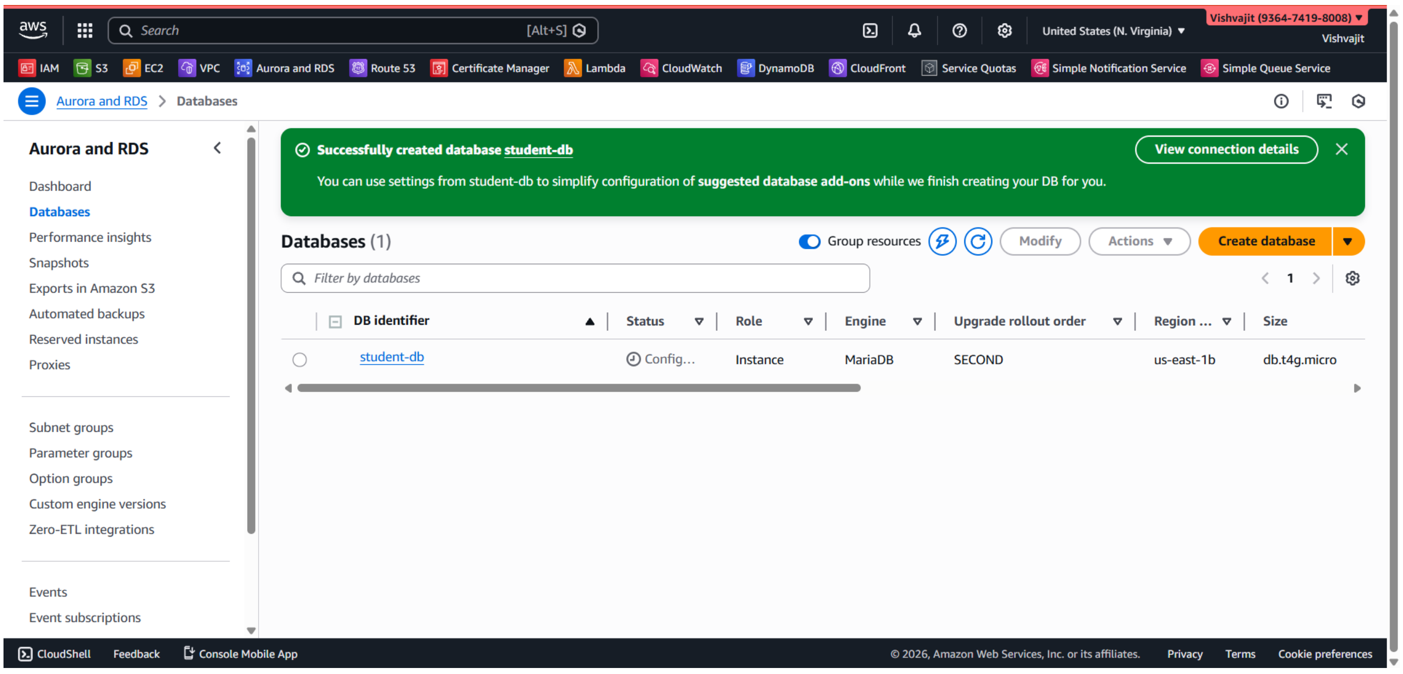
Task

Application deploy using load balancer and auto scaling

First, I need a database that store the user details so I created a student-db using RDS service in that I choose mariadb database engine


aws
Search [Alt+S]
United States (N. Virginia)
Vishvajit (9364-7419-8008)
Vishvajit
IAM S3 EC2 VPC Aurora and RDS Route 53 Certificate Manager Lambda CloudWatch DynamoDB CloudFront Service Quotas Simple Notification Service Simple Queue Service
Aurora and RDS > Databases
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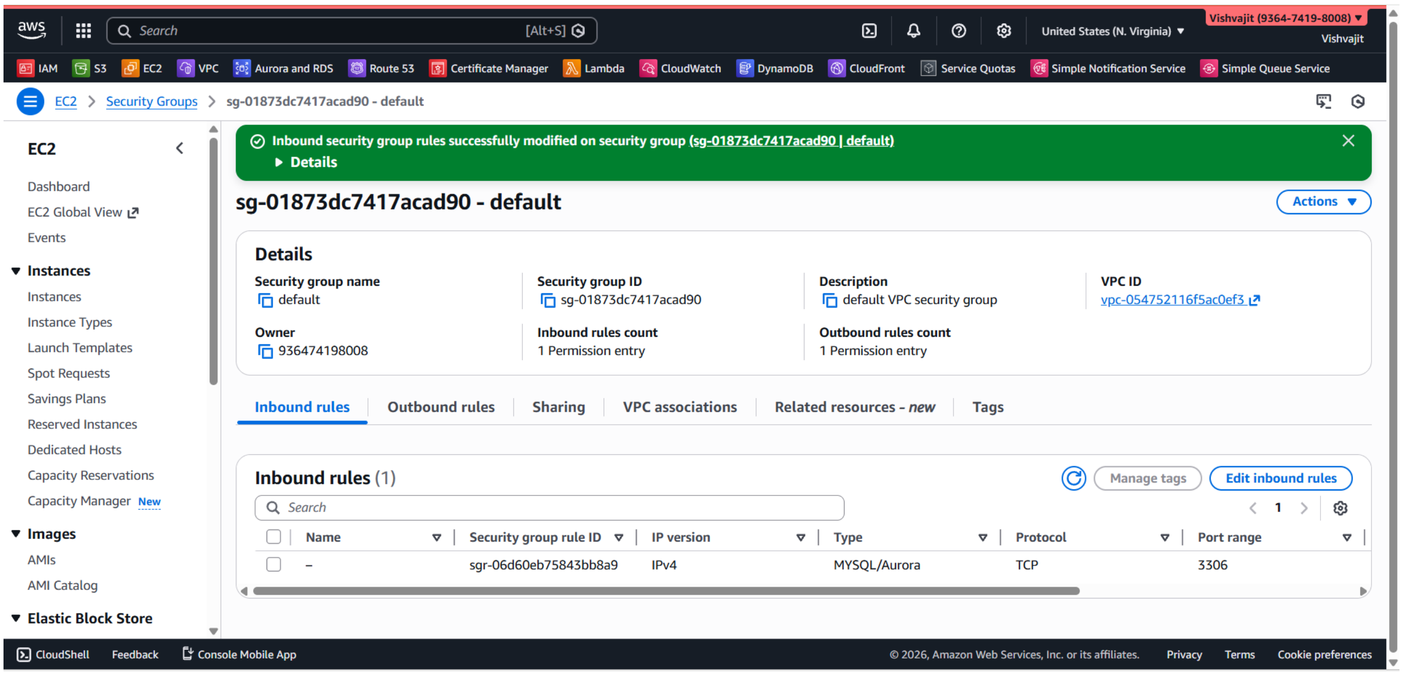
Successfully created database student-db

You can use settings from student-db to simplify configuration of **suggested database add-ons** while we finish creating your DB for you.

Databases (1)

DB identifier	Status	Role	Engine	Upgrade rollout order	Region ...	Size
student-db	Config...	Instance	MariaDB	SECOND	us-east-1b	db.t4g.micro

After creating the database we need to allow 3306 port in the security group


aws
Search [Alt+S]
United States (N. Virginia)
Vishvajit (9364-7419-8008)
Vishvajit
IAM S3 EC2 VPC Aurora and RDS Route 53 Certificate Manager Lambda CloudWatch DynamoDB CloudFront Service Quotas Simple Notification Service Simple Queue Service
EC2 > Security Groups > sg-01873dc7417acad90 - default
EC2
Dashboard
EC2 Global View
Events
Instances
Instances
Instance Types
Launch Templates
Spot Requests
Savings Plans
Reserved Instances
Dedicated Hosts
Capacity Reservations
Capacity Manager New
Images
AMIs
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Elastic Block Store
Actions
Inbound rules Outbound rules Sharing VPC associations Related resources - new Tags
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Edit inbound rules
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Inbound security group rules successfully modified on security group (sg-01873dc7417acad90 | default)

Details

sg-01873dc7417acad90 - default

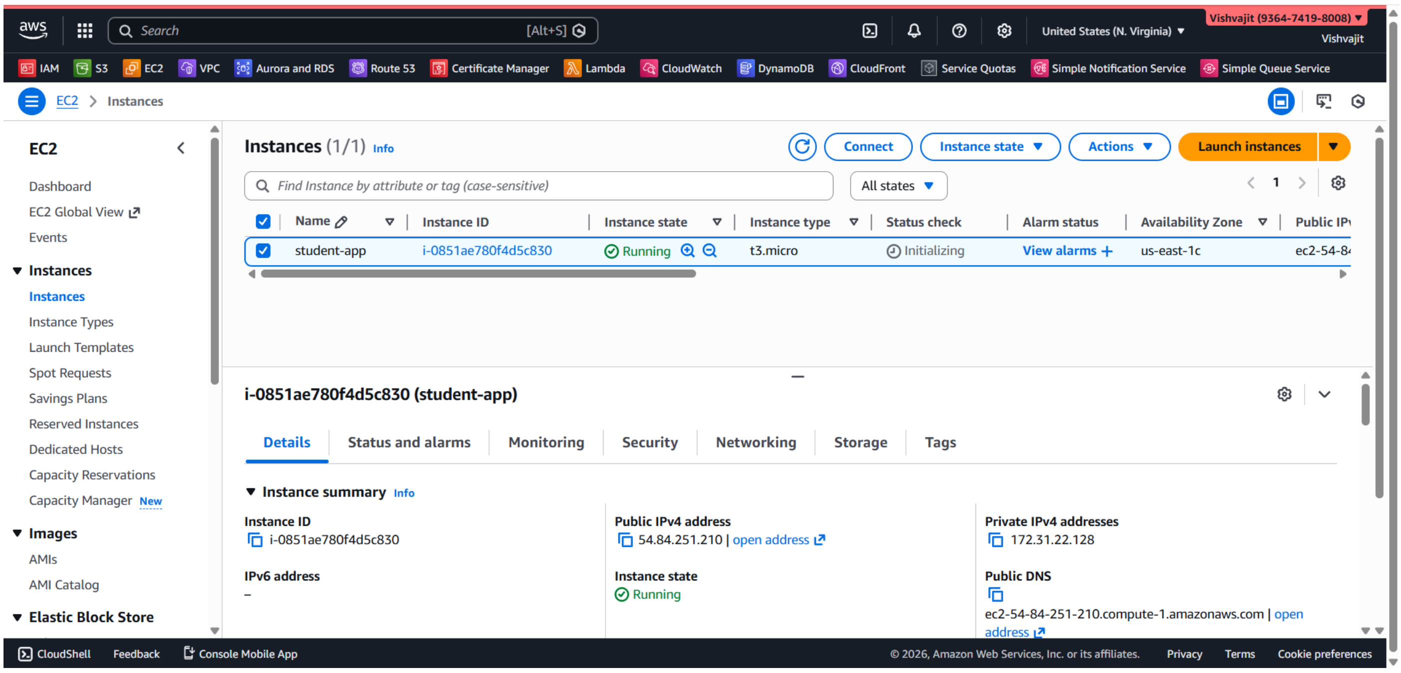
Details

Security group name: default	Security group ID: sg-01873dc7417acad90	Description: default VPC security group	VPC ID: vpc-054752116f5ac0ef3
Owner: 936474198008	Inbound rules count: 1 Permission entry	Outbound rules count: 1 Permission entry	

Inbound rules (1)

Name	Security group rule ID	IP version	Type	Protocol	Port range
–	sgr-06d60eb75843bb8a9	IPv4	MYSQL/Aurora	TCP	3306

Then I am going to create instance to host application and install docker



Instances (1/1) Info

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IP
student-app	i-0851ae780f4d5c830	Running	t3.micro	Initializing	View alarms +	us-east-1c	ec2-54-8

i-0851ae780f4d5c830 (student-app)

Instance summary Info

Instance ID: i-0851ae780f4d5c830

Public IPv4 address: 54.84.251.210 | open address

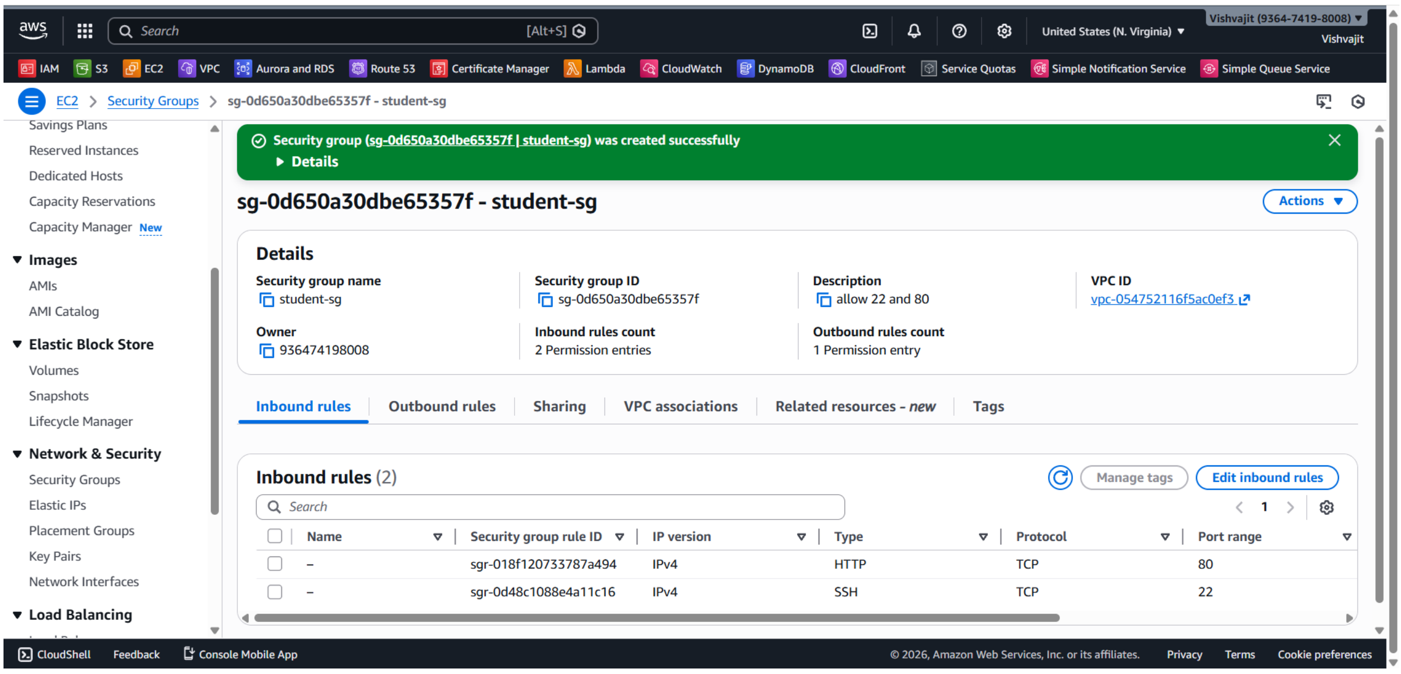
Private IPv4 addresses: 172.31.22.128

IPv6 address: –

Instance state: Running

Public DNS: ec2-54-84-251-210.compute-1.amazonaws.com | open address

After creating the instance i edit the security group and allow port 80 and 22 is allow by default.



Security group (sg-0d650a30dbe65357f | student-sg) was created successfully
▸ Details

sg-0d650a30dbe65357f - student-sg

Details

Security group name: student-sg

Security group ID: sg-0d650a30dbe65357f

Description: allow 22 and 80

VPC ID: vpc-054752116f5ac0ef3

Owner: 936474198008

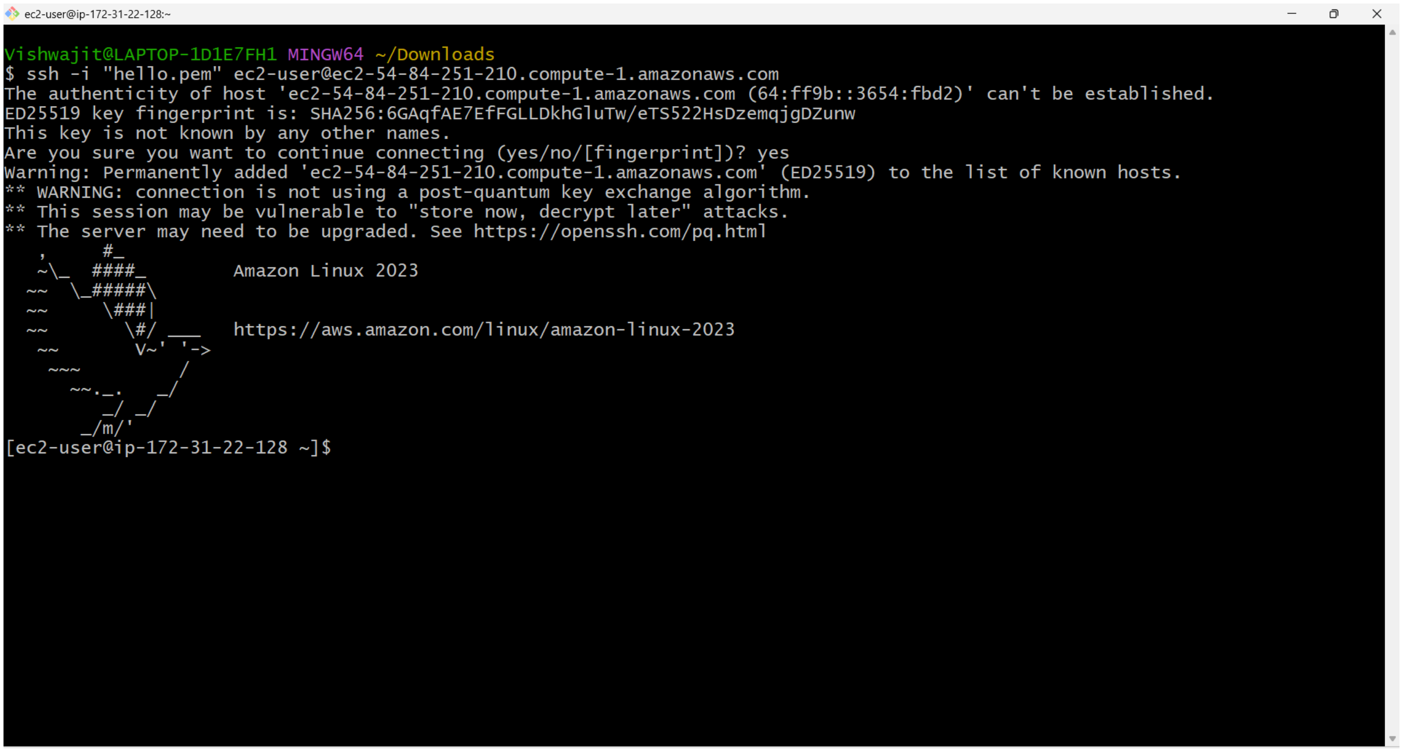
Inbound rules count: 2 Permission entries

Outbound rules count: 1 Permission entry

Inbound rules (2)

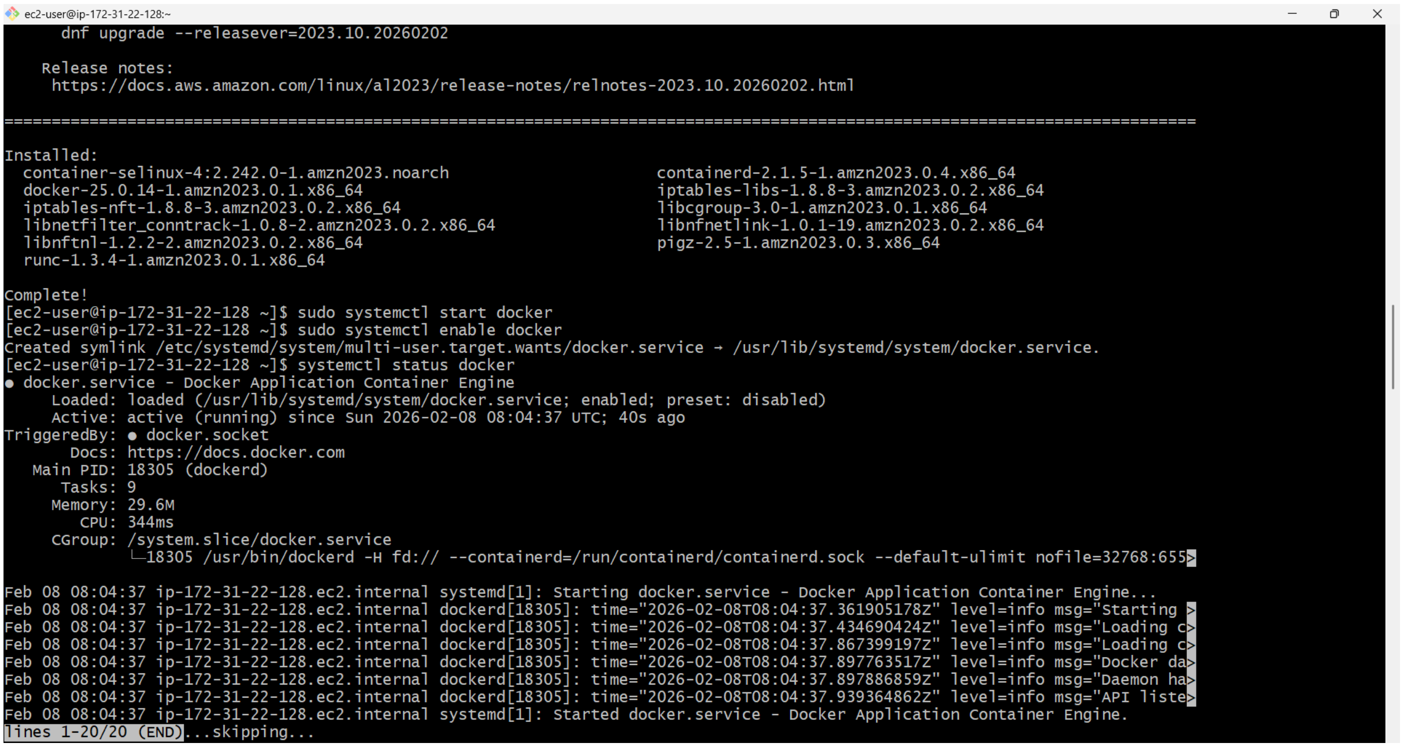
Name	Security group rule ID	IP version	Type	Protocol	Port range
–	sgr-018f120733787a494	IPv4	HTTP	TCP	80
–	sgr-0d48c1088e4a11c16	IPv4	SSH	TCP	22

Then I connect the ec2 instance using git tool.


ec2-user@ip-172-31-22-128:~

```
Vishwajit@LAPTOP-1D1E7FH1 MINGW64 ~/Downloads
$ ssh -i "hello.pem" ec2-user@ec2-54-84-251-210.compute-1.amazonaws.com
The authenticity of host 'ec2-54-84-251-210.compute-1.amazonaws.com (64:ff9b::3654:fbd2)' can't be established.
ED25519 key fingerprint is: SHA256:6GAqfAE7EfFGLLDkhGluTw/eTS522HsDzemqjgDZunw
This key is not known by any other names.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added 'ec2-54-84-251-210.compute-1.amazonaws.com' (ED25519) to the list of known hosts.
** WARNING: connection is not using a post-quantum key exchange algorithm.
** This session may be vulnerable to "store now, decrypt later" attacks.
** The server may need to be upgraded. See https://openssh.com/pq.html
   ,     #_
   ~\_  ####_        Amazon Linux 2023
  ~~  \_#####\
  ~~     \###|
  ~~       \#/ ___   https://aws.amazon.com/linux/amazon-linux-2023
   ~~       V~' '->
    ~~~         /
      ~~._.   _/
         _/ _/
       _/m/'
[ec2-user@ip-172-31-22-128 ~]$
```

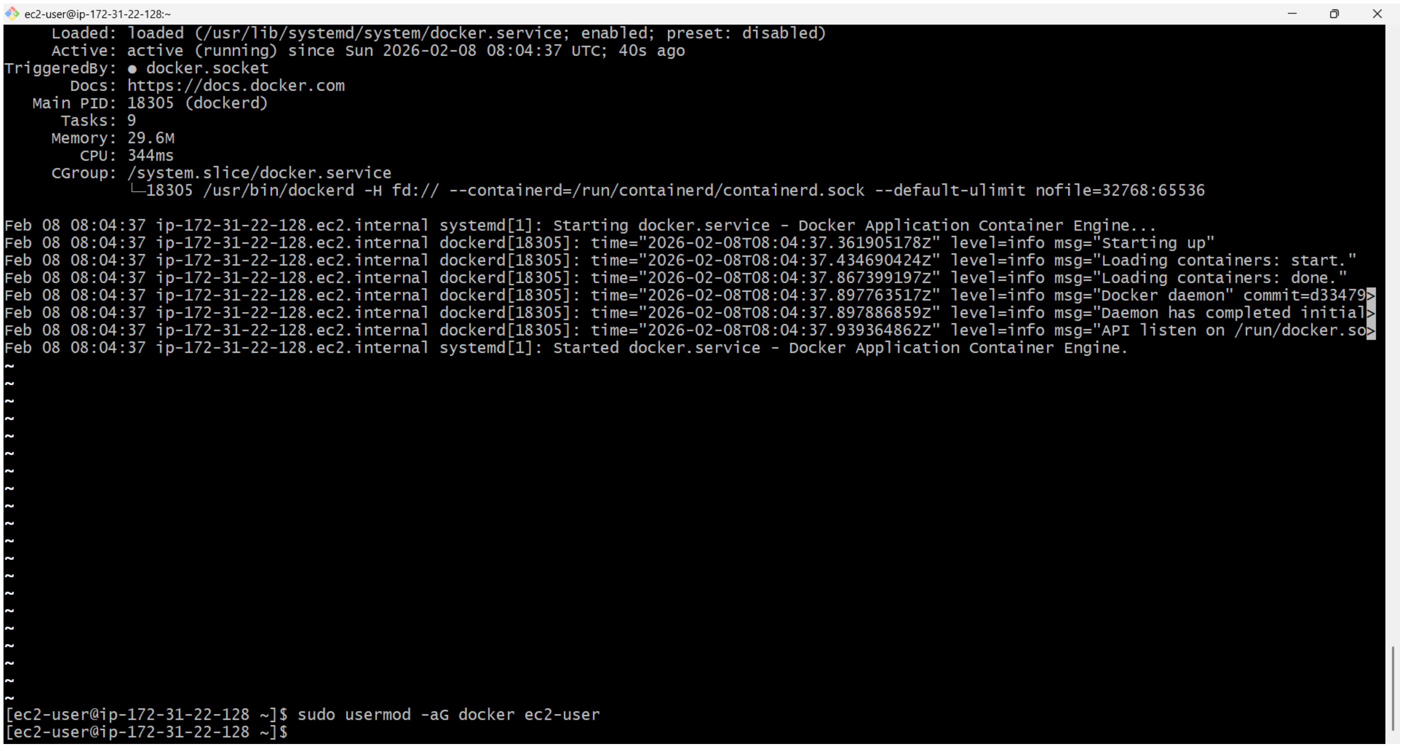
After that I update the system first, then install the docker, start and enable the docker using yum package manager.


ec2-user@ip-172-31-22-128:~

```
     dnf upgrade --releasever=2023.10.20260202

   Release notes:
    https://docs.aws.amazon.com/linux/al2023/release-notes/relnotes-2023.10.20260202.html

===================================================================================================================

Installed:
  container-selinux-4:2.242.0-1.amzn2023.noarch                    containerd-2.1.5-1.amzn2023.0.4.x86_64
  docker-25.0.14-1.amzn2023.0.1.x86_64                             iptables-libs-1.8.8-3.amzn2023.0.2.x86_64
  iptables-nft-1.8.8-3.amzn2023.0.2.x86_64                         libcgroup-3.0-1.amzn2023.0.1.x86_64
  libnetfilter_conntrack-1.0.8-2.amzn2023.0.2.x86_64               libnfnetlink-1.0.1-19.amzn2023.0.2.x86_64
  libnftnl-1.2.2-2.amzn2023.0.2.x86_64                             pigz-2.5-1.amzn2023.0.3.x86_64
  runc-1.3.4-1.amzn2023.0.1.x86_64

Complete!
[ec2-user@ip-172-31-22-128 ~]$ sudo systemctl start docker
[ec2-user@ip-172-31-22-128 ~]$ sudo systemctl enable docker
Created symlink /etc/systemd/system/multi-user.target.wants/docker.service → /usr/lib/systemd/system/docker.service.
[ec2-user@ip-172-31-22-128 ~]$ systemctl status docker
● docker.service - Docker Application Container Engine
     Loaded: loaded (/usr/lib/systemd/system/docker.service; enabled; preset: disabled)
     Active: active (running) since Sun 2026-02-08 08:04:37 UTC; 40s ago
TriggeredBy: ● docker.socket
       Docs: https://docs.docker.com
   Main PID: 18305 (dockerd)
      Tasks: 9
     Memory: 29.6M
        CPU: 344ms
     CGroup: /system.slice/docker.service
             └─18305 /usr/bin/dockerd -H fd:// --containerd=/run/containerd/containerd.sock --default-ulimit nofile=32768:655>

Feb 08 08:04:37 ip-172-31-22-128.ec2.internal systemd[1]: Starting docker.service - Docker Application Container Engine...
Feb 08 08:04:37 ip-172-31-22-128.ec2.internal dockerd[18305]: time="2026-02-08T08:04:37.361905178Z" level=info msg="Starting >
Feb 08 08:04:37 ip-172-31-22-128.ec2.internal dockerd[18305]: time="2026-02-08T08:04:37.434690424Z" level=info msg="Loading c>
Feb 08 08:04:37 ip-172-31-22-128.ec2.internal dockerd[18305]: time="2026-02-08T08:04:37.867399197Z" level=info msg="Loading c>
Feb 08 08:04:37 ip-172-31-22-128.ec2.internal dockerd[18305]: time="2026-02-08T08:04:37.897763517Z" level=info msg="Docker da>
Feb 08 08:04:37 ip-172-31-22-128.ec2.internal dockerd[18305]: time="2026-02-08T08:04:37.897886859Z" level=info msg="Daemon ha>
Feb 08 08:04:37 ip-172-31-22-128.ec2.internal dockerd[18305]: time="2026-02-08T08:04:37.939364862Z" level=info msg="API liste>
Feb 08 08:04:37 ip-172-31-22-128.ec2.internal systemd[1]: Started docker.service - Docker Application Container Engine.
lines 1-20/20 (END)...skipping...
```

Now the docker is in running state.

Then I just add the ec2-user to docker group that is already created by default because without docker group I need to use sudo to run the docker commands and that will take more time after adding the ec2-user in the docker group I can run docker command without using sudo.



```
     Loaded: loaded (/usr/lib/systemd/system/docker.service; enabled; preset: disabled)
     Active: active (running) since Sun 2026-02-08 08:04:37 UTC; 40s ago
TriggeredBy: ● docker.socket
       Docs: https://docs.docker.com
   Main PID: 18305 (dockerd)
      Tasks: 9
     Memory: 29.6M
        CPU: 344ms
     CGroup: /system.slice/docker.service
             └─18305 /usr/bin/dockerd -H fd:// --containerd=/run/containerd/containerd.sock --default-ulimit nofile=32768:65536

Feb 08 08:04:37 ip-172-31-22-128.ec2.internal systemd[1]: Starting docker.service - Docker Application Container Engine...
Feb 08 08:04:37 ip-172-31-22-128.ec2.internal dockerd[18305]: time="2026-02-08T08:04:37.361905178Z" level=info msg="Starting up"
Feb 08 08:04:37 ip-172-31-22-128.ec2.internal dockerd[18305]: time="2026-02-08T08:04:37.434690424Z" level=info msg="Loading containers: start."
Feb 08 08:04:37 ip-172-31-22-128.ec2.internal dockerd[18305]: time="2026-02-08T08:04:37.867399197Z" level=info msg="Loading containers: done."
Feb 08 08:04:37 ip-172-31-22-128.ec2.internal dockerd[18305]: time="2026-02-08T08:04:37.897763517Z" level=info msg="Docker daemon" commit=d33479>
Feb 08 08:04:37 ip-172-31-22-128.ec2.internal dockerd[18305]: time="2026-02-08T08:04:37.897886859Z" level=info msg="Daemon has completed initial>
Feb 08 08:04:37 ip-172-31-22-128.ec2.internal dockerd[18305]: time="2026-02-08T08:04:37.939364862Z" level=info msg="API listen on /run/docker.so>
Feb 08 08:04:37 ip-172-31-22-128.ec2.internal systemd[1]: Started docker.service - Docker Application Container Engine.
~
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~
[ec2-user@ip-172-31-22-128 ~]$ sudo usermod -aG docker ec2-user
[ec2-user@ip-172-31-22-128 ~]$
```
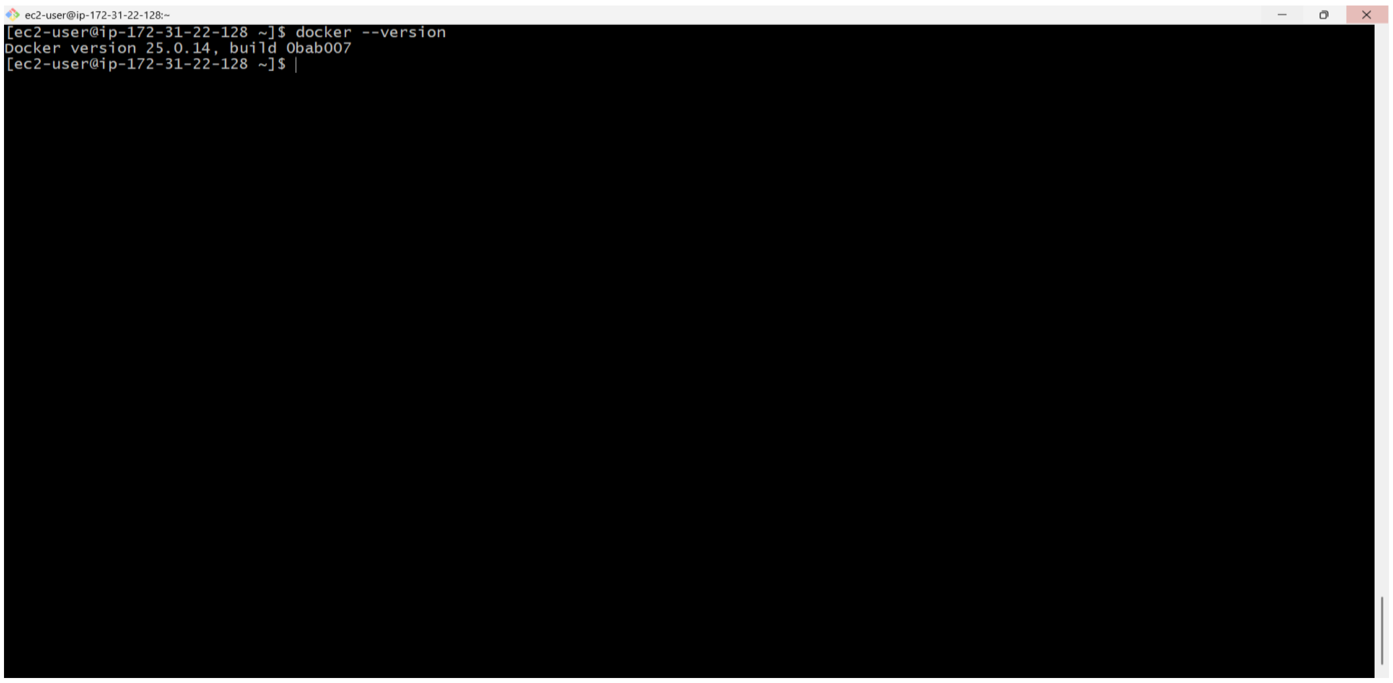
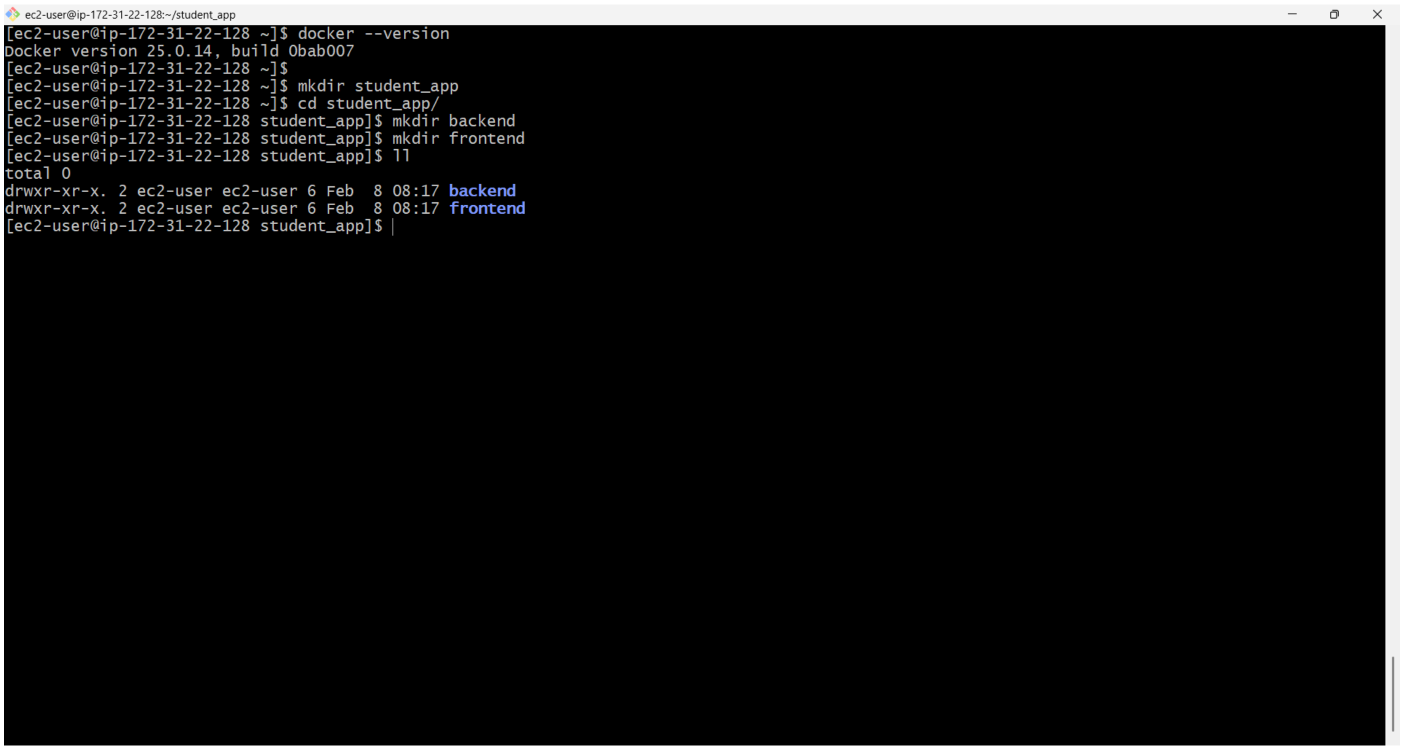

After that I check the docker is install or not using docker –version command



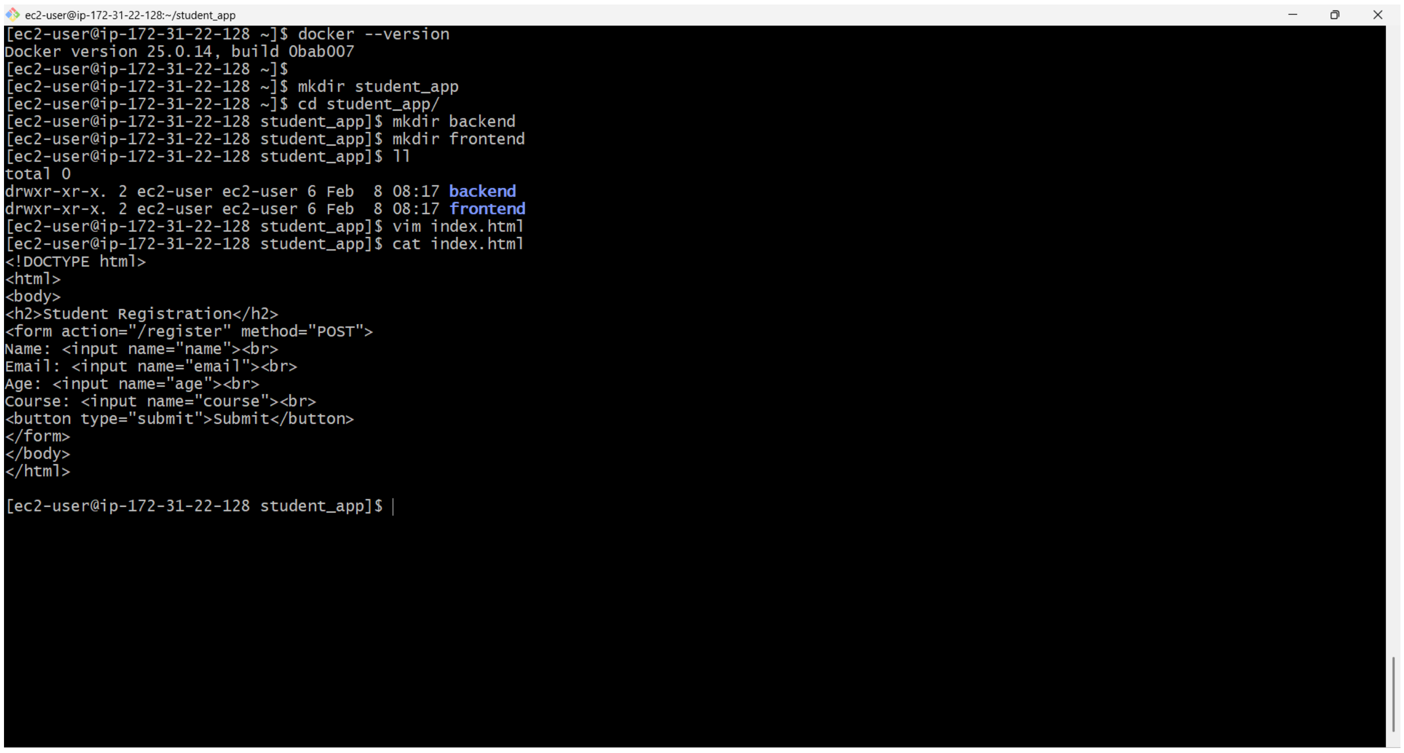
```
[ec2-user@ip-172-31-22-128 ~]$ docker --version
Docker version 25.0.14, build 0bab007
[ec2-user@ip-172-31-22-128 ~]$ |
```

After that I create a working directory that contain my frontend and backend code and dependencies.



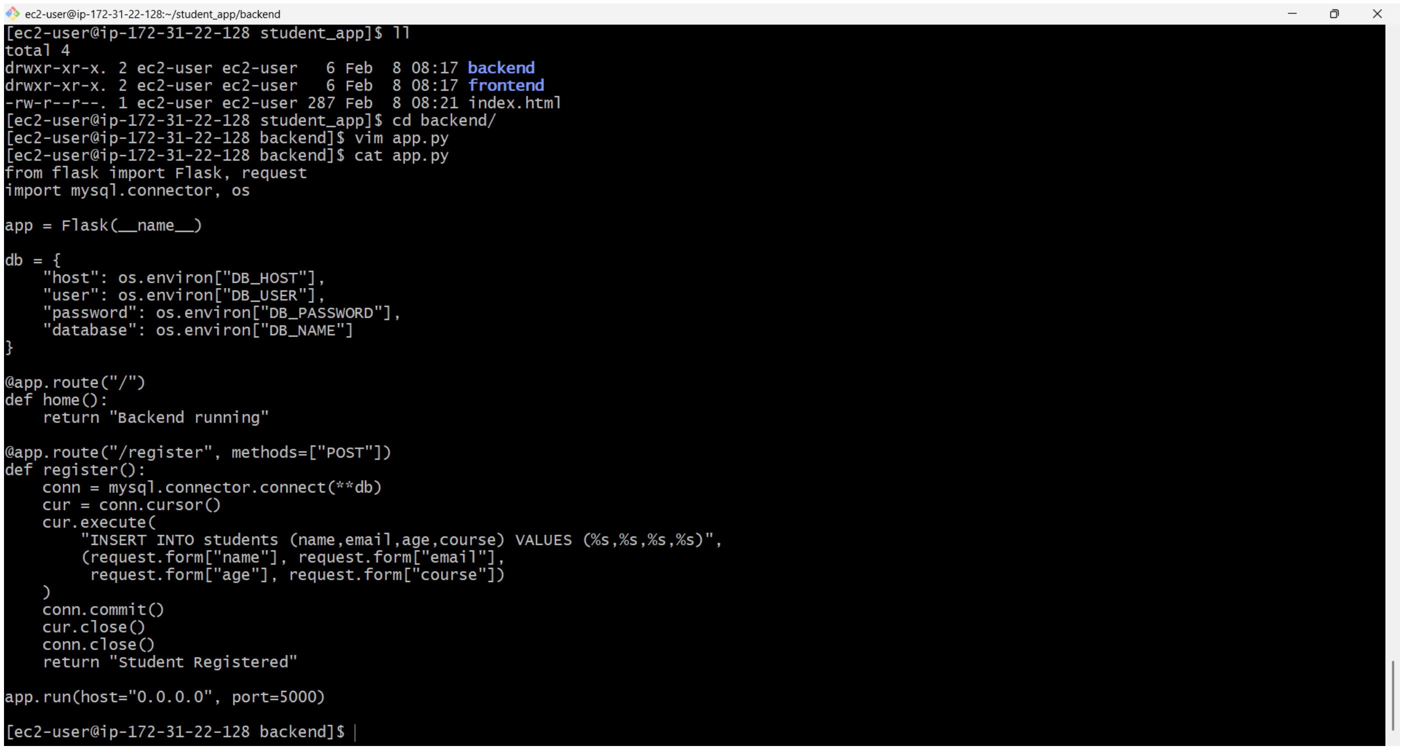
```
[ec2-user@ip-172-31-22-128 ~]$ docker --version
Docker version 25.0.14, build 0bab007
[ec2-user@ip-172-31-22-128 ~]$
[ec2-user@ip-172-31-22-128 ~]$ mkdir student_app
[ec2-user@ip-172-31-22-128 ~]$ cd student_app/
[ec2-user@ip-172-31-22-128 student_app]$ mkdir backend
[ec2-user@ip-172-31-22-128 student_app]$ mkdir frontend
[ec2-user@ip-172-31-22-128 student_app]$ ll
total 0
drwxr-xr-x. 2 ec2-user ec2-user 6 Feb  8 08:17 backend
drwxr-xr-x. 2 ec2-user ec2-user 6 Feb  8 08:17 frontend
[ec2-user@ip-172-31-22-128 student_app]$ |
```

After that I created a index.html file using vim editor that contain the frontend code



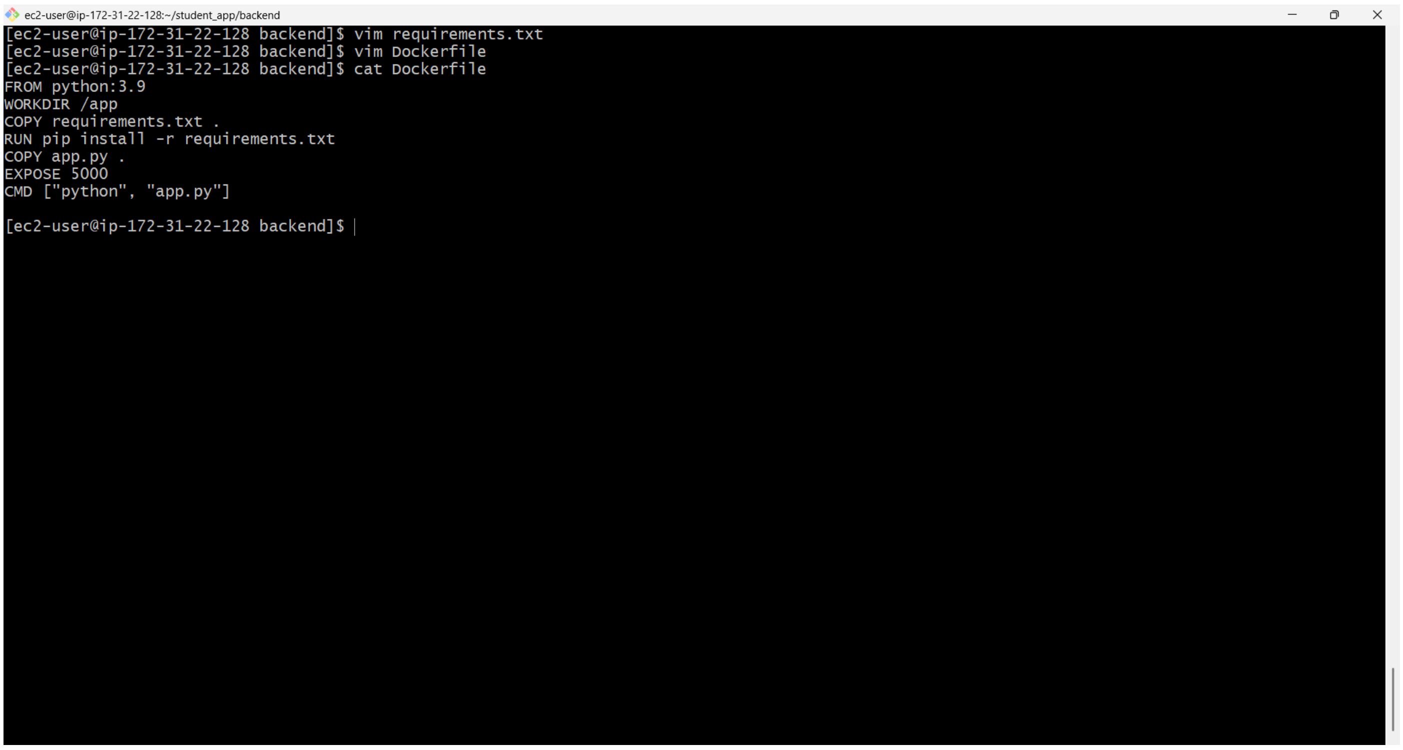
```
[ec2-user@ip-172-31-22-128 ~]$ docker --version
Docker version 25.0.14, build 0bab007
[ec2-user@ip-172-31-22-128 ~]$
[ec2-user@ip-172-31-22-128 ~]$ mkdir student_app
[ec2-user@ip-172-31-22-128 ~]$ cd student_app/
[ec2-user@ip-172-31-22-128 student_app]$ mkdir backend
[ec2-user@ip-172-31-22-128 student_app]$ mkdir frontend
[ec2-user@ip-172-31-22-128 student_app]$ ll
total 0
drwxr-xr-x. 2 ec2-user ec2-user 6 Feb  8 08:17 backend
drwxr-xr-x. 2 ec2-user ec2-user 6 Feb  8 08:17 frontend
[ec2-user@ip-172-31-22-128 student_app]$ vim index.html
[ec2-user@ip-172-31-22-128 student_app]$ cat index.html
<!DOCTYPE html>
<html>
<body>
<h2>Student Registration</h2>
<form action="/register" method="POST">
Name: <input name="name"><br>
Email: <input name="email"><br>
Age: <input name="age"><br>
Course: <input name="course"><br>
<button type="submit">Submit</button>
</form>
</body>
</html>

[ec2-user@ip-172-31-22-128 student_app]$ |
```

After that I create the app.py file inside the backend folder that contain the backend code.



```
[ec2-user@ip-172-31-22-128 student_app]$ ll
total 4
drwxr-xr-x. 2 ec2-user ec2-user   6 Feb  8 08:17 backend
drwxr-xr-x. 2 ec2-user ec2-user   6 Feb  8 08:17 frontend
-rw-r--r--. 1 ec2-user ec2-user 287 Feb  8 08:21 index.html
[ec2-user@ip-172-31-22-128 student_app]$ cd backend/
[ec2-user@ip-172-31-22-128 backend]$ vim app.py
[ec2-user@ip-172-31-22-128 backend]$ cat app.py
from flask import Flask, request
import mysql.connector, os

app = Flask(__name__)

db = {
    "host": os.environ["DB_HOST"],
    "user": os.environ["DB_USER"],
    "password": os.environ["DB_PASSWORD"],
    "database": os.environ["DB_NAME"]
}

@app.route("/")
def home():
    return "Backend running"

@app.route("/register", methods=["POST"])
def register():
    conn = mysql.connector.connect(**db)
    cur = conn.cursor()
    cur.execute(
        "INSERT INTO students (name,email,age,course) VALUES (%s,%s,%s,%s)",
        (request.form["name"], request.form["email"],
         request.form["age"], request.form["course"])
    )
    conn.commit()
    cur.close()
    conn.close()
    return "Student Registered"

app.run(host="0.0.0.0", port=5000)

[ec2-user@ip-172-31-22-128 backend]$ |
```

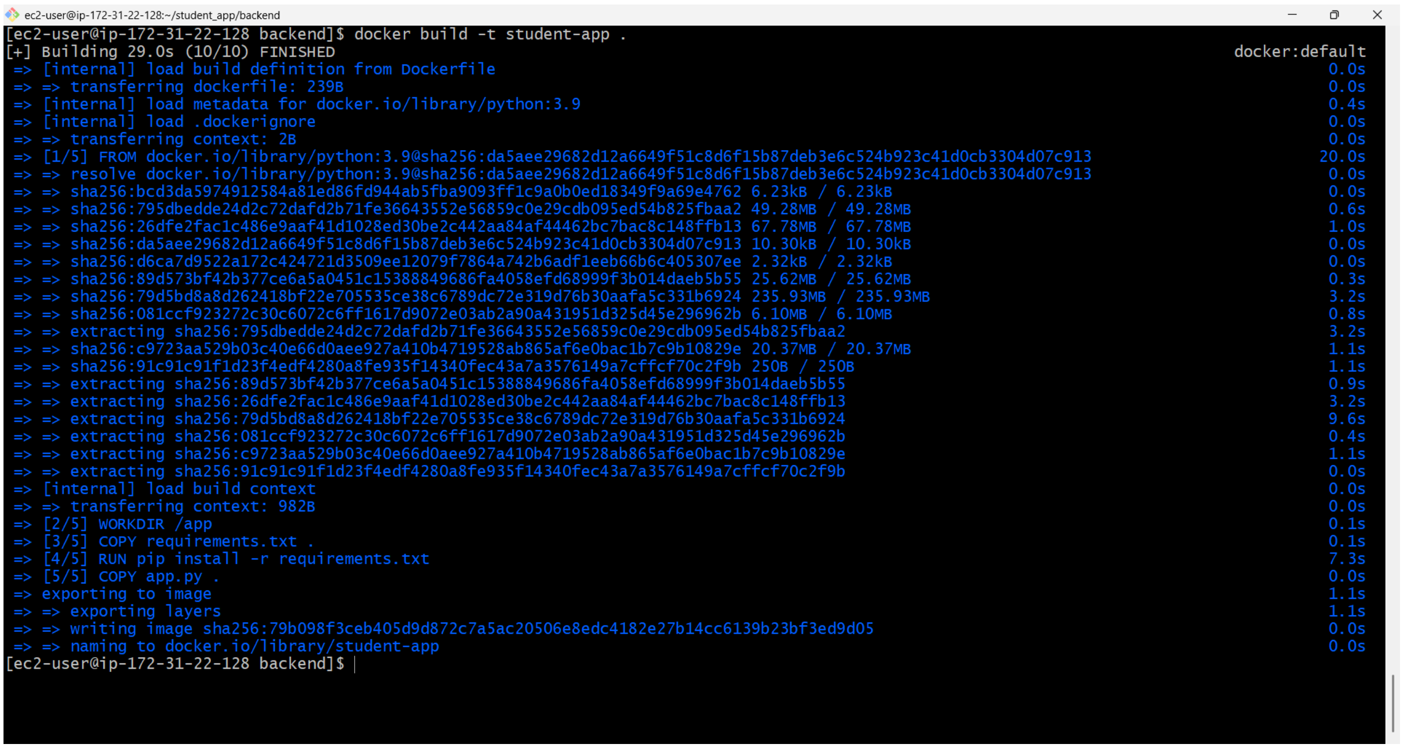
After that I created the a Dockerfile and requirements.txt in the backend folder.



ec2-user@ip-172-31-22-128:~/student_app/backend

```
[ec2-user@ip-172-31-22-128 backend]$ vim requirements.txt
[ec2-user@ip-172-31-22-128 backend]$ vim Dockerfile
[ec2-user@ip-172-31-22-128 backend]$ cat Dockerfile
FROM python:3.9
WORKDIR /app
COPY requirements.txt .
RUN pip install -r requirements.txt
COPY app.py .
EXPOSE 5000
CMD ["python", "app.py"]

[ec2-user@ip-172-31-22-128 backend]$
```

After that I build the image from Dockerfile in the same folder

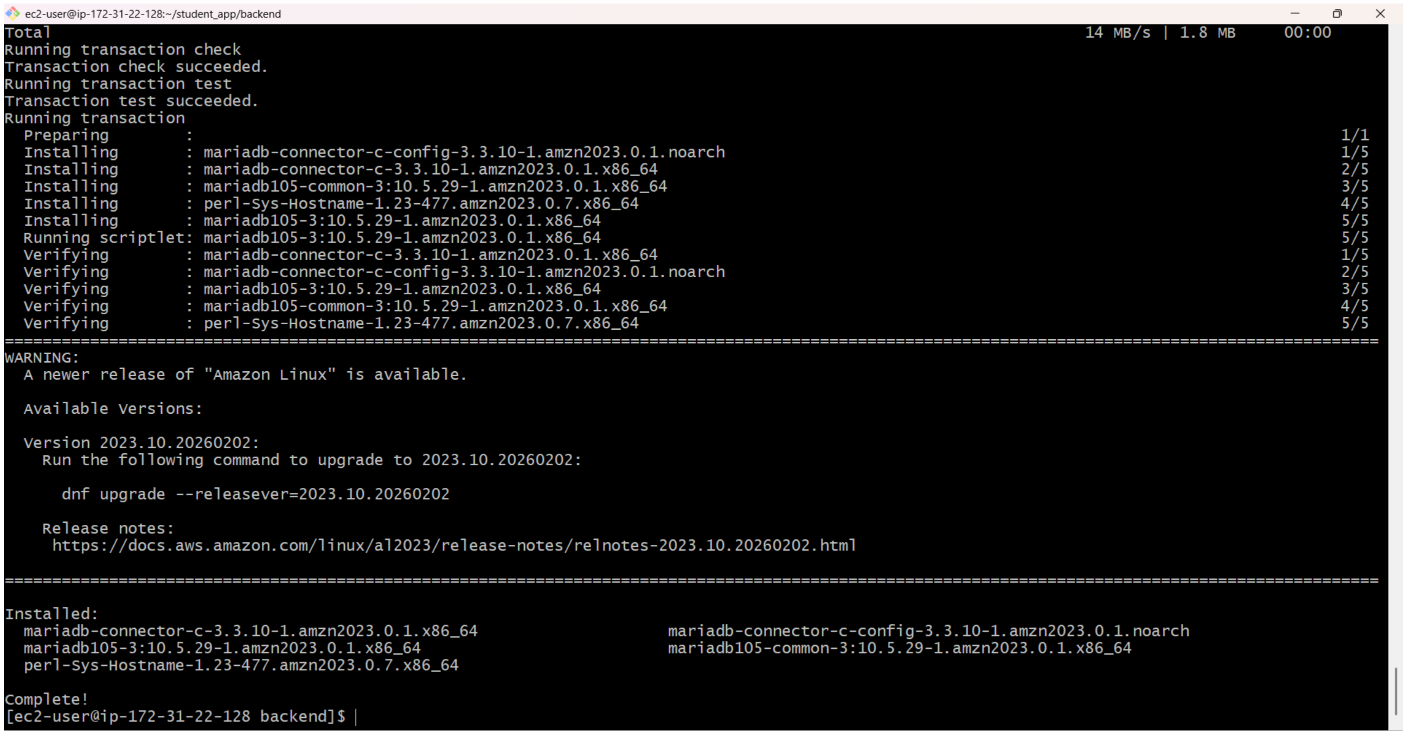


ec2-user@ip-172-31-22-128:~/student_app/backend

```
[ec2-user@ip-172-31-22-128 backend]$ docker build -t student-app .
[+] Building 29.0s (10/10) FINISHED                                                                                           docker:default
 => [internal] load build definition from Dockerfile                                                                                    0.0s
 => => transferring dockerfile: 239B                                                                                                    0.0s
 => [internal] load metadata for docker.io/library/python:3.9                                                                           0.4s
 => [internal] load .dockerignore                                                                                                       0.0s
 => => transferring context: 2B                                                                                                         0.0s
 => [1/5] FROM docker.io/library/python:3.9@sha256:da5aee29682d12a6649f51c8d6f15b87deb3e6c524b923c41d0cb3304d07c913                    20.0s
 => => resolve docker.io/library/python:3.9@sha256:da5aee29682d12a6649f51c8d6f15b87deb3e6c524b923c41d0cb3304d07c913                     0.0s
 => => sha256:bcd3da5974912584a81ed86fd944ab5fba9093ff1c9a0b0ed18349f9a69e4762 6.23kB / 6.23kB                                          0.0s
 => => sha256:795dbedde24d2c72dafd2b71fe36643552e56859c0e29cdb095ed54b825fbaa2 49.28MB / 49.28MB                                        0.6s
 => => sha256:26dfe2fac1c486e9aaf41d1028ed30be2c442aa84af44462bc7bac8c148ffb13 67.78MB / 67.78MB                                        1.0s
 => => sha256:da5aee29682d12a6649f51c8d6f15b87deb3e6c524b923c41d0cb3304d07c913 10.30kB / 10.30kB                                        0.0s
 => => sha256:d6ca7d9522a172c424721d3509ee12079f7864a742b6adf1eeb66b6c405307ee 2.32kB / 2.32kB                                          0.0s
 => => sha256:89d573bf42b377ce6a5a0451c15388849686fa4058efd68999f3b014daeb5b55 25.62MB / 25.62MB                                        0.3s
 => => sha256:79d5bd8a8d262418bf22e705535ce38c6789dc72e319d76b30aafa5c331b6924 235.93MB / 235.93MB                                      3.2s
 => => sha256:081ccf923272c30c6072c6ff1617d9072e03ab2a90a431951d325d45e296962b 6.10MB / 6.10MB                                          0.8s
 => => extracting sha256:795dbedde24d2c72dafd2b71fe36643552e56859c0e29cdb095ed54b825fbaa2                                               3.2s
 => => sha256:c9723aa529b03c40e66d0aee927a410b4719528ab865af6e0bac1b7c9b10829e 20.37MB / 20.37MB                                        1.1s
 => => sha256:91c91c91f1d23f4edf4280a8fe935f14340fec43a7a3576149a7cffcf70c2f9b 250B / 250B                                              1.1s
 => => extracting sha256:89d573bf42b377ce6a5a0451c15388849686fa4058efd68999f3b014daeb5b55                                               0.9s
 => => extracting sha256:26dfe2fac1c486e9aaf41d1028ed30be2c442aa84af44462bc7bac8c148ffb13                                               3.2s
 => => extracting sha256:79d5bd8a8d262418bf22e705535ce38c6789dc72e319d76b30aafa5c331b6924                                               9.6s
 => => extracting sha256:081ccf923272c30c6072c6ff1617d9072e03ab2a90a431951d325d45e296962b                                               0.4s
 => => extracting sha256:c9723aa529b03c40e66d0aee927a410b4719528ab865af6e0bac1b7c9b10829e                                               1.1s
 => => extracting sha256:91c91c91f1d23f4edf4280a8fe935f14340fec43a7a3576149a7cffcf70c2f9b                                               0.0s
 => [internal] load build context                                                                                                       0.0s
 => => transferring context: 982B                                                                                                       0.0s
 => [2/5] WORKDIR /app                                                                                                                  0.1s
 => [3/5] COPY requirements.txt .                                                                                                       0.1s
 => [4/5] RUN pip install -r requirements.txt                                                                                           7.3s
 => [5/5] COPY app.py .                                                                                                                 0.0s
 => exporting to image                                                                                                                  1.1s
 => => exporting layers                                                                                                                 1.1s
 => => writing image sha256:79b098f3ceb405d9d872c7a5ac20506e8edc4182e27b14cc6139b23bf3ed9d05                                            0.0s
 => => naming to docker.io/library/student-app                                                                                          0.0s
[ec2-user@ip-172-31-22-128 backend]$
```

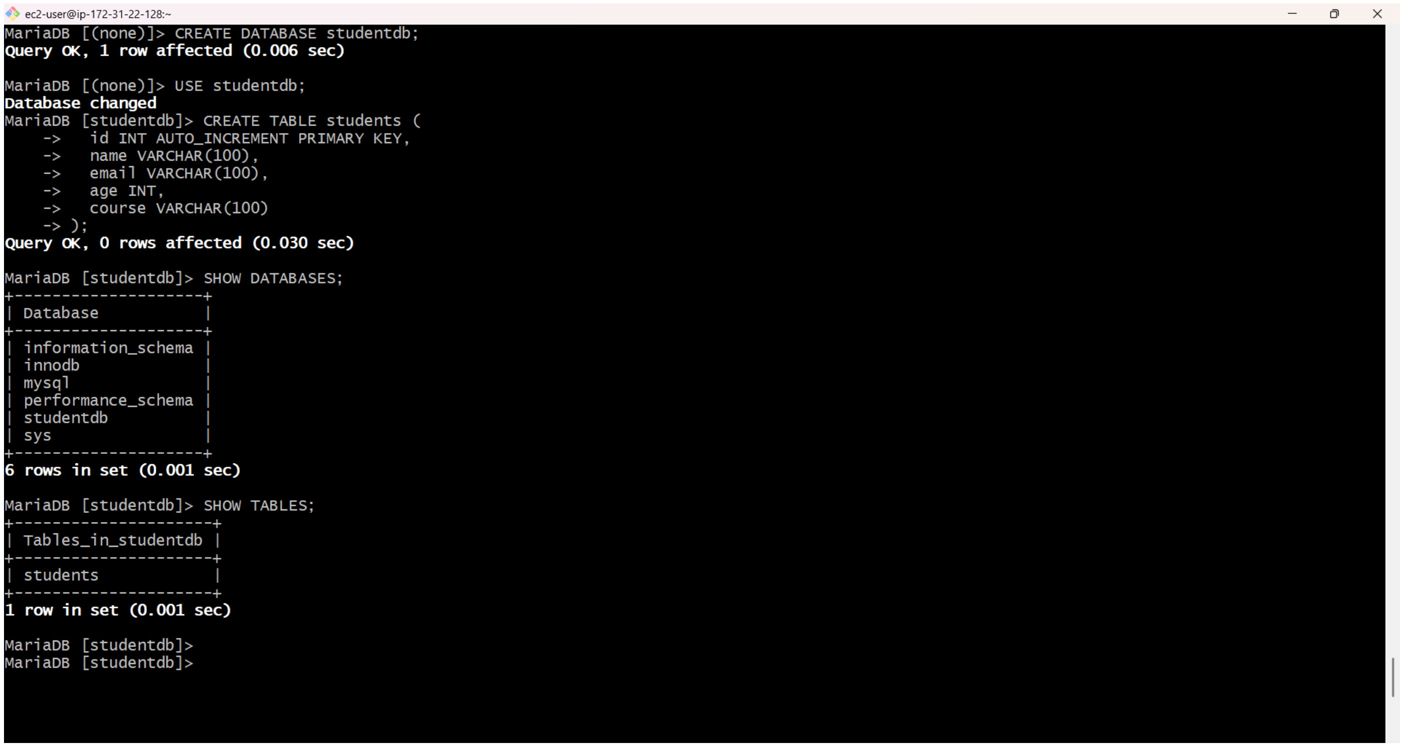
So, the frontend and backend is done.

after that I install the mariadb105 packaged using yum package manager to configure the database using mysql -h command.



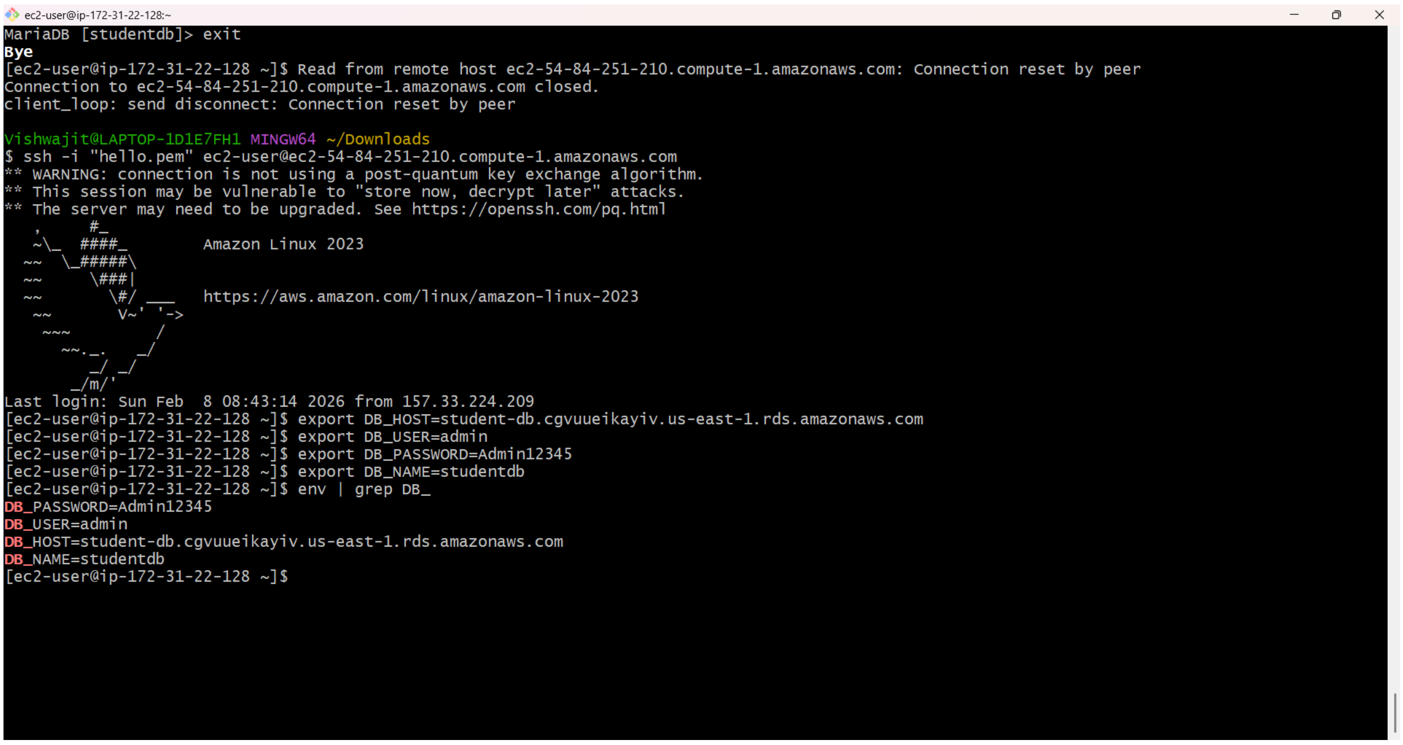
```
Total                                                                                                                   14 MB/s | 1.8 MB     00:00
Running transaction check
Transaction check succeeded.
Running transaction test
Transaction test succeeded.
Running transaction
  Preparing        :                                                                                                                          1/1
  Installing       : mariadb-connector-c-config-3.3.10-1.amzn2023.0.1.noarch                                                                1/5
  Installing       : mariadb-connector-c-3.3.10-1.amzn2023.0.1.x86_64                                                                       2/5
  Installing       : mariadb105-common-3:10.5.29-1.amzn2023.0.1.x86_64                                                                      3/5
  Installing       : perl-Sys-Hostname-1.23-477.amzn2023.0.7.x86_64                                                                         4/5
  Installing       : mariadb105-3:10.5.29-1.amzn2023.0.1.x86_64                                                                             5/5
  Running scriptlet: mariadb105-3:10.5.29-1.amzn2023.0.1.x86_64                                                                             5/5
  Verifying        : mariadb-connector-c-3.3.10-1.amzn2023.0.1.x86_64                                                                       1/5
  Verifying        : mariadb-connector-c-config-3.3.10-1.amzn2023.0.1.noarch                                                                2/5
  Verifying        : mariadb105-3:10.5.29-1.amzn2023.0.1.x86_64                                                                             3/5
  Verifying        : mariadb105-common-3:10.5.29-1.amzn2023.0.1.x86_64                                                                      4/5
  Verifying        : perl-Sys-Hostname-1.23-477.amzn2023.0.7.x86_64                                                                         5/5
==================================================================================================================================================
WARNING:
  A newer release of "Amazon Linux" is available.

  Available Versions:

  Version 2023.10.20260202:
    Run the following command to upgrade to 2023.10.20260202:

      dnf upgrade --releasever=2023.10.20260202

    Release notes:
     https://docs.aws.amazon.com/linux/al2023/release-notes/relnotes-2023.10.20260202.html

==================================================================================================================================================

Installed:
  mariadb-connector-c-3.3.10-1.amzn2023.0.1.x86_64                     mariadb-connector-c-config-3.3.10-1.amzn2023.0.1.noarch
  mariadb105-3:10.5.29-1.amzn2023.0.1.x86_64                           mariadb105-common-3:10.5.29-1.amzn2023.0.1.x86_64
  perl-Sys-Hostname-1.23-477.amzn2023.0.7.x86_64

Complete!
[ec2-user@ip-172-31-22-128 backend]$ |
```

After connected to the database I created a studentdb database and then create the table.



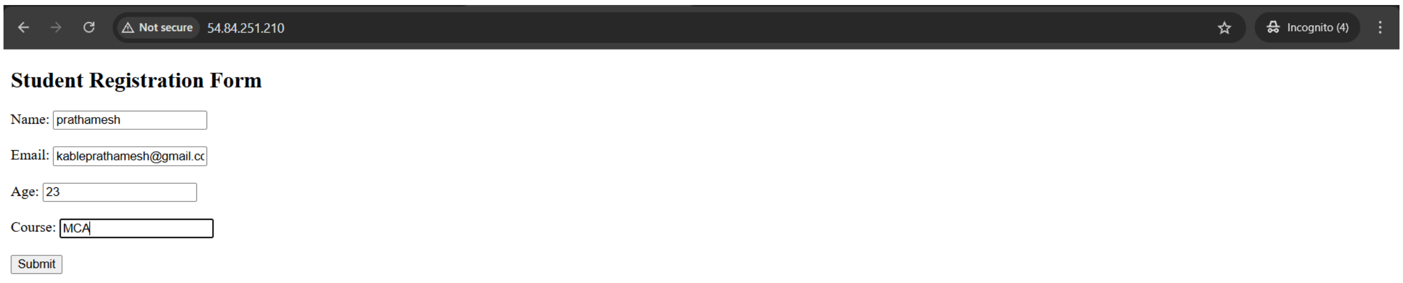
```
MariaDB [(none)]> CREATE DATABASE studentdb;
Query OK, 1 row affected (0.006 sec)

MariaDB [(none)]> USE studentdb;
Database changed
MariaDB [studentdb]> CREATE TABLE students (
    ->   id INT AUTO_INCREMENT PRIMARY KEY,
    ->   name VARCHAR(100),
    ->   email VARCHAR(100),
    ->   age INT,
    ->   course VARCHAR(100)
    -> );
Query OK, 0 rows affected (0.030 sec)

MariaDB [studentdb]> SHOW DATABASES;
+--------------------+
| Database           |
+--------------------+
| information_schema |
| innodb             |
| mysql              |
| performance_schema |
| studentdb          |
| sys                |
+--------------------+
6 rows in set (0.001 sec)

MariaDB [studentdb]> SHOW TABLES;
+---------------------+
| Tables_in_studentdb |
+---------------------+
| students            |
+---------------------+
1 row in set (0.001 sec)

MariaDB [studentdb]>
MariaDB [studentdb]>
```

After that I just created the environment variable to help the app to know where the DB is.



```
MariaDB [studentdb]> exit
Bye
[ec2-user@ip-172-31-22-128 ~]$ Read from remote host ec2-54-84-251-210.compute-1.amazonaws.com: Connection reset by peer
Connection to ec2-54-84-251-210.compute-1.amazonaws.com closed.
client_loop: send disconnect: Connection reset by peer

Vishwajit@LAPTOP-1D1E7FH1 MINGW64 ~/Downloads
$ ssh -i "hello.pem" ec2-user@ec2-54-84-251-210.compute-1.amazonaws.com
** WARNING: connection is not using a post-quantum key exchange algorithm.
** This session may be vulnerable to "store now, decrypt later" attacks.
** The server may need to be upgraded. See https://openssh.com/pq.html
         #_
   ~\_  ####_        Amazon Linux 2023
  ~~  \_#####\
  ~~     \###|
  ~~       \#/ ___   https://aws.amazon.com/linux/amazon-linux-2023
   ~~       V~' '->
    ~~~         /
      ~~._.   _/
         _/ _/
       _/m/'
Last login: Sun Feb  8 08:43:14 2026 from 157.33.224.209
[ec2-user@ip-172-31-22-128 ~]$ export DB_HOST=student-db.cgvuueikayiv.us-east-1.rds.amazonaws.com
[ec2-user@ip-172-31-22-128 ~]$ export DB_USER=admin
[ec2-user@ip-172-31-22-128 ~]$ export DB_PASSWORD=Admin12345
[ec2-user@ip-172-31-22-128 ~]$ export DB_NAME=studentdb
[ec2-user@ip-172-31-22-128 ~]$ env | grep DB_
DB_PASSWORD=Admin12345
DB_USER=admin
DB_HOST=student-db.cgvuueikayiv.us-east-1.rds.amazonaws.com
DB_NAME=studentdb
[ec2-user@ip-172-31-22-128 ~]$
```

After I run the docker container. And then check the website is running or not.



Student Registration Form

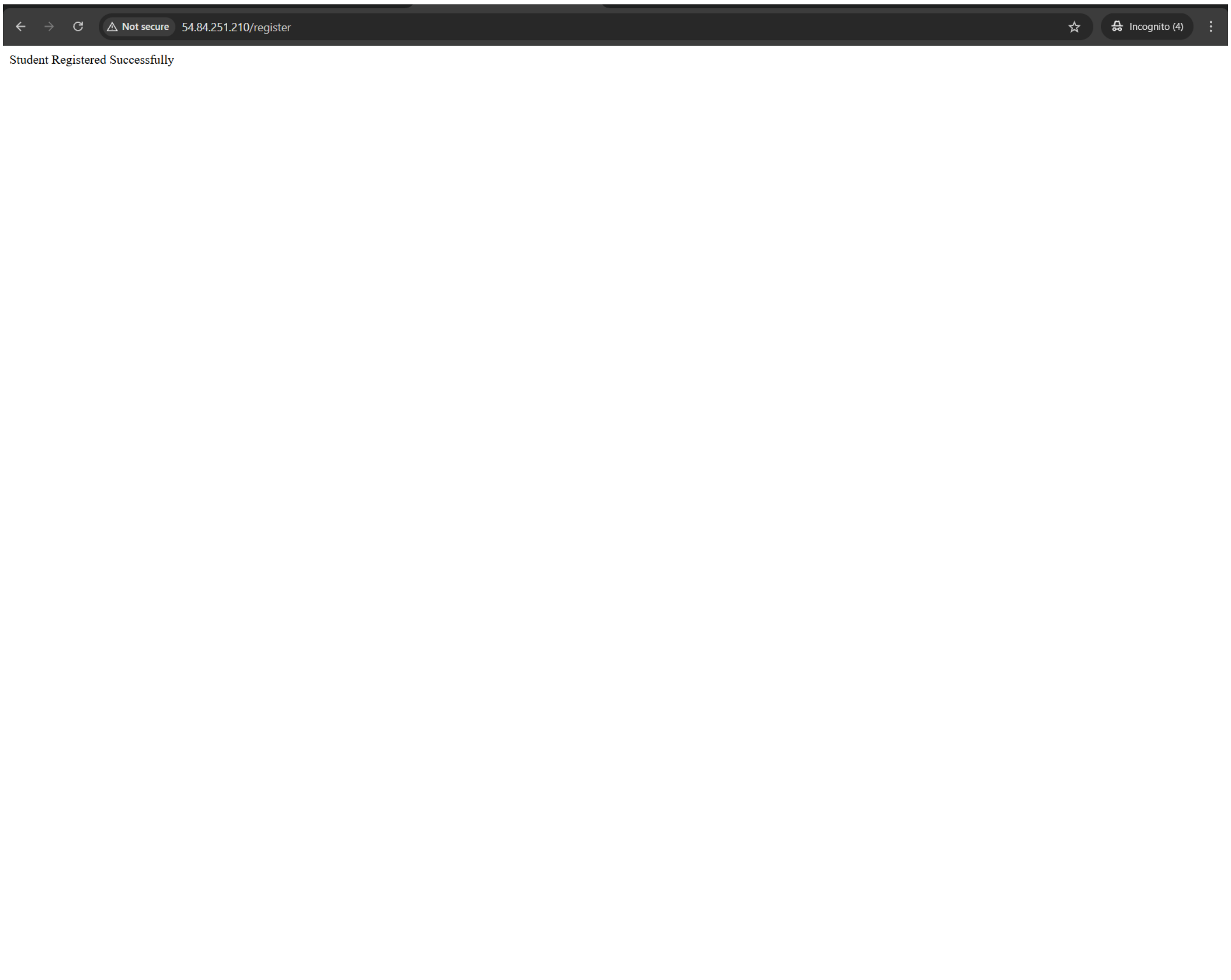
Name: prathamesh

Email: kableprathamesh@gmail.cc

Age: 23

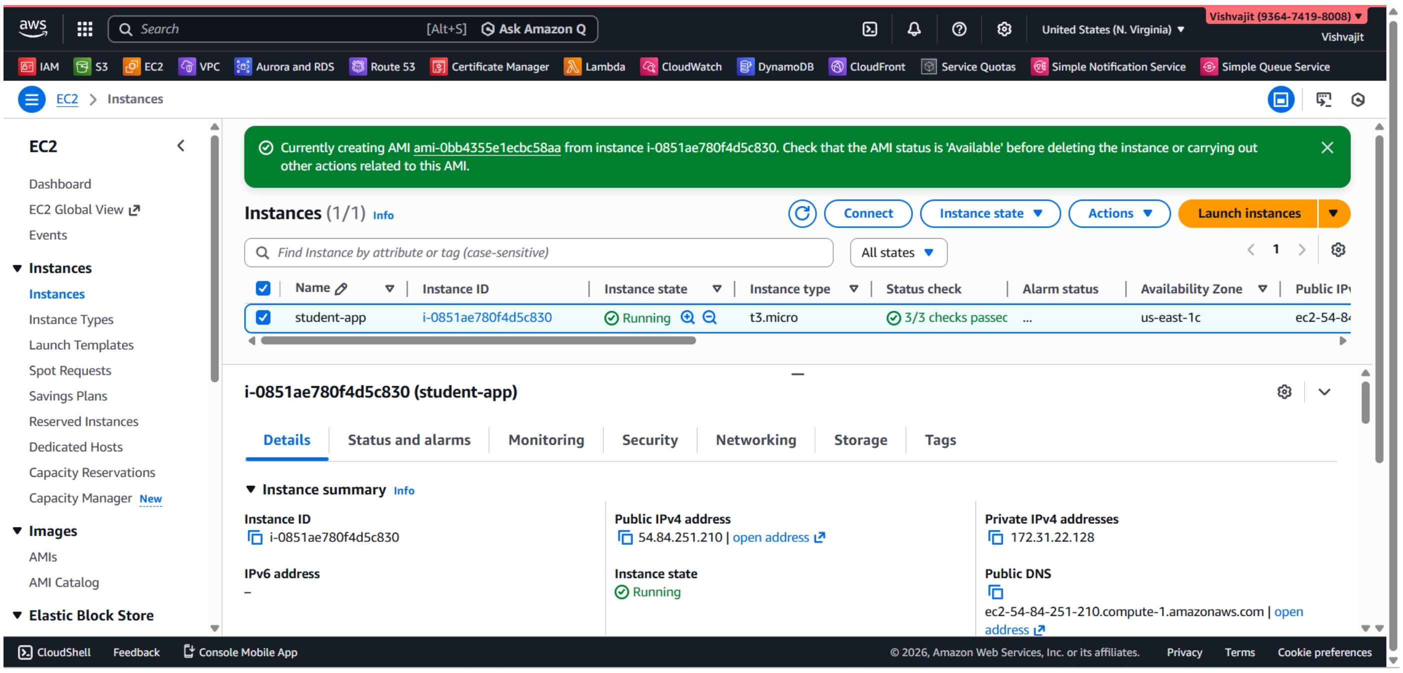
Course: MCA

Submit


Not secure 54.84.251.210/register

Student Registered Successfully

After that I create the AMI for auto scaling.


EC2 > Instances

Currently creating AMI ami-0bb4355e1ecbc58aa from instance i-0851ae780f4d5c830. Check that the AMI status is 'Available' before deleting the instance or carrying out other actions related to this AMI.

Instances (1/1)

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IP
student-app	i-0851ae780f4d5c830	Running	t3.micro	3/3 checks passec	...	us-east-1c	ec2-54-8

i-0851ae780f4d5c830 (student-app)

Instance summary

Instance ID: i-0851ae780f4d5c830

Public IPv4 address: 54.84.251.210 | open address

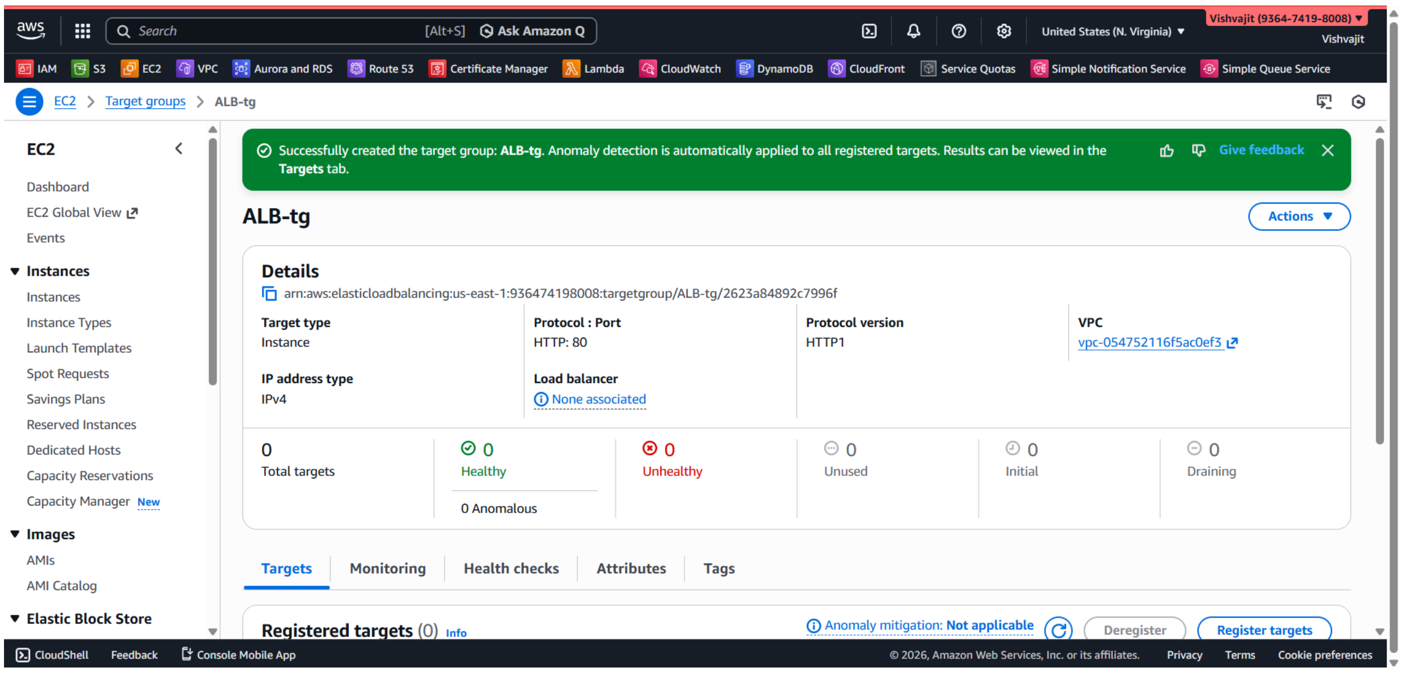
Private IPv4 addresses: 172.31.22.128

IPv6 address: –

Instance state: Running

Public DNS: ec2-54-84-251-210.compute-1.amazonaws.com | open address

After that I create a target group for load balancer.


EC2 > Target groups > ALB-tg

Successfully created the target group: **ALB-tg**. Anomaly detection is automatically applied to all registered targets. Results can be viewed in the **Targets** tab.

ALB-tg

Details

arn:aws:elasticloadbalancing:us-east-1:936474198008:targetgroup/ALB-tg/2623a84892c7996f

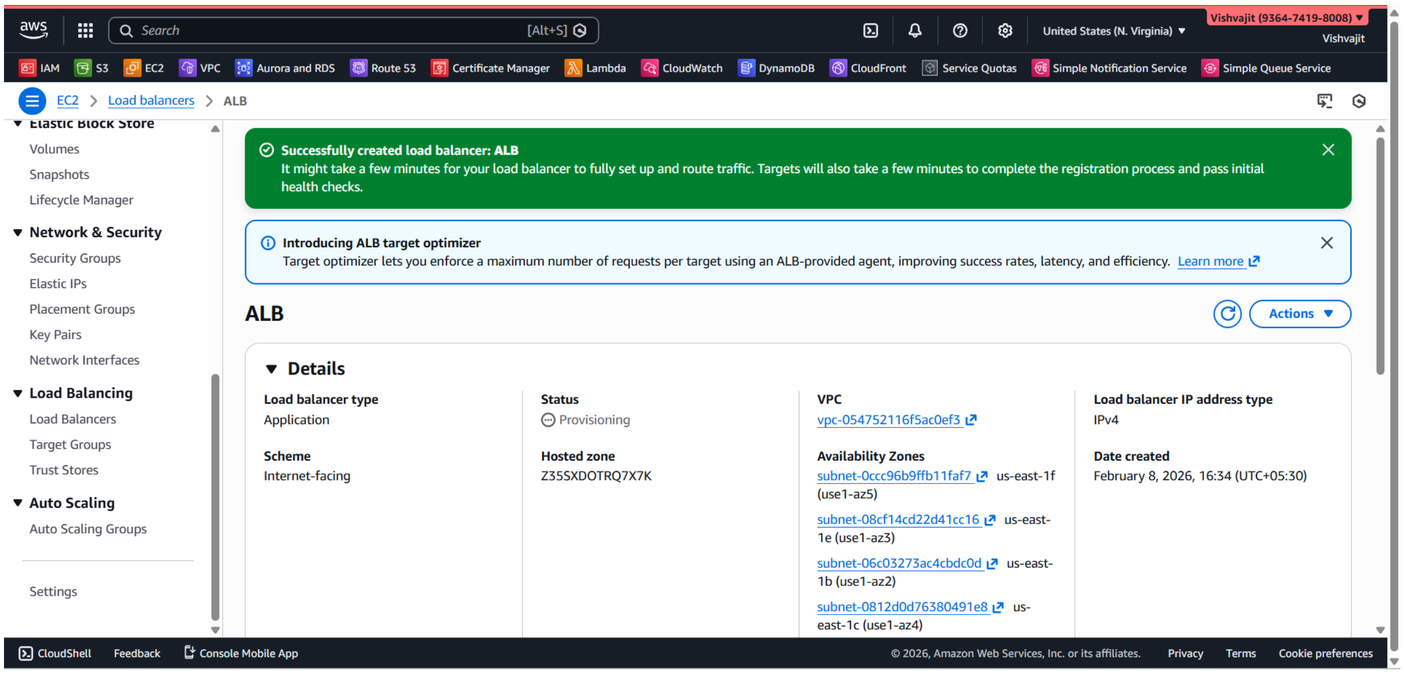
Target type	Protocol : Port	Protocol version	VPC
Instance	HTTP: 80	HTTP1	vpc-054752116f5ac0ef3
IP address type	**Load balancer**		
IPv4	None associated		

Total targets	Healthy	Unhealthy	Unused	Initial	Draining
0	0	0	0	0	0
	0 Anomalous				

Targets | Monitoring | Health checks | Attributes | Tags

Registered targets (0) Info — Anomaly mitigation: Not applicable

Then I created the application load balancer to equally distribute traffic that come in load balancer.


EC2 > Load balancers > ALB

Successfully created load balancer: ALB
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.

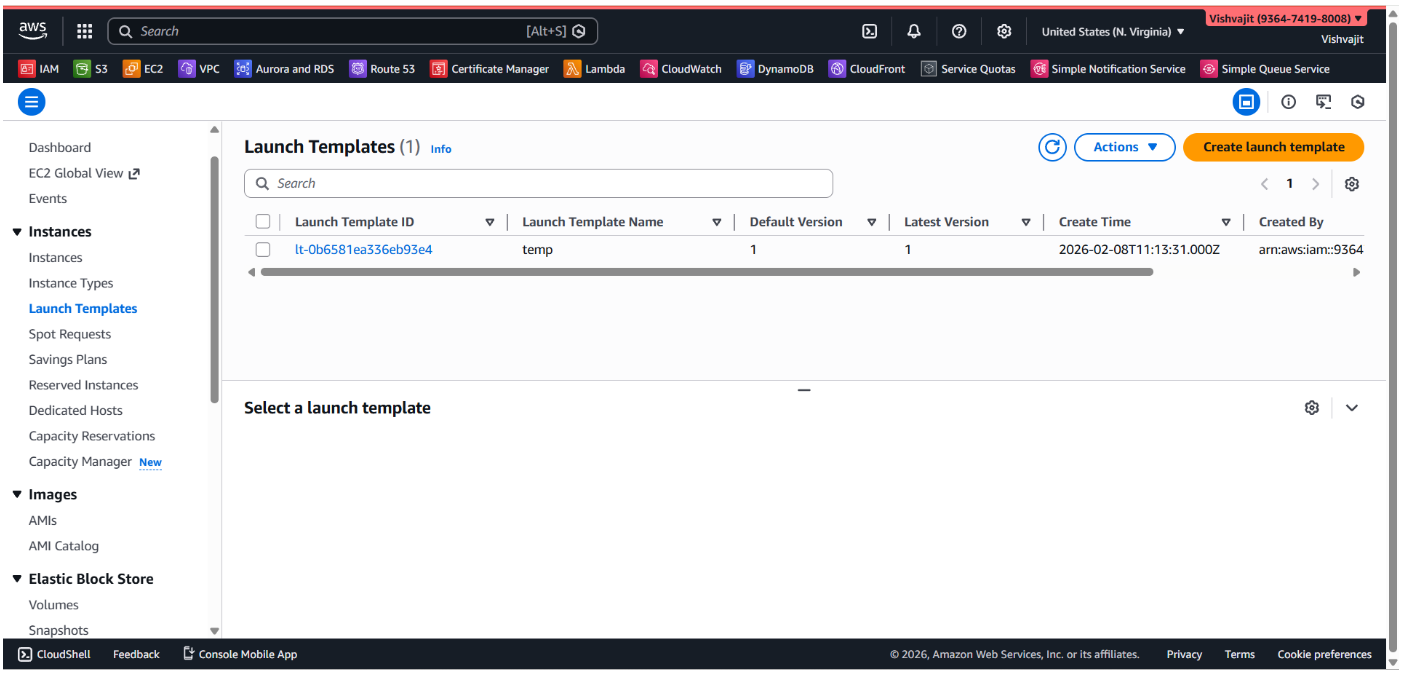
Introducing ALB target optimizer
Target optimizer lets you enforce a maximum number of requests per target using an ALB-provided agent, improving success rates, latency, and efficiency. Learn more

ALB

Details

Load balancer type	Status	VPC	Load balancer IP address type
Application	Provisioning	vpc-054752116f5ac0ef3	IPv4
Scheme	**Hosted zone**	**Availability Zones**	**Date created**
Internet-facing	Z35SXDOTRQ7X7K	subnet-0ccc96b9ffb11faf7 us-east-1f (use1-az5) subnet-08cf14cd22d41cc16 us-east-1e (use1-az3) subnet-06c03273ac4cbdc0d us-east-1b (use1-az2) subnet-0812d0d76380491e8 us-east-1c (use1-az4)	February 8, 2026, 16:34 (UTC+05:30)

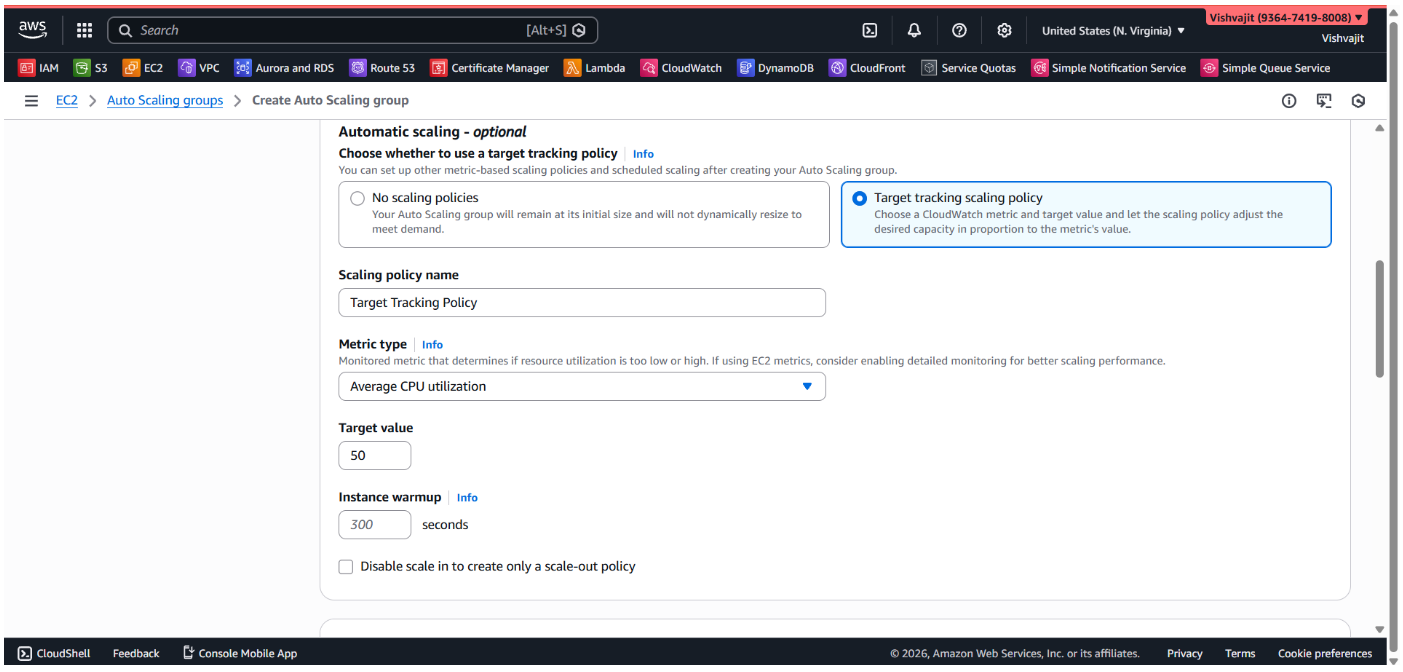
Then I created the template for auto scaling using the AMI.


Launch Templates (1)

Launch Template ID	Launch Template Name	Default Version	Latest Version	Create Time	Created By
lt-0b6581ea336eb93e4	temp	1	1	2026-02-08T11:13:31.000Z	arn:aws:iam::9364

Select a launch template

Then I created the auto scaling group using template and set the target tracking policy.


EC2 > Auto Scaling groups > Create Auto Scaling group

Automatic scaling - *optional*

Choose whether to use a target tracking policy

You can set up other metric-based scaling policies and scheduled scaling after creating your Auto Scaling group.

No scaling policies [✓ Target tracking scaling policy]

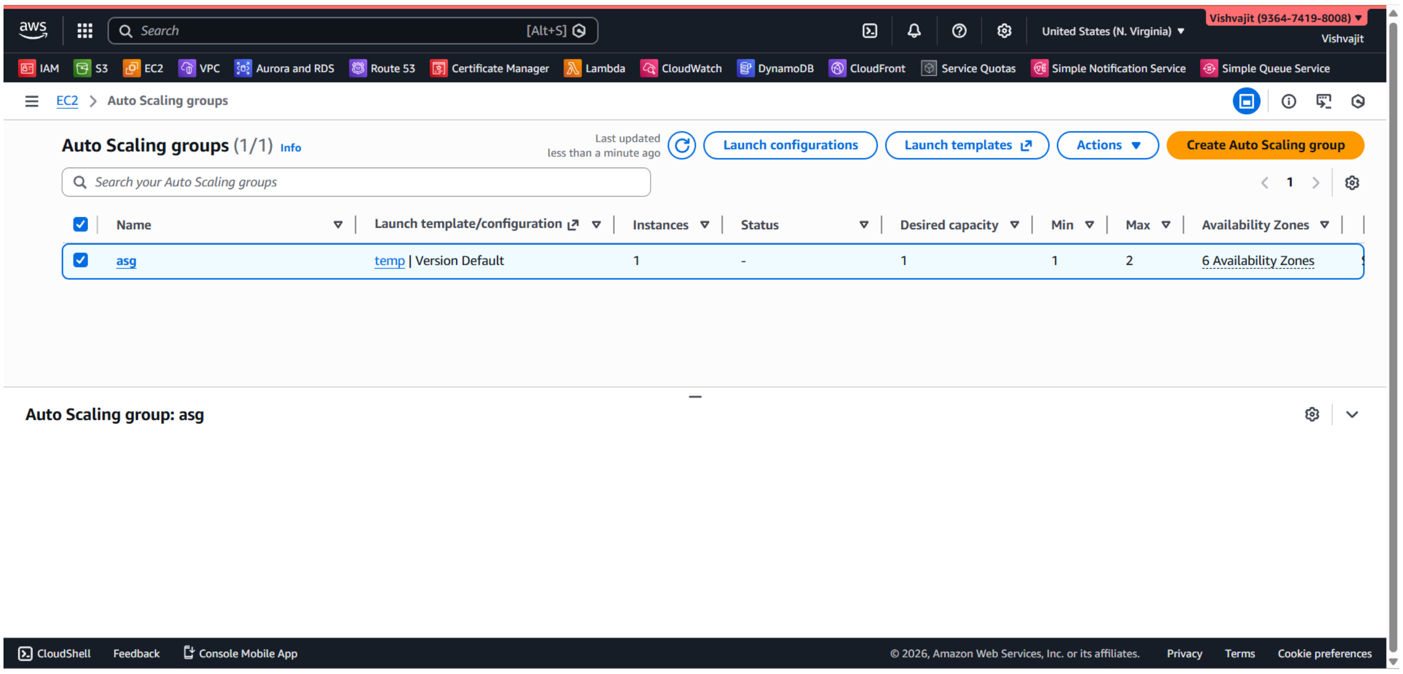
Scaling policy name: Target Tracking Policy

Metric type: Average CPU utilization

Target value: 50

Instance warmup: 300 seconds

☐ Disable scale in to create only a scale-out policy

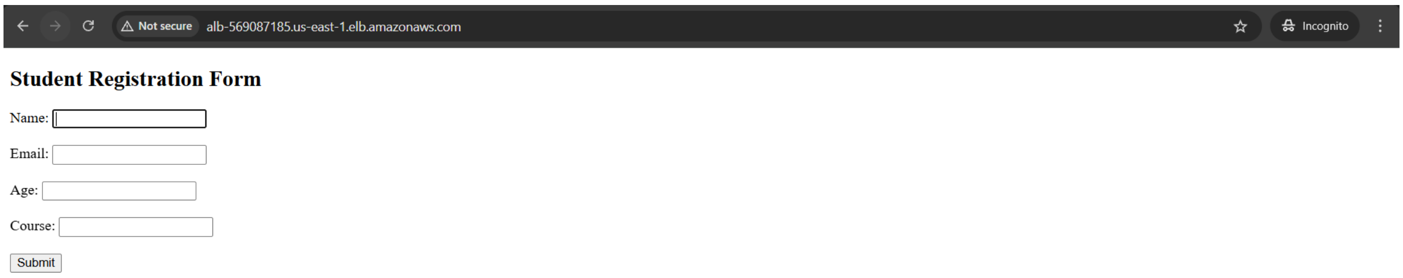

aws
Search [Alt+S]
United States (N. Virginia)
Vishvajit (9364-7419-8008)
Vishvajit
IAM S3 EC2 VPC Aurora and RDS Route 53 Certificate Manager Lambda CloudWatch DynamoDB CloudFront Service Quotas Simple Notification Service Simple Queue Service
EC2 > Auto Scaling groups
Last updated less than a minute ago
Launch configurations
Launch templates
Actions
Create Auto Scaling group
Search your Auto Scaling groups
CloudShell Feedback Console Mobile App
© 2026, Amazon Web Services, Inc. or its affiliates. Privacy Terms Cookie preferences

Auto Scaling groups (1/1) Info

Name	Launch template/configuration	Instances	Status	Desired capacity	Min	Max	Availability Zones
asg	temp | Version Default	1	-	1	1	2	6 Availability Zones

Auto Scaling group: asg

After that I check my website is running or not using load balancer endpoint.



Student Registration Form

Name:

Email:

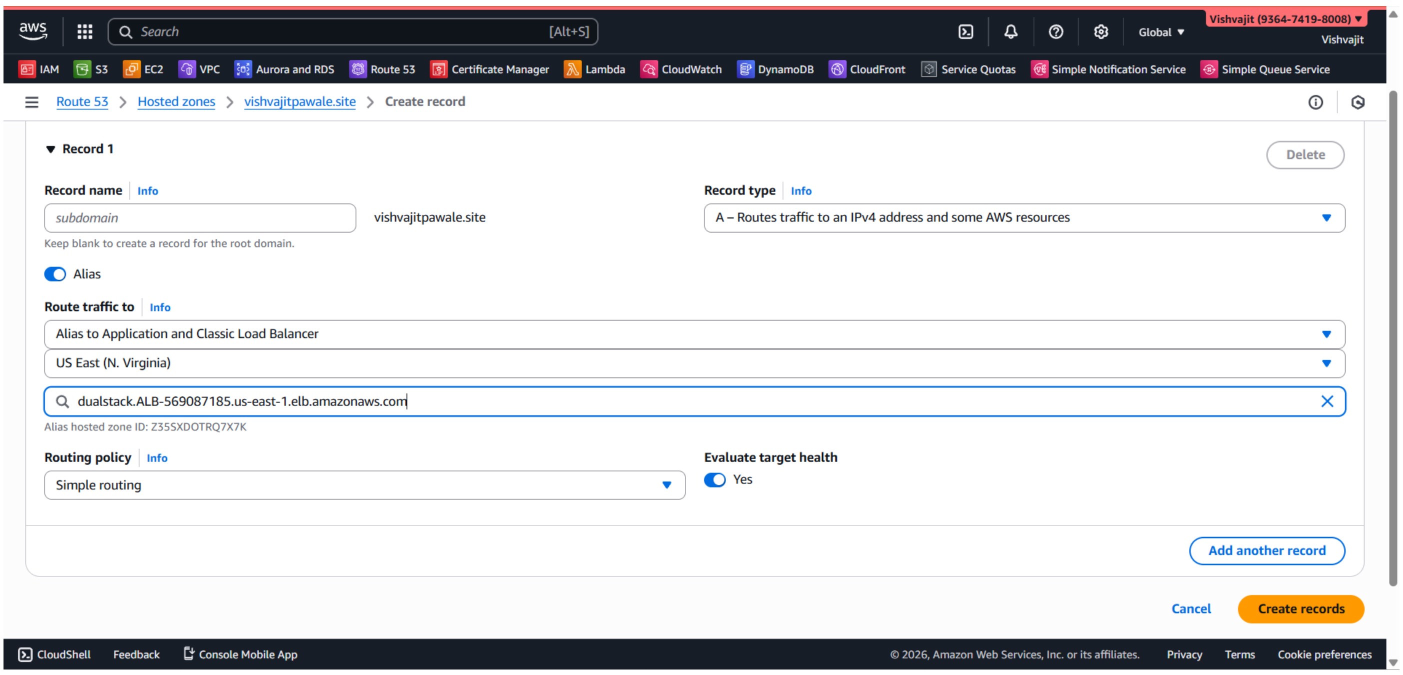
Age:

Course:

Submit

Then I create a hosted zone then create using alias feature I map the endpoint to the domain name.

Domain name is = **vishvajitpawale.site**



Record name: subdomain vishvajitpawale.site

Keep blank to create a record for the root domain.

Record type: A – Routes traffic to an IPv4 address and some AWS resources

Alias: on

Route traffic to: Alias to Application and Classic Load Balancer

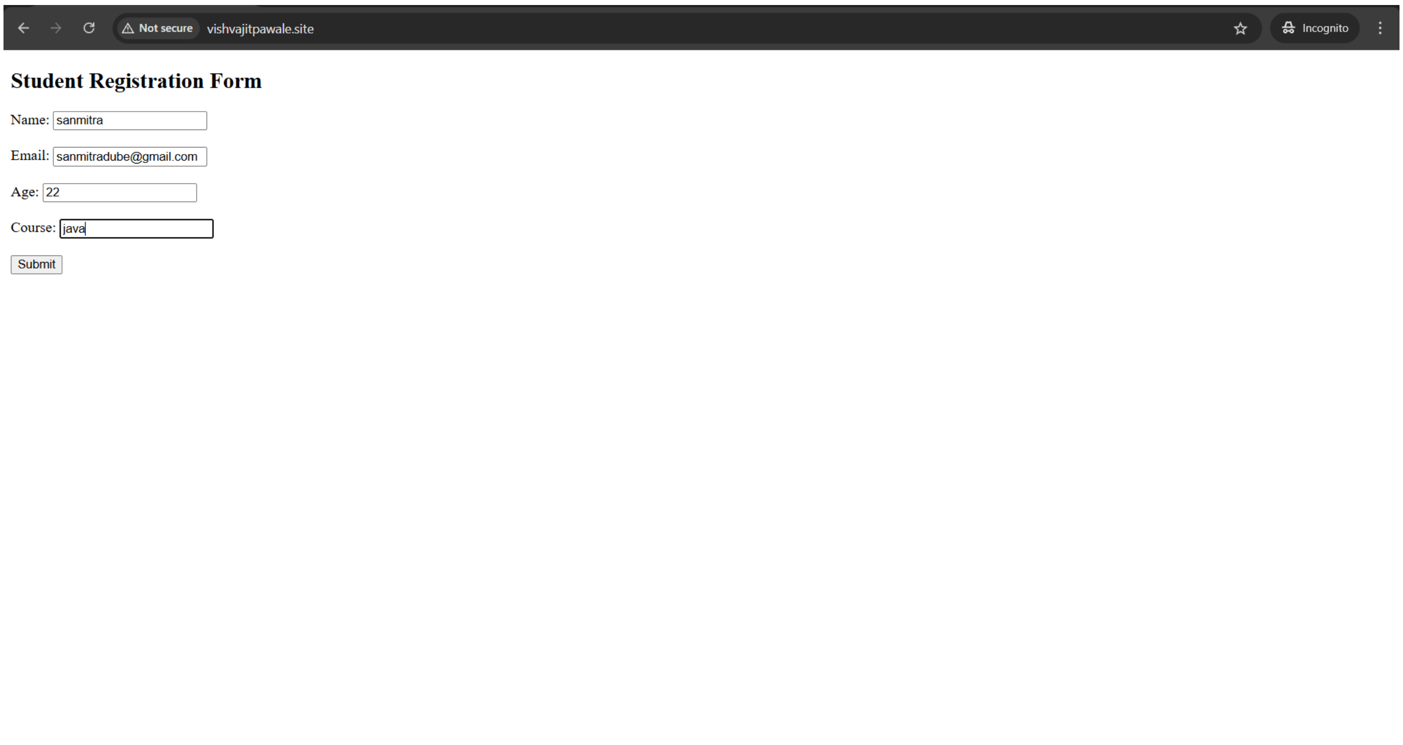
US East (N. Virginia)

dualstack.ALB-569087185.us-east-1.elb.amazonaws.com

Alias hosted zone ID: Z35SXDOTRQ7X7K

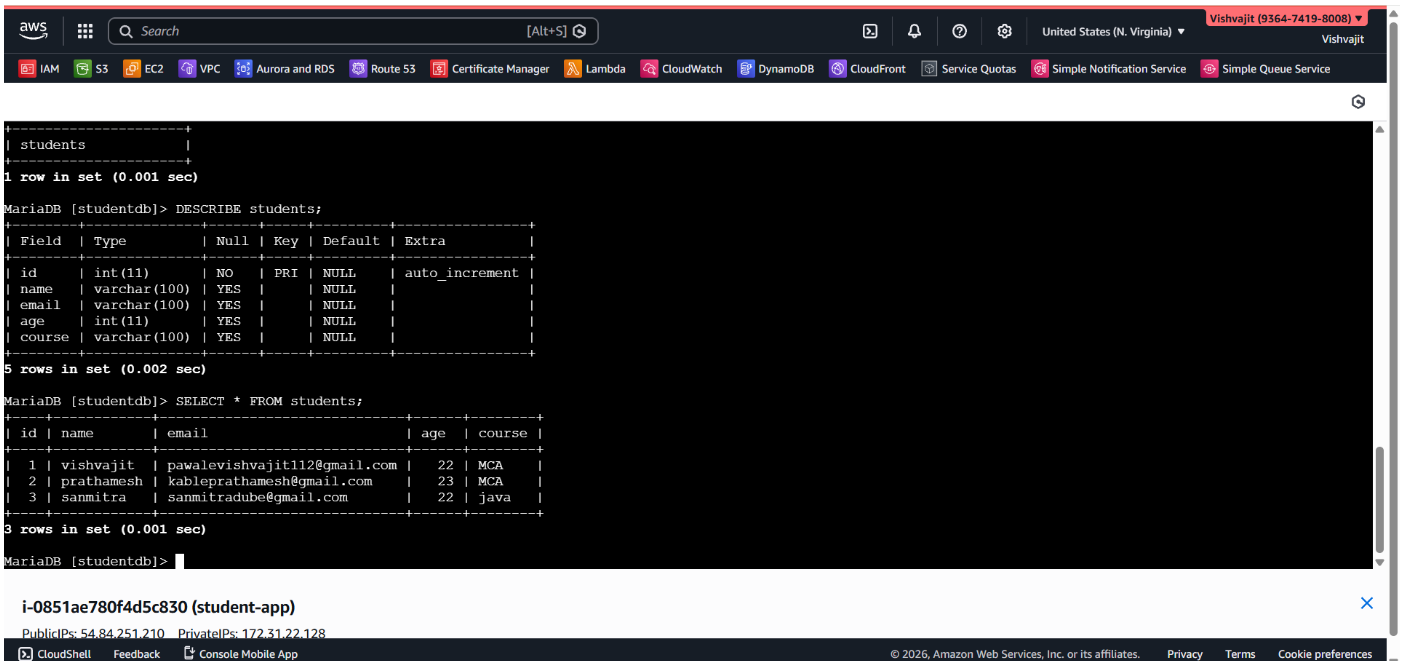
Routing policy: Simple routing

Evaluate target health: Yes



Student Registration Form

Name:	sanmitra
Email:	sanmitradube@gmail.com
Age:	22
Course:	java



```
+----------------------+
| students             |
+----------------------+
1 row in set (0.001 sec)

MariaDB [studentdb]> DESCRIBE students;
+--------+--------------+------+-----+---------+----------------+
| Field  | Type         | Null | Key | Default | Extra          |
+--------+--------------+------+-----+---------+----------------+
| id     | int(11)      | NO   | PRI | NULL    | auto_increment |
| name   | varchar(100) | YES  |     | NULL    |                |
| email  | varchar(100) | YES  |     | NULL    |                |
| age    | int(11)      | YES  |     | NULL    |                |
| course | varchar(100) | YES  |     | NULL    |                |
+--------+--------------+------+-----+---------+----------------+
5 rows in set (0.002 sec)

MariaDB [studentdb]> SELECT * FROM students;
+----+-----------+-----------------------------+------+--------+
| id | name      | email                       | age  | course |
+----+-----------+-----------------------------+------+--------+
|  1 | vishvajit | pawalevishvajit112@gmail.com |   22 | MCA    |
|  2 | prathamesh | kableprathamesh@gmail.com   |   23 | MCA    |
|  3 | sanmitra  | sanmitradube@gmail.com      |   22 | java   |
+----+-----------+-----------------------------+------+--------+
3 rows in set (0.001 sec)

MariaDB [studentdb]>
```

i-0851ae780f4d5c830 (student-app)

PublicIPs: 54.84.251.210 PrivateIPs: 172.31.22.128