '2023-10-17T19:29:14.00'. The 'Architecture' row shows 'x86_64'. The 'Virtualization' row shows 'hvm'. The 'Root device type' row shows 'ebs'. The 'ENA Enabled' row shows 'Yes'. To the right, a 'Summary' panel shows the selected software image (Ubuntu Server 20.04 LTS (HVM)), virtual server type (t2.micro), and storage (1 volume(s) - 8 GiB). A tooltip for the free tier is displayed, stating: 'Free tier: In your first year includes 750 hours of t2.micro (or t3.micro in the Regions in which t2.micro is unavailable) instance usage on free tier AMIs per month, 750 hours of public IPv4 address usage per month, 30 GiB of EBS storage, 2 million IOs, 1 GB of snapshots, and 100 GB of bandwidth to the internet.'

- Instance type: **t2.micro**
- Key pair: select key pair.

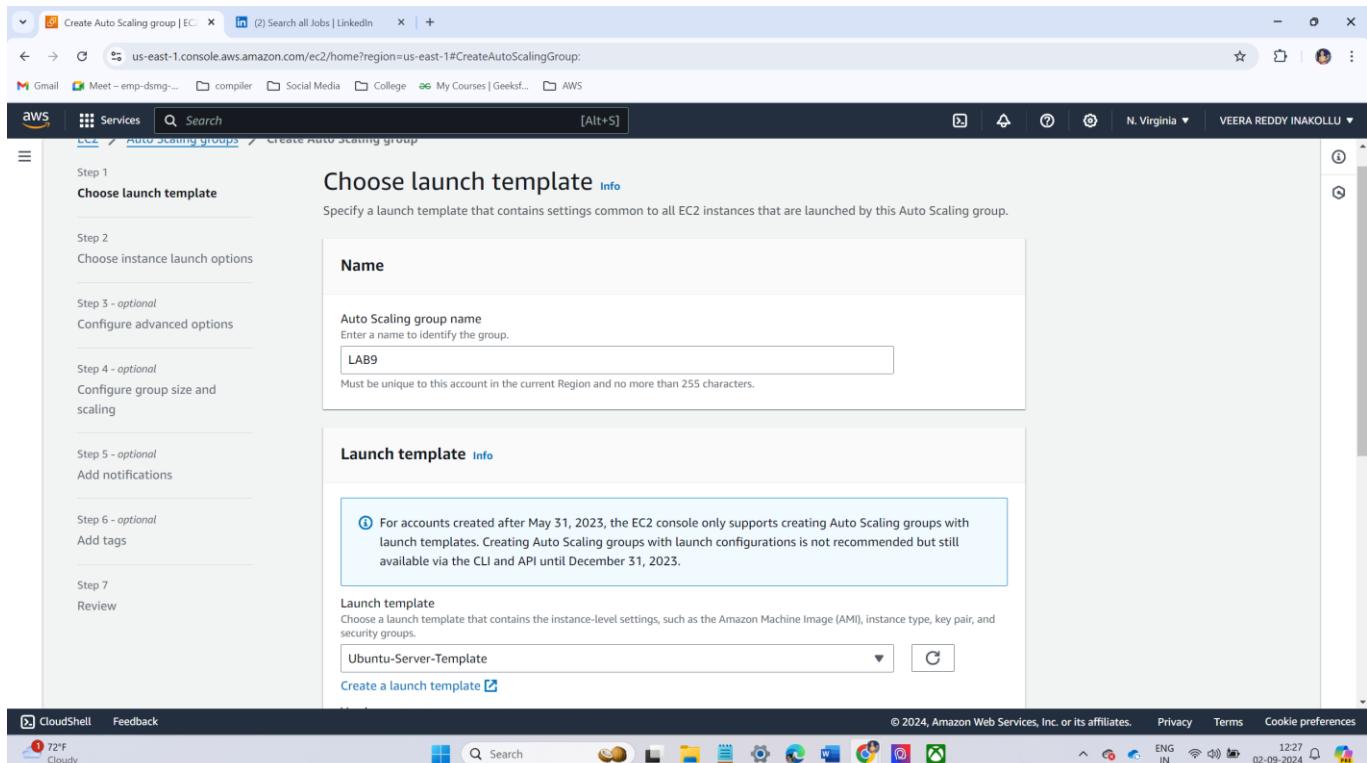
The screenshot shows the AWS EC2 'Create launch template' page. In the 'Instance type' section, 't2.micro' is selected. Under 'Key pair (login)', 'devops' is chosen. In the 'Network settings' section, there's a note about free tier usage. The right side displays a 'Summary' panel with software image details, virtual server type (t2.micro), firewall (New security group), and storage (1 volume - 8 GiB).

- Security groups: choose your choice that you want required.

The screenshot shows the AWS EC2 'Create launch template' page with a focus on security groups. A new security group named 'LAB9' is being created. It has an inbound rule allowing SSH traffic from anywhere. The right side shows a summary of the selected AMI, instance type (t2.micro), and storage.

- Click create template.

- Create Auto Scaling Group
- Navigate to the **Auto Scaling Groups** section under **EC2**.
- Click **Create Auto Scaling group**.
- Select the **Launch Template** created template.



- Set the **Auto Scaling Group name** and choose a **VPC** and **Subnets** where the instances should launch.
- Configure the **Desired Capacity**:
 - **Min Capacity:** 1
 - **Max Capacity:** 2
- Review and click **Create Auto Scaling group**.
- Change Max Capacity and Verify Instance Launching
- AWS will launch new instances to meet the updated capacity.

The screenshot shows the AWS EC2 Instances page. The left sidebar includes options like EC2 Dashboard, EC2 Global View, Events, Console-to-Code, Instances (selected), Instance Types, Launch Templates, Spot Requests, Savings Plans, Reserved Instances, Dedicated Hosts, Capacity Reservations, Images, AMIs, and AMI Catalog. The main content area displays a table of instances with columns for Name, Instance ID, Instance state, Instance type, Status check, Alarm status, and Availability Zone. There are four instances listed: one pending, one initializing, and two running.

LAB – 10 - PROVISION AN RDS INSTANCE (MYSQL)

- Choose **standard create** and **MySQL**.
- Configuration Settings
- Configure instance size db.t3.micro.
- Choose VPC and subnets.

The screenshot shows the AWS RDS MySQL creation wizard. It starts with a choice between "Standard create" (selected) and "Easy create". The "Standard create" option allows setting all configuration options, including availability, security, backups, and maintenance. The "Easy create" option uses recommended best-practice configurations. Below this, there's a section for "Engine options" where "MySQL" is selected (radio button is checked). Other options shown include Aurora (MySQL Compatible), Aurora (PostgreSQL Compatible), MariaDB, PostgreSQL, and Oracle. To the right, there's a detailed description of MySQL and a list of its features:

MySQL

MySQL is the most popular open source database in the world. MySQL on RDS offers the rich features of the MySQL community edition with the flexibility to easily scale compute resources or storage capacity for your database.

- Supports database size up to 64 TiB.
- Supports General Purpose, Memory Optimized, and Burstable Performance instance classes.
- Supports automated backup and point-in-time recovery.
- Supports up to 15 Read Replicas per instance, within a single Region or 5 read replicas cross-region.

Console Home | Console Home x RDS | us-east-1 x + us-east-1.console.aws.amazon.com/rds/home?region=us-east-1#launch-dbinstance:

Gmail Meet – emp-dsmg... compiler Social Media College My Courses | Geeks... AWS

AWS Services Search [Alt+S]

MySQL

DB instance class Info

▼ Hide filters

Show instance classes that support Amazon RDS Optimized Writes [Info](#)
Amazon RDS Optimized Writes improves write throughput by up to 2x at no additional cost.

Include previous generation classes

Standard classes (includes m classes)

Memory optimized classes (includes r and x classes)

Burstable classes (includes t classes)

db.t3.micro
2 vCPUs 1 GiB RAM Network: 2,085 Mbps

Storage

Storage type [Info](#)
Provisioned IOPS SSD (io2) storage volumes are now available.

General Purpose SSD (gp2)
Baseline performance determined by volume size

Allocated storage [Info](#)
20 GiB
The minimum value is 20 GiB and the maximum value is 6,144 GiB

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Console Home | Console Home x RDS | us-east-1 x + us-east-1.console.aws.amazon.com/rds/home?region=us-east-1#launch-dbinstance:

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AWS Services Search [Alt+S]

MySQL

Connectivity Info

Compute resource
Choose whether to set up a connection to a compute resource for this database. Setting up a connection will automatically change connectivity settings so that the compute resource can connect to this database.

Don't connect to an EC2 compute resource
Don't set up a connection to a compute resource for this database. You can manually set up a connection to a compute resource later.

Connect to an EC2 compute resource
Set up a connection to an EC2 compute resource for this database.

Virtual private cloud (VPC) [Info](#)
Choose the VPC. The VPC defines the virtual networking environment for this DB instance.

Default VPC (vpc-07c472b50c6ec4ff6)
6 Subnets, 6 Availability Zones

Only VPCs with a corresponding DB subnet group are listed.

After a database is created, you can't change its VPC.

DB subnet group [Info](#)
Choose the DB subnet group. The DB subnet group defines which subnets and IP ranges the DB instance can use in the VPC that you selected.

default

Public access [Info](#)
 Yes
RDS assigns a public IP address to the database. Amazon EC2 instances and other resources outside of the VPC can connect to your database. Resources inside the VPC can also connect to the database. Choose one or more VPC security groups that specify which resources can connect to the database.

No

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➤ Database Created Successfully.

The screenshot shows the AWS RDS console in the us-east-1 region. A green banner at the top says "Successfully created database lab10". Below it, a message encourages creating a Blue/Green deployment. The main table lists one database, "lab10", which is currently "Backing-up". The table includes columns for DB identifier, Status, Role, Engine, Region &..., Size, and Recommendations. The "Create database" button is visible at the top right of the table area.

➤ Open MySQL Port in the Connected Security Group (SG)

The screenshot shows the AWS EC2 Security Groups console. A new security group named "LAB10" is being created. The "Basic details" section shows the name "LAB10" and a description "allow 3306port". The "VPC Info" dropdown is set to "vpc-07c472b50c6ec4ff6". The "Inbound rules" section contains a single rule: "Type: MySQL/Aurora", "Protocol: TCP", "Port range: 3306", "Source: Anywhere", and "Description: 0.0.0.0/X". An "Add rule" button is visible at the bottom left of the rule table.

➤ Launch EC2 instance

The screenshot shows the AWS Management Console with the EC2 Instances page open. On the left, there's a navigation sidebar with sections like EC2 Dashboard, EC2 Global View, Events, Instances (selected), Instance Types, Launch Templates, Spot Requests, Savings Plans, Reserved Instances, Dedicated Hosts, Capacity, and Reservations. Below that are Images, AMIs, and AMI Catalog. Further down are Elastic Block Store, Volumes, and Snapshots. At the bottom of the sidebar is a feedback section. The main content area shows a table with one row for 'LAB10'. The columns include Name (LAB10), Instance ID (i-08eba042af557636e), Instance state (Running), Instance type (t2.micro), Status check (Initializing), Alarm status (View alarms), and Availability Zone (us-east-1d). A search bar at the top says 'Find Instance by attribute or tag (case-sensitive)' and a dropdown says 'All states'. At the top right, there are buttons for 'Launch instances' and other actions. The status bar at the bottom indicates it's from 03-09-2024.

- Connect EC2 instance using ssh command.
- Install MySQL client in ec2 instance.

```
ec2-user@ip-172-31-16-14: ~ + - Microsoft Windows [Version 10.0.22631.4037]
(c) Microsoft Corporation. All rights reserved.

C:\Users\jawah>cd Socialprachar
C:\Users\jawah\Socialprachar>cd "veera reddy"
C:\Users\jawah\Socialprachar\veera reddy>cd keys

C:\Users\jawah\Socialprachar\veera reddy>ssh -i "devops.pem" ec2-user@ec2-100-26-110-122.compute-1.amazonaws.com
The authenticity of host 'ec2-100-26-110-122.compute-1.amazonaws.com (64:ff9b:641a:6e7a)' can't be established.
ED25519 key fingerprint is SHA256:bt5QnDcyvaiIsfPPMmtOxh90gE/IAS083gcDW2qJ+o.
This key is not known by any other names
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added 'ec2-100-26-110-122.compute-1.amazonaws.com' (ED25519) to the list of known hosts.

#_
  _###_      Amazon Linux 2
  _\####_ 
  _\###_|     AL2 End of Life is 2025-06-30.
  _\#_--_
  _\#_V-->
  _/_A newer version of Amazon Linux is available!
  _/_Amazon Linux 2023, GA and supported until 2028-03-15.
  _/_https://aws.amazon.com/linux/amazon-linux-2023/
[ec2-user@ip-172-31-16-14 ~]$ sudo yum install mysql
Loaded plugins: extras_suggestions, langpacks, priorities, update-motd
Resolving Dependencies
--> Running transaction check
--> Package mariadb.x86_64 1:5.5.68-1.amzn2.0.1 will be installed
--> Finished Dependency Resolution

Dependencies Resolved

=====
Package          Arch        Version           Repository      Size
=====
Installing:
mariadb         x86_64     1:5.5.68-1.amzn2.0.1      amzn2-core    8.8 M

Transaction Summary
=====
Install 1 Package

Total download size: 8.8 M

75°F Cloudy
```

- Connect to the RDS MySQL Instance using command mysql -h <RDS-endpoint> -u <master-username> -p

The screenshot shows a terminal window titled "Dependencies Resolved" on a Linux system. It displays the process of installing the MariaDB package:

```
Dependencies Resolved
=====
Package          Arch      Version           Repository      Size
=====
Installing:
mariadb          x86_64    1:5.5.68-1.amzn2.0.1      amzn2-core      8.8 M
=====
Transaction Summary
=====
Install 1 Package
=====
Total download size: 8.8 M
Installed size: 49 M
Is this ok [y/d/N]: y
Downloading packages:
mariadb-5.5.68-1.amzn2.0.1.x86_64.rpm | 8.8 MB  00:00:00
Running transaction check
Running transaction test
Transaction test succeeded
Running transaction
  Installing : 1:mariadb-5.5.68-1.amzn2.0.1.x86_64      1/1
  Verifying   : 1:mariadb-5.5.68-1.amzn2.0.1.x86_64      1/1
=====
Installed:
  mariadb.x86_64 1:5.5.68-1.amzn2.0.1
=====
Complete!
[ec2-user@ip-172-31-16-14 ~]$ mysql -h lab10.cpwk62gwgqsg.us-east-1.rds.amazonaws.com -u admin -p
Enter password:
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MySQL connection id is 42
Server version: 8.0.35 Source distribution
Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.
Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.
MySQL [(none)]> |
```

The terminal also shows the connection to an RDS MySQL instance at `lab10.cpwk62gwgqsg.us-east-1.rds.amazonaws.com` with user `admin`.