Project – 1

Deploying a Multi-Tier Website Using AWS EC2

- Ruchitha Bt

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)

3. Create an RDS Instance

4. Create Database & Table in RDS instance:

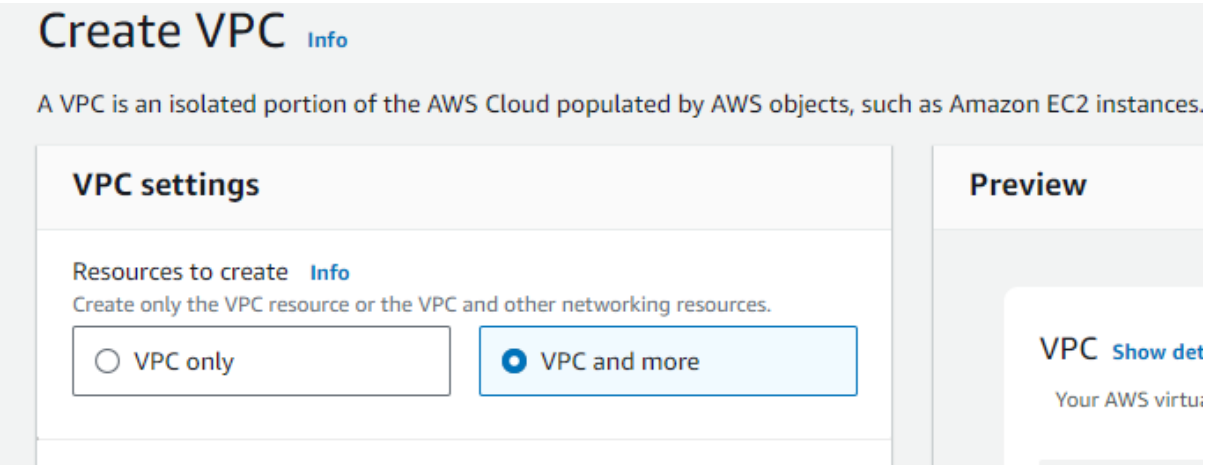
    a. Database name: intel

    b. Table name: data

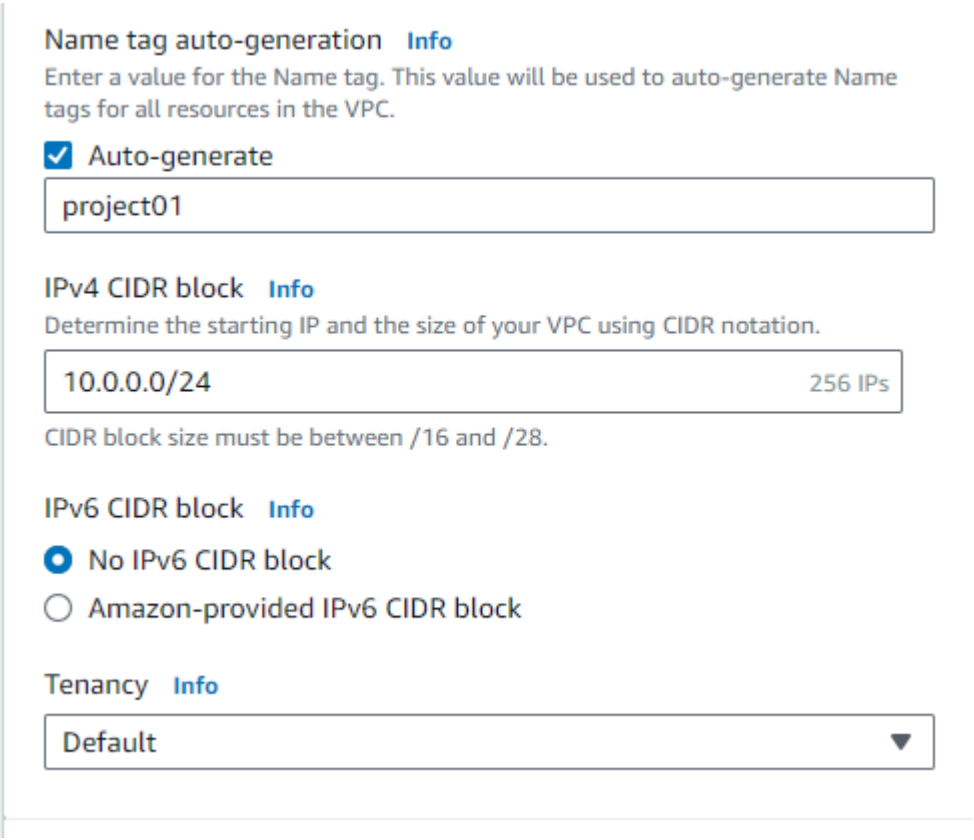
    c. Database password: intel123

Solutions:

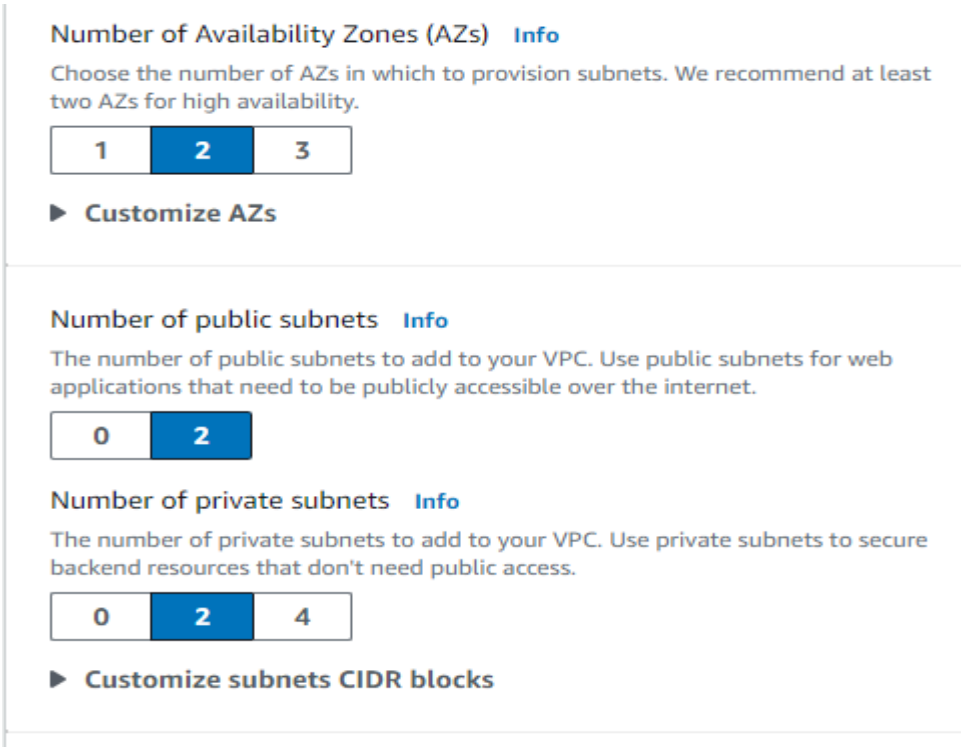
Go to VPC > Create VPC



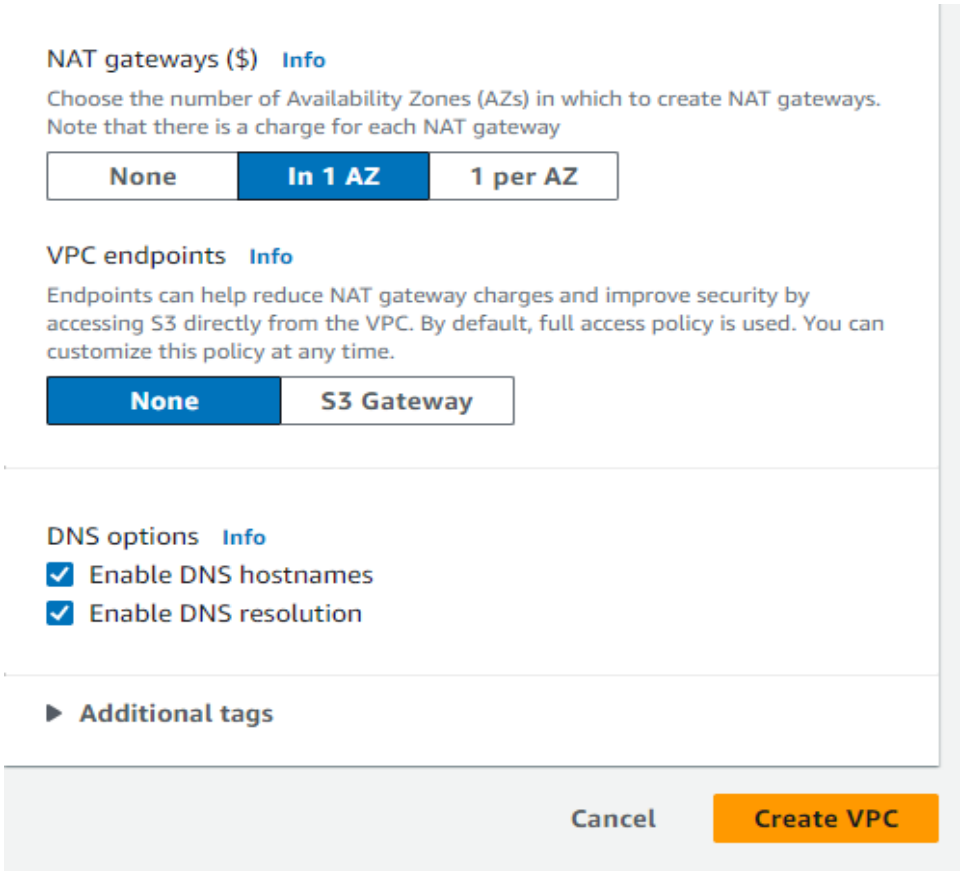
Give Name and IP address



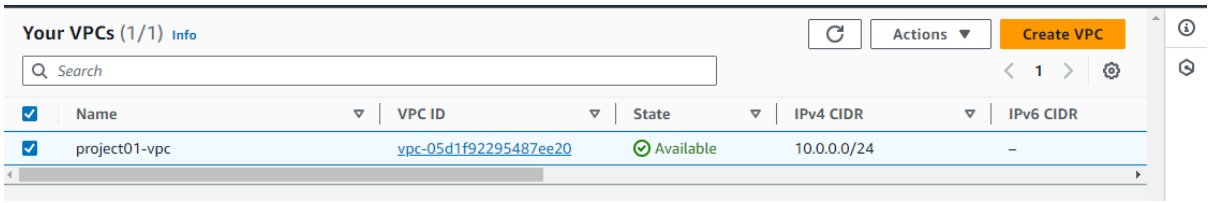
Select 2 AZ and 2 Private and public Subnets



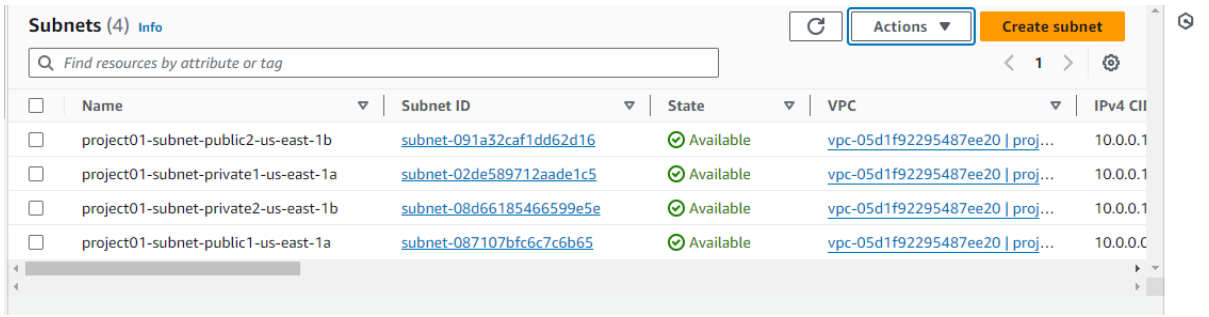
Use Nat gateway and Create VPC



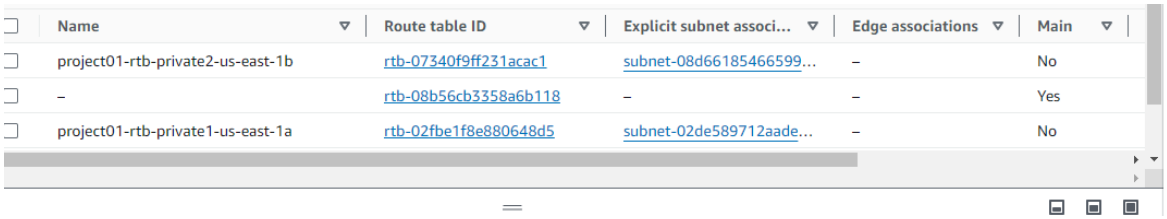
VPC is created



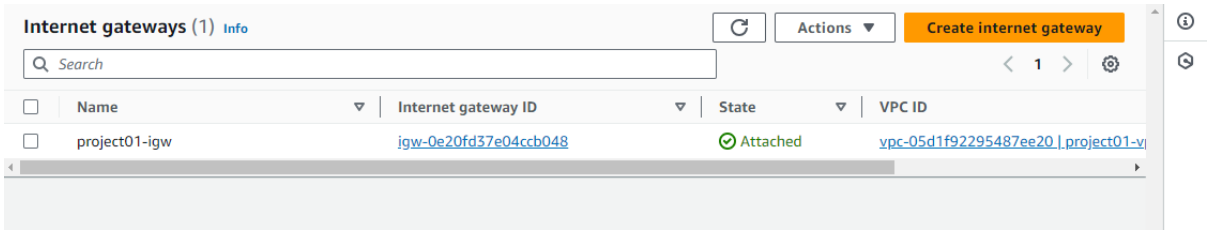
2 Private and Public Subnets are created in different zones

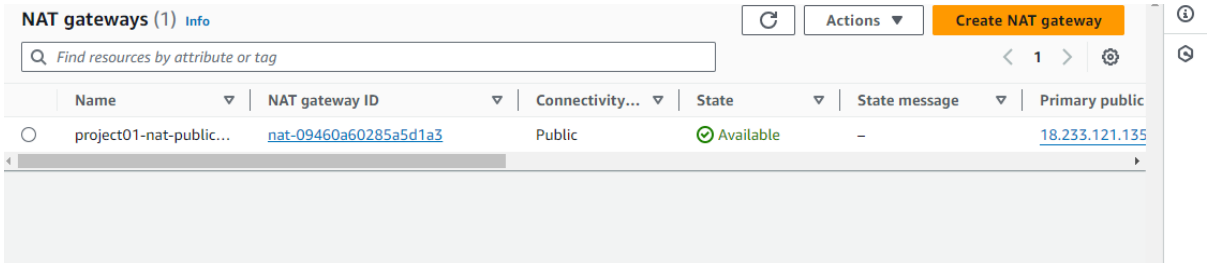


3 Route table is created for different zones

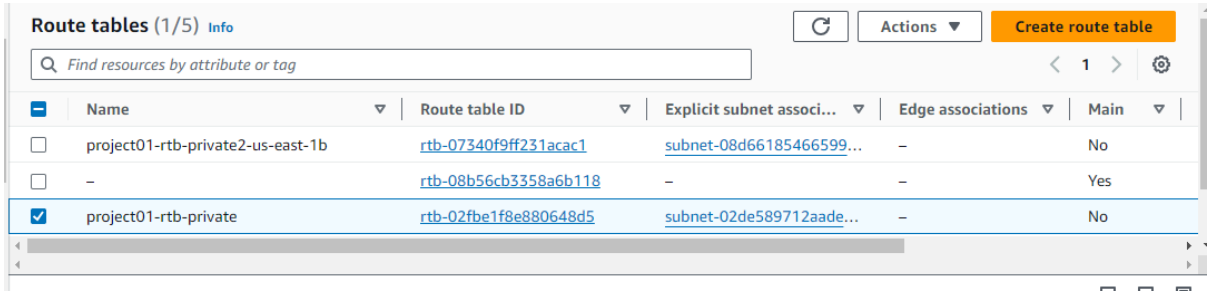


1 Internet gateway and 1 NAT gateway is created.

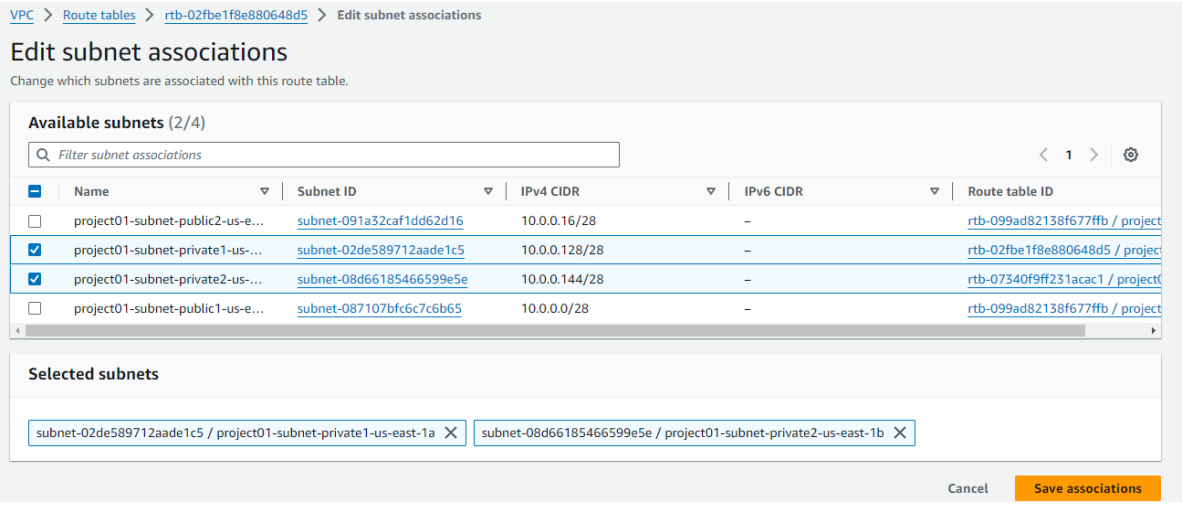




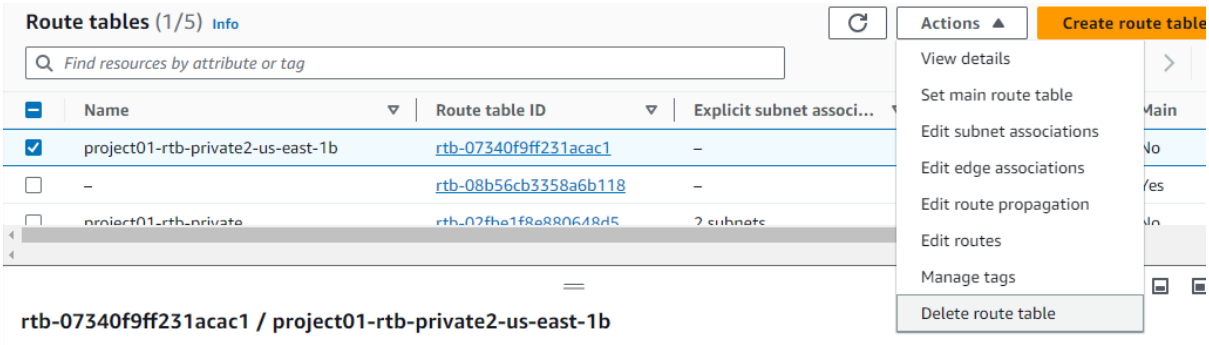
As our 2 Private subnets are dedicated to 2 Route tables, make them come under single Route table



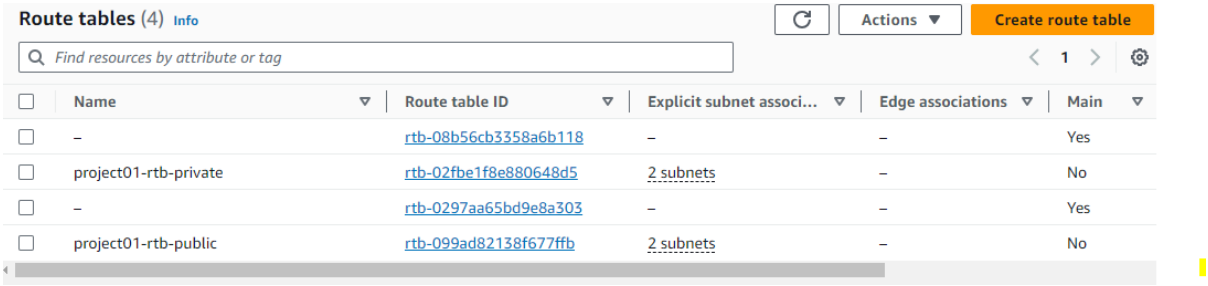
Go to Subnet association > Edit > select private subnets > save



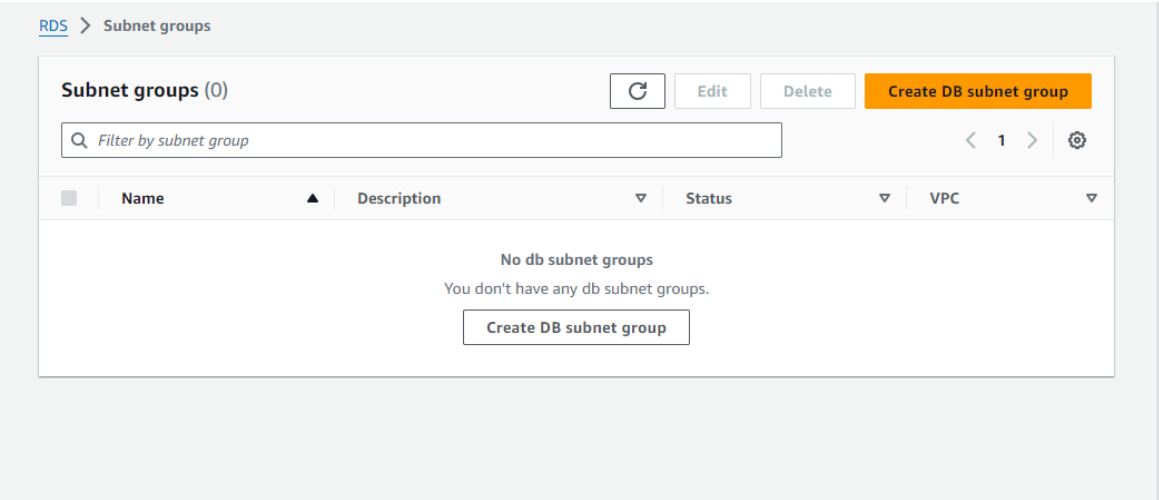
Delete the other Subnet



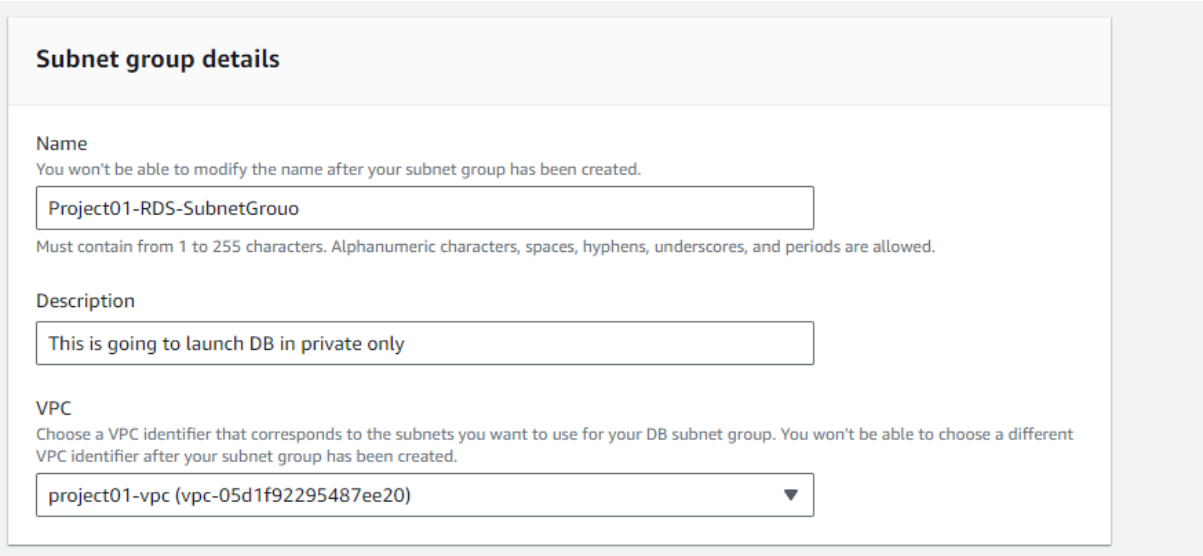
Hence we can see 1 private and 1 pubic Route tables for each 2 Subnets



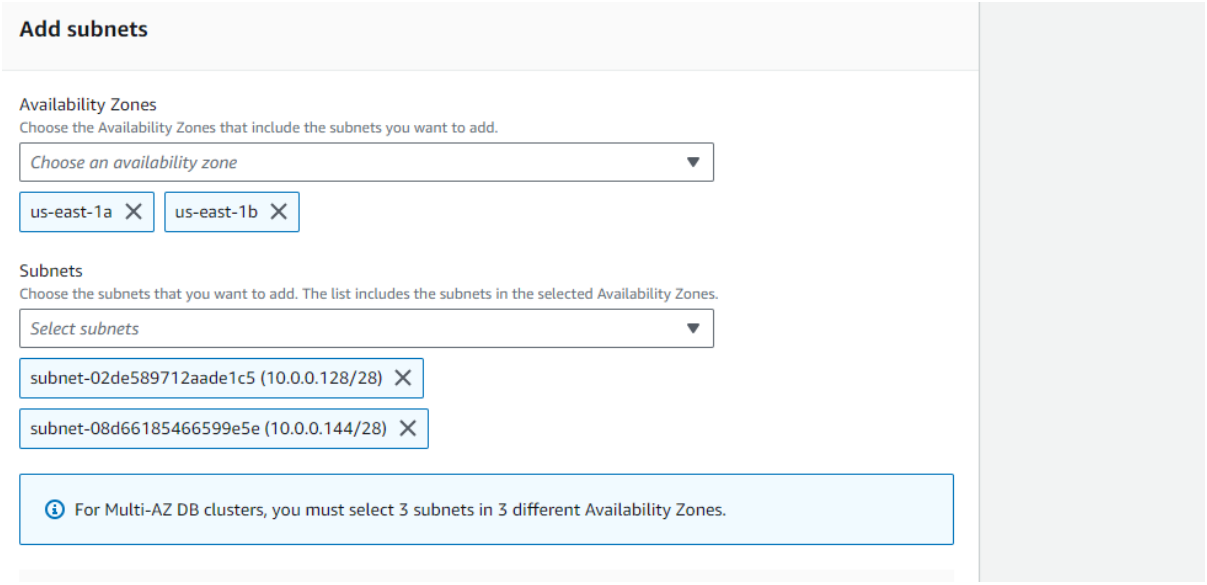
Now create Subnet group for creating Database



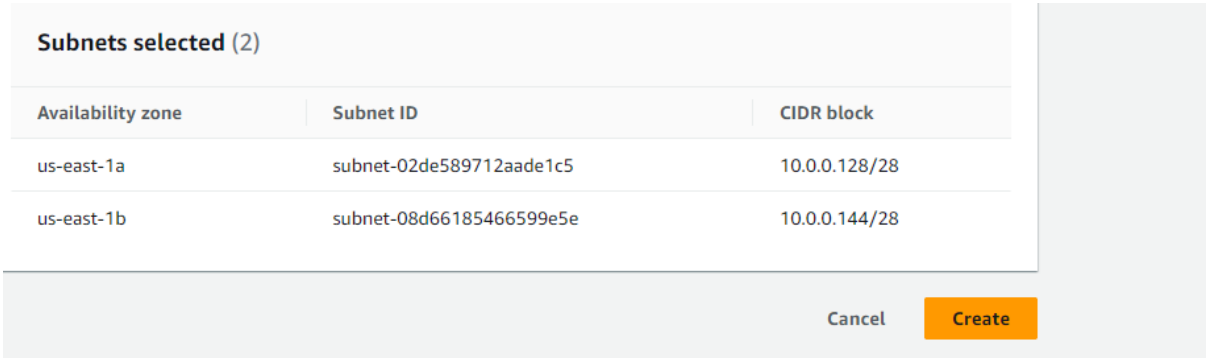
Give name and select created VPC



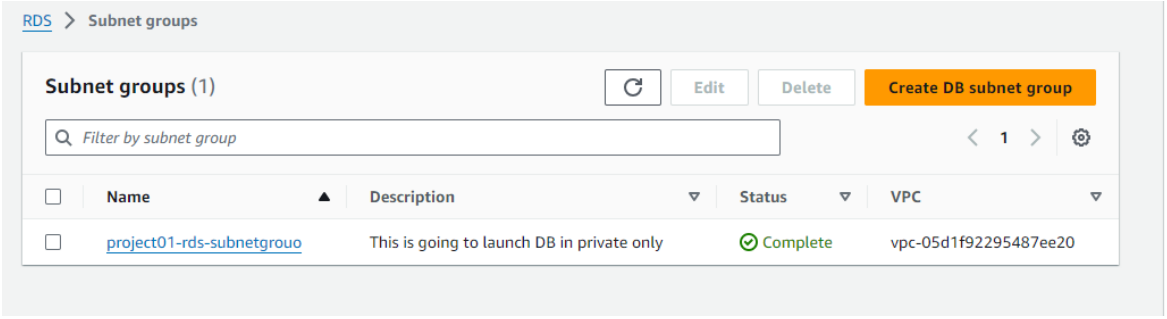
Select AZ’s and Choose only private subnets associated with IP address



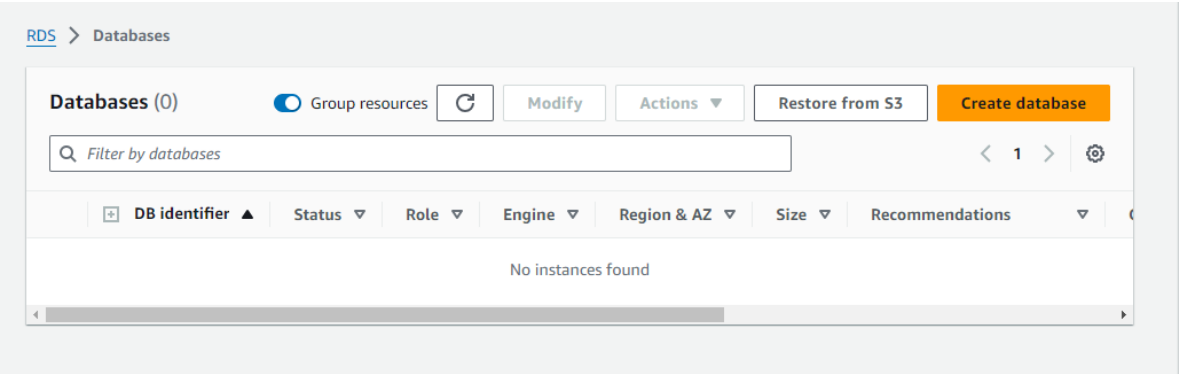
Create the Subnets group



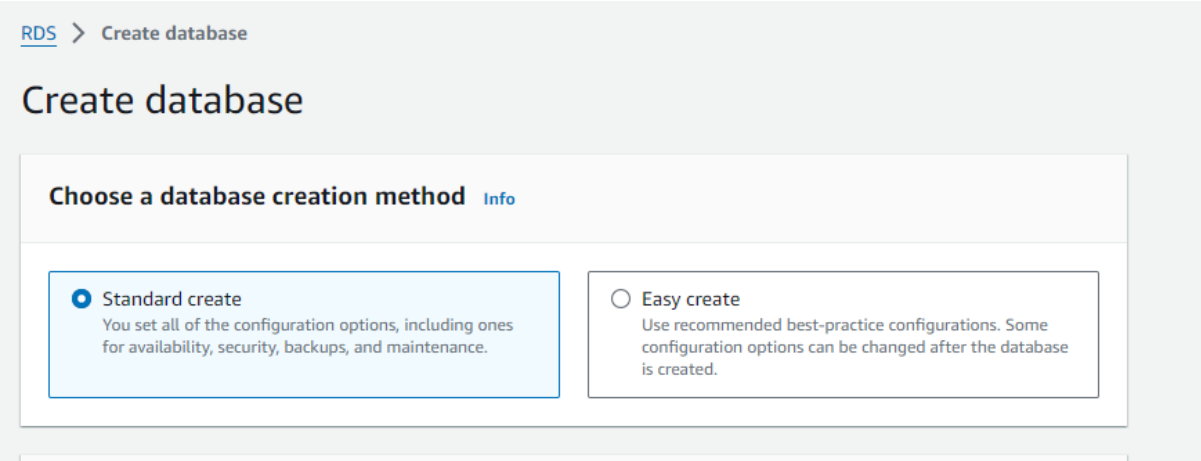
Subnet group is created



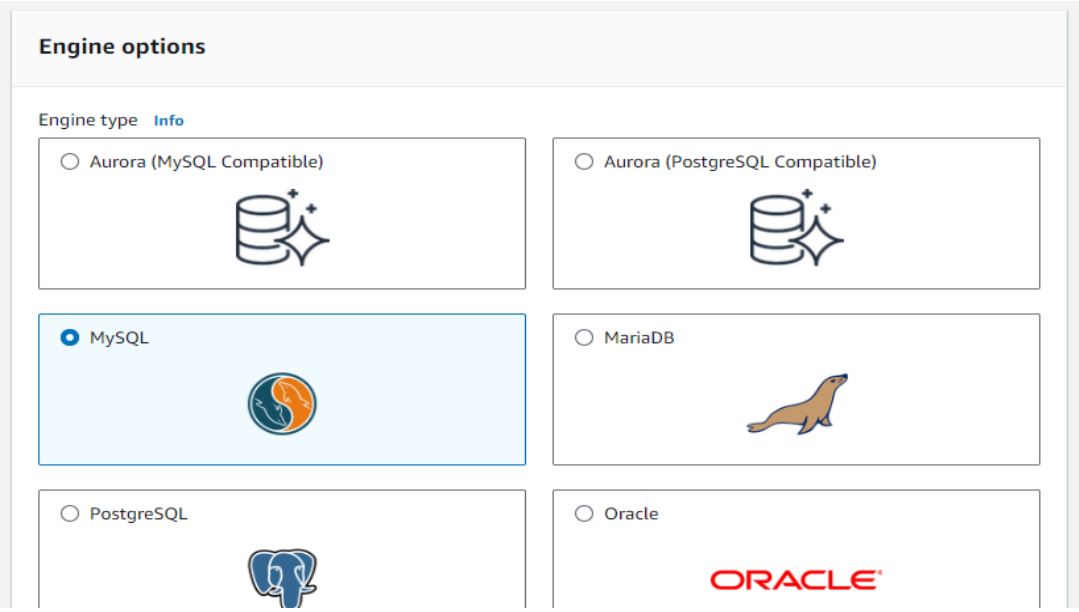
Now create Database



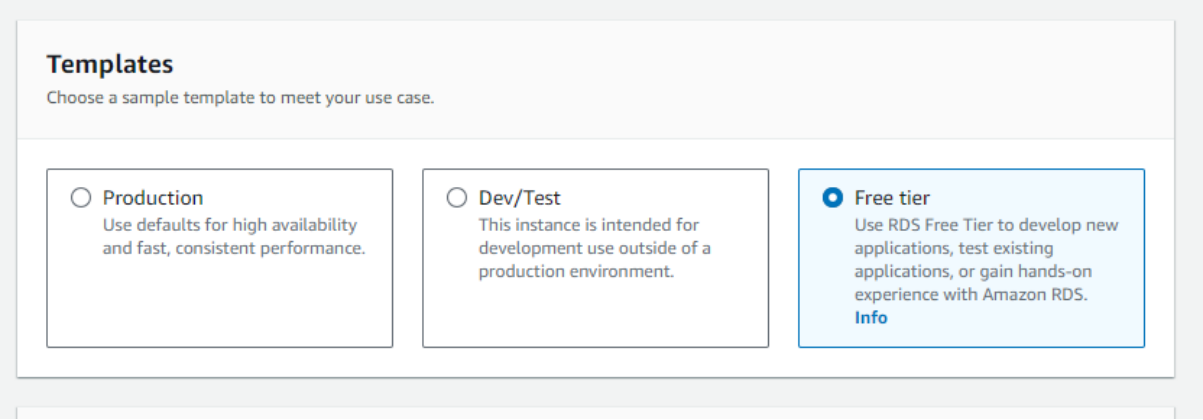
Choose Standard create



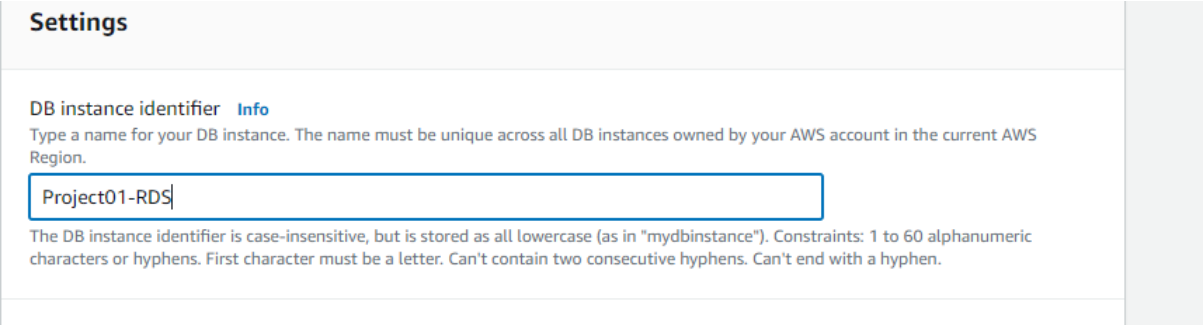
Choose MySQL



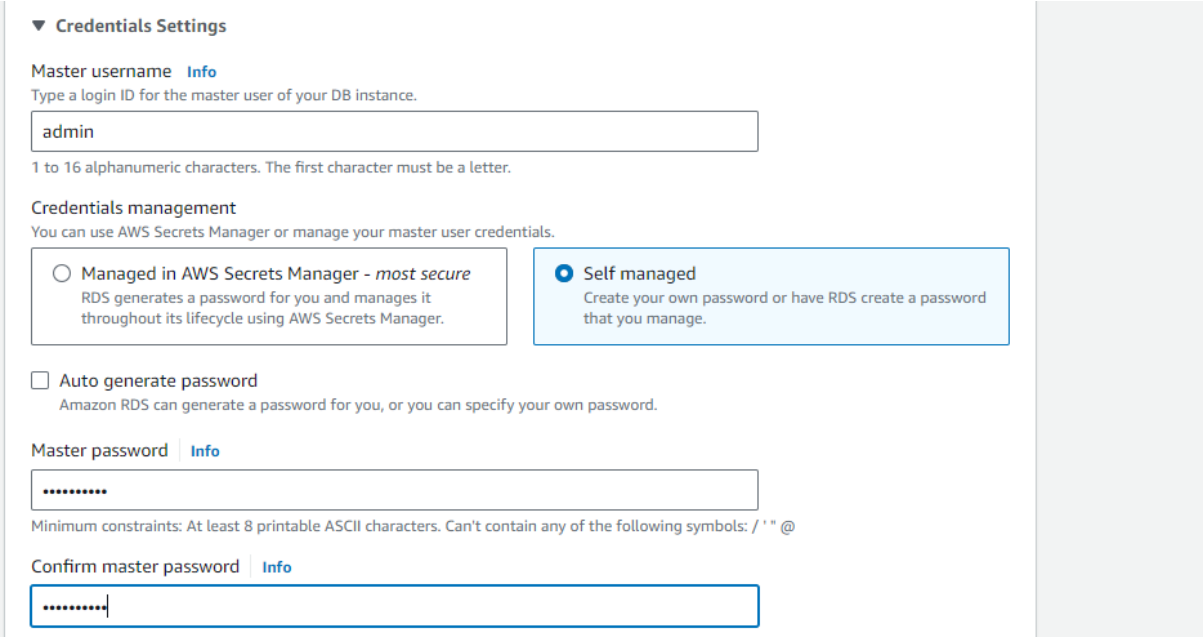
Free tier



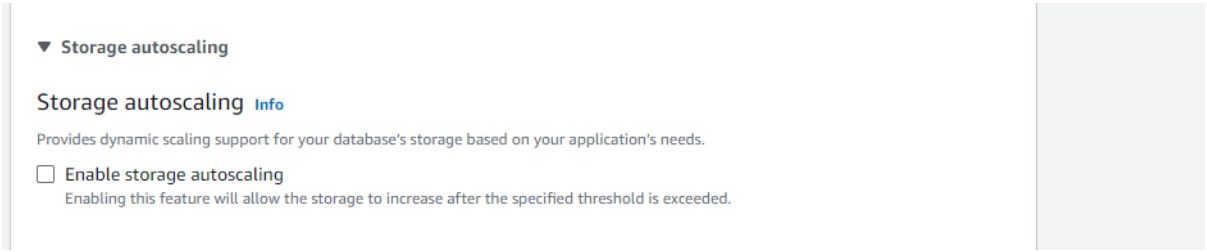
Give Database name



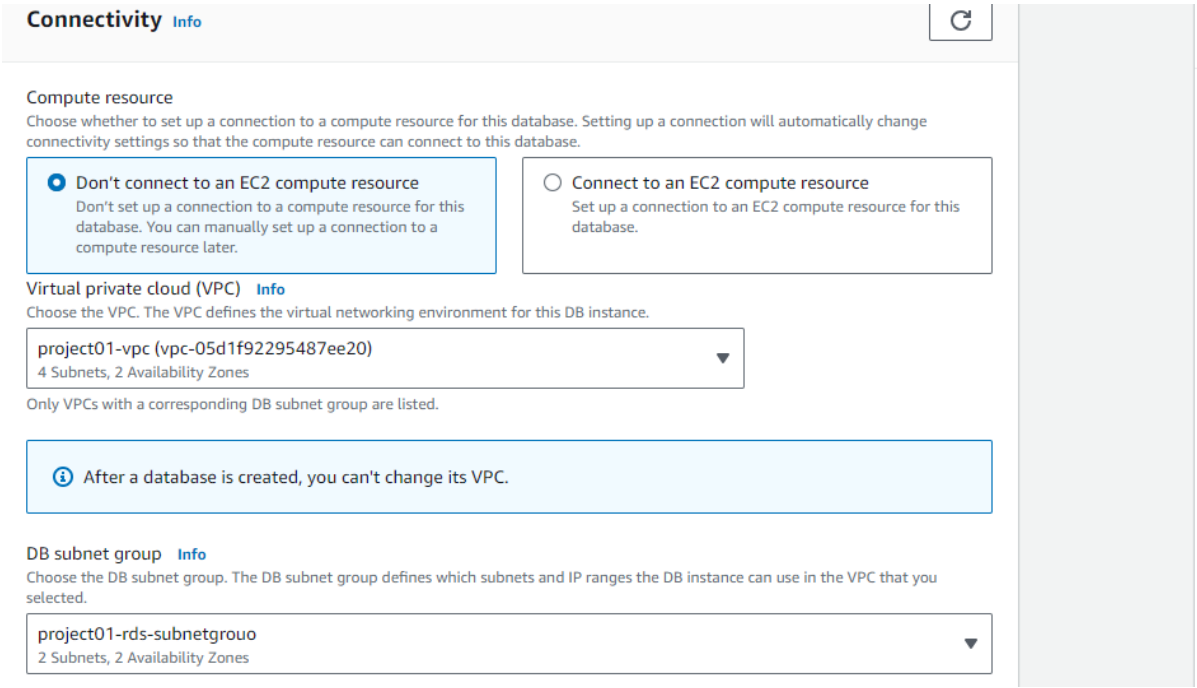
Provide Master Username and Password



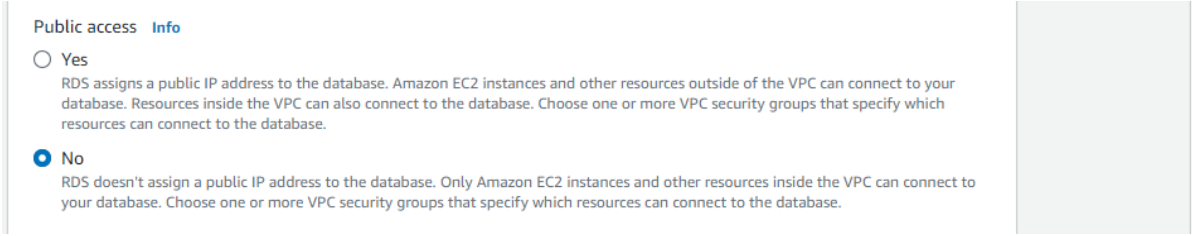
Disable Auto scaling



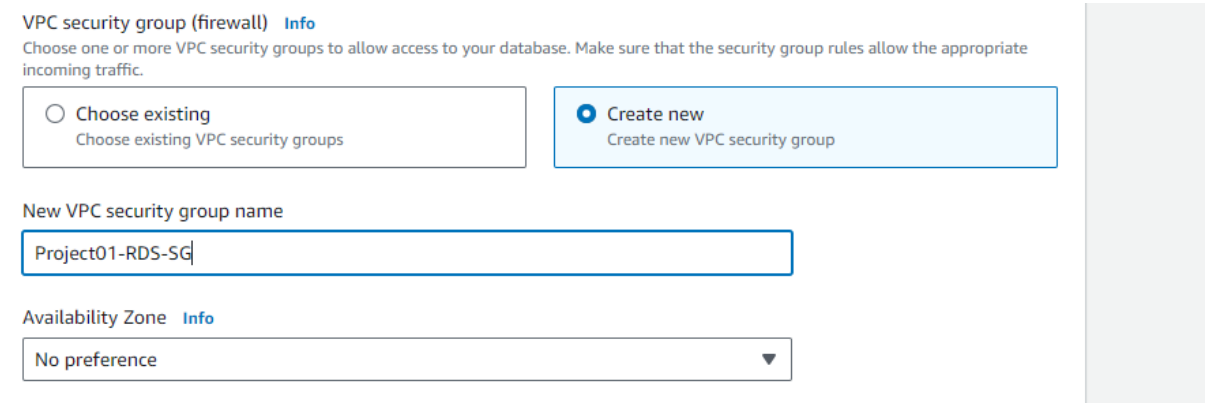
Choose VPC and Subnet Group which are created from our end



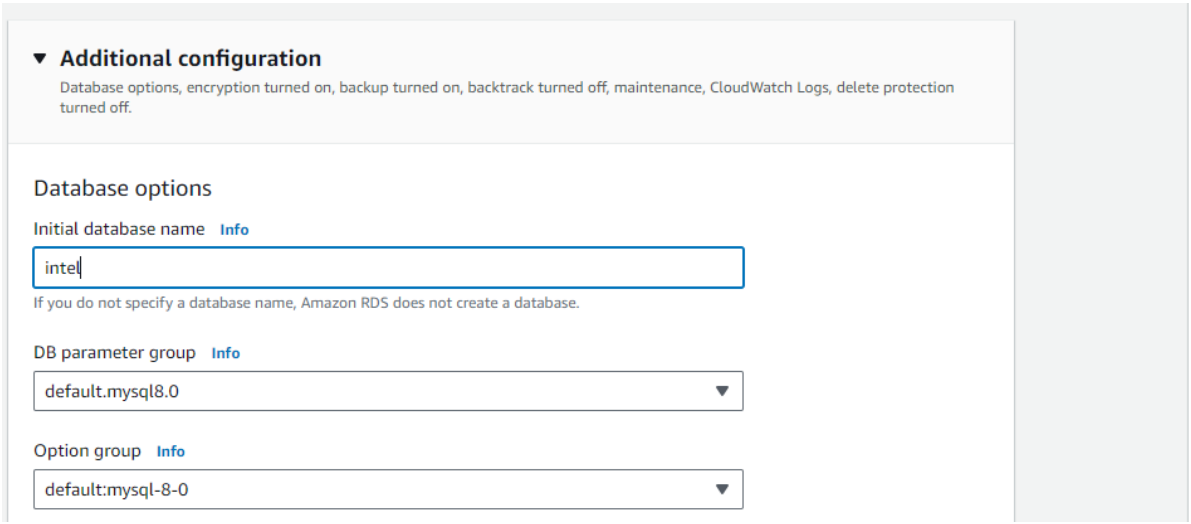
Disable Public access



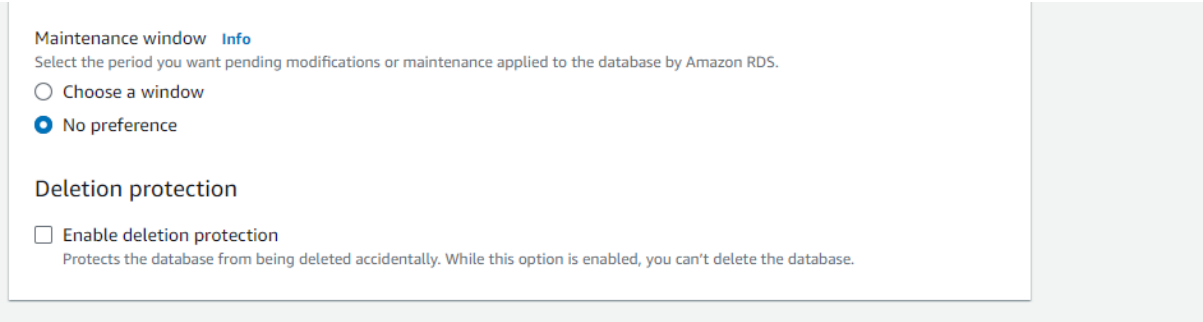
Created New Security group and select



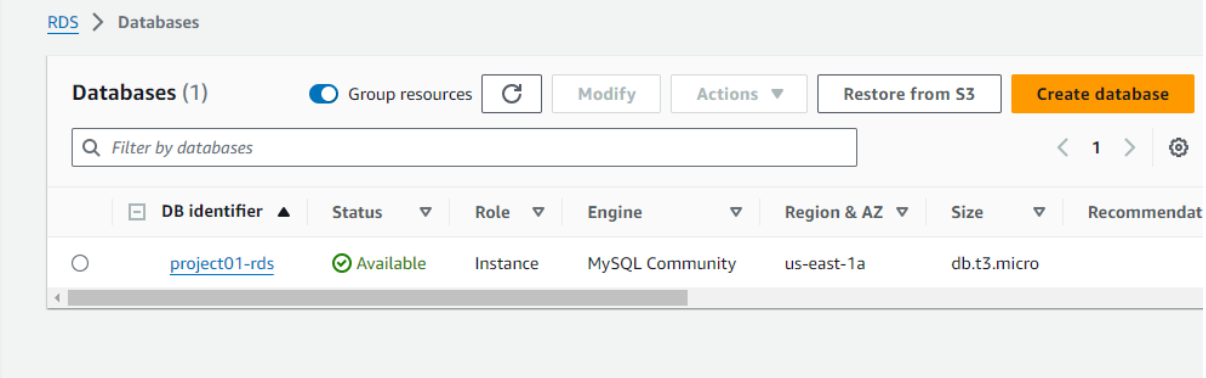
Give Data base name as Intel as per the question



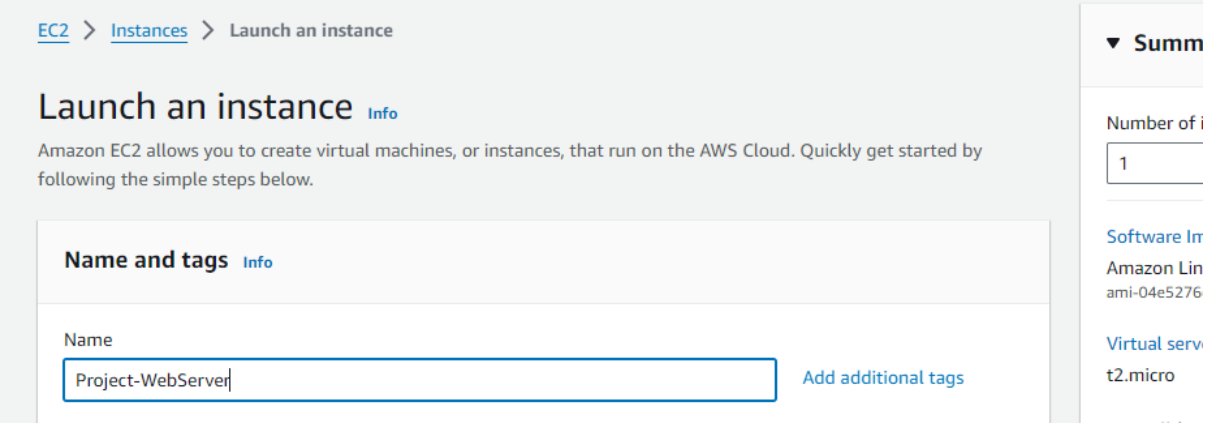
Disable Backup and Deletion Protection then give create Database



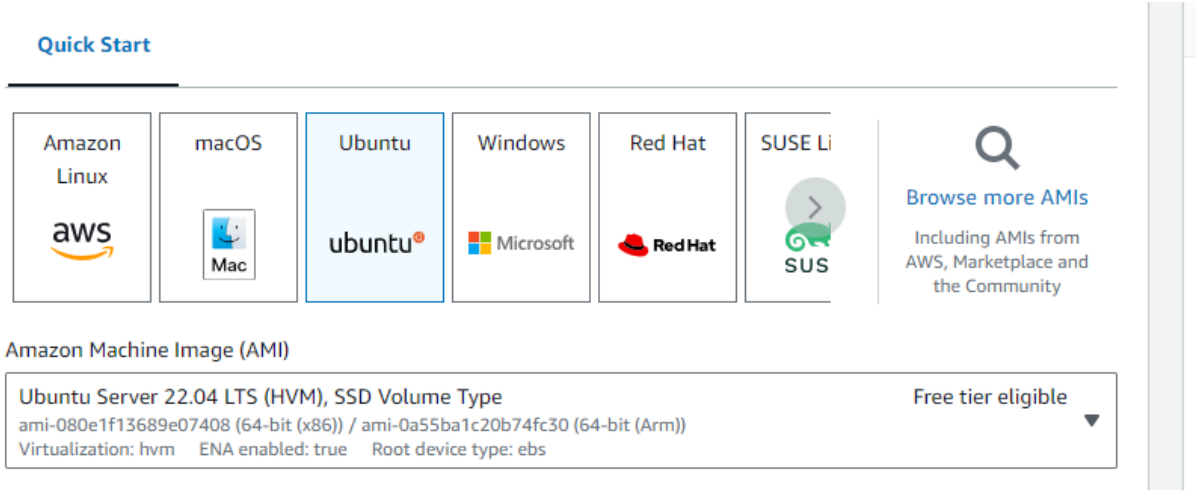
Database is created



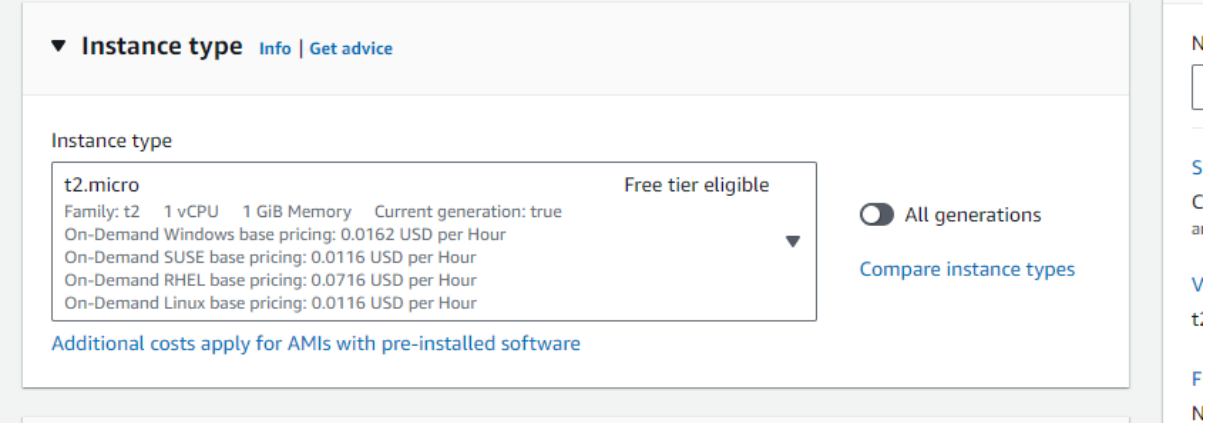
Now Launch a new instance, give a proper name



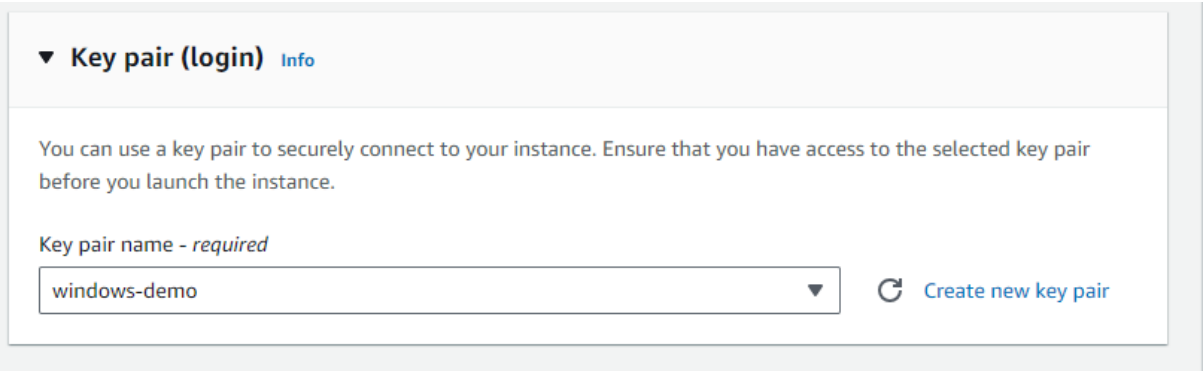
Select Ubuntu machine



Select Free tier

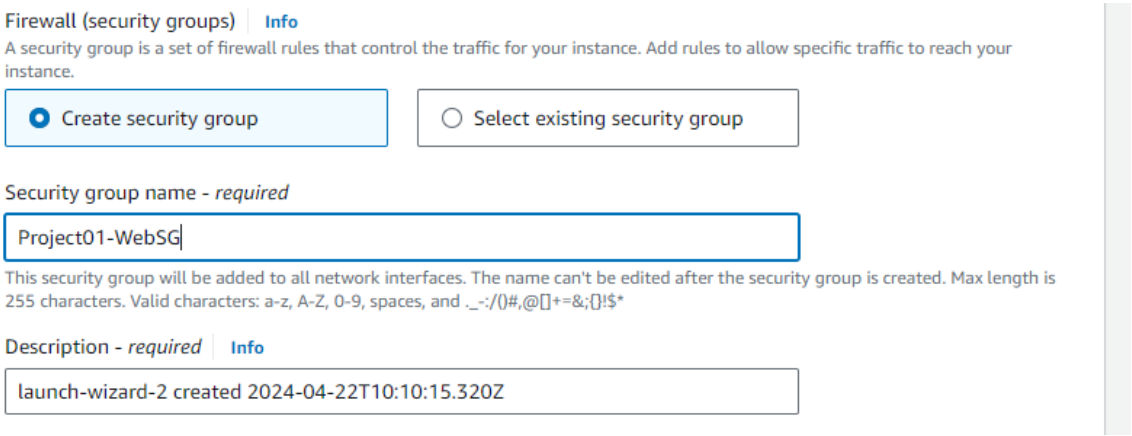


Choose key pair

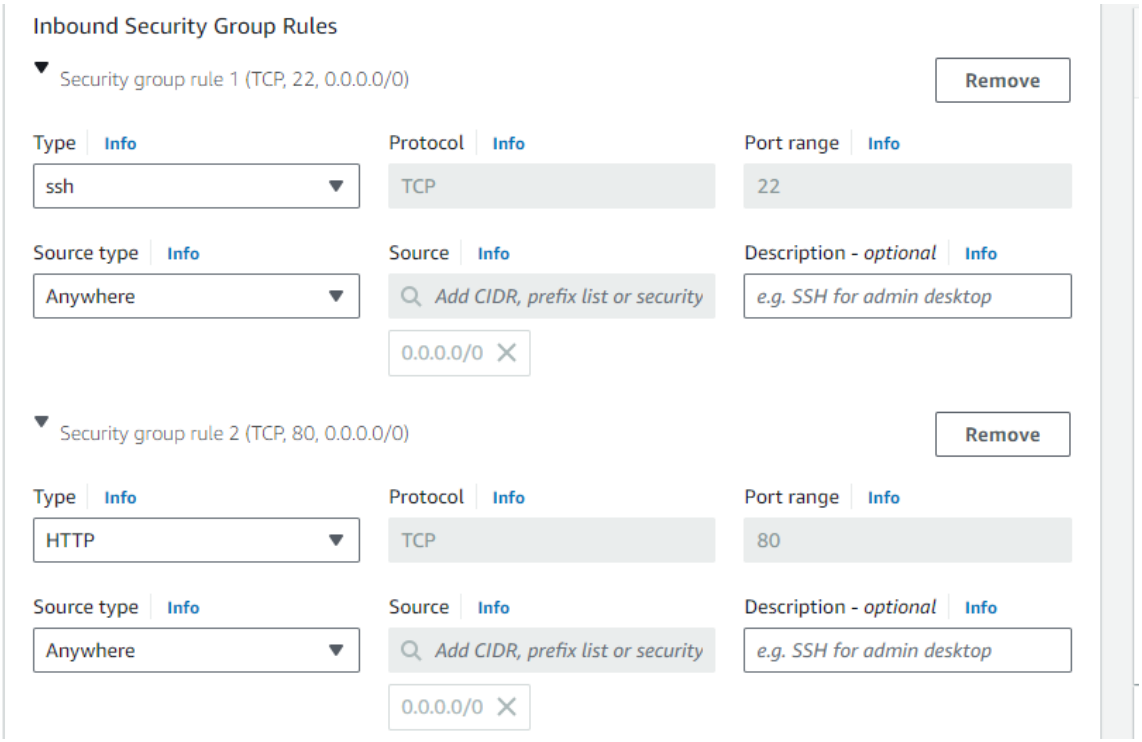


Select our created VPC and subnets, Disabled Public IP

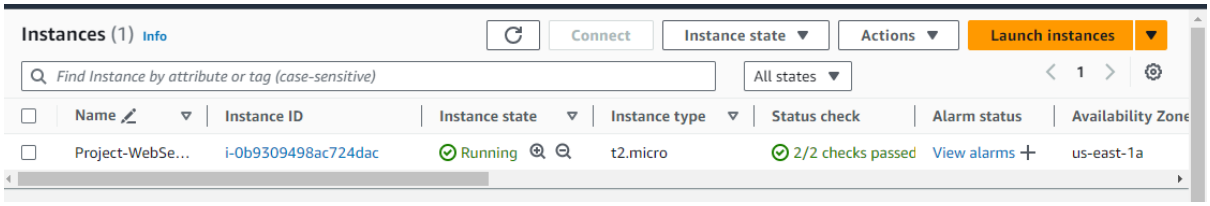
Create new Security group for EC2



Create another inbound security rule for HTTP

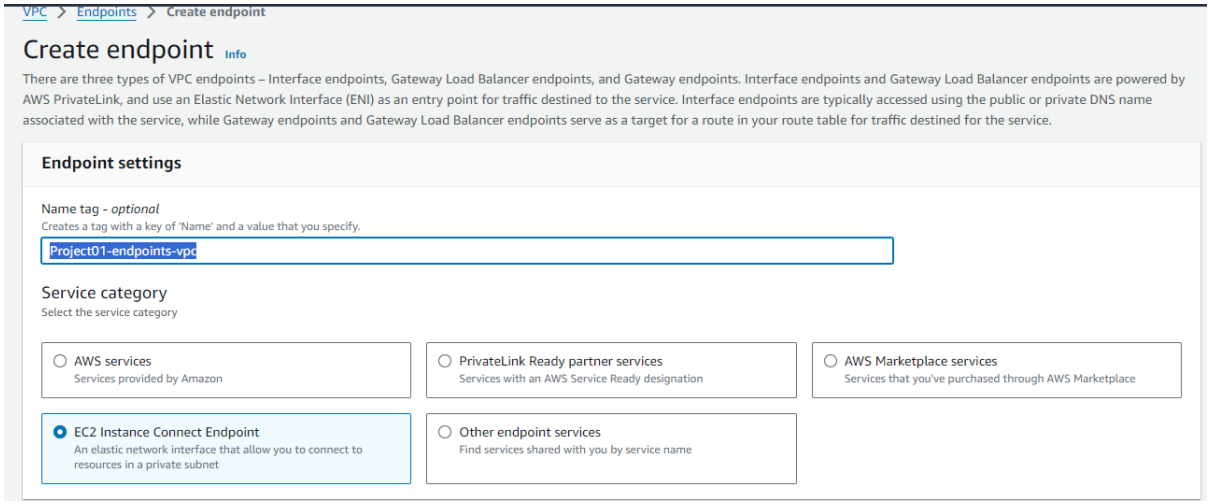


Give Launch, EC2 instance is created

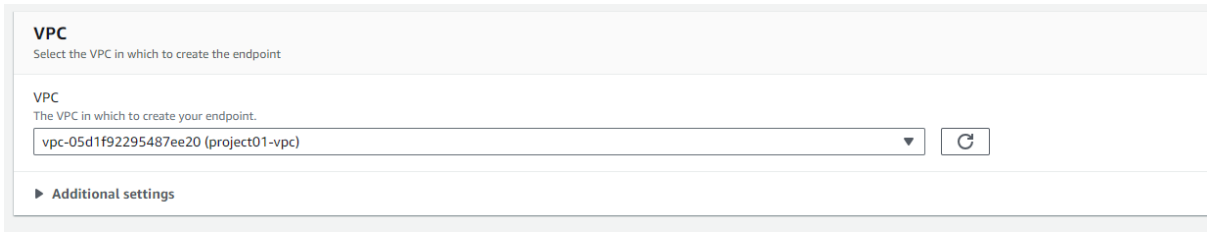


To connect the EC2 server into Ubuntu Machine, as this our private subnet we need Endpoint.

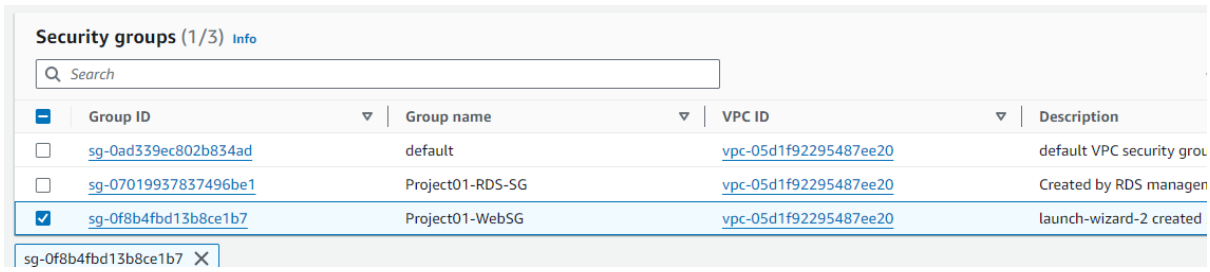
Create endpoint give a name and Choose EC2 Instance connect Endpoint

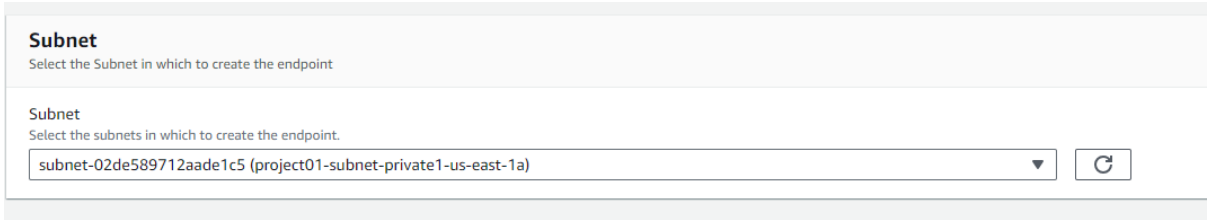


Choose our created VPC

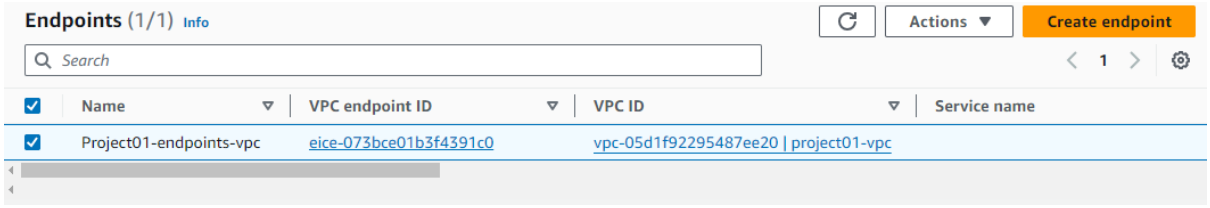


Choose created EC2 Security group and private Subnet and give create

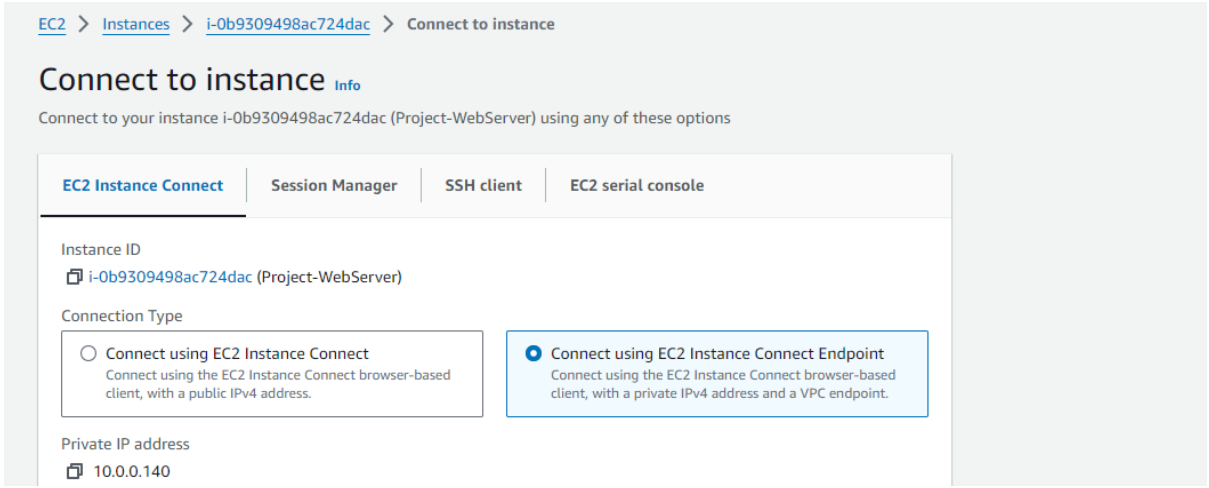




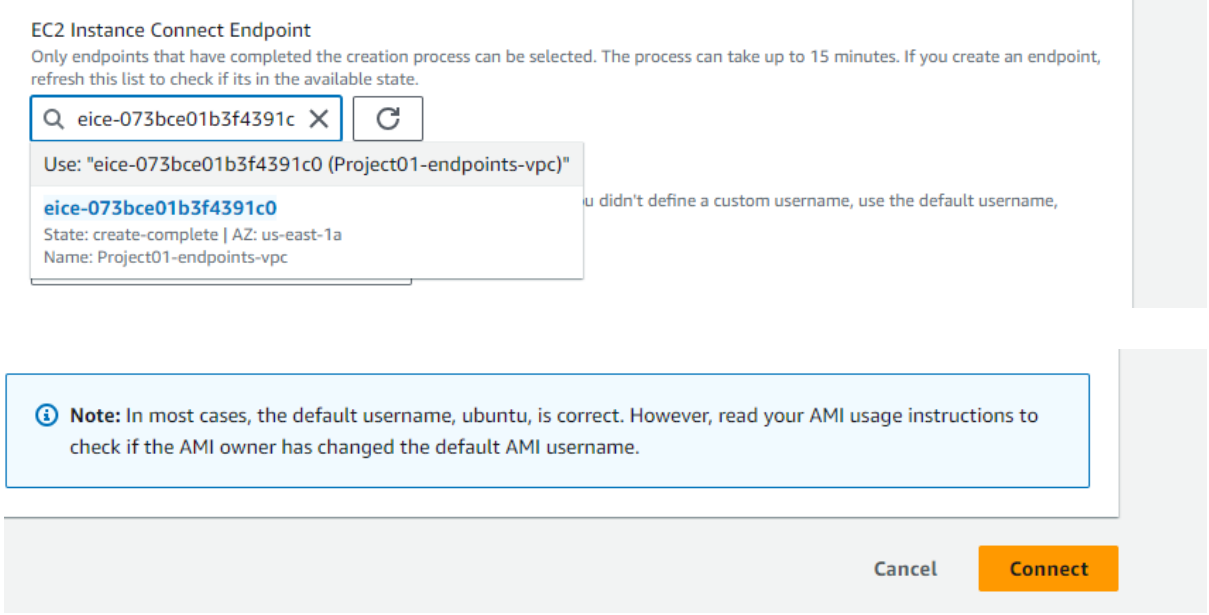
Endpoints are created



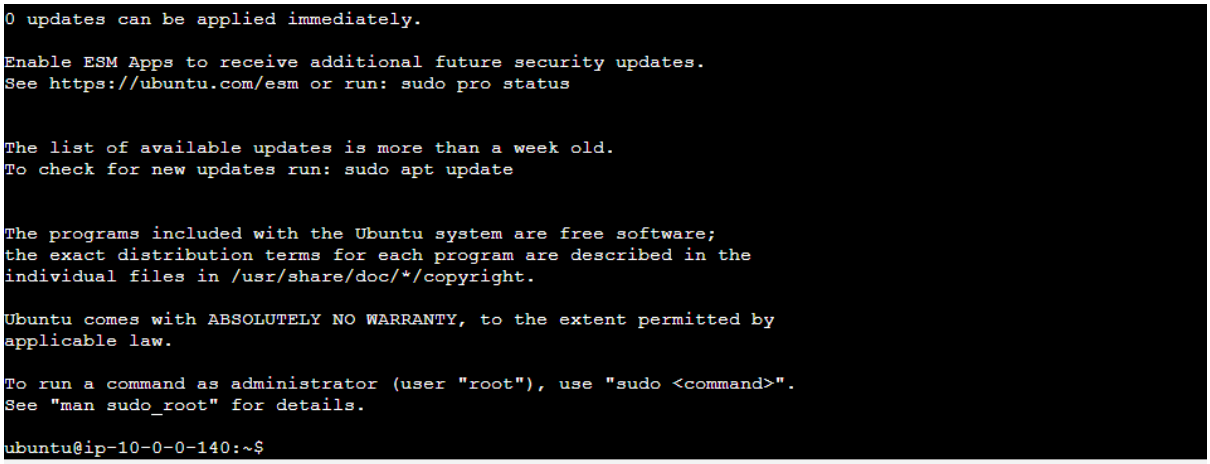
Now connect EC2 server, choose connect through endpoint



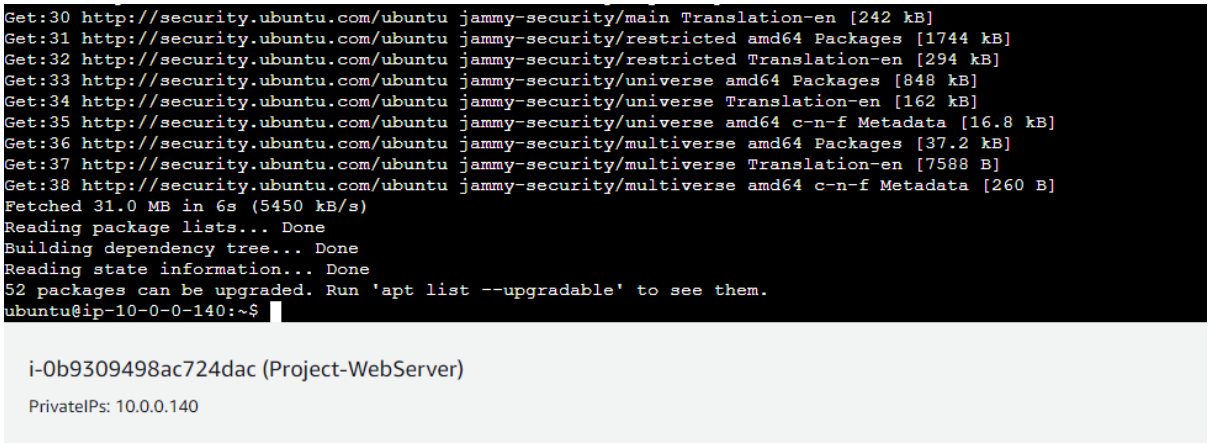
Choose our created Endpoint and Click on Connect



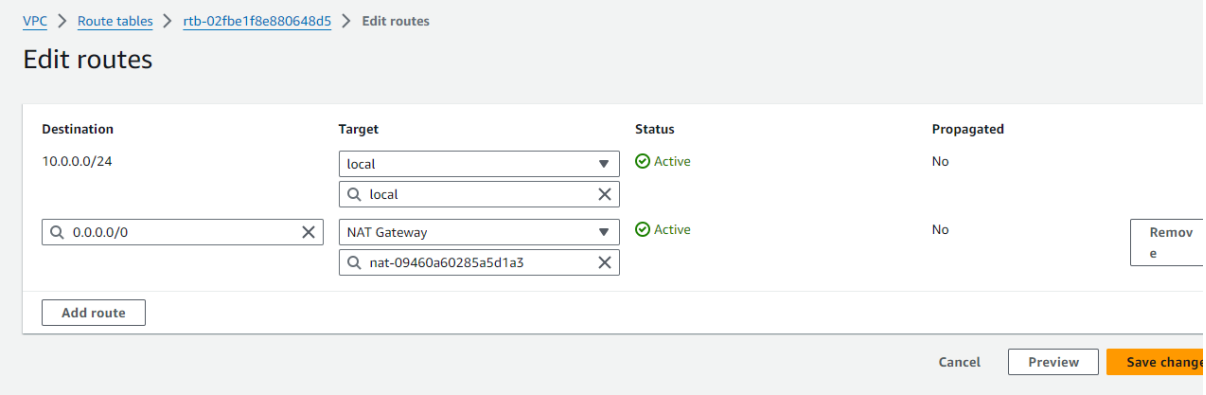
Ubuntu machine is connected successfully



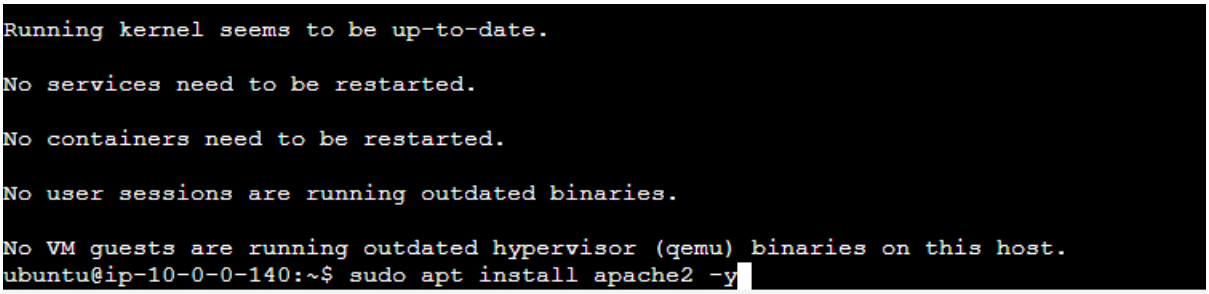
Run the Update command: sudo apt update -y



Make sure our private Route table is connected to NAT gateway

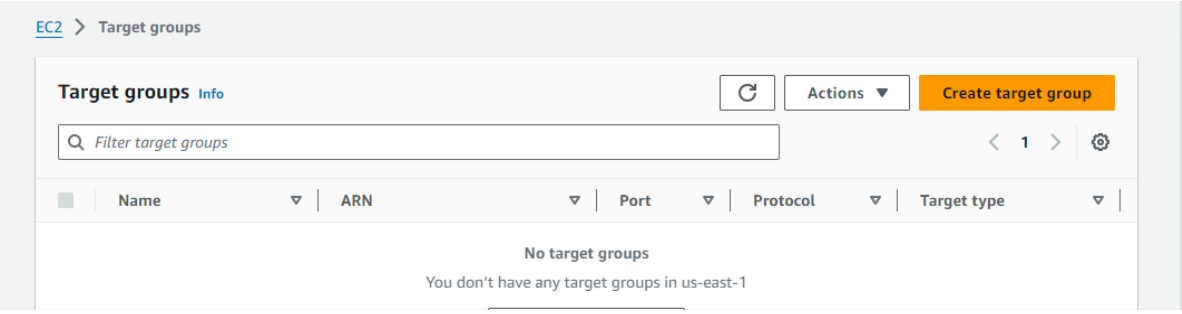


Install apache server: sudo apt install apache2 -y

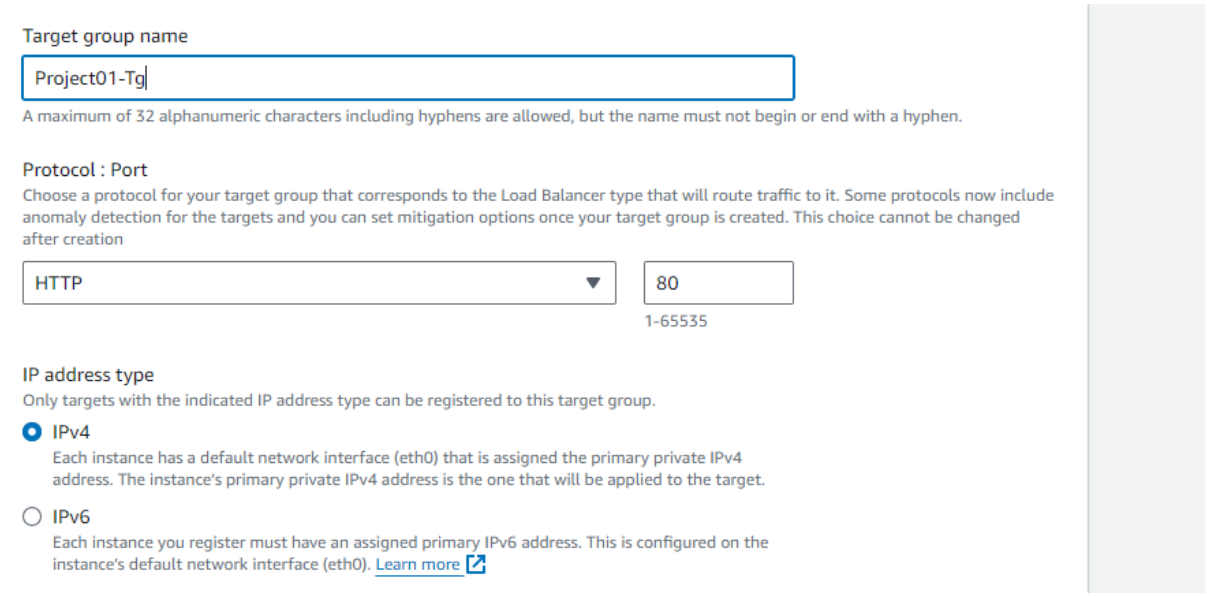


In order to open the Apache server in our local browser, as these are private subnet we need Load balancer,

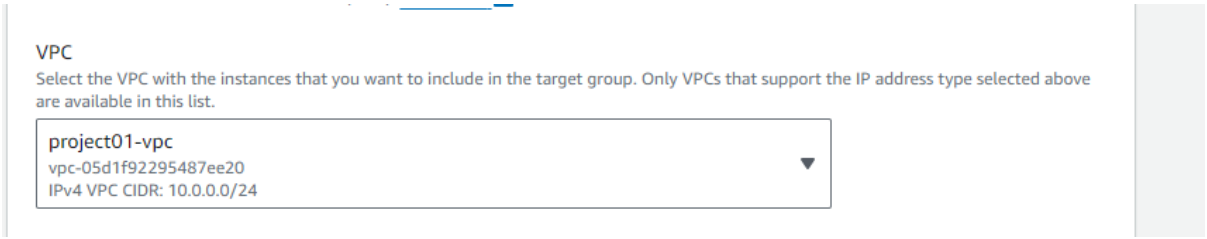
To create Load Balancer First create target group



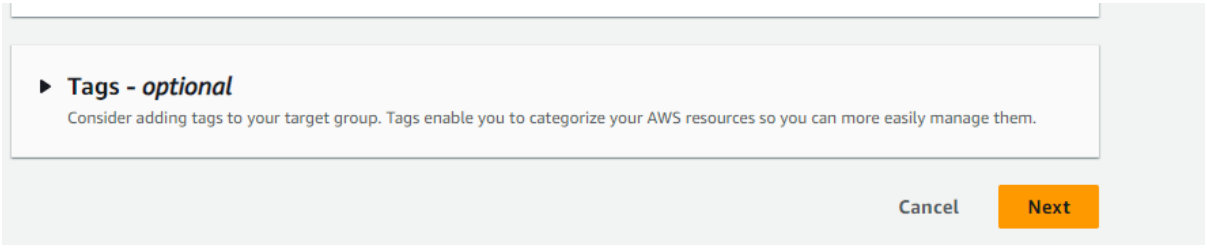
Give Proper Name



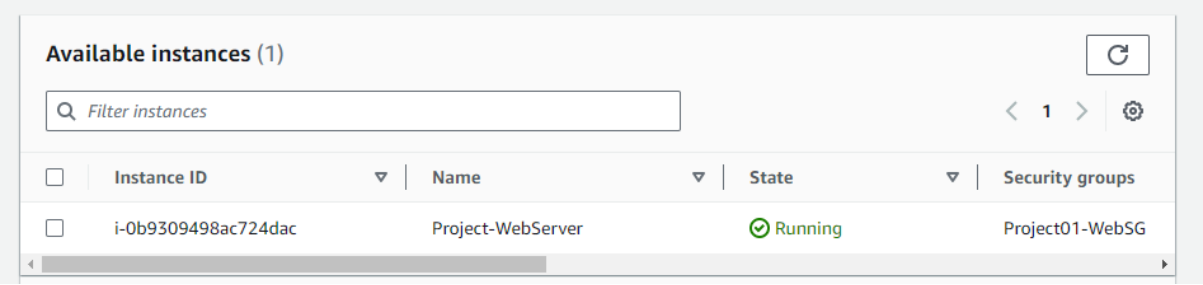
Choose our created VPC



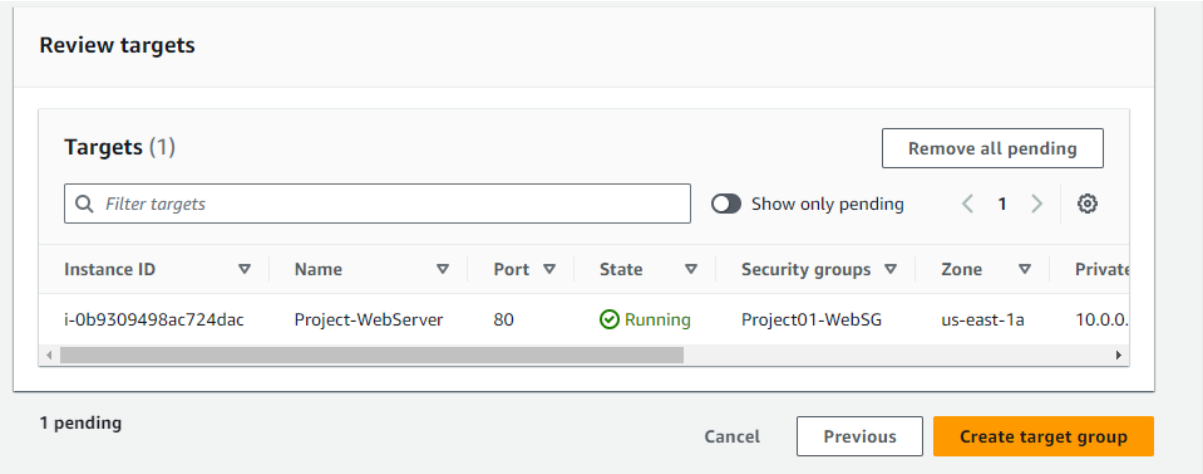
Click on Next



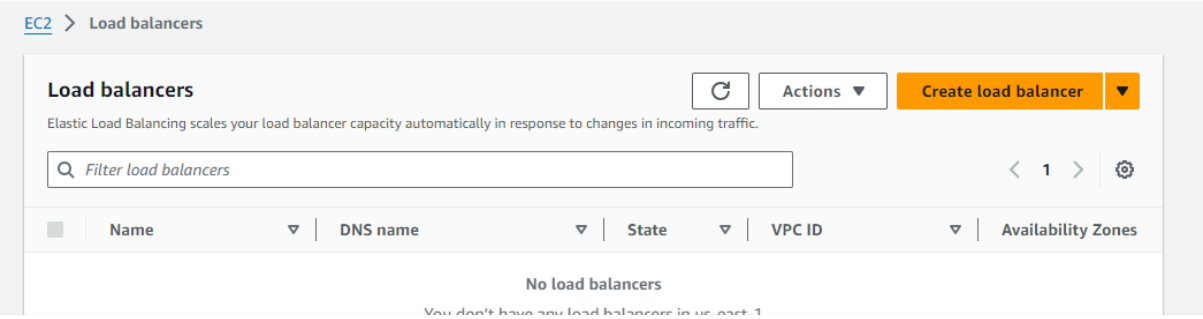
Select our created EC2 instance



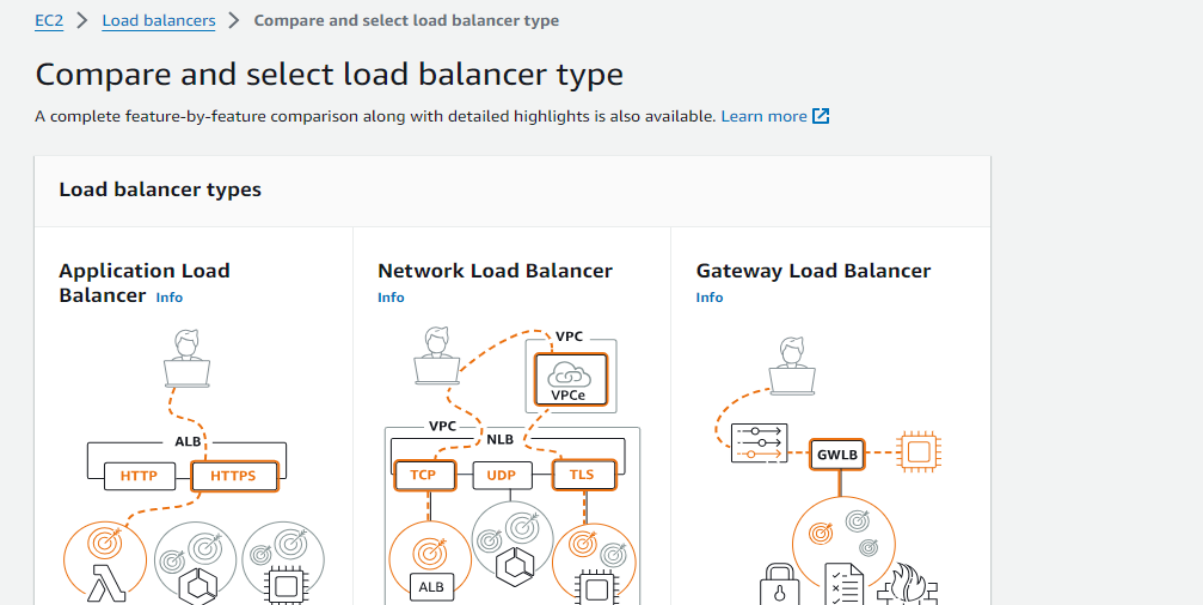
Review the targets and create target group



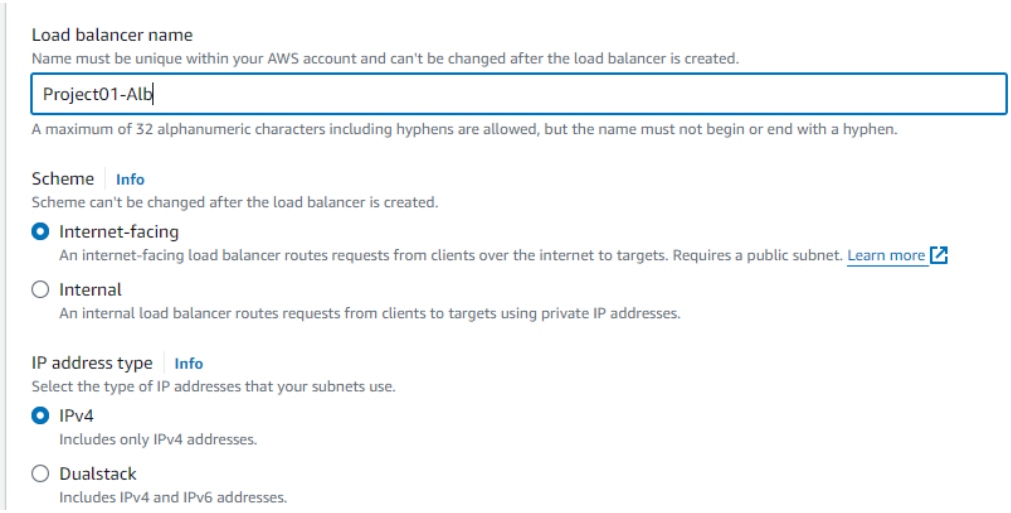
Next create Load balancer



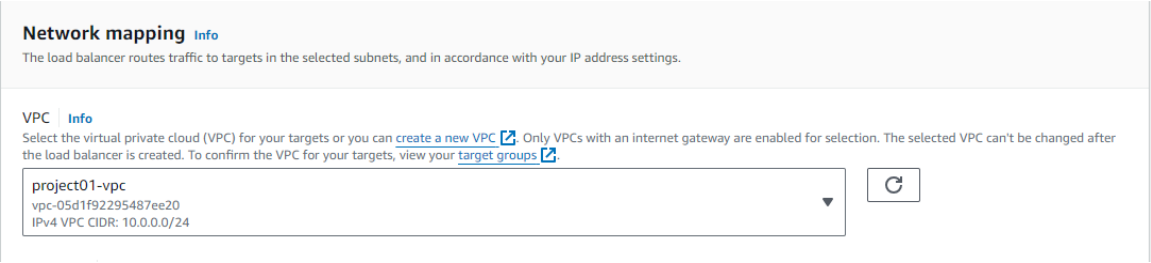
Select application load balancer



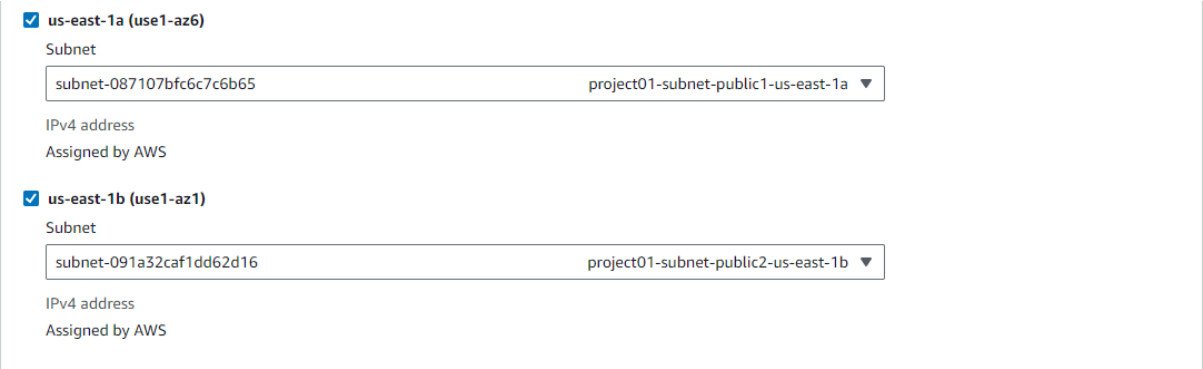
Give Name and select the scheme as Internet facing



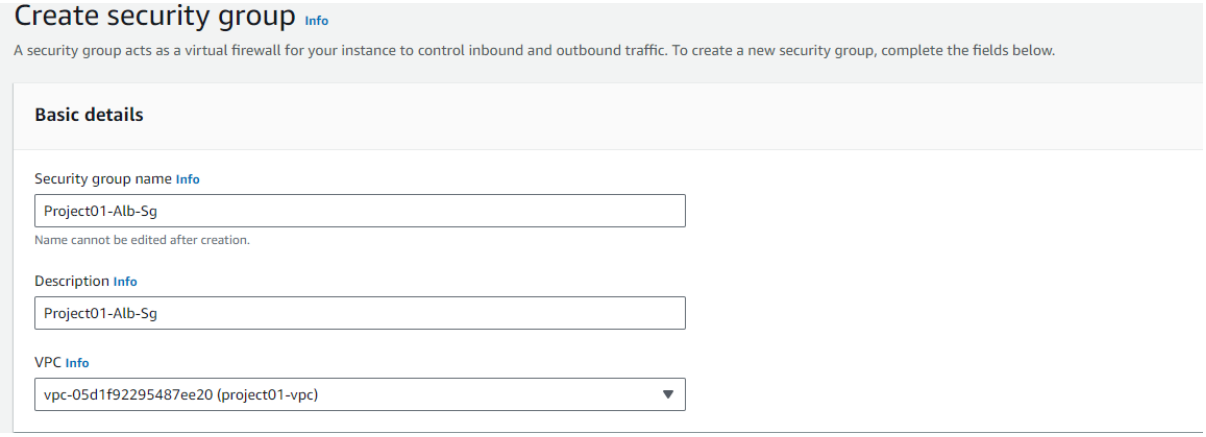
Choose our created VPC



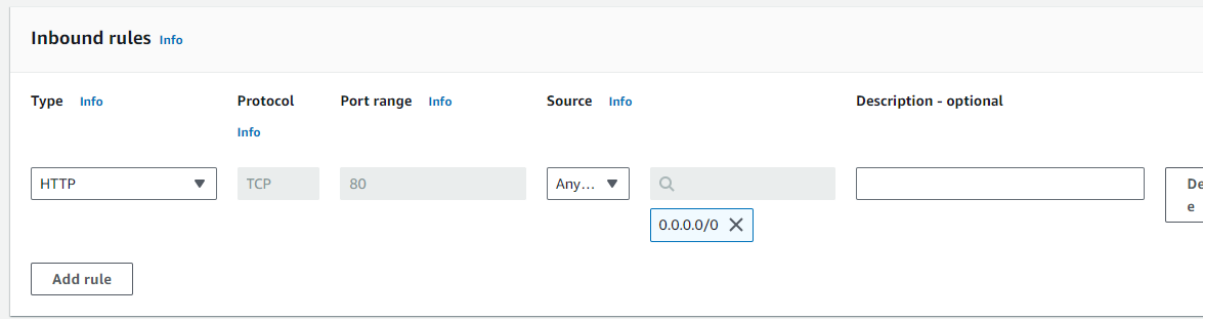
Now Choose Public Subnets (Bcoz we need to choose the Subnets which connecting the Internet gateway)



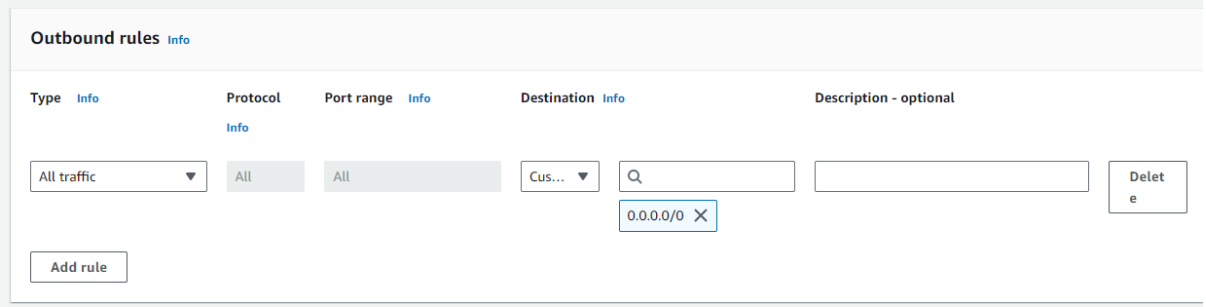
Create new Security group under same VPC for Load balancing



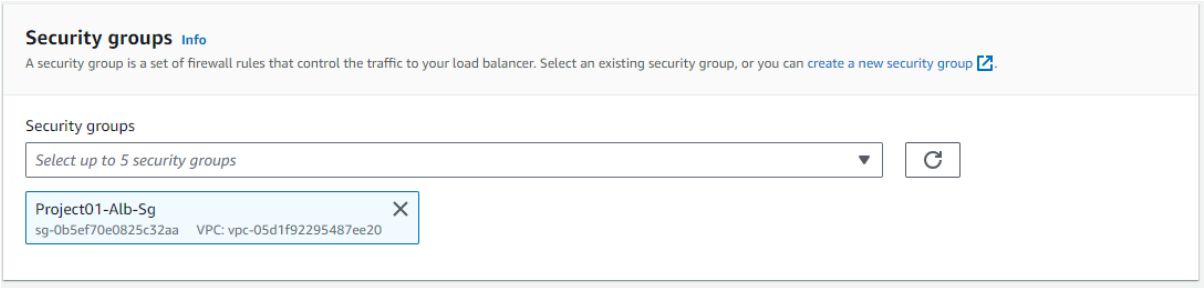
Create Inbound rule for Type HTTP and Source Anywhere



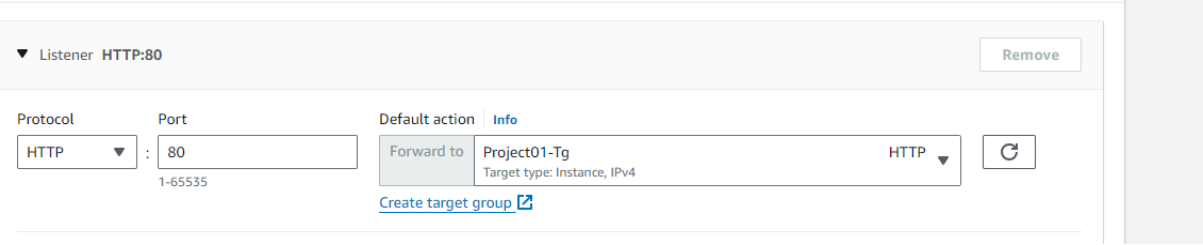
Outbound rule is automatically created for All traffic



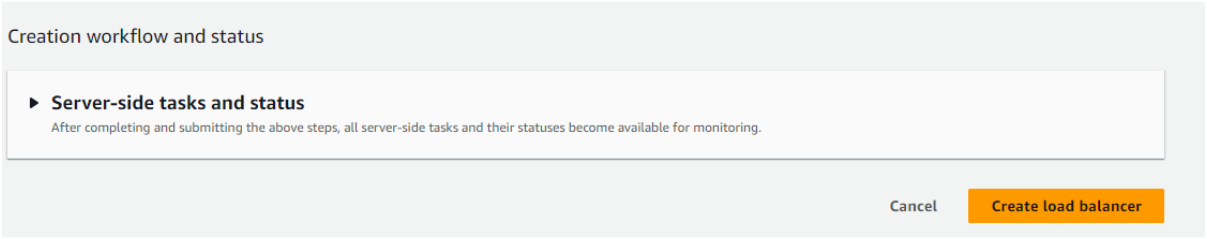
Next select the created Security groups



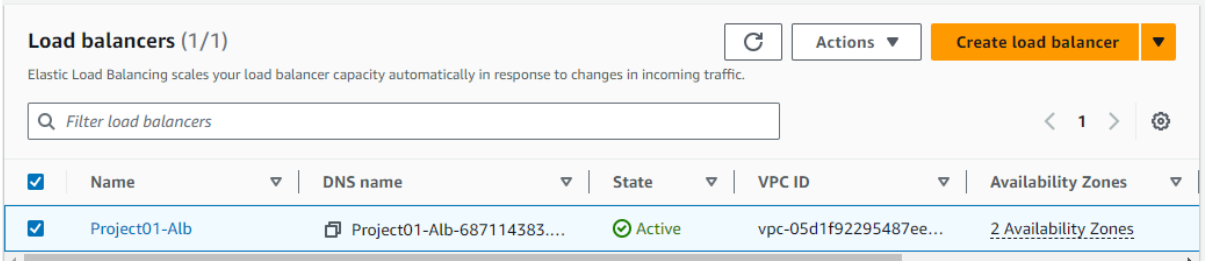
Here select the Target group which we created first



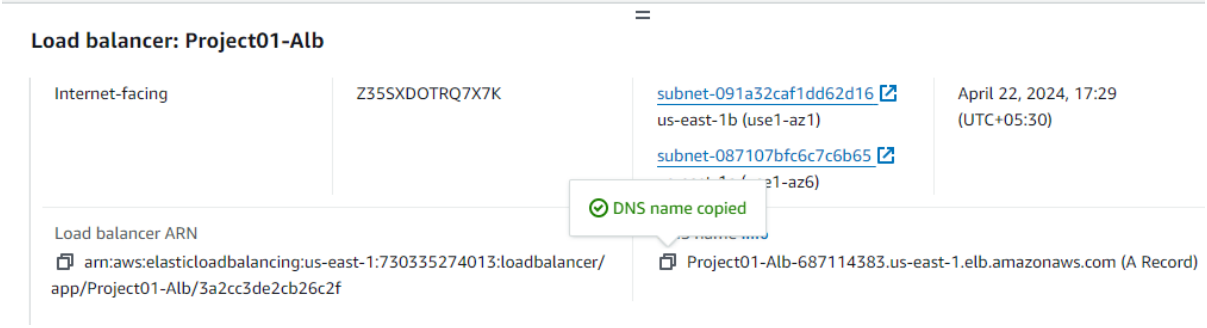
Click on create load balancer



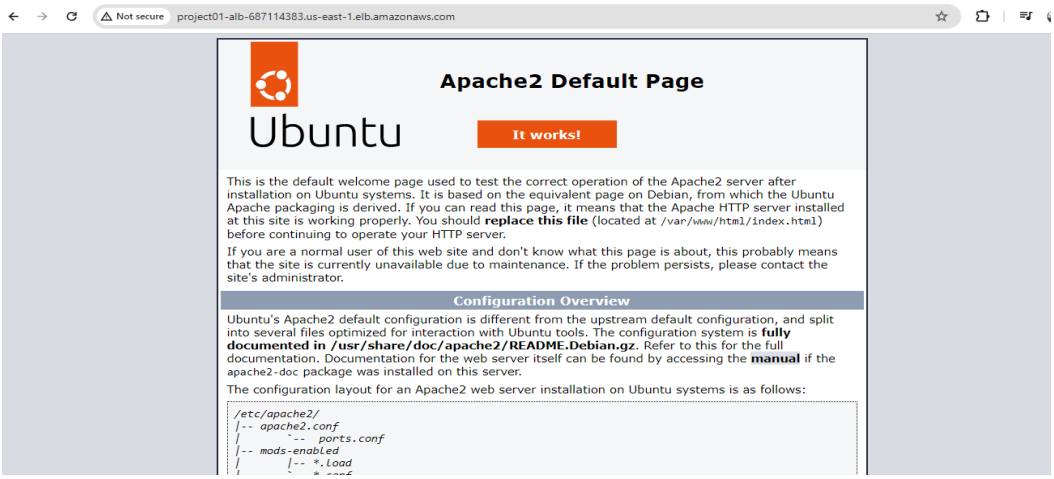
Load balancer is created successfully



Now Copy the DNS server from Load balancer and Browse it



Now apache2 Default page will be opened



Give the following commands in order to replace the HTML page from default

- wget https://lms.intellipaat.com/mediaFiles/2020/10/code.zip
- ls
- sudo apt install unzip –y
- unzip code.zip
- ls
- cd 1243/
- ls

```
No VM guests are running outdated hypervisor (qemu) binaries on this host.
ubuntu@ip-10-0-0-140:~$ ls
code.zip
ubuntu@ip-10-0-0-140:~$ ls
code.zip
ubuntu@ip-10-0-0-140:~$ unzip code.zip
Archive:  code.zip
   creating: 1243/images/
  inflating: 1243/images/1.png
  inflating: 1243/images/2.png
  inflating: 1243/index.php
ubuntu@ip-10-0-0-140:~$ ls
1243  code.zip
ubuntu@ip-10-0-0-140:~$ cd 1243/
ubuntu@ip-10-0-0-140:~/1243$ ls
images  index.php
ubuntu@ip-10-0-0-140:~/1243$
```

We need to replace the inex.html file, run the following command

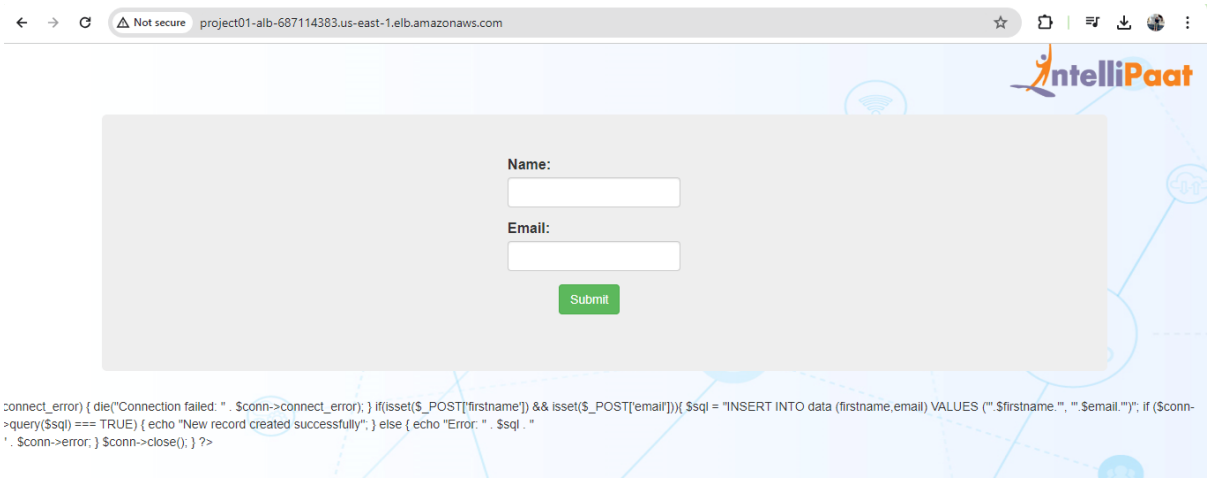
- Sudo mv * /var/www/html
- ls
- Cd /var/www/html
- ls
- sudo rm index.html

```
1243  code.zip
ubuntu@ip-10-0-0-140:~$ cd 1243/
ubuntu@ip-10-0-0-140:~/1243$ ls
images  index.php
ubuntu@ip-10-0-0-140:~/1243$ sudo mv * /var/www/html
ubuntu@ip-10-0-0-140:~/1243$ ls
ubuntu@ip-10-0-0-140:~/1243$ cd /var/www/html
ubuntu@ip-10-0-0-140:/var/www/html$ ls
images  index.html  index.php
ubuntu@ip-10-0-0-140:/var/www/html$ sudo rm index.html
ubuntu@ip-10-0-0-140:/var/www/html$ ls
images  index.php
ubuntu@ip-10-0-0-140:/var/www/html$
```

i-0b9309498ac724dac (Project-WebServer)

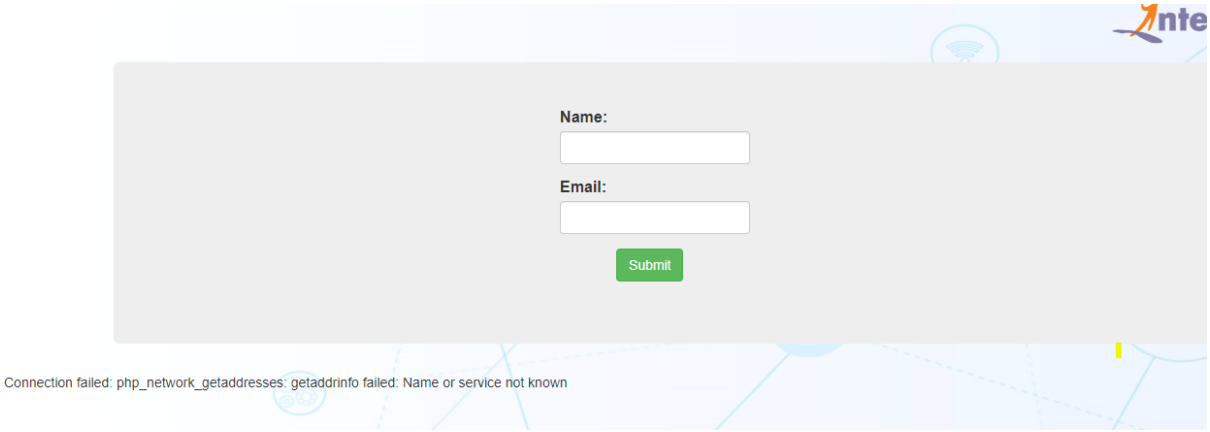
PrivateIPs: 10.0.0.140

If you refresh the page you will see the new web page



In order to exit from the above errors, run the following commands

- sudo add-apt-repository -y ppa:ondrej/php
- sudo apt install php5.6 mysql-client php5.6-mysqli –y

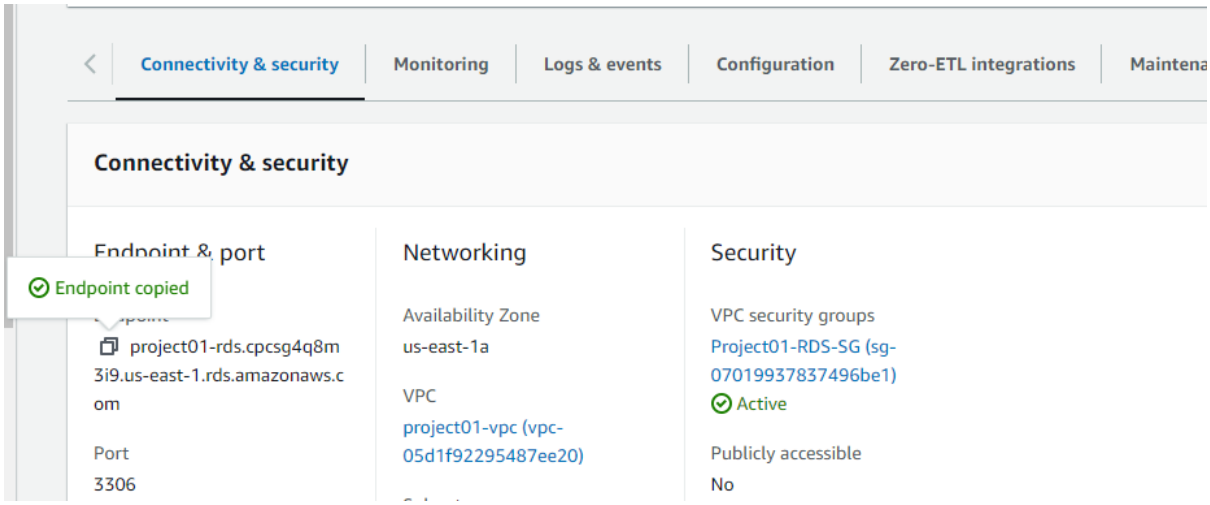


Now Front end is working but we found the error in database server

So Go inside index.php file and edit the servername, username and password

- sudo nano index.php

Servername is basically the Endpoint of the RDS

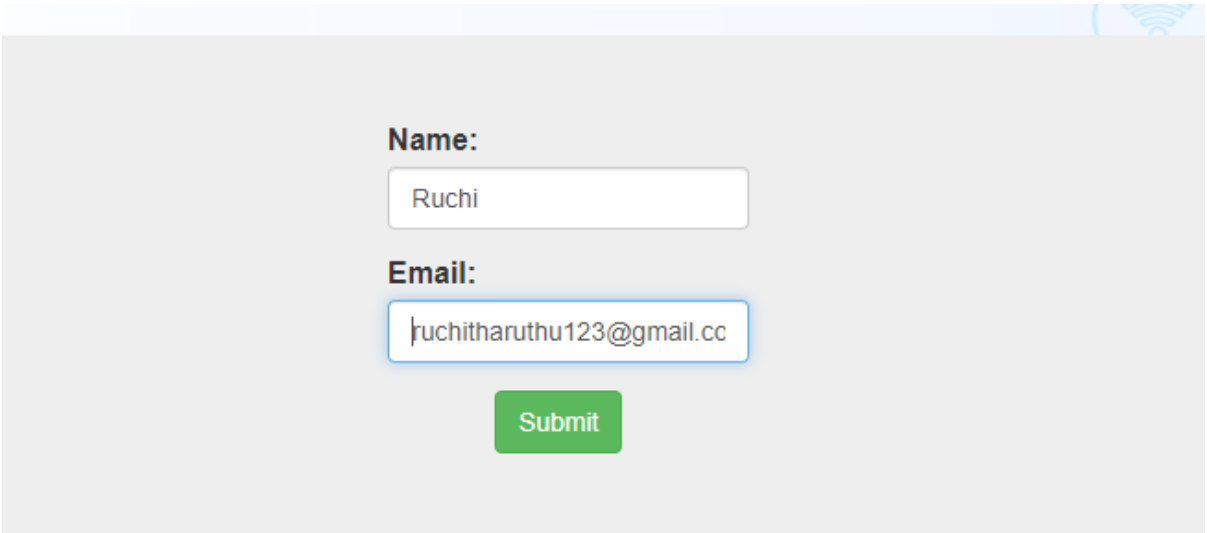


When you enter the details, you face these errors

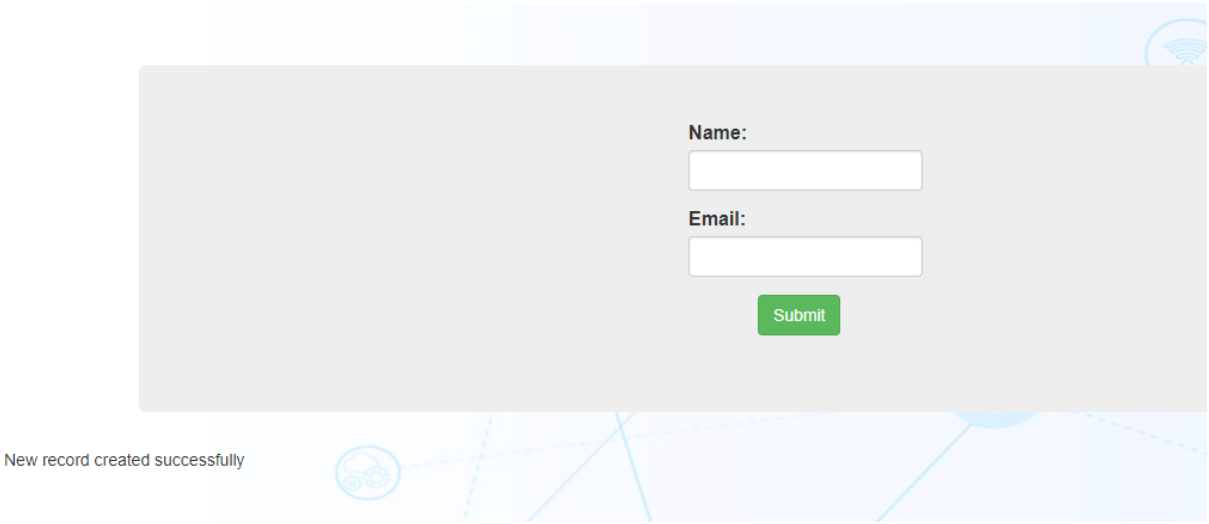
To exit from the above error, we need connect to the database, Follow as per the following commands

```
sudo add-apt-repository -y ppa:ondrej/php
sudo apt install php5.6 mysql-client php5.6-mysqli -y

mysql -h <rds-endpoint> -u <username> -p

create database intel;
use intel;
create table data (firstname varchar(20), email varchar(25));
select * from data;
```

Now enter the credentials and submit



Now we can see that the records are created successfully



And reflected into our machine.

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