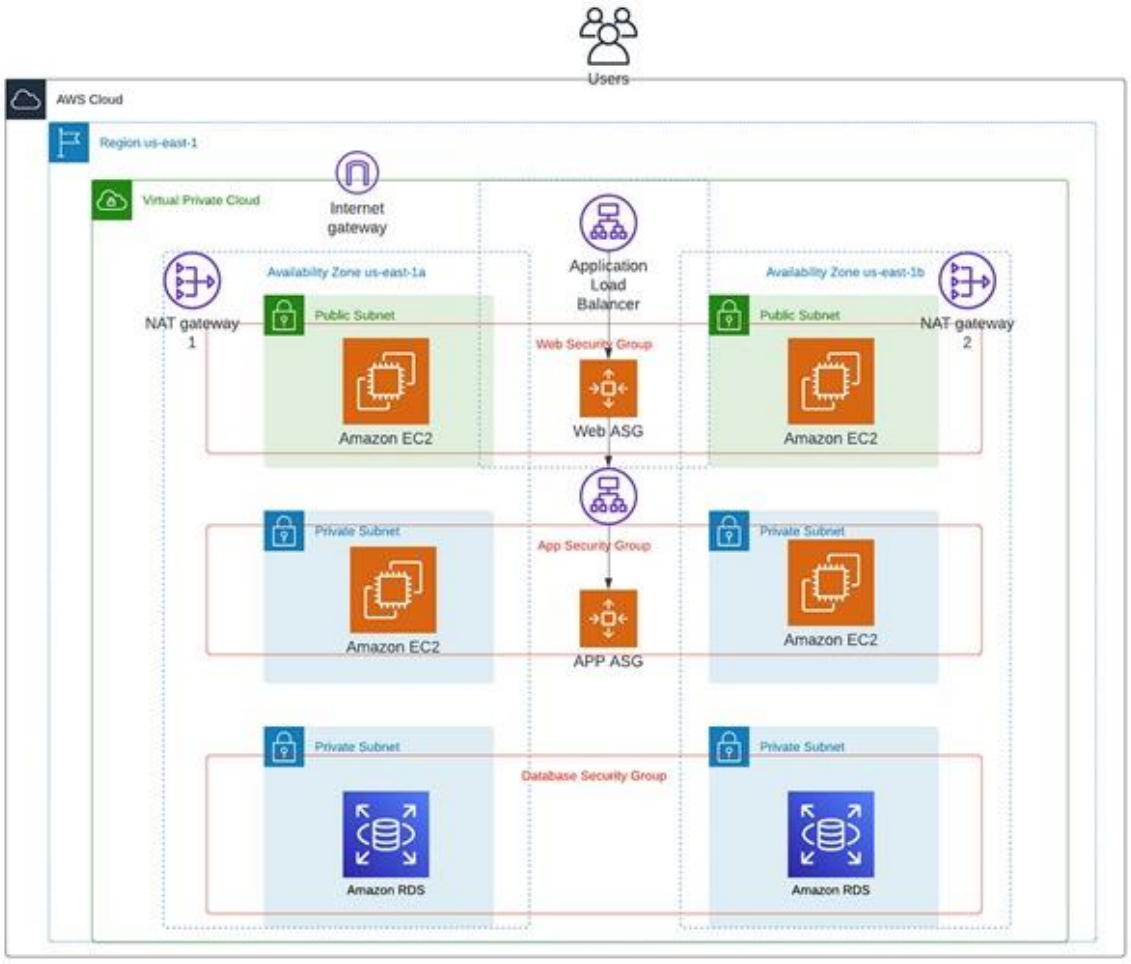
Three Tire Architecture project using AWS



The above architecture is the “Architecting 3 Tier Architecture on AWS”.

- First tier of our architecture is a web tier. It consists of 2 public subnets in separate availability zones, and an Auto scaling group with launch template and security group.
- The second tier is an Application tier. This tier will consist of 2 Private subnets, an Autoscaling group with launch a template and same security group used in above web tier.
- The third tier is a Database tier. This tier will have an RDS(relational database service) in 2 Private subnets and an same security group used in above both the tiers.

Required AWS Services:

1) Virtual Private Cloud, Subnets – 6, Internet gate way – 1, Route tables – 2, Nat gate way – 1.

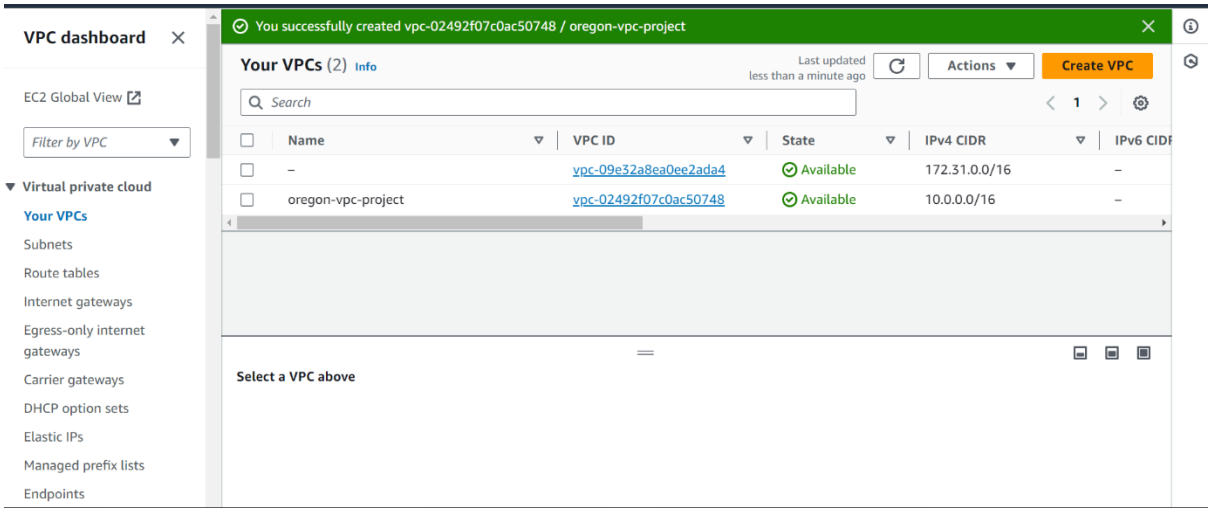
2) Elastic cloud Compute

3) Load Balancer

4) Auto- Scaling Group

5) Relational Database

Step 1: **Create VPC and its components:.**

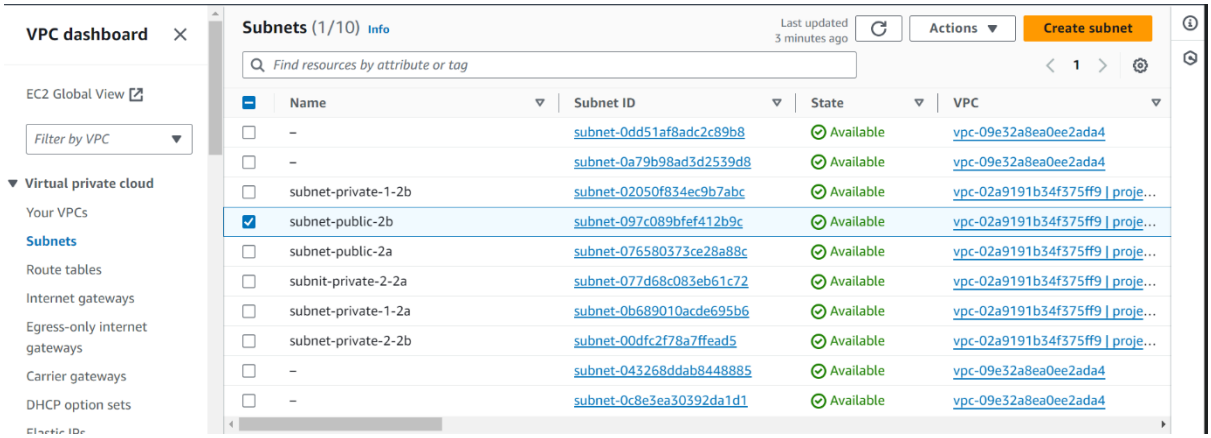


• Go to VPC dashboard click on create VPC.

• Click on VPC only and name tag as Oregon-vpc-project

• Give IPV4 CIDR (classless inter domain routing) as 10.0.0.0/16.

• Click on VPC, it is created.



• Create 6 subnets (2-public, 4-private).

• Create first subnet.

• Click on subnet, click on create subnet, select our VPC (Oregon-vpc-project).

• Give name tag as subnet public-2a, select availability zone as us-west-2a. Give CIDR as 10.0.0.0/24 and created it.

• Create Second subnet.

• Click on subnet, click on create subnet, select our VPC (Oregon-vpv-project).

• Give name tag as subnet public-2b, select availability zone as us-west-2b. Give CIDR as 10.0.15.0/24 and created it.

Create Third subnet.

• Click on subnet, click on create subnet, select our VPC (Oregon-vpc-project).

• Give name tag as subnet private-1-2a, select availability zone as us-west-2a. Give CIDR as 10.0.20.0/24 and created it.

Create fourth subnet.

• Click on subnet, click on create subnet, select our VPC (Oregon-vpc-project).

• Give name tag as subnet private-1-2b, select availability zone as us-east-1b. Give CIDR as 10.0.30.0/24 and created it.

Create FIFTH subnet.

• Click on subnet, click on create subnet, select our VPC (Oregon-vpcproject).

• Give name tag as subnet-2-2a, select availability zone as us-east-1b. Give CIDR as 10.0.40.0/24 and created it.

Create SIXTH subnet.

• Click on subnet, click on create subnet, select our VPC (Oregon-vpc-project).

• Give name tag as subnet private-2-2b, select availability zone as us-east-1b. Give CIDR as 10.0.50.0/24 and created it.

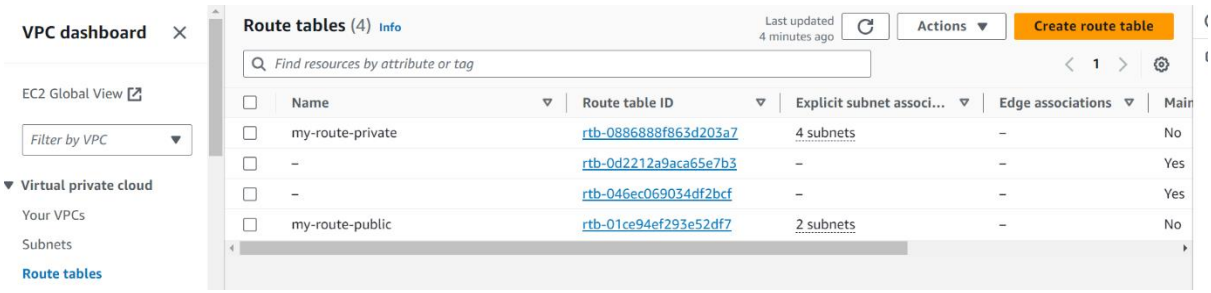
Create internet gateway, name tag as project-internet-gateway

This igw is attached to VPC.

• Go to actions in internet gate way and click on attach to VPC

• Select our VPC (Oregon-vpc-project). Click on attach internet gateway. Click on attach internet gateway

Create two route table, give name as my-route-public and my-route private



Create route table name as my-route-public

• Select our VPC (Oregon-vpc-project), create it. Click on route table id, open it.

• Go down click on edit subnet association.

• Select both public subnet and click on save association.

Go to actions click on edit routes.

• Click on add routes give all traffic (0.0.0.0/0) and select our internet gateway, save changes.

Create private route table name as my-route-private.

•Select our VPC, (Oregon-vpc-project), create it.

• Click on route table id, open it.

• Go down click on edit subnet association.

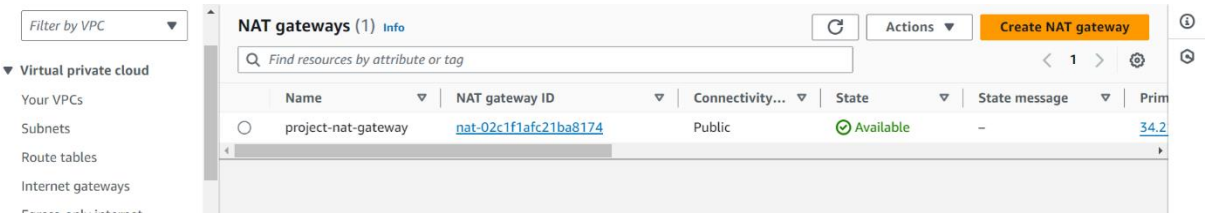
• Select all private subnet and click on save association.

Create NAT gateway name as project-nat-gateway

• Select public subnet(private-2a).

• Select connectivity type as IPV4.

• Click on allocate Elastic IP



Now go to private route and click on actions.

• Click on edit routes and add route.

• Give all traffic (0.0.0.0/0) and select NAT gateway.

Create Autoscaling group.

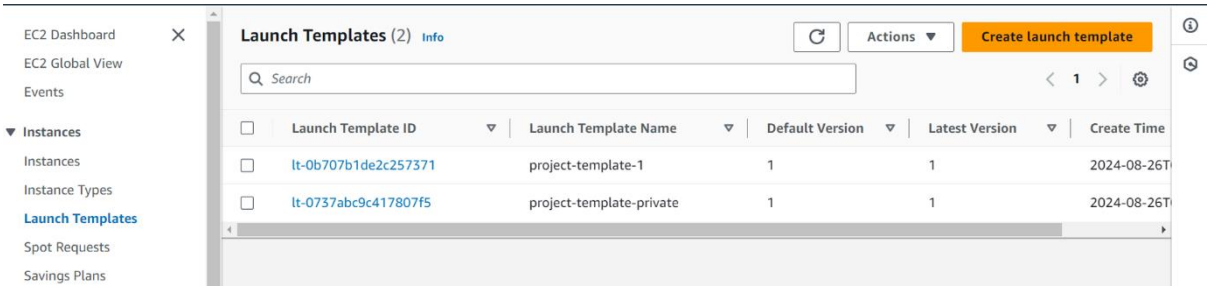
• For creating autoscaling group we need to create an launch template, create two template

• Click on create a launch template.

• Template name as project-template-1-public & project-template-private, description as nothing.

• Select my-image.

- Instance type as t2.micro and key pair as project-01.
- create security group name as project-sg
- Now click on create launch template



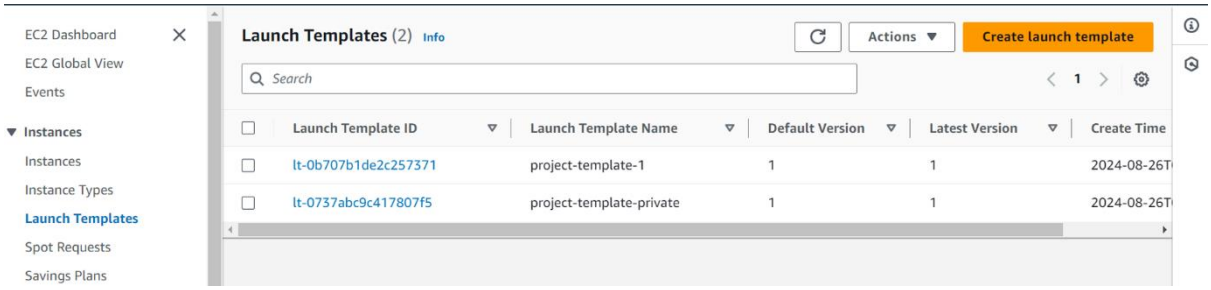
- After creating two templates go to auto scaling groups and

  Auto scaling for the public subnets (instances subnet public-2a & subnet public-2b)

  And the auto scaling for private subnet (instances subnet private-1-2a & subnet-private-1-2b

Open a auto scaling

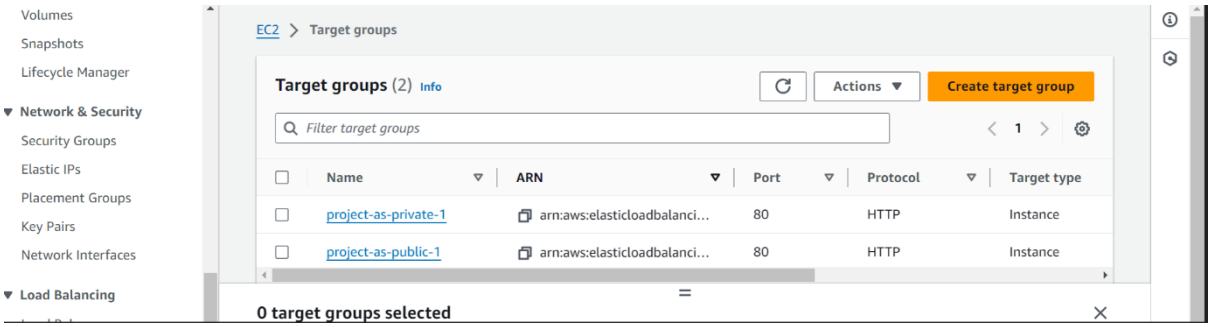
- Click on create autoscaling group, create two auto scaling
- Give name as (project-as-public and project-as-private).
- Choose the created launch template (project-template-1 and project-template-private) and click on next.
- Select our VPC (Oregon-vpc-project),
- Click on next and click on no load balancer.
- Give desired capacity as 2 in sizing desired capacity min – 2 and max – 5 and click on next.
- Click on next and click on create auto scaling groups



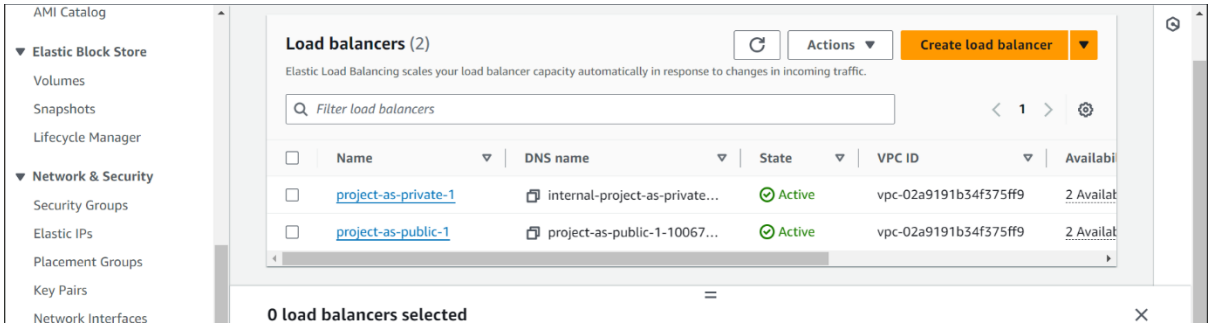
• While creating the auto scaling we can launch automatically target group, load balancer and ec2 instances

• No need to create separate target group, load balancer and ec2 instances

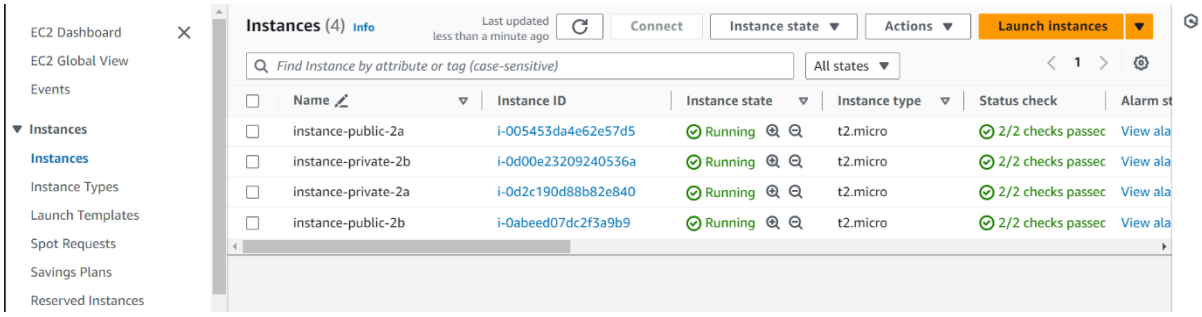
Target groups



Load balancers

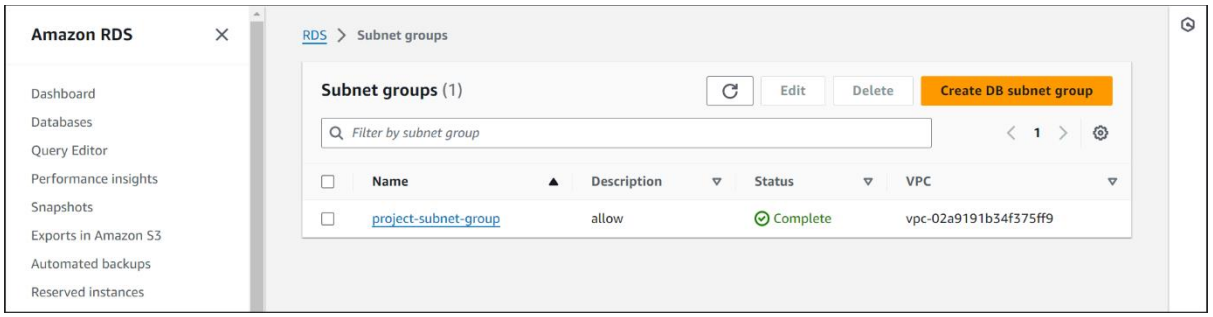


Ec2 instances



Create subnet group

- Give name as project-subnet-group and description nothing.
- Select created VPC
- Give availability zones and select private subnets from each zone.
- Create the DB subnet group.

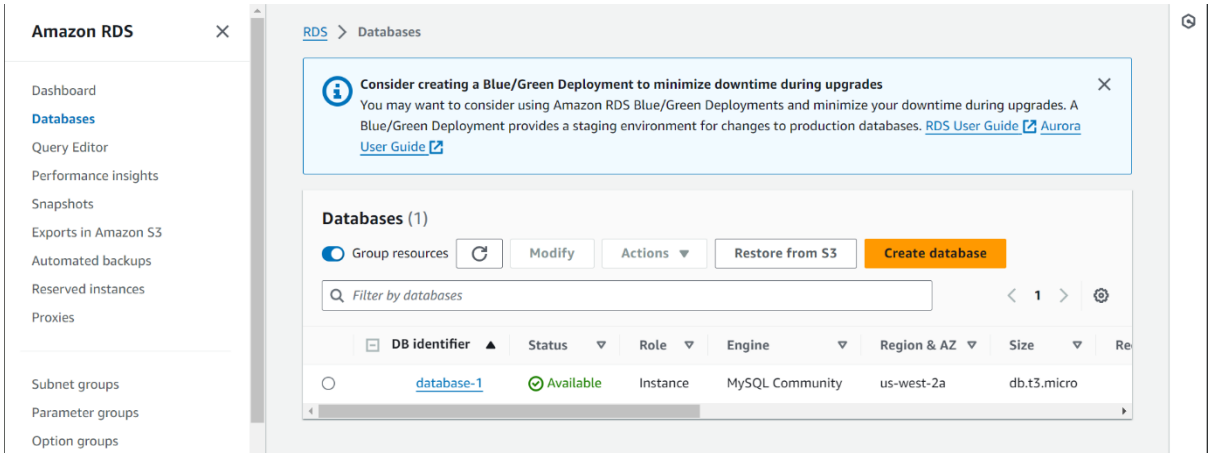


Create Database (RDS) Relational Databases

- Click on create database, select standard create, select engine type as MySQL.
- Select templates as production and select multi-AZ DB cluster.
- Select on self-managed, give password and confirm the password. •
- Select memory optimized class.
- In connectivity, click on Don’t connect to the EC2 compute resource and select created VPC (Oregon-vpc-project).

• Select subnet group (extra) and give public access as yes.
• Choose existing security group (project-sg).

• Go to VPC dashboard, click on VPC, click on actions, go to edit VPC settings and click on the enable DNS hostnames.
• Create the database



Establish connection

• Go to EC2 instance, click on instance-public-2a, open it click on connect and again click on connect. Give commands as:

1. sudo -i (convert from normal user to root user).

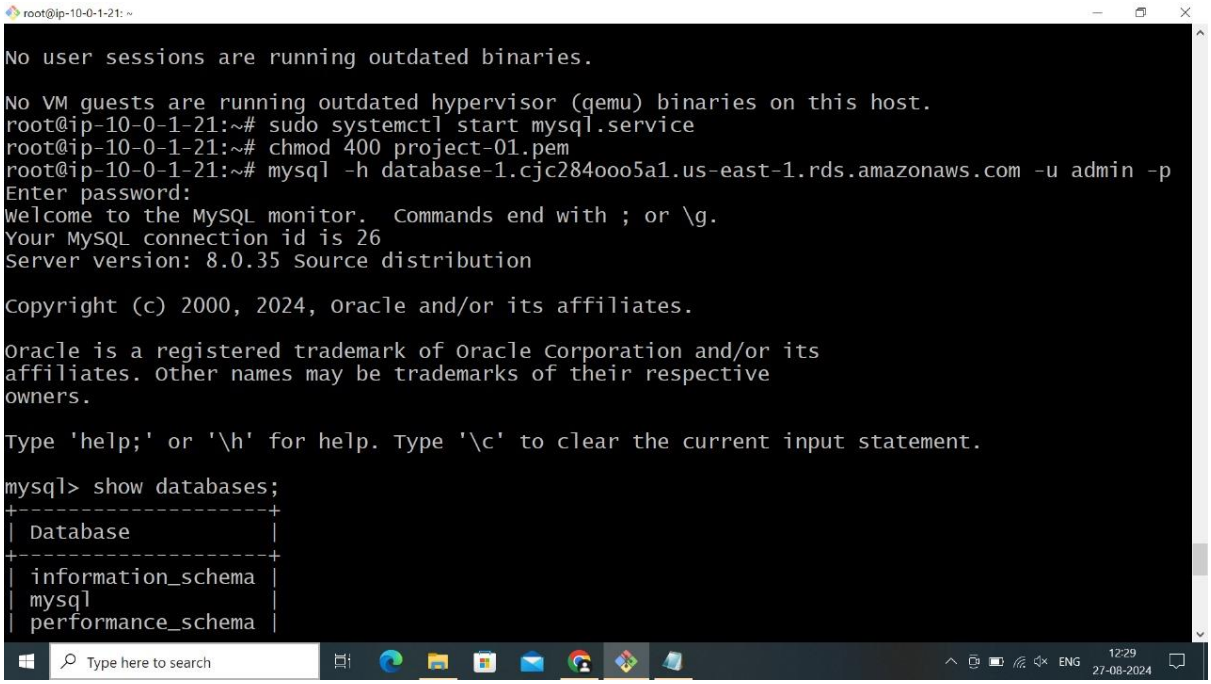
2. apt update -y

3. sudo apt install mysql-server (to install mysql)

• After installing mysql connect to RDS server through the RDS Endpoint and provide user name & password.

Now we can see that we are connected to MySQL server.
Use commands like:

• show databases; (to show the list of databases are there)



- create database project; (to create a new database)
- use project; (server will take that database to use)
- create a table using this command

CREATE TABLE Persons

```
CREATE TABLE Persons (
    PersonID int,
    LastName varchar(255),
    FirstName varchar(255),
    Address varchar(255),
    City varchar(255)
);
```

Insert the fiels and the values

INSERT INTO persons (personsID,LastName, FirstName, Address, City ,)

VALUES ('101', 'pedapudi', 'manisha', 'Hyd', 'gunture');