**Project - 1: Deploying a Multi-Tier Website Using AWS EC2**

Description: Amazon Elastic Compute Cloud (Amazon EC2) provides scalable computing capacity in the Amazon Web Services (AWS) cloud. Using Amazon EC2 eliminates your need to invest in hardware up front so you can develop and deploy applications faster. You can use Amazon EC2 to launch as many or as few virtual servers as you need, configure security and networking, and manage storage. Amazon EC2 enables you to scale up or down to handle changes in requirements or spikes in popularity, reducing your need to forecast traffic.

**Problem Statement:**

Company ABC wants to move their product to AWS. They have the following things set up right now:

1. **MySQL DB**
2. **Website (PHP)**

The Company wants high availability on this product, therefore wants Auto Scaling to be enabled on this website.

Steps To Solve:

1. Launch an EC2 Instance

2. Enable Auto Scaling on these instances (minimum 2)

1. **Create an RDS Instance**

**4. Create Database & Table in RDS instance:**

a. Database name: Intel

b. Table name: data

c. Database password: intel123

1. **Change hostname in website.**
2. **Allow traffic from EC2 to RDS instance.**
3. **Allow all-traffic to EC2 instance.**

**Solution:**

We are given a task to create a minimum of 2 EC2 instances using Auto-Scaling Group. ● First we’ll create an auto-scaling group with minimum 2 EC2 instances.

● Go to EC2> Launch templates > Create launch template

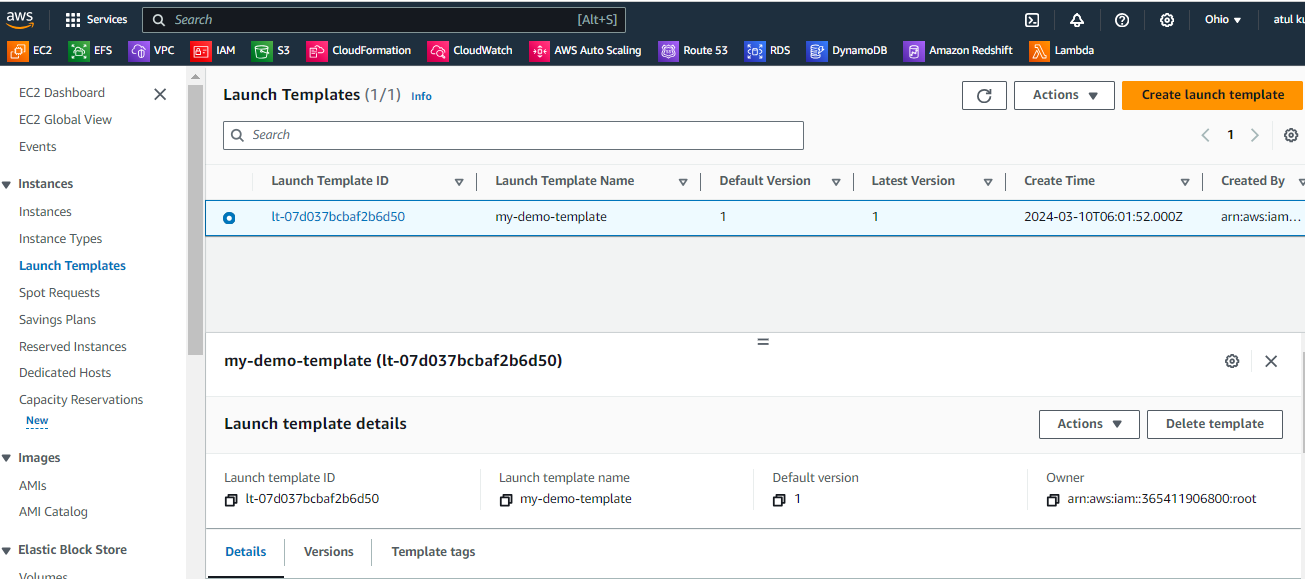
1. Enter the launch template name as ‘my-demo-template’.

2. Select the AMI type as ‘amazon linux’ and the instance type as ‘t2.micro’.

3. Create a key pair. I have created a key pair named ‘atul-key.pem’.

4. Under the Network setting, create a new security group and name it as ‘mydemotemplate-sg’ which allows all traffic from anywhere.

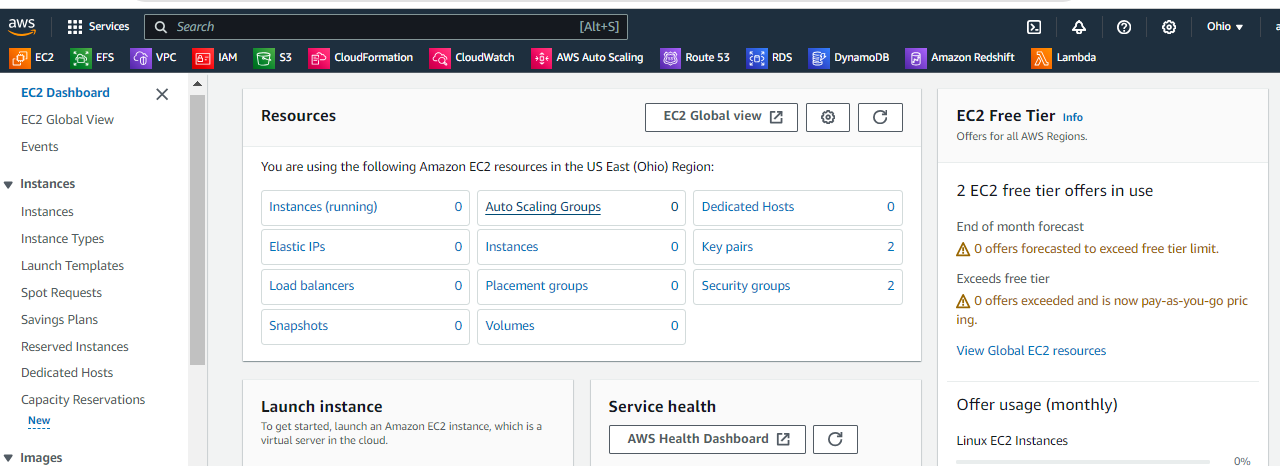
6. Click on ‘Create launch template’.

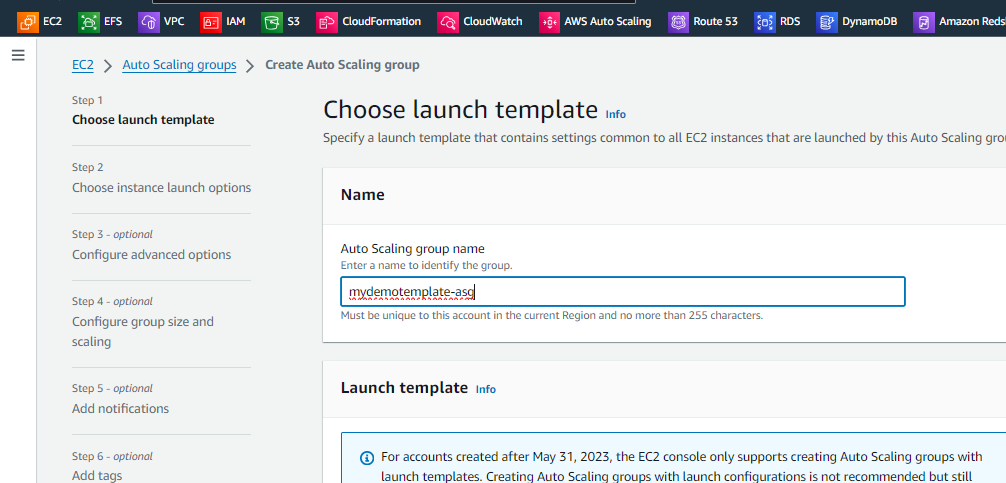


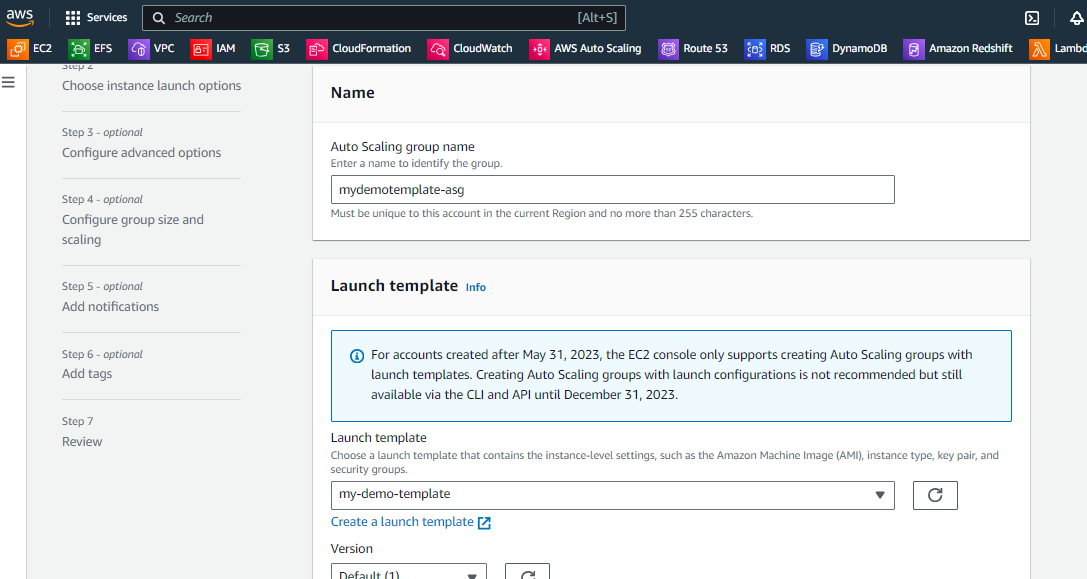
Go to EC2>Auto Scaling Groups > Create auto scaling group

1. Enter the Auto Scaling group name as ‘mydemotemplate-asg’.

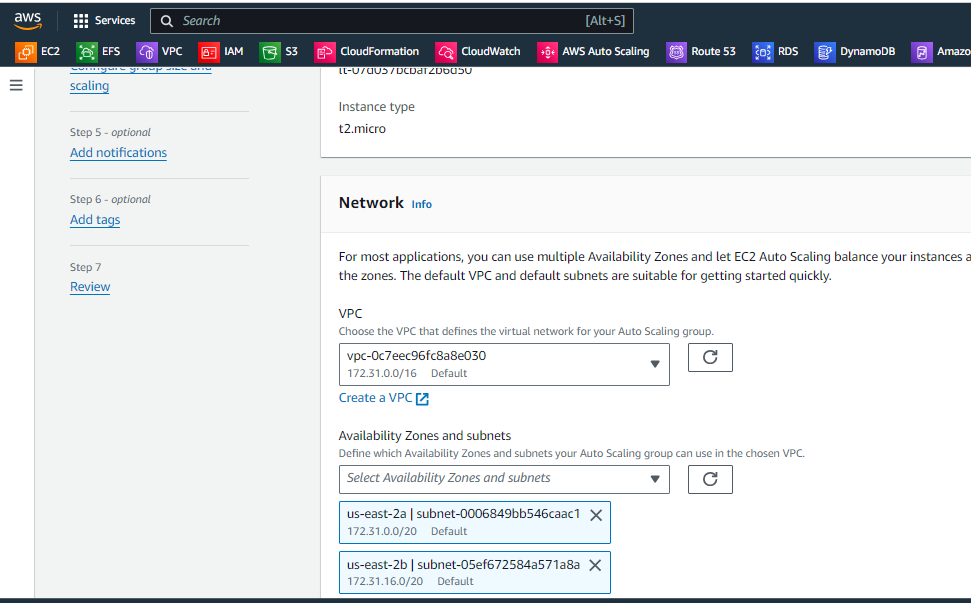
2. Select the launch template we just created (Demo-Template) and click on Next.



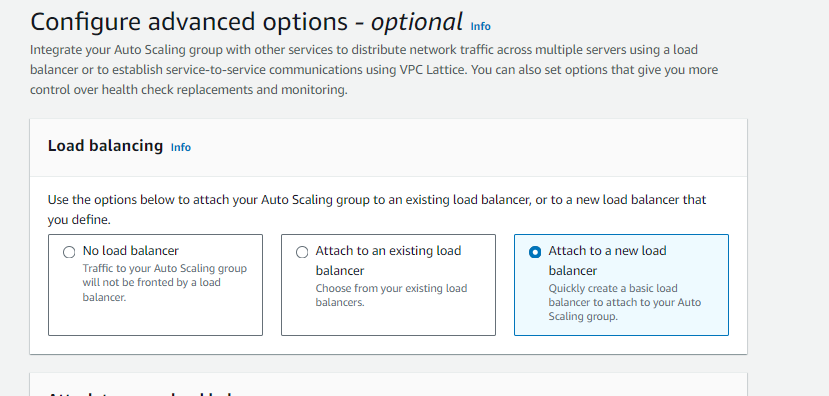




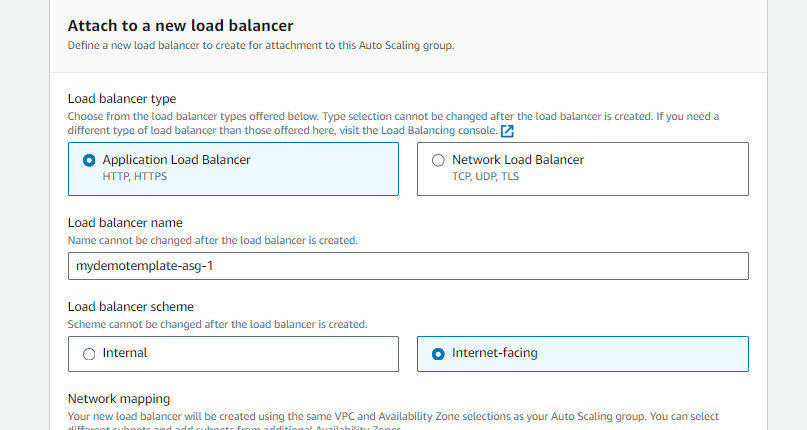
3. Under the network section, select all the AZs under the selected region and click on next.



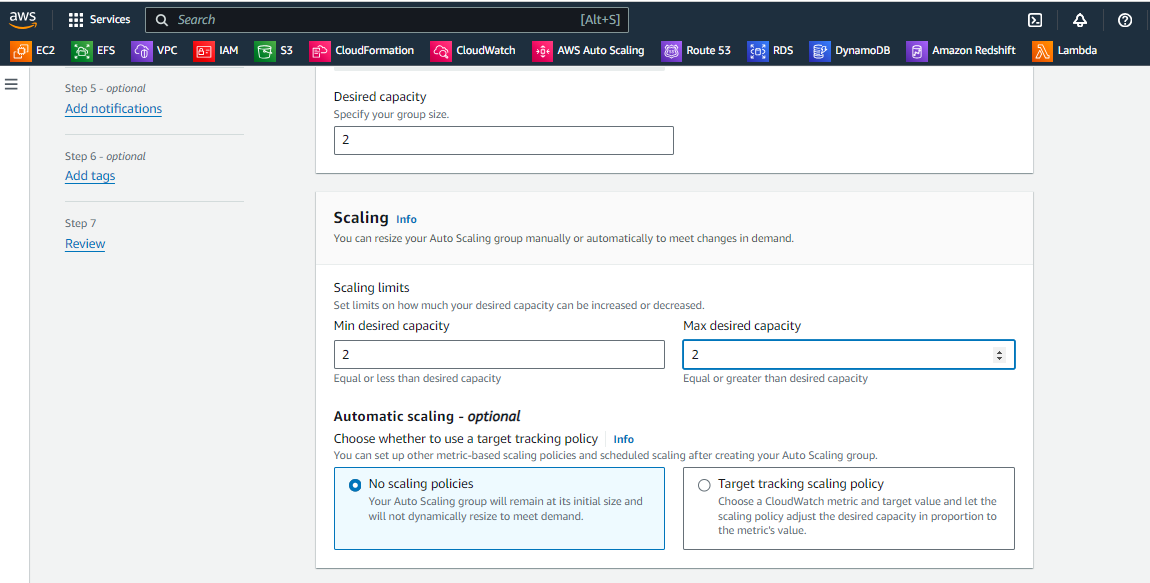
4. Underthe‘LoadBalancing’ ,selectAttachtoanewloadbalancerandload balancertypeasApplicationLoadBalancer.



4. Under the ‘Load Balancing’, select Attach to a new load balancer and load balancer type as Application Load Balancer and select internet facing.

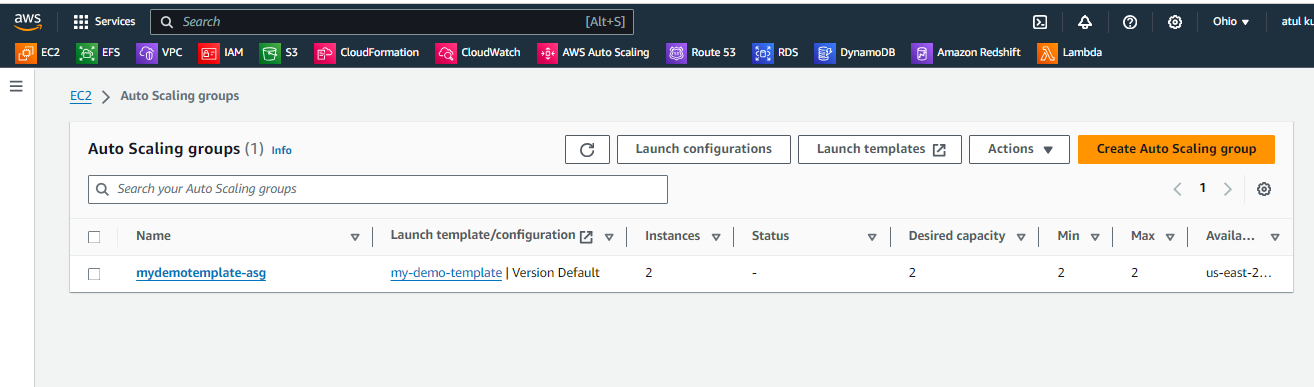


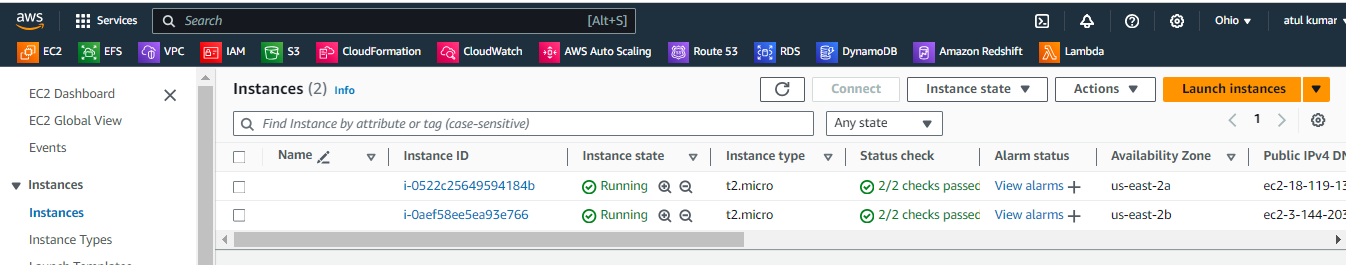
1. Create a new target group and name it as ‘mydemotemplate-asg-1and click on Next.
2. Enter the desired capacity as 2, minimum capacity as 2, and max capacity as 3 and click on Next.



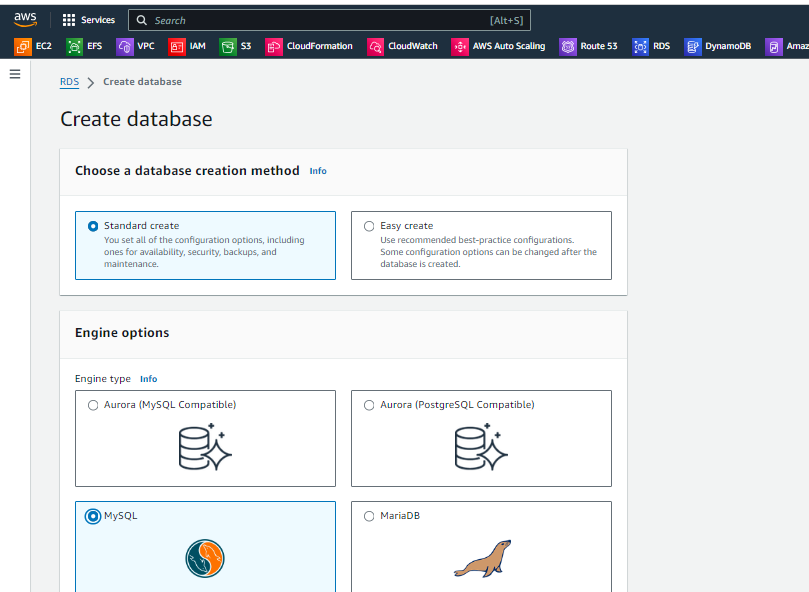
● Skip to review and click on Create auto scaling group.

● Our Auto Scaling group has been created with a minimum of 2 instances.

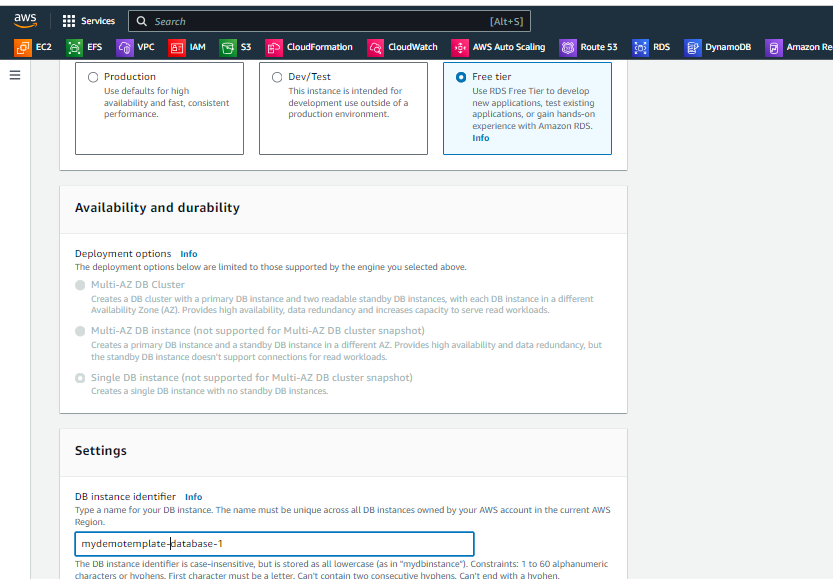




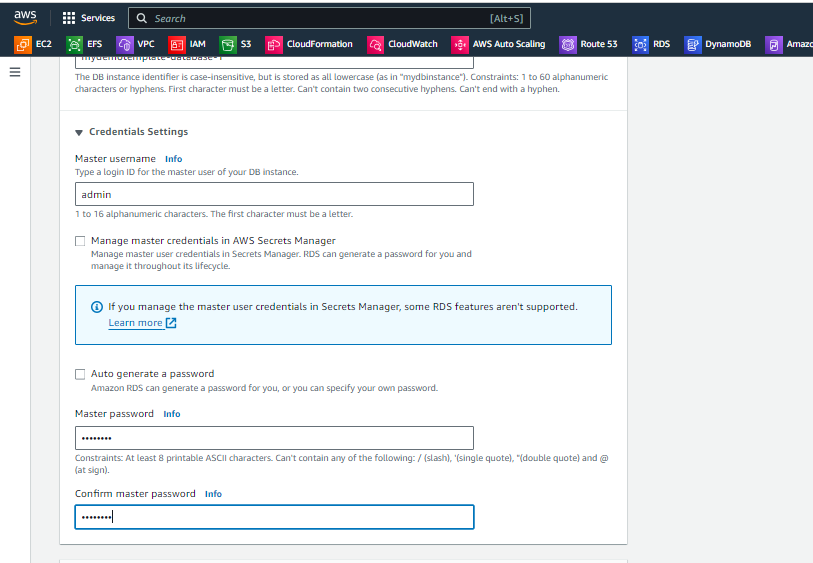
* Next we’ll create a My SQL RDS instance.
* Go to RDS > Create database.
* Select Standard create database creation method, MySQL as engine type.
* Give name to database
* Must select availability zone be sure that instance and rds is in same availability zone
* Go to additional setting and give database name “intel” (as gave by intellipaat team)



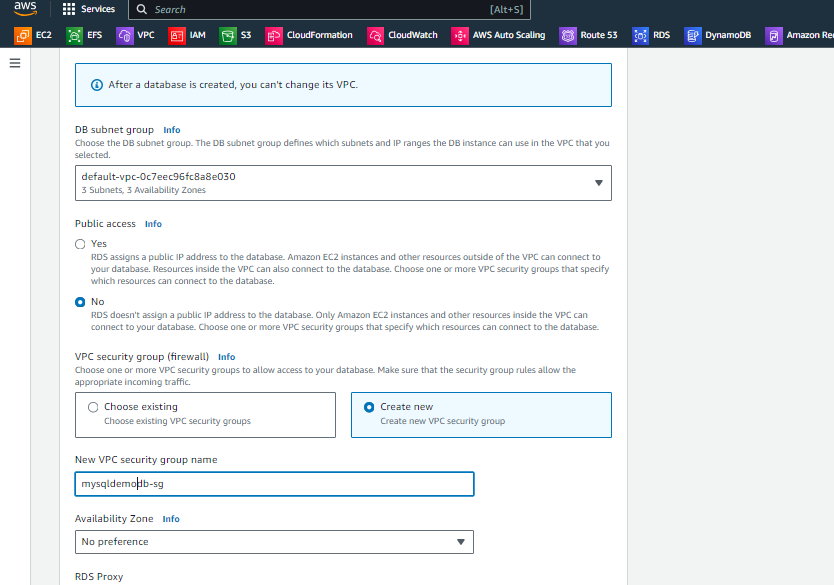
● Select template as Free tier and DB instance identifier as DemoDatabase-1.

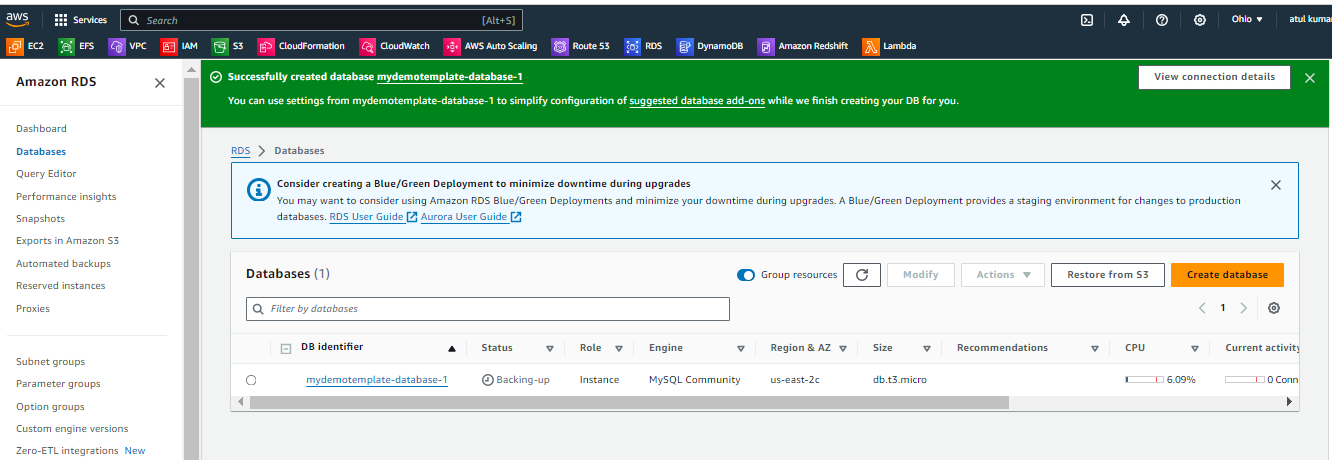


● Enter the master username as admin and master password as ‘intel123’.



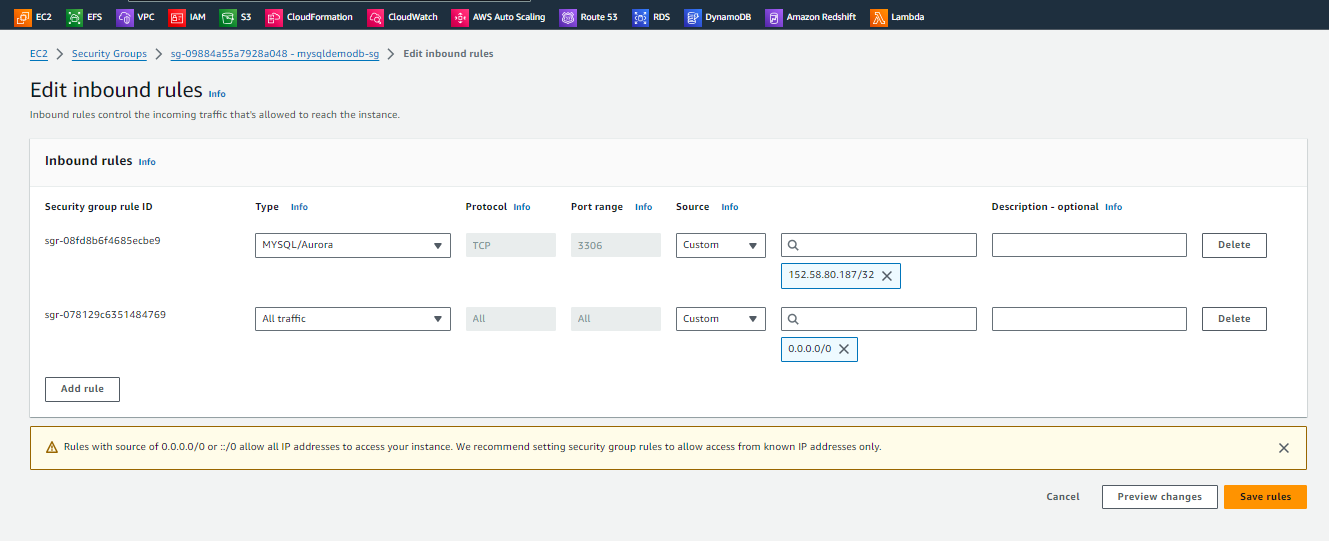
● Select Public access as NO, VPC security group as Create new, new VPC security group name as mysqldemodb-sg and create database.



Our database instance has been created and we need to copy the endpoint of our instance to setup a connection between RDS and EC2 instances.

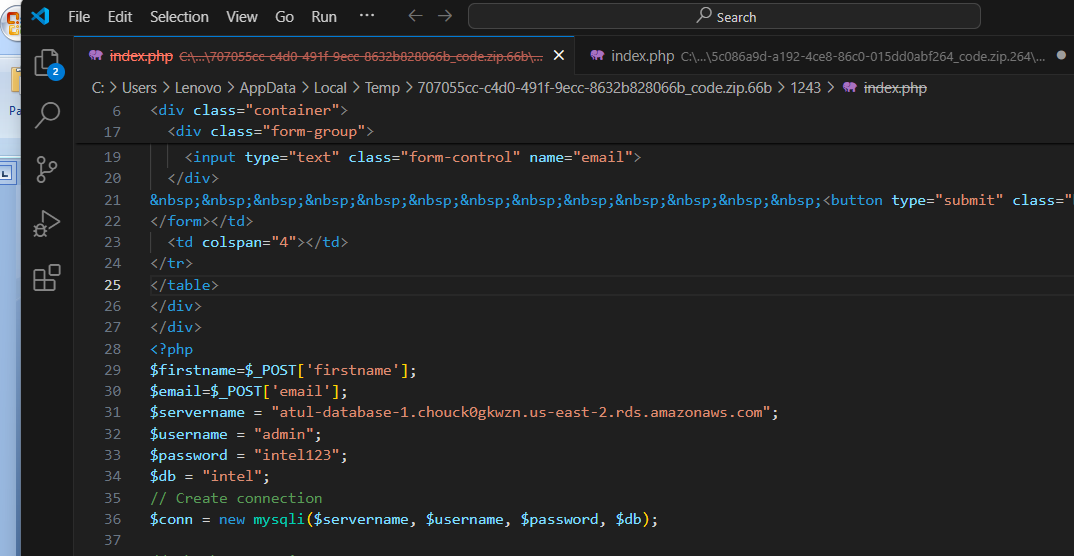
● Select the security group ‘MySQLDB-sg’ and click on Edit inbound rules.

● Enable all traffic from anywhere and save.



● Open the index.php file and under the $ server name, enter the copied end point of RDS instance. (demodatabase-1.cdudzmejspu7.us-east-1.rds.amazonaws.com)

● Under the $username, enter the value as‘admin’and save the file.



● Now we need to ssh into our instances and install php, apache server and mysql client for php.

● Connect to both the instances through instance connect and run the following command:

1. sudo apt install php5.6 mysql-client php5.6-mysqli (It will install php, mysql-client and php mysql-client for ubuntu)

● To setup a connection between EC2 and RDS instance, run the following command:

1. mysql -h<endpoint> -u<username> -p

● Hence run the below command and enter the password as‘intel123’ :

‘mysql –h demodatabase-1.cdudzmejspu7.us-east-1.rds.amazonaws.com -u admin -p’

● Our connection is successfully setup between RDS and EC2 instances.

● Now we need to create the database ‘intel’ and create the table ‘data’ inside the‘intel’ database.

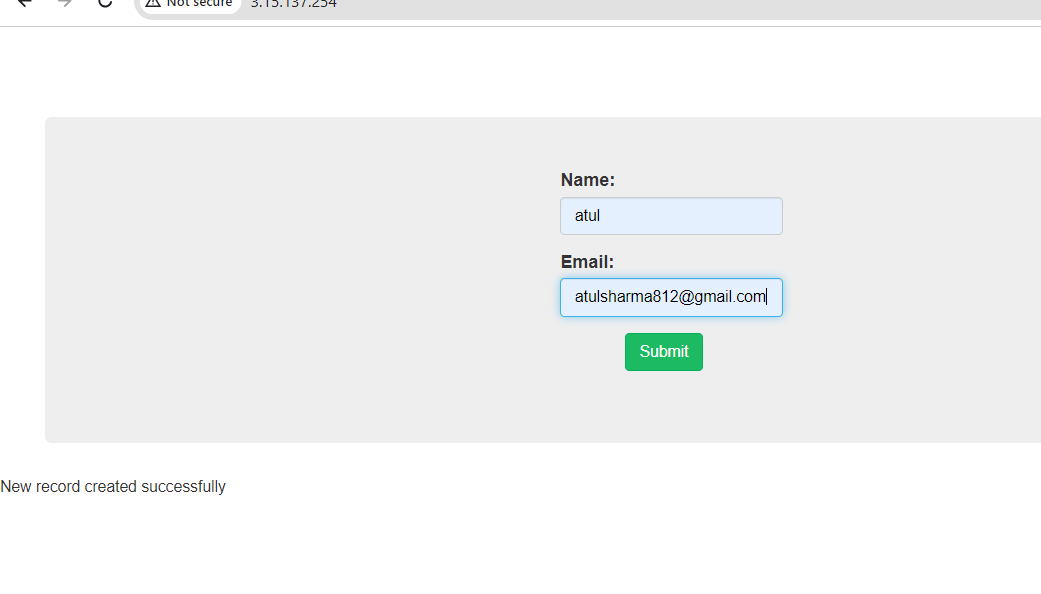
1. To create the database, runs the command: ‘create database intel

2. To create the table named ‘data’, run the command: ‘use intel;’ ‘create table data (fistname varchar(15),email varchar(30));’

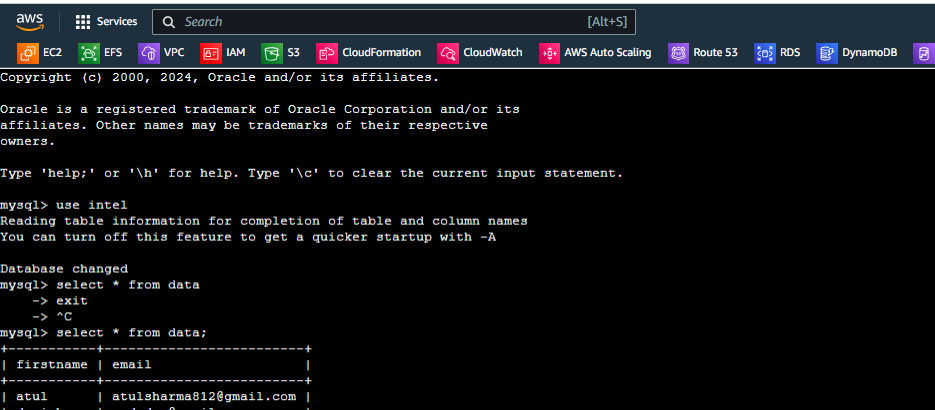
● We have successfully created the database and table.

● now go to var/www/html and remove or replace the file with our given file and save it as a index.php file.

* Go to vim and copy the code and paste it in index.php which we created and save it
* Now copy the endpoint of rds or load balance url and paste it on the browser and hit enter



* You can see new record saved successfully .



● Connect to any instance and run the command: ‘Select\*from data;’

● Our entries are reflecting in our database successfully.

● The task is completed

Thanks