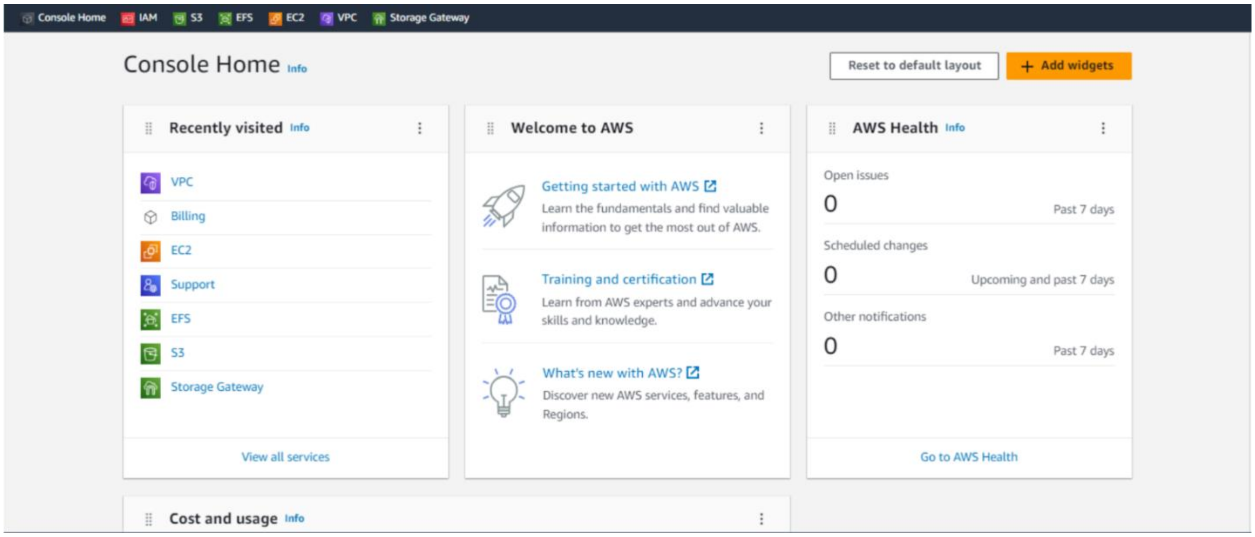
AWS Two tier of student .war

Step1:-

First of all login to AWS account.



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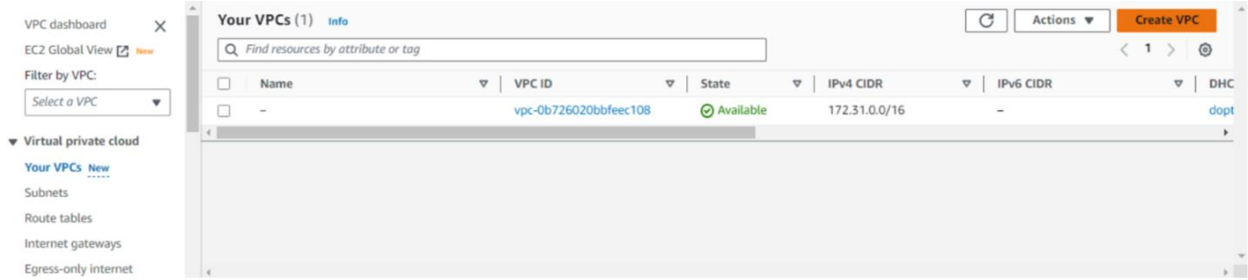
Open issues
0 Past 7 days

Scheduled changes
0 Upcoming and past 7 days

Other notifications
0 Past 7 days

Step2:-

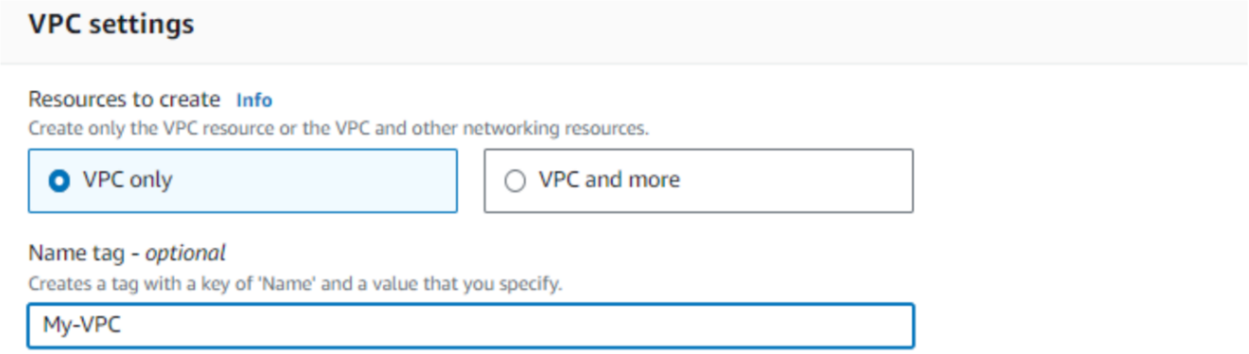
Now firstly you have to create your VPC(virtual private cloud). So go VPC service and then click on your VPC. And then click on create VPC to create your VPC.



Name	VPC ID	State	IPv4 CIDR	IPv6 CIDR	DHC
-	vpc-0b726020bbfeec108	Available	172.31.0.0/16	-	dopt

Step3:-

Next you will see the VPC create setting. So choose resources to create VPC only. And the gave a name to tat VPC.



VPC settings

Resources to create Info

Create only the VPC resource or the VPC and other networking resources.

● VPC only ○ VPC and more

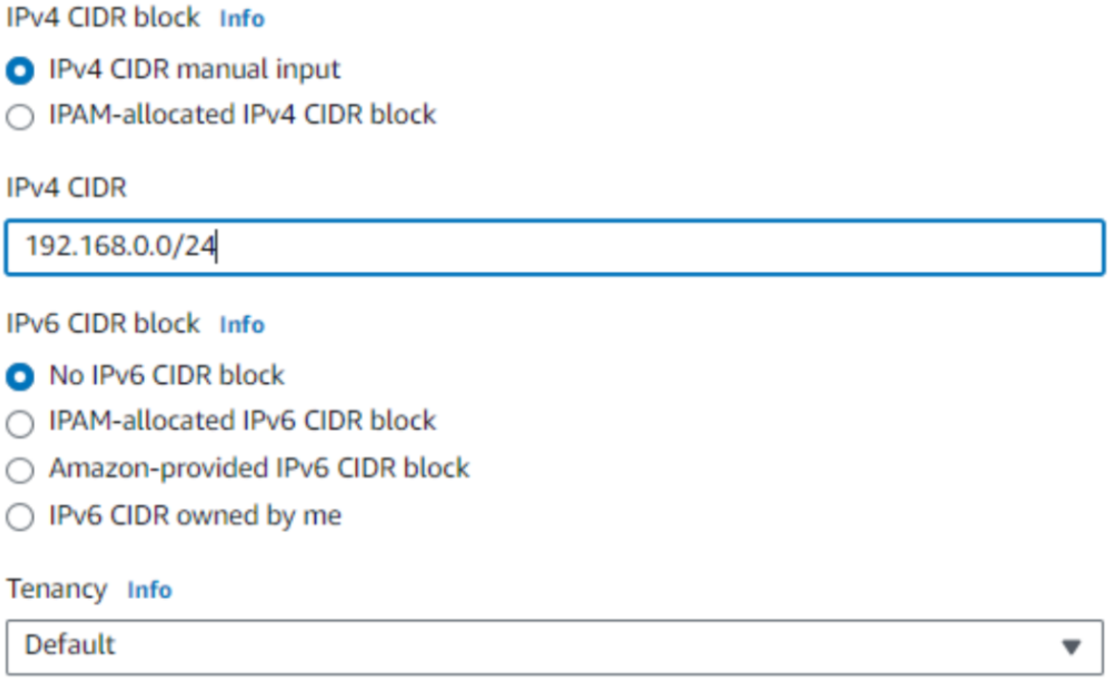
Name tag - *optional*

Creates a tag with a key of 'Name' and a value that you specify.

My-VPC

Step4:-

And then you have to select ipv4 CIDR block so in that select IPv4 CIDR manual input and then have IPv4 CIDR, I have get class three ipv4 192.168.0.0/24 then leave as it is and click on create VPC.



IPv4 CIDR block Info

● IPv4 CIDR manual input

○ IPAM-allocated IPv4 CIDR block

IPv4 CIDR

192.168.0.0/24

IPv6 CIDR block Info

● No IPv6 CIDR block

○ IPAM-allocated IPv6 CIDR block

○ Amazon-provided IPv6 CIDR block

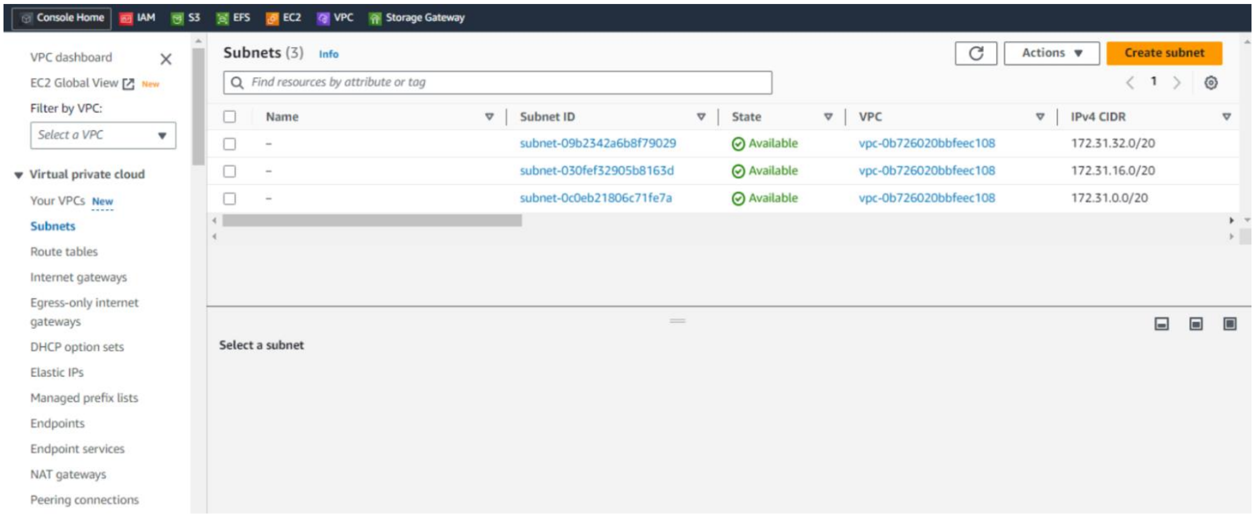
○ IPv6 CIDR owned by me

Tenancy Info

Default ▾

Step5:-

After that you have to create subnets so I will make to subnet one public and second private, create subnet click on create subnet.

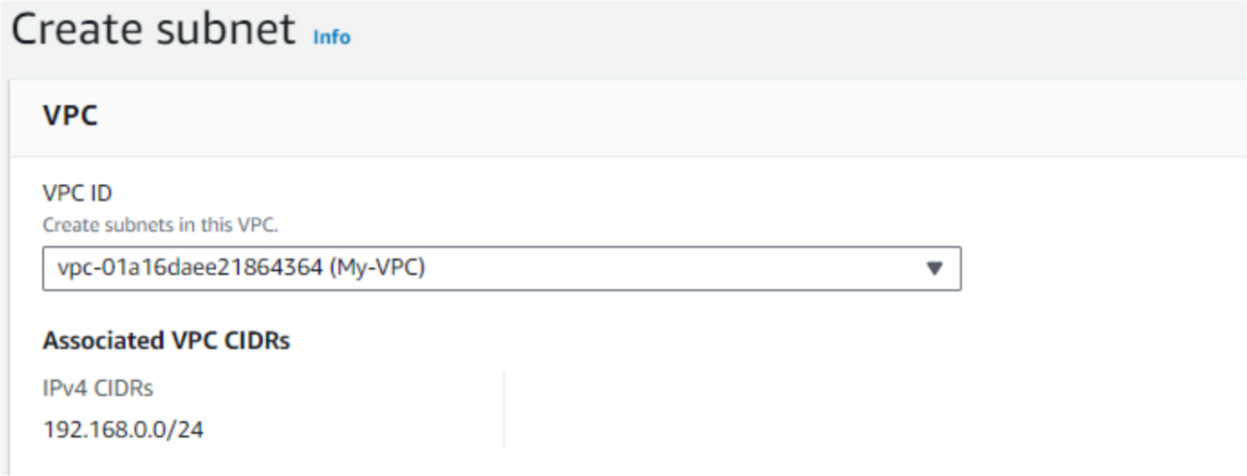


Subnets (3) Info

□	Name	Subnet ID	State	VPC	IPv4 CIDR
□	-	subnet-09b2342a6b8f79029	✓ Available	vpc-0b726020bbfeec108	172.31.32.0/20
□	-	subnet-030fef32905b8163d	✓ Available	vpc-0b726020bbfeec108	172.31.16.0/20
□	-	subnet-0c0eb21806c71fe7a	✓ Available	vpc-0b726020bbfeec108	172.31.0.0/20

Step6:-

Now u will see subnet creates options so first select your VPC and scroll down.



Create subnet Info

VPC

VPC ID

Create subnets in this VPC.

vpc-01a16daee21864364 (My-VPC)

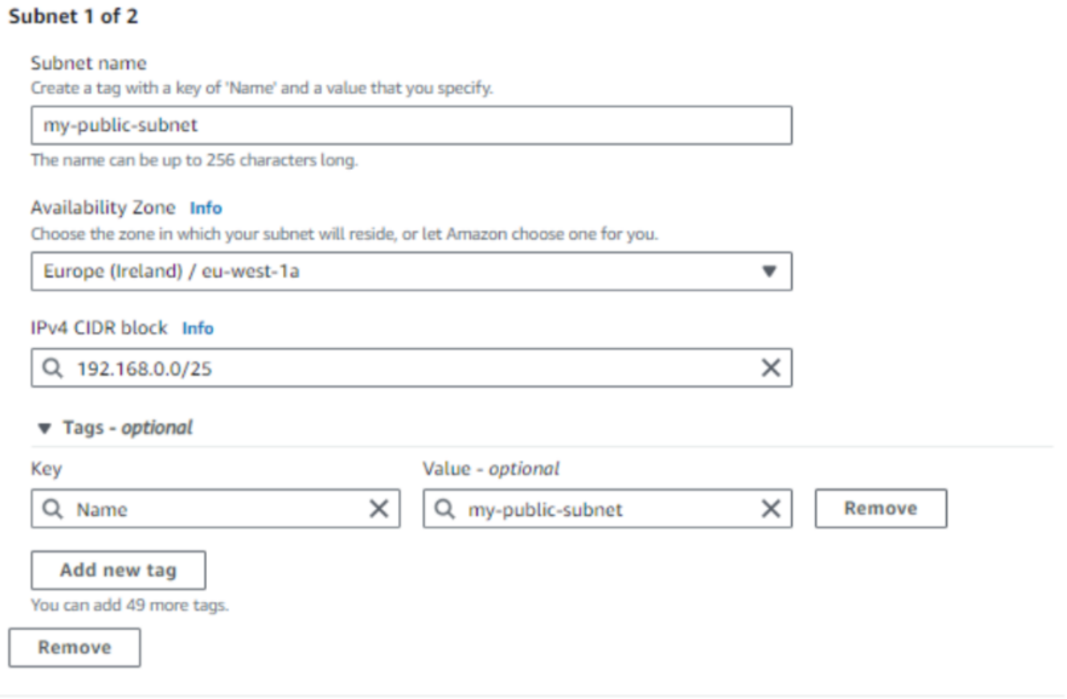
Associated VPC CIDRs

IPv4 CIDRs

192.168.0.0/24

Step7:-

Now create 1st subnets by giving name and then select availability zone then select ipv4 CIDR block means range of IP's I was selected 192.168.0.0/25



Subnet 1 of 2

Subnet name

Create a tag with a key of 'Name' and a value that you specify.

my-public-subnet

The name can be up to 256 characters long.

Availability Zone Info

Choose the zone in which your subnet will reside, or let Amazon choose one for you.

Europe (Ireland) / eu-west-1a

IPv4 CIDR block Info

192.168.0.0/25

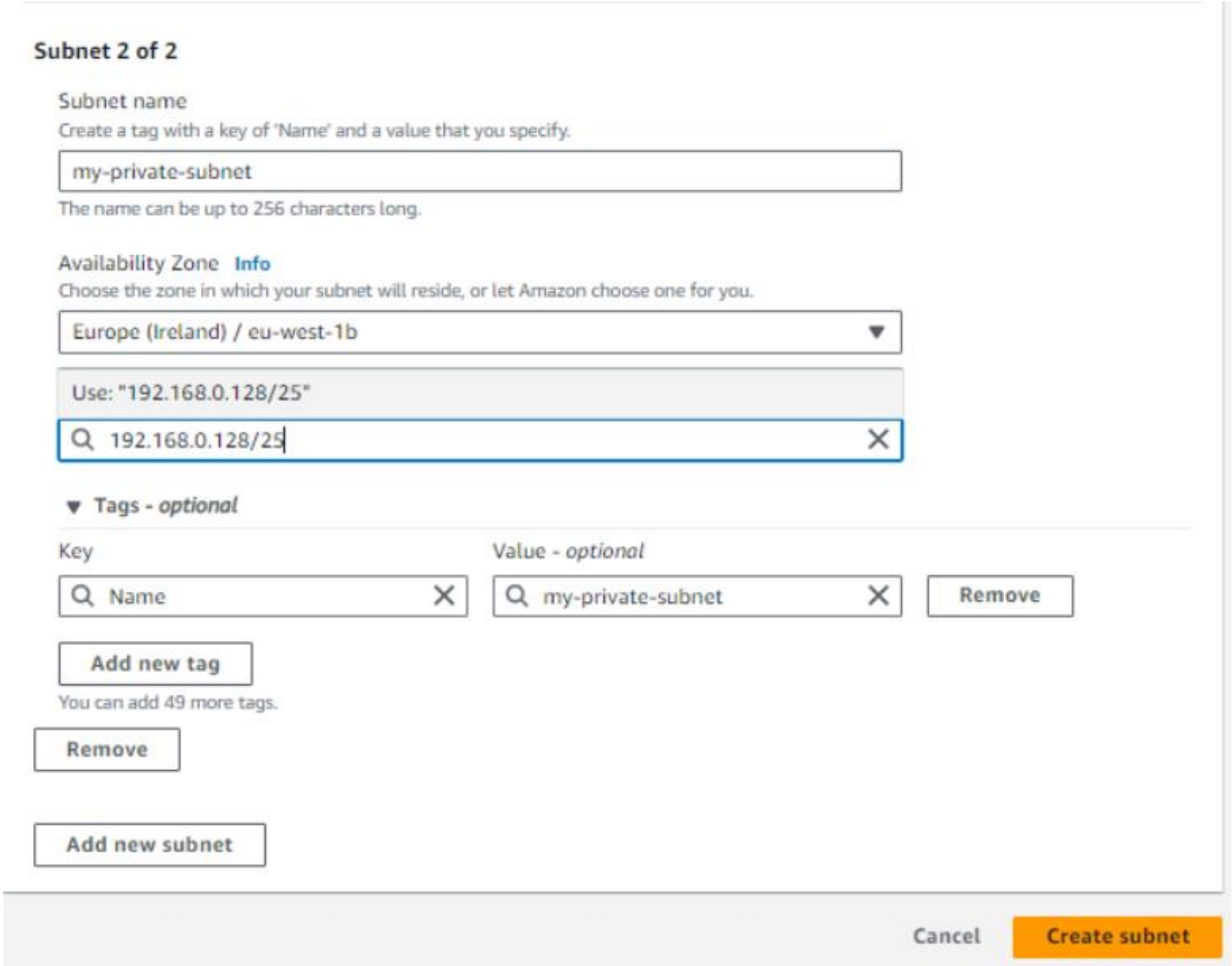
▼ Tags - *optional*

Key	Value - *optional*
Name	my-public-subnet

You can add 49 more tags.

Step8:-

Now create 2nd one subnet my giving name and then select availability zone and them gave t ipv4 second range and then click on create subnet. And your subnet was created.



Subnet 2 of 2

Subnet name
Create a tag with a key of 'Name' and a value that you specify.

my-private-subnet

The name can be up to 256 characters long.

Availability Zone Info
Choose the zone in which your subnet will reside, or let Amazon choose one for you.

Europe (Ireland) / eu-west-1b

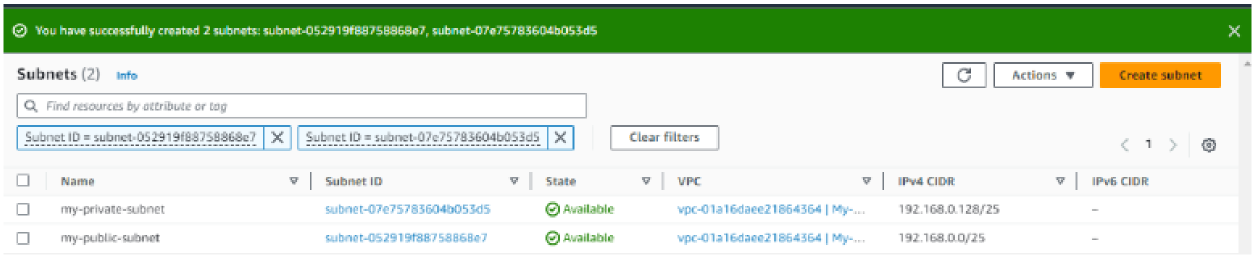
Use: "192.168.0.128/25"

192.168.0.128/25

▼ Tags - *optional*

Key	Value - *optional*
Name	my-private-subnet

You can add 49 more tags.



You have successfully created 2 subnets: subnet-052919f88758868e7, subnet-07e75783604b053d5

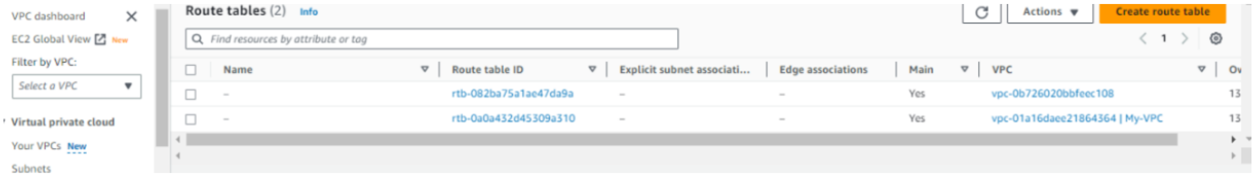
Subnets (2) Info

Subnet ID = subnet-052919f88758868e7 | Subnet ID = subnet-07e75783604b053d5

☐	Name	Subnet ID	State	VPC	IPv4 CIDR	IPv6 CIDR
☐	my-private-subnet	subnet-07e75783604b053d5	✓ Available	vpc-01a16daee21864364 | My-...	192.168.0.128/25	–
☐	my-public-subnet	subnet-052919f88758868e7	✓ Available	vpc-01a16daee21864364 | My-...	192.168.0.0/25	–

Step9:-

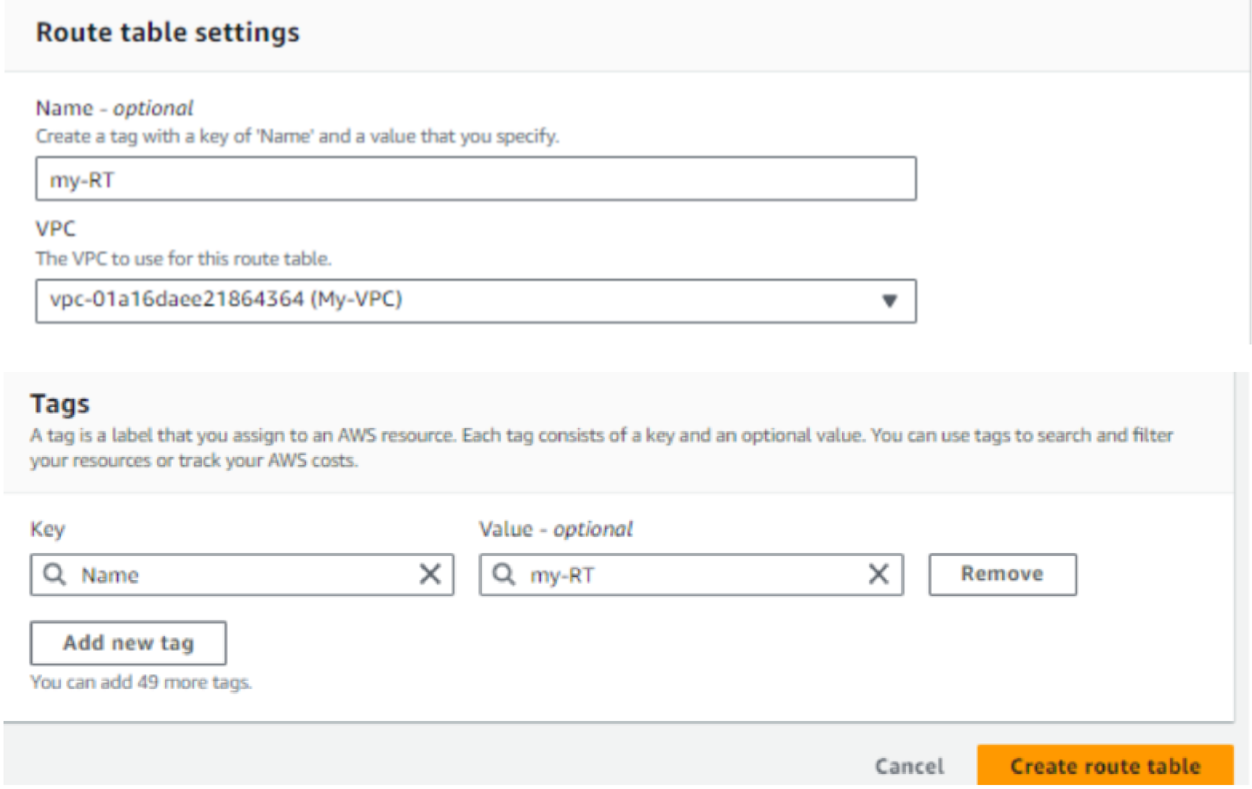
Now you have to create a route table to connect your VPC, subnet and IGW, click on create route table.



□	Name	Route table ID	Explicit subnet associati...	Edge associations	Main	VPC	Ov
□	–	rtb-082ba75a1ae47da9a	–	–	Yes	vpc-0b726020bbfeec108	13
□	–	rtb-0a0a432d45309a310	–	–	Yes	vpc-01a16daee21864364 | My-VPC	13

Step 10:-

Now you will see the setting of creating route table. So gave a route table name my-public-RT then select your VPC. And then click on create route table. And next create one more RT as private.



Route table settings

Name - *optional*
Create a tag with a key of 'Name' and a value that you specify.
my-RT

VPC
The VPC to use for this route table.
vpc-01a16daee21864364 (My-VPC)

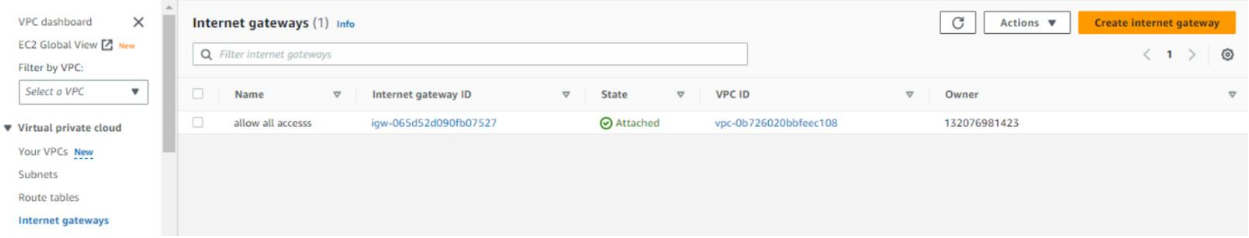
Tags
A tag is a label that you assign to an AWS resource. Each tag consists of a key and an optional value. You can use tags to search and filter your resources or track your AWS costs.

Key	Value - *optional*
Name	my-RT

You can add 49 more tags.

Step 11:-

Next you have to create internet gateway so click on internet gateway session and then click on create internet gateway.

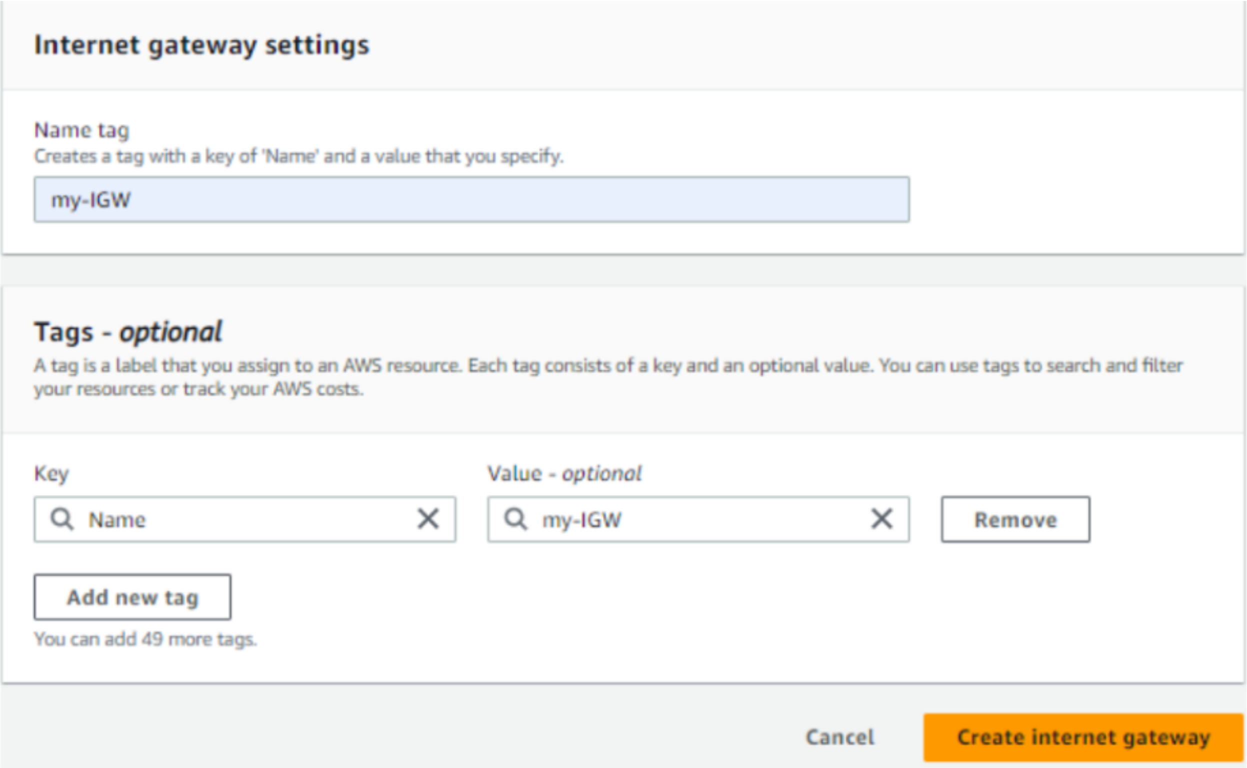


Internet gateways (1) Info

Name	Internet gateway ID	State	VPC ID	Owner
allow all accesss	igw-065d52d090fb07527	Attached	vpc-0b726020bbfeec108	132076981423

Step 12:-

You will see the setting of creating IGW. So gave it name and simply click on create internet gateway. Then select your internet gateway



Internet gateway settings

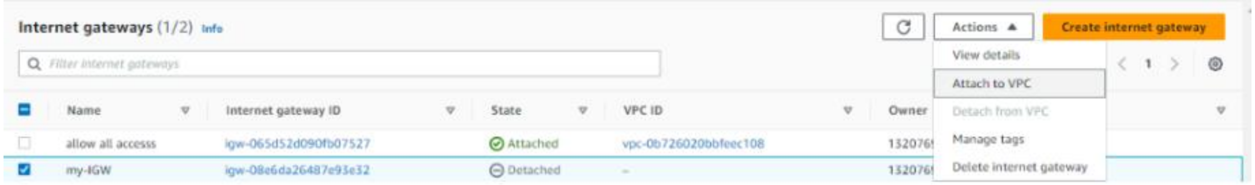
Name tag
Creates a tag with a key of 'Name' and a value that you specify.

my-IGW

Tags - *optional*
A tag is a label that you assign to an AWS resource. Each tag consists of a key and an optional value. You can use tags to search and filter your resources or track your AWS costs.

Key	Value - *optional*
Name	my-IGW

Attache to VPC

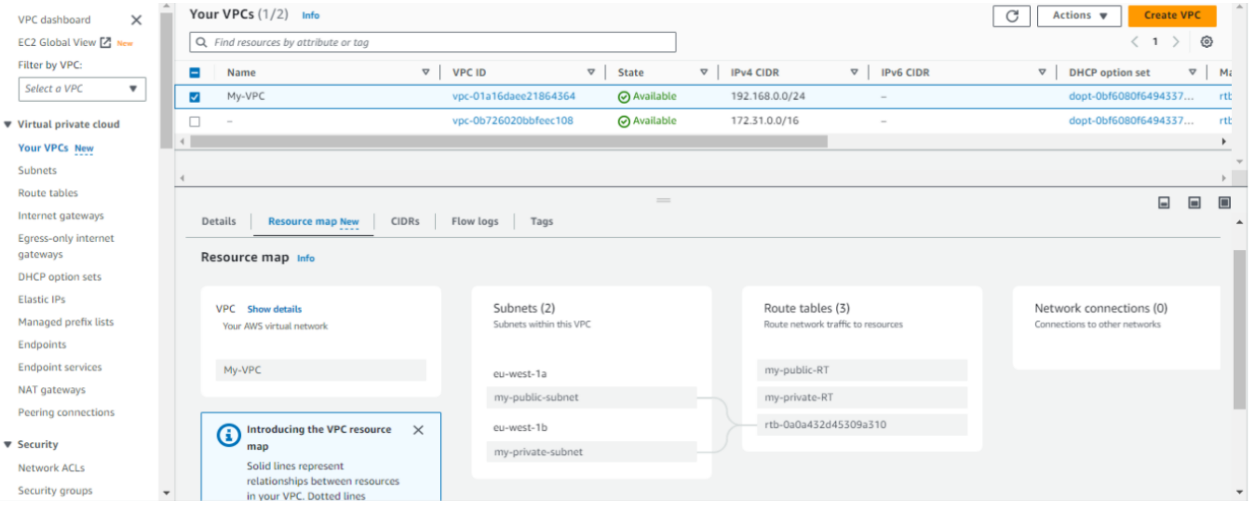


Internet gateways (1/2) Info

	Name	Internet gateway ID	State	VPC ID	Owner
□	allow all accesss	igw-065d52d090fb07527	Attached	vpc-0b726020bbfeec108	132076
☑	my-IGW	igw-08e6da26487e93e32	Detached	-	132076

Step 13:-

Now your VPC was created completed.



Your VPCs (1/2) Info

	Name	VPC ID	State	IPv4 CIDR	IPv6 CIDR	DHCP option set	M
☑	My-VPC	vpc-01a16daee21864364	Available	192.168.0.0/24	–	dopt-0bf6080f6494337...	rtb
□	–	vpc-0b726020bbfeec108	Available	172.31.0.0/16	–	dopt-0bf6080f6494337...	rtb

Resource map Info

VPC Show details
Your AWS virtual network
My-VPC

Subnets (2)
Subnets within this VPC
eu-west-1a
my-public-subnet
eu-west-1b
my-private-subnet

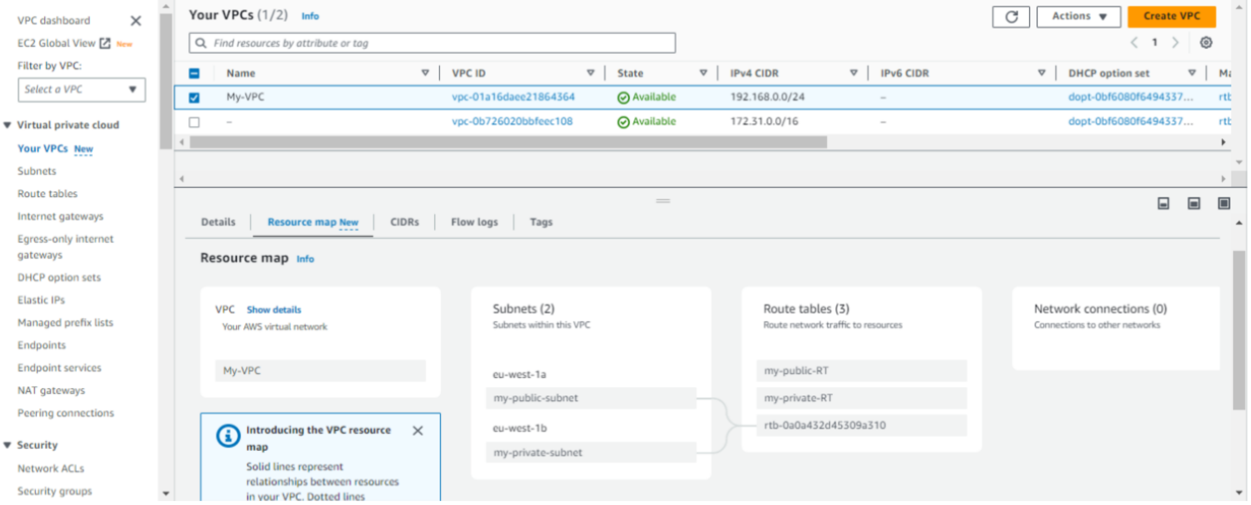
Route tables (3)
Route network traffic to resources
my-public-RT
my-private-RT
rtb-0a0a432d45309a310

Network connections (0)
Connections to other networks

Introducing the VPC resource map
Solid lines represent relationships between resources in your VPC. Dotted lines

Step 14:-

So after all set go to VPC setting and select VPC and then click on resource map now to see the connection on VPC subnet route table and internet gateway. See the following image my VPC has added all thing but not connected.



Your VPCs (1/2) Info

	Name	VPC ID	State	IPv4 CIDR	IPv6 CIDR	DHCP option set	M
☑	My-VPC	vpc-01a16daee21864364	Available	192.168.0.0/24	–	dopt-0bf6080f6494337...	rtb
□	–	vpc-0b726020bbfeec108	Available	172.31.0.0/16	–	dopt-0bf6080f6494337...	rtb

Resource map Info

VPC Show details
Your AWS virtual network
My-VPC

Subnets (2)
Subnets within this VPC
eu-west-1a
my-public-subnet
eu-west-1b
my-private-subnet

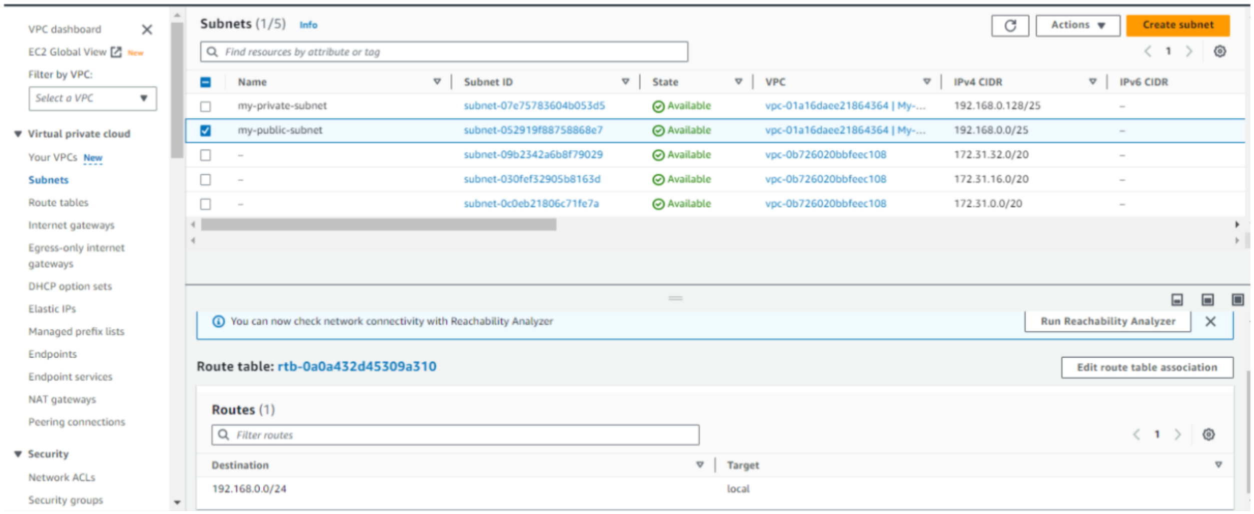
Route tables (3)
Route network traffic to resources
my-public-RT
my-private-RT
rtb-0a0a432d45309a310

Network connections (0)
Connections to other networks

Introducing the VPC resource map
Solid lines represent relationships between resources in your VPC. Dotted lines

Step 15:-

So first connect your subnet to your route table. Public subnet to public RT and private subnet to private RT. So go to subnet session and then select your public subnet and then click on route table option and then edit route table association. And after that select public route table and save, and do as it is to private subnet to connect private RT.



Subnets (1/5) Info

Find resources by attribute or tag

	Name	Subnet ID	State	VPC	IPv4 CIDR	IPv6 CIDR
☐	my-private-subnet	subnet-07e75783604b053d5	Available	vpc-01a16daee21864364 | My-...	192.168.0.128/25	–
☑	my-public-subnet	subnet-052919f88758868e7	Available	vpc-01a16daee21864364 | My-...	192.168.0.0/25	–
☐	–	subnet-09b2342a6b8f79029	Available	vpc-0b726020bbfeec108	172.31.32.0/20	–
☐	–	subnet-030fef32905b8163d	Available	vpc-0b726020bbfeec108	172.31.16.0/20	–
☐	–	subnet-0c0eb21806c71fe7a	Available	vpc-0b726020bbfeec108	172.31.0.0/20	–

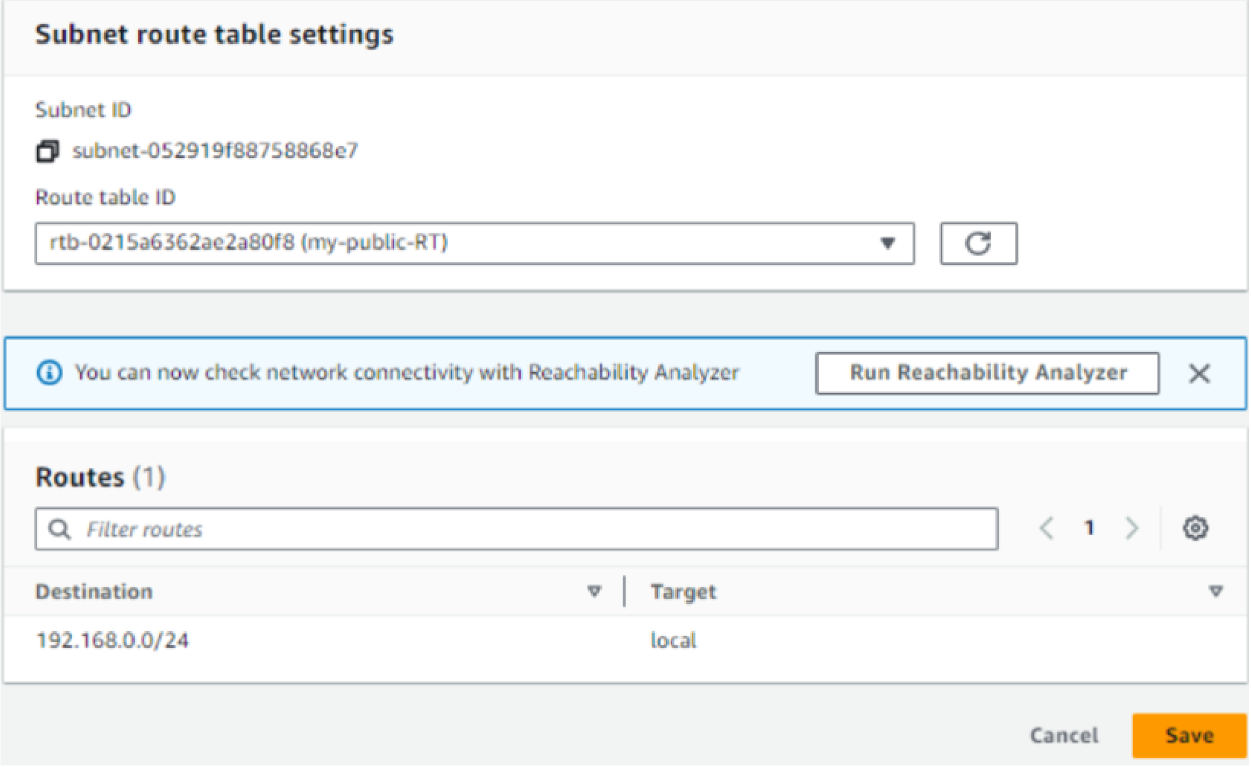
You can now check network connectivity with Reachability Analyzer

Route table: rtb-0a0a432d45309a310

Routes (1)

Filter routes

Destination	Target
192.168.0.0/24	local



Subnet route table settings

Subnet ID

subnet-052919f88758868e7

Route table ID

rtb-0215a6362ae2a80f8 (my-public-RT)

You can now check network connectivity with Reachability Analyzer

Routes (1)

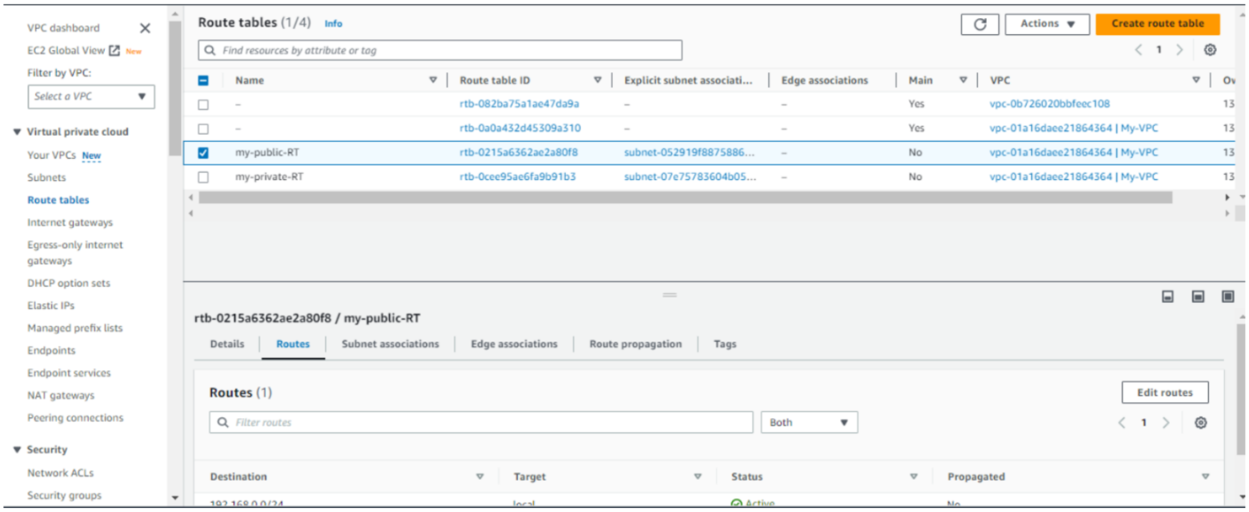
Filter routes

Destination	Target
192.168.0.0/24	local

Step 16:-

Now you have to connect public route table to IGW and private to NAT(nat gateway).

So go to route tables session and then select your public route table and then click on routes option and then edit routes. And then click on add route and then in first column select 0.0.0.0/0 and then next column select internet gateway option and then select IGW and then save it and your Public RT connect to IGW.



Route tables (1/4) Info

Find resources by attribute or tag

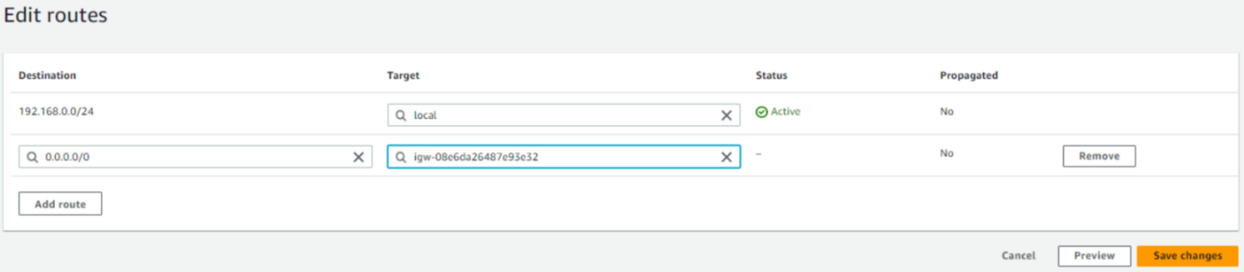
	Name	Route table ID	Explicit subnet associati...	Edge associations	Main	VPC	Ov
□	–	rtb-082ba75a1ae47da9a	–	–	Yes	vpc-0b726020bbfeec108	13
□	–	rtb-0a0a432d45309a310	–	–	Yes	vpc-01a16daee21864364 | My-VPC	13
☑	my-public-RT	rtb-0215a6362ae2a80f8	subnet-052919f8875886...	–	No	vpc-01a16daee21864364 | My-VPC	13
□	my-private-RT	rtb-0cee95ae6fa9b91b3	subnet-07e75783604b05...	–	No	vpc-01a16daee21864364 | My-VPC	13

rtb-0215a6362ae2a80f8 / my-public-RT

Routes (1)

Filter routes

Destination	Target	Status	Propagated
192.168.0.0/24	local	Active	No

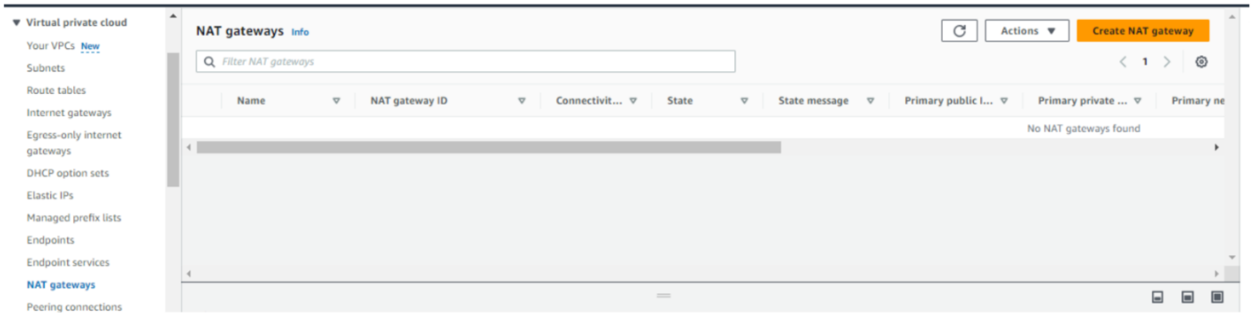


Edit routes

Destination	Target	Status	Propagated
192.168.0.0/24	local	Active	No
0.0.0.0/0	igw-08e6da26487e93e32	-	No

Step 17:-

Now connect NAT gateway to private RT, So first of all create NAT gateway. Click on NAT gateways session and then click on create NAT gateway to your VPC.



NAT gateways Info

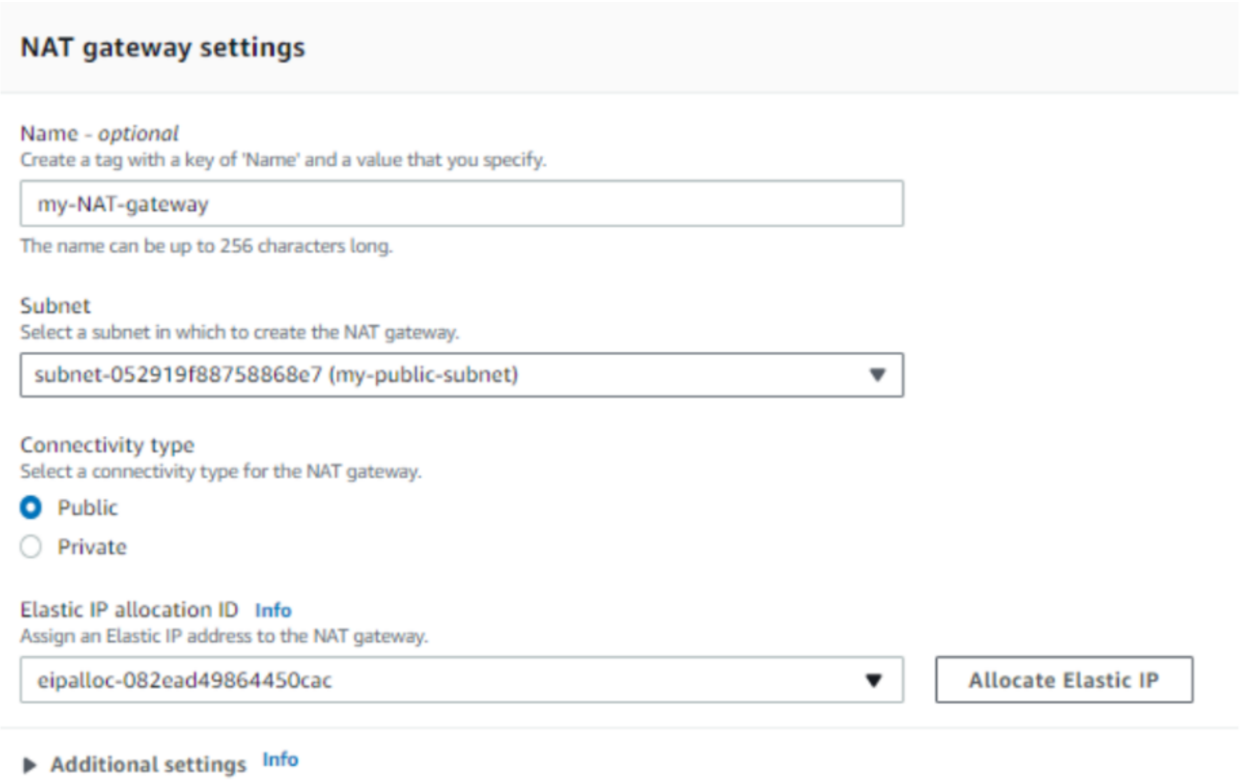
Filter NAT gateways

Name	NAT gateway ID	Connectivit...	State	State message	Primary public I...	Primary private ...	Primary ne

No NAT gateways found

Step 18:-

Now you will see NAT gateway create setting so gave it name. and then select the public subnet and then click on public connective type after that allocate elastic IP to NAT gateway. And then create NAT gateway.



NAT gateway settings

Name - *optional*
Create a tag with a key of 'Name' and a value that you specify.
my-NAT-gateway
The name can be up to 256 characters long.

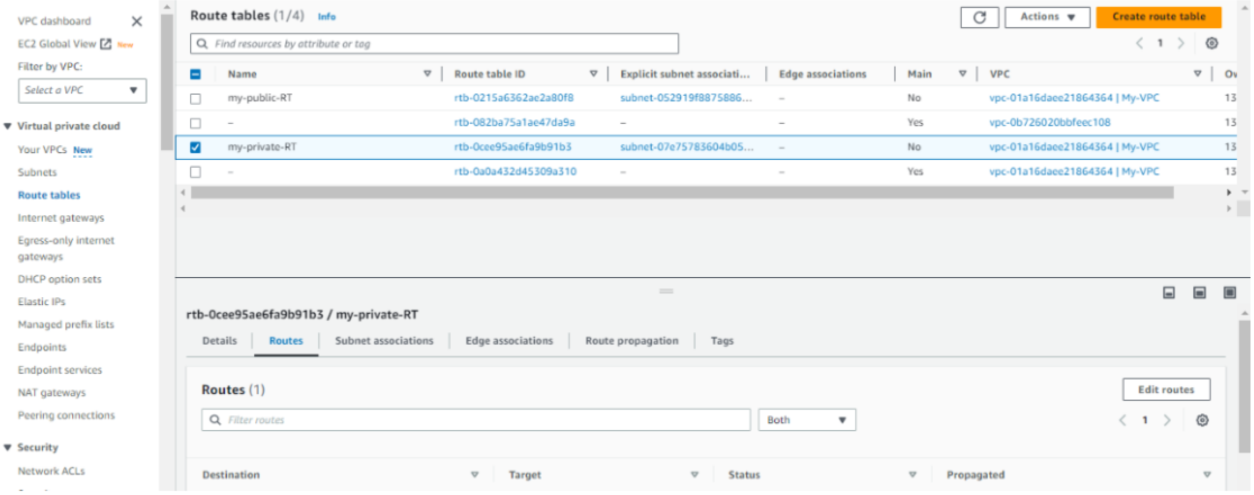
Subnet
Select a subnet in which to create the NAT gateway.
subnet-052919f88758868e7 (my-public-subnet) ▼

Connectivity type
Select a connectivity type for the NAT gateway.
● Public
○ Private

Elastic IP allocation ID Info
Assign an Elastic IP address to the NAT gateway.
eipalloc-082ead49864450cac ▼

Step 19 :-

Now you have to go route table session and then select your private route table after that click on routes option in down side and then edit routes.



☐	Name	Route table ID	Explicit subnet associati...	Edge associations	Main	VPC	Ov
☐	my-public-RT	rtb-0215a6362ae2a80f8	subnet-052919f8875886...	–	No	vpc-01a16daee21864364 | My-VPC	13
☐	–	rtb-082ba75a1ae47da9a	–	–	Yes	vpc-0b726020bbfeec108	13
☑	my-private-RT	rtb-0cee95ae6fa9b91b3	subnet-07e75783604b05...	–	No	vpc-01a16daee21864364 | My-VPC	13
☐	–	rtb-0a0a432d45309a310	–	–	Yes	vpc-01a16daee21864364 | My-VPC	13

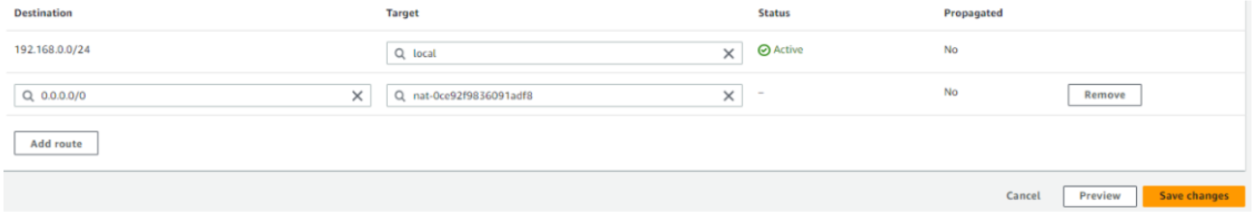
rtb-0cee95ae6fa9b91b3 / my-private-RT

Destination	Target	Status	Propagated

Step 20:-

Now you have to click on add route and after that click on first column and select 0.0.0.0/0 after that select second column and in that select NAT gateway option and ten select your newly added Nat and save changes and your private subnet also connected to Nat by RT.

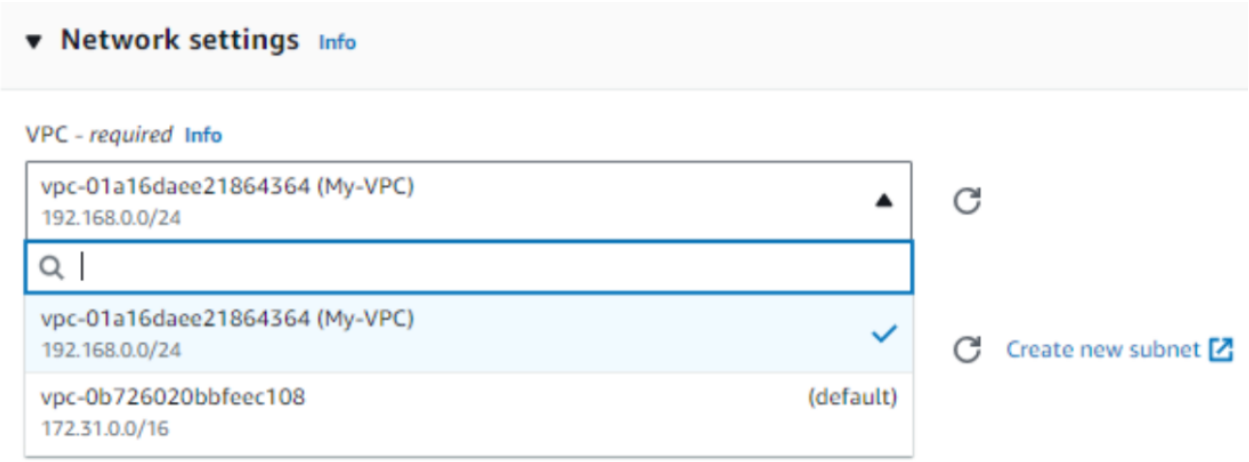
Now your VPC was ready to launch public and private instances.



Destination	Target	Status	Propagated
192.168.0.0/24	local	Active	No
0.0.0.0/0	nat-0ce92f9836091adf8	-	No

Step 21:-

Now you have to launch instances public and private instance. So I will show only where to changes to do at the launching instance time. Go to ec2 services and then launch instance. At the instance launch setting edit network setting and then click VPC an select your own VPC.



▾ Network settings Info

VPC - *required* Info

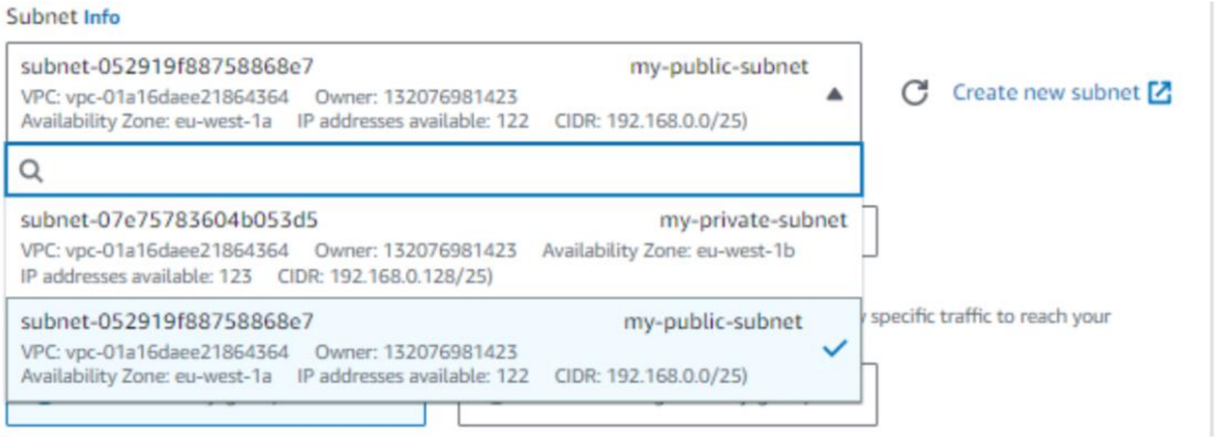
vpc-01a16daee21864364 (My-VPC)
192.168.0.0/24

vpc-01a16daee21864364 (My-VPC) ✓
192.168.0.0/24

vpc-0b726020bbfeec108 (default)
172.31.0.0/16

Step 22:-

Next select public subnet to launch public instance.



Subnet Info

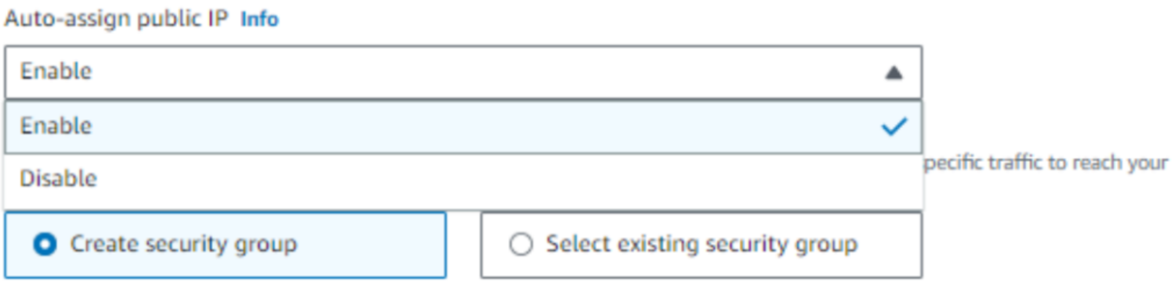
subnet-052919f88758868e7 my-public-subnet
VPC: vpc-01a16daee21864364 Owner: 132076981423
Availability Zone: eu-west-1a IP addresses available: 122 CIDR: 192.168.0.0/25)

subnet-07e75783604b053d5 my-private-subnet
VPC: vpc-01a16daee21864364 Owner: 132076981423 Availability Zone: eu-west-1b
IP addresses available: 123 CIDR: 192.168.0.128/25)

subnet-052919f88758868e7 my-public-subnet ✓
VPC: vpc-01a16daee21864364 Owner: 132076981423
Availability Zone: eu-west-1a IP addresses available: 122 CIDR: 192.168.0.0/25)

Step 23:-

Give it public IP because it is public instance enable it.



Auto-assign public IP Info

Enable ▲

Enable ✓

Disable

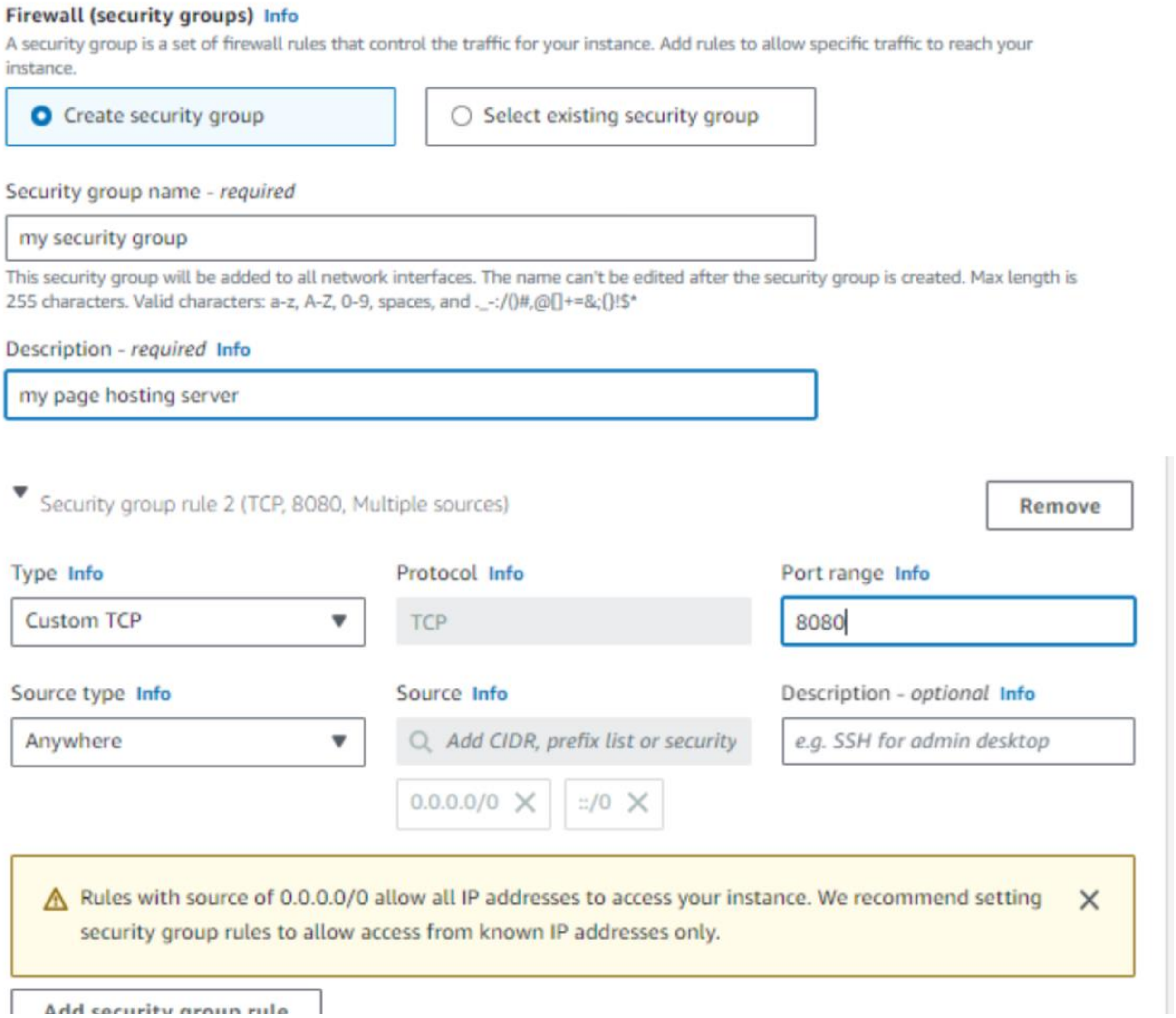
pecific traffic to reach your

● Create security group

○ Select existing security group

Step 24:

After that create new security group and add port 8080 in that SG.



Firewall (security groups) Info

A security group is a set of firewall rules that control the traffic for your instance. Add rules to allow specific traffic to reach your instance.

● Create security group

○ Select existing security group

Security group name - *required*

my security group

This security group will be added to all network interfaces. The name can't be edited after the security group is created. Max length is 255 characters. Valid characters: a-z, A-Z, 0-9, spaces, and ._-:/()#,@[]+=&;{}!$*

Description - *required* Info

my page hosting server

▼ Security group rule 2 (TCP, 8080, Multiple sources)

Remove

Type Info	Protocol Info	Port range Info
Custom TCP ▼	TCP	8080

Source type Info	Source Info	Description - *optional* Info
Anywhere ▼	*Add CIDR, prefix list or security* 0.0.0.0/0 ✕ ::/0 ✕	*e.g. SSH for admin desktop*

⚠ 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. ✕

Add security group rule

Step 25:-

After that add in user following script to run with launching instance means configured with launched instance.

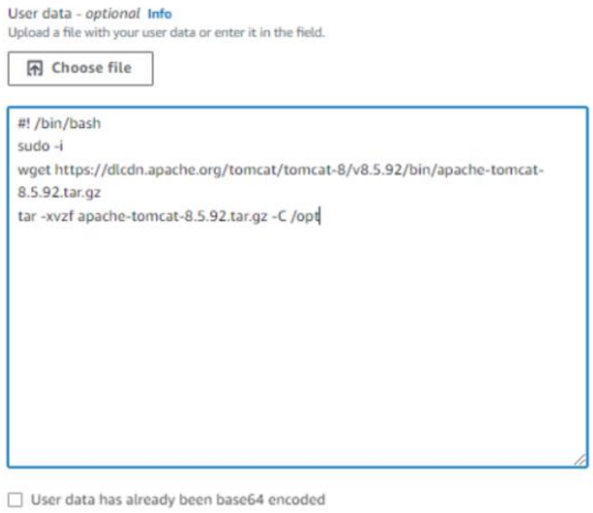
#! /bin/bash = to inter in environment

Sudo –I =to change local user to root user

wget https://dlcdn.apache.org/tomcat/tomcat-8/v8.5.92/bin/apache-tomcat-8.5.92.tar.g = to download package tomcat

tar –xzvf apache-tomcat-8.5.92.tar.gz –C /opt = and after that download package is in the archive and compression format downloaded so we have extract it by tar command.

And after that launch your public instance.

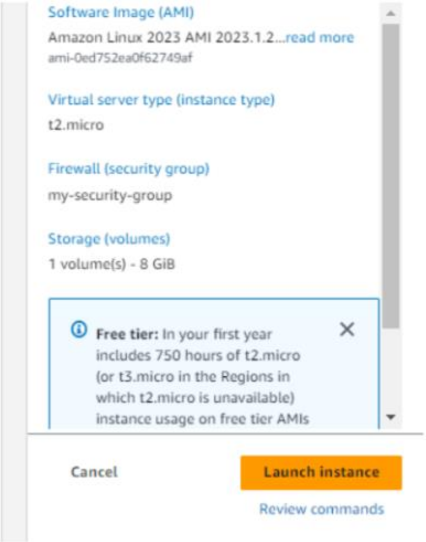


User data - *optional* Info

Upload a file with your user data or enter it in the field.

```
#! /bin/bash
sudo -i
wget https://dlcdn.apache.org/tomcat/tomcat-8/v8.5.92/bin/apache-tomcat-
8.5.92.tar.gz
tar -xvzf apache-tomcat-8.5.92.tar.gz -C /opt
```

□ User data has already been base64 encoded



Software Image (AMI)

Amazon Linux 2023 AMI 2023.1.2...read more

ami-0ed752ea0f62749af

Virtual server type (instance type)

t2.micro

Firewall (security group)

my-security-group

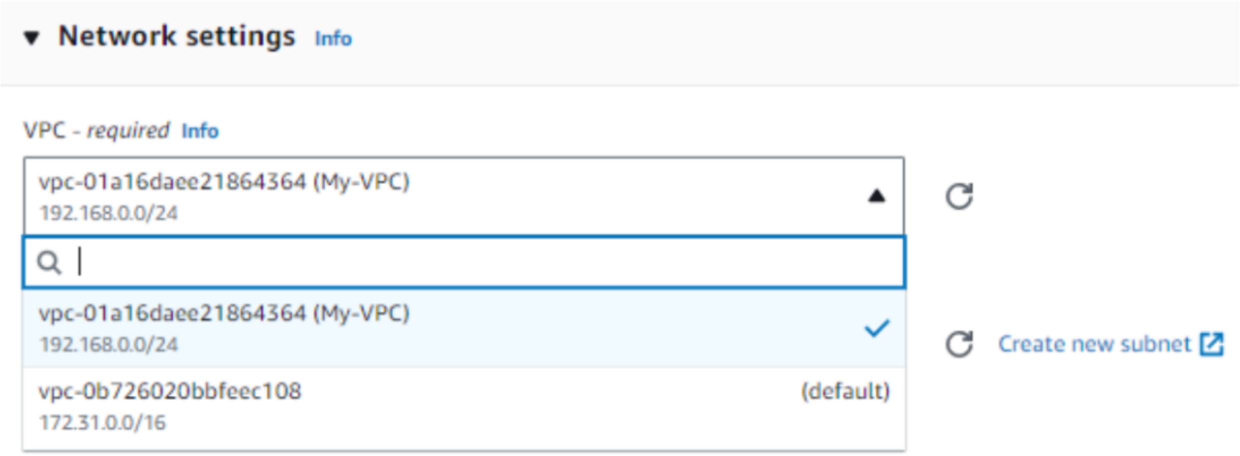
Storage (volumes)

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 usage on free tier AMIs

Step 26:-

After that launch a private instance with following configuration and see downwards ss for, how it configure. Edit network setting and add your VPC.



Network settings Info

VPC - *required* Info

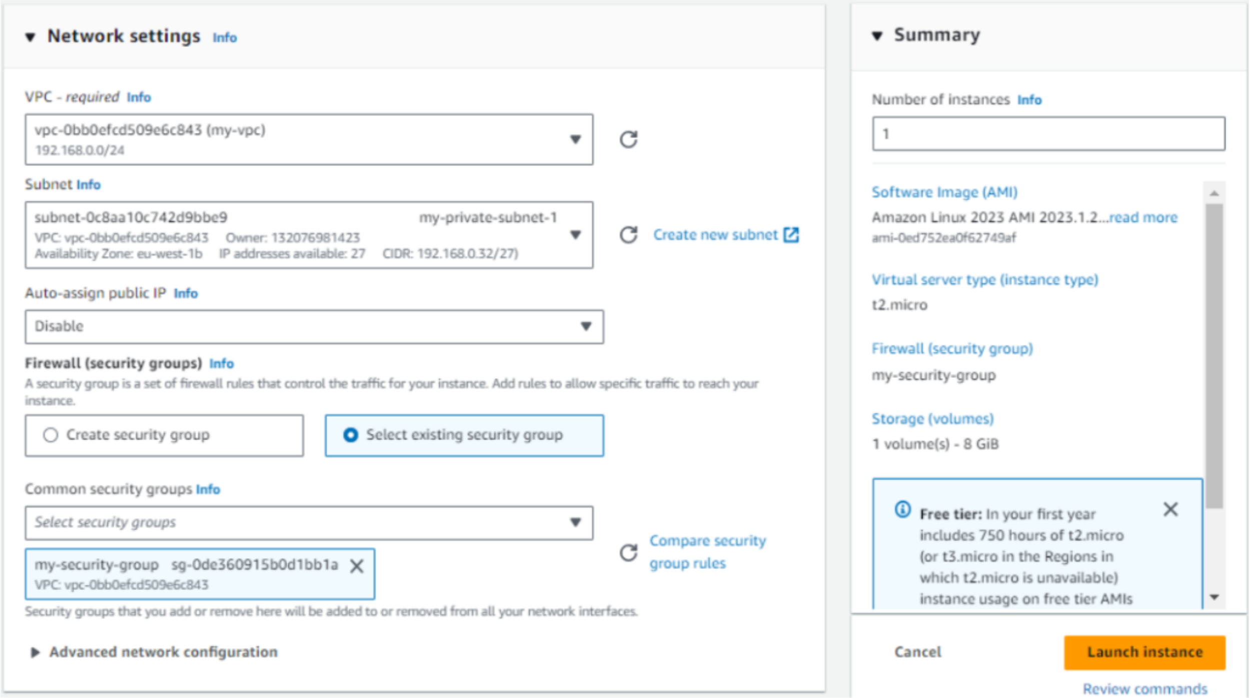
vpc-01a16daee21864364 (My-VPC)
192.168.0.0/24

vpc-01a16daee21864364 (My-VPC) ✓
192.168.0.0/24

vpc-0b726020bbfeec108 (default)
172.31.0.0/16

Step 27:-

Now select your private subnet and then disable auto assign public IP because this instance is not our public instance. After that add security group in which added port 3306 of mariadb and 22 to ssh.



Network settings Info

VPC - *required* Info
vpc-0bb0efcd509e6c843 (my-vpc)
192.168.0.0/24

Subnet Info
subnet-0c8aa10c742d9bbe9 my-private-subnet-1
VPC: vpc-0bb0efcd509e6c843 Owner: 132076981423
Availability Zone: eu-west-1b IP addresses available: 27 CIDR: 192.168.0.32/27)

Auto-assign public IP Info
Disable

Firewall (security groups) Info
A security group is a set of firewall rules that control the traffic for your instance. Add rules to allow specific traffic to reach your instance.

○ Create security group ● Select existing security group

Common security groups Info
Select security groups

my-security-group sg-0de360915b0d1bb1a
VPC: vpc-0bb0efcd509e6c843

Security groups that you add or remove here will be added to or removed from all your network interfaces.

Summary

Number of instances Info
1

Software Image (AMI)
Amazon Linux 2023 AMI 2023.1.2...read more
ami-0ed752ea0f62749af

Virtual server type (instance type)
t2.micro

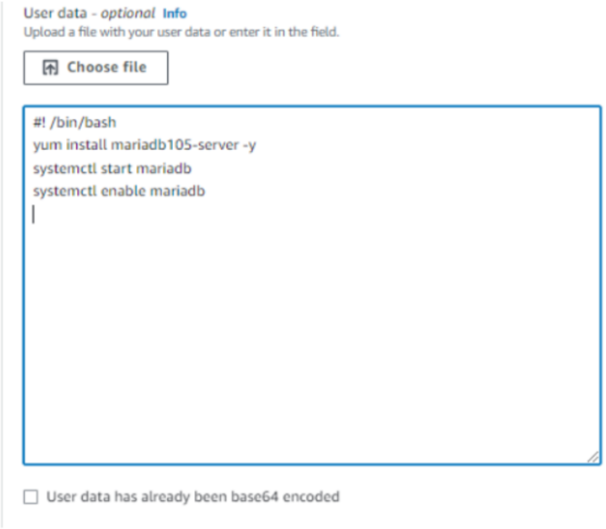
Firewall (security group)
my-security-group

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 usage on free tier AMIs

Step 28:-

Now add following user data and then launch it. Following user data is for installing MariaDB service to your private server.

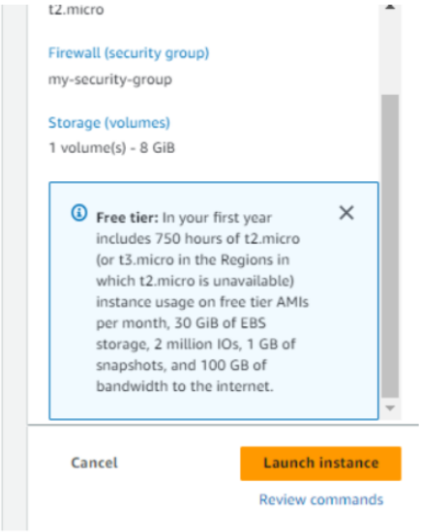


User data - *optional* Info

Upload a file with your user data or enter it in the field.

```
#! /bin/bash
yum install mariadb105-server -y
systemctl start mariadb
systemctl enable mariadb
```

□ User data has already been base64 encoded



t2.micro

Firewall (security group)

my-security-group

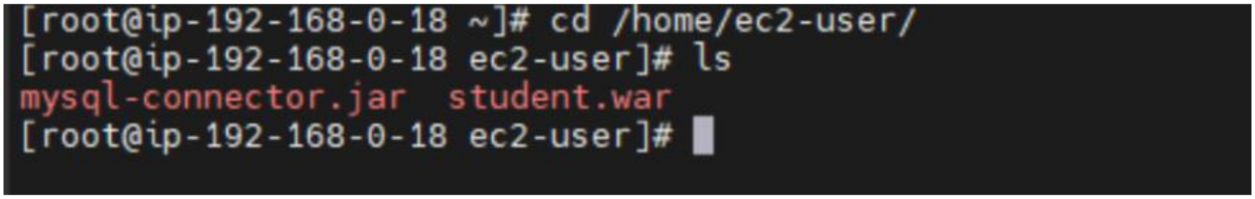
Storage (volumes)

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 usage on free tier AMIs per month, 30 GiB of EBS storage, 2 million IOs, 1 GB of snapshots, and 100 GB of bandwidth to the internet.

Step 29:-

After that get access of your public instance and by drag and drop process get student. war and JDBC connecter file as name MySQL-connecter in your public instance.



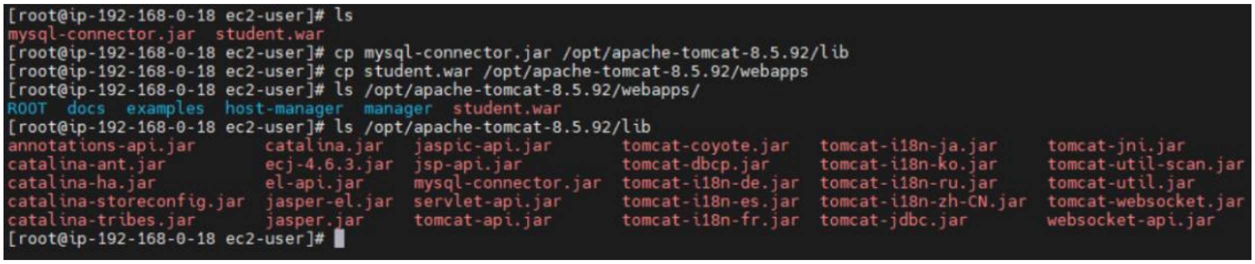
```
[root@ip-192-168-0-18 ~]# cd /home/ec2-user/
[root@ip-192-168-0-18 ec2-user]# ls
mysql-connector.jar  student.war
[root@ip-192-168-0-18 ec2-user]# 
```

Step 30:-

And then mv or cp that file to Apache's file which we have install in /opt.

student. war mv or cp to /opt/apache-tomcat-8.5.92/webapps and

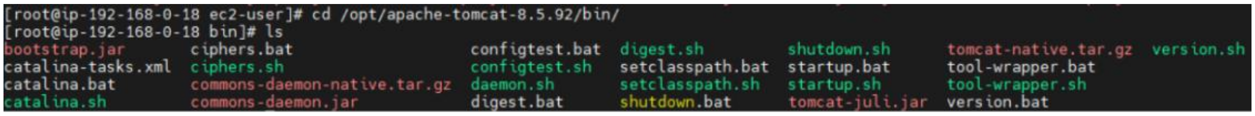
mysql-connector.jar file mv or cp to /opt/apache-tomcat-8.5.92/lib



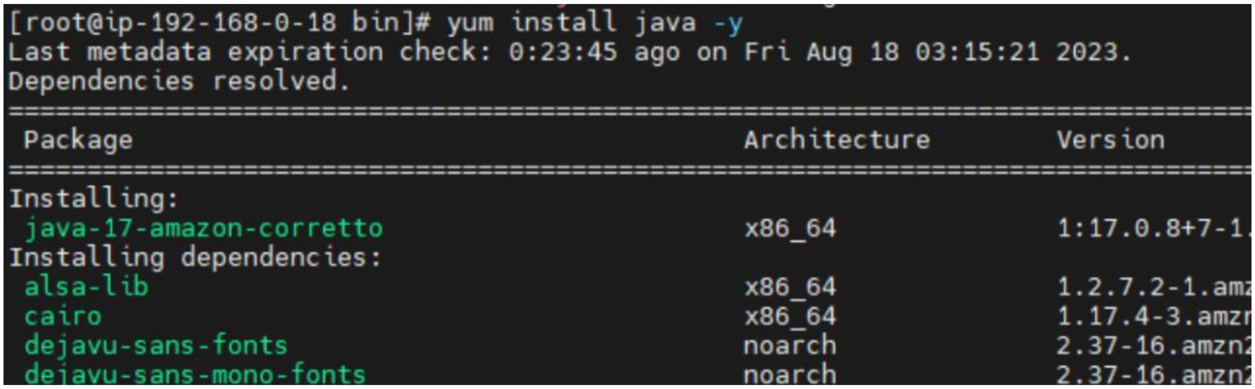
```
[root@ip-192-168-0-18 ec2-user]# ls
mysql-connector.jar  student.war
[root@ip-192-168-0-18 ec2-user]# cp mysql-connector.jar /opt/apache-tomcat-8.5.92/lib
[root@ip-192-168-0-18 ec2-user]# cp student.war /opt/apache-tomcat-8.5.92/webapps
[root@ip-192-168-0-18 ec2-user]# ls /opt/apache-tomcat-8.5.92/webapps/
ROOT  docs  examples  host-manager  manager  student.war
[root@ip-192-168-0-18 ec2-user]# ls /opt/apache-tomcat-8.5.92/lib
annotations-api.jar       catalina.jar   jaspic-api.jar       tomcat-coyote.jar   tomcat-i18n-ja.jar     tomcat-jni.jar
catalina-ant.jar          ecj-4.6.3.jar  jsp-api.jar          tomcat-dbcp.jar     tomcat-i18n-ko.jar     tomcat-util-scan.jar
catalina-ha.jar           el-api.jar     mysql-connector.jar  tomcat-i18n-de.jar  tomcat-i18n-ru.jar     tomcat-util.jar
catalina-storeconfig.jar  jasper-el.jar  servlet-api.jar      tomcat-i18n-es.jar  tomcat-i18n-zh-CN.jar  tomcat-websocket.jar
catalina-tribes.jar       jasper.jar     tomcat-api.jar       tomcat-i18n-fr.jar  tomcat-jdbc.jar        websocket-api.jar
[root@ip-192-168-0-18 ec2-user]# 
```

Step 31:-

Now you have to start a tomcat, so you have to run the .sh file of catalina.sh file for .sh file run we have to install a java package. So run command #yum install java –y.



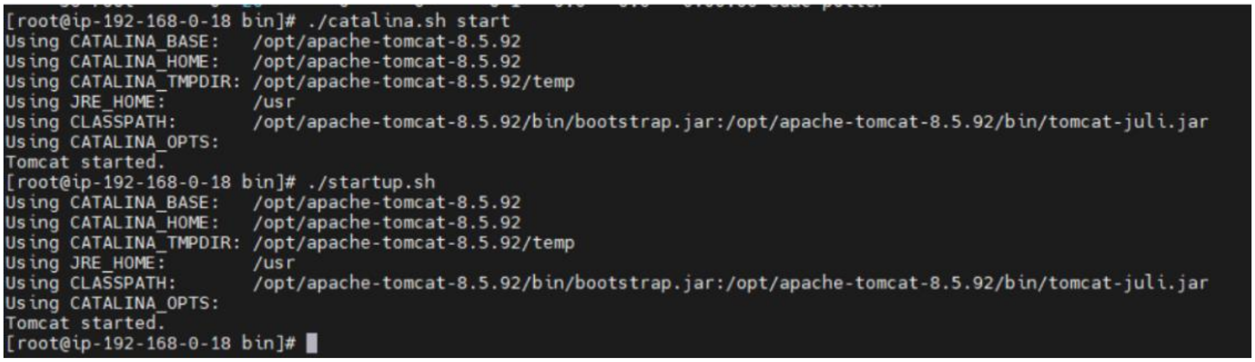
```
[root@ip-192-168-0-18 ec2-user]# cd /opt/apache-tomcat-8.5.92/bin/
[root@ip-192-168-0-18 bin]# ls
bootstrap.jar        ciphers.bat                   configtest.bat  digest.sh          shutdown.sh      tomcat-native.tar.gz  version.sh
catalina-tasks.xml   ciphers.sh                    configtest.sh   setclasspath.bat   startup.bat      tool-wrapper.bat
catalina.bat         commons-daemon-native.tar.gz  daemon.sh       setclasspath.sh    startup.sh       tool-wrapper.sh
catalina.sh          commons-daemon.jar            digest.bat      shutdown.bat       tomcat-juli.jar  version.bat
```



```
[root@ip-192-168-0-18 bin]# yum install java -y
Last metadata expiration check: 0:23:45 ago on Fri Aug 18 03:15:21 2023.
Dependencies resolved.
==================================================================================
 Package                                       Architecture         Version
==================================================================================
Installing:
 java-17-amazon-corretto                       x86_64               1:17.0.8+7-1.
Installing dependencies:
 alsa-lib                                      x86_64               1.2.7.2-1.amz
 cairo                                         x86_64               1.17.4-3.amzn
 dejavu-sans-fonts                             noarch               2.37-16.amzn2
 dejavu-sans-mono-fonts                        noarch               2.37-16.amzn2
```

Step 32:-

Now you have ready to run .sh file of catalina so run command # ./catalina.sh start and then ./startup.sh file.

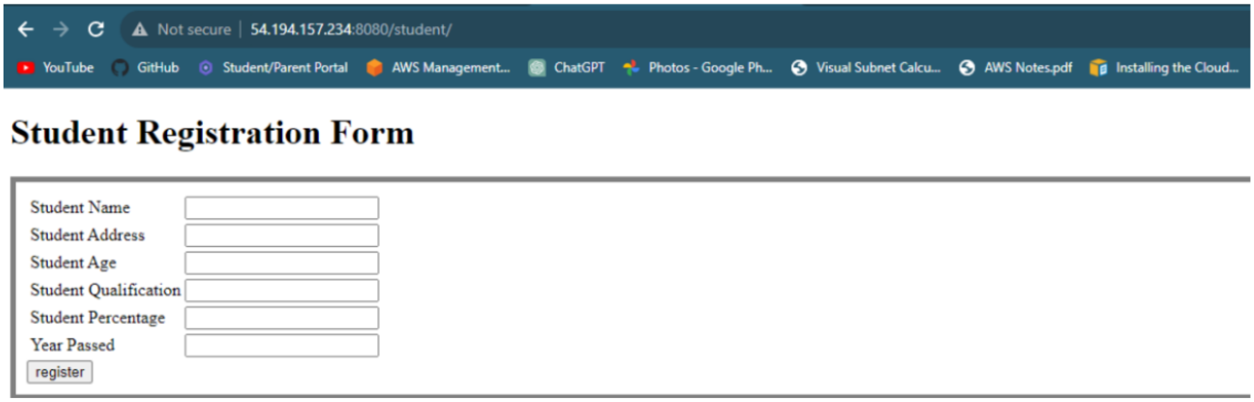


```
[root@ip-192-168-0-18 bin]# ./catalina.sh start
Using CATALINA_BASE:   /opt/apache-tomcat-8.5.92
Using CATALINA_HOME:   /opt/apache-tomcat-8.5.92
Using CATALINA_TMPDIR: /opt/apache-tomcat-8.5.92/temp
Using JRE_HOME:        /usr
Using CLASSPATH:       /opt/apache-tomcat-8.5.92/bin/bootstrap.jar:/opt/apache-tomcat-8.5.92/bin/tomcat-juli.jar
Using CATALINA_OPTS:
Tomcat started.
[root@ip-192-168-0-18 bin]# ./startup.sh
Using CATALINA_BASE:   /opt/apache-tomcat-8.5.92
Using CATALINA_HOME:   /opt/apache-tomcat-8.5.92
Using CATALINA_TMPDIR: /opt/apache-tomcat-8.5.92/temp
Using JRE_HOME:        /usr
Using CLASSPATH:       /opt/apache-tomcat-8.5.92/bin/bootstrap.jar:/opt/apache-tomcat-8.5.92/bin/tomcat-juli.jar
Using CATALINA_OPTS:
Tomcat started.
[root@ip-192-168-0-18 bin]# █
```

Step 33:-

Now hit your public IP of instance and your hosting page is ready only remaining MariaDB connecting for data save.

Type in browser as it is. = http://54.194.157.234:8080/student/

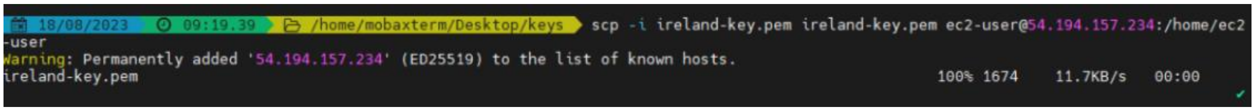


Student Registration Form

Student Name	
Student Address	
Student Age	
Student Qualification	
Student Percentage	
Year Passed	

Step 34:-

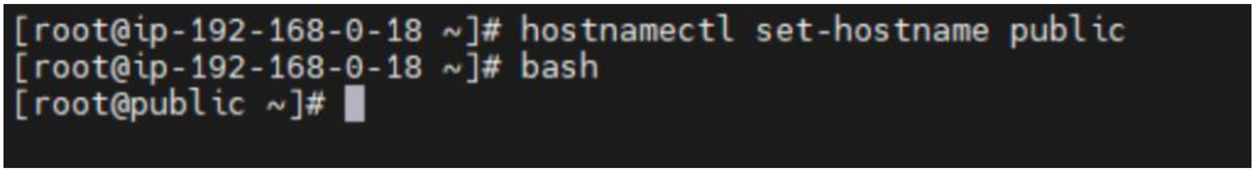
Now you have to get access of private instance by SSH key so get that key on public instance which has connected to your private instance.



```
 18/08/2023  09:19.39  /home/mobaxterm/Desktop/keys  scp -i ireland-key.pem ireland-key.pem ec2-user@54.194.157.234:/home/ec2
-user
Warning: Permanently added '54.194.157.234' (ED25519) to the list of known hosts.
ireland-key.pem                                                                           100% 1674    11.7KB/s   00:00
```

Step 35:-

First gave the name to you public and private instance a machine as public machine to public and private to private. By command hostnamectl.

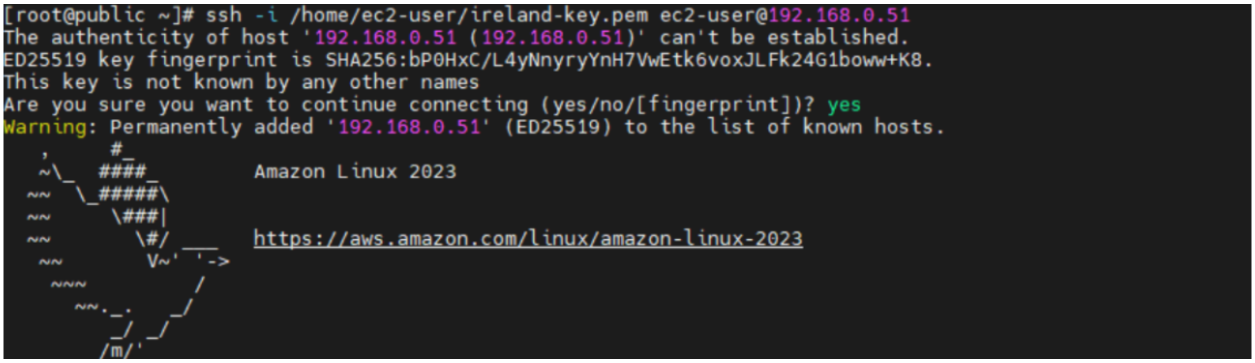


```
[root@ip-192-168-0-18 ~]# hostnamectl set-hostname public
[root@ip-192-168-0-18 ~]# bash
[root@public ~]# 
```

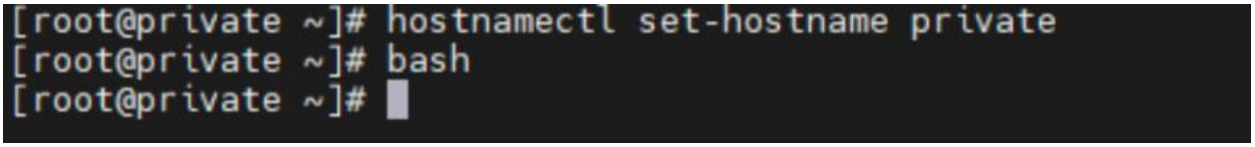
As it is when you gave access of it by SSH

Step 36:-

Now, you have get private instance access by SSH key.



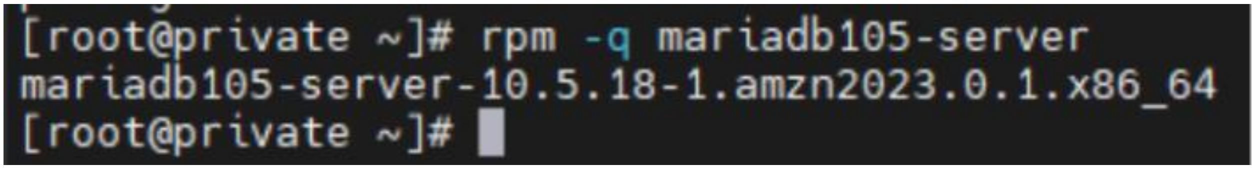
```
[root@public ~]# ssh -i /home/ec2-user/ireland-key.pem ec2-user@192.168.0.51
The authenticity of host '192.168.0.51 (192.168.0.51)' can't be established.
ED25519 key fingerprint is SHA256:bP0HxC/L4yNnyryYnH7VwEtk6voxJLFk24G1boww+K8.
This key is not known by any other names
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '192.168.0.51' (ED25519) to the list of known hosts.
   ,     #_
   ~\_  ####_        Amazon Linux 2023
  ~~  \_#####\
  ~~     \###|
  ~~       \#/ ___   https://aws.amazon.com/linux/amazon-linux-2023
   ~~       V~' '->
    ~~~         /
      ~~._.   _/
         _/ _/
        /m/'
```



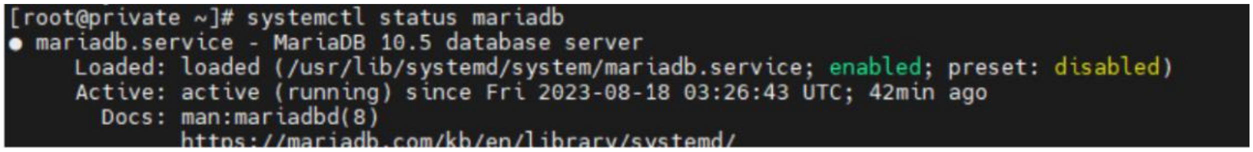
```
[root@private ~]# hostnamectl set-hostname private
[root@private ~]# bash
[root@private ~]# 
```

Step 37:-

Check user data script was run or not by rpm –q and package name.



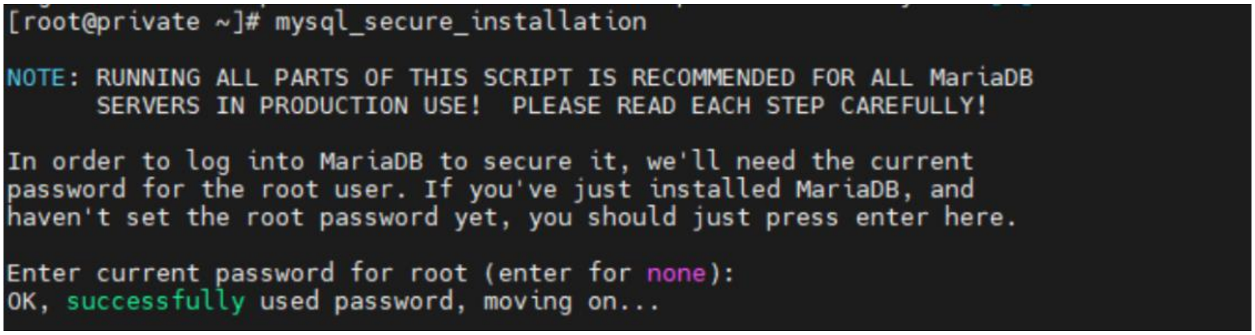
```
[root@private ~]# rpm -q mariadb105-server
mariadb105-server-10.5.18-1.amzn2023.0.1.x86_64
[root@private ~]# 
```



```
[root@private ~]# systemctl status mariadb
● mariadb.service - MariaDB 10.5 database server
     Loaded: loaded (/usr/lib/systemd/system/mariadb.service; enabled; preset: disabled)
     Active: active (running) since Fri 2023-08-18 03:26:43 UTC; 42min ago
       Docs: man:mariadbd(8)
             https://mariadb.com/kb/en/library/systemd/
```

Step 38:-

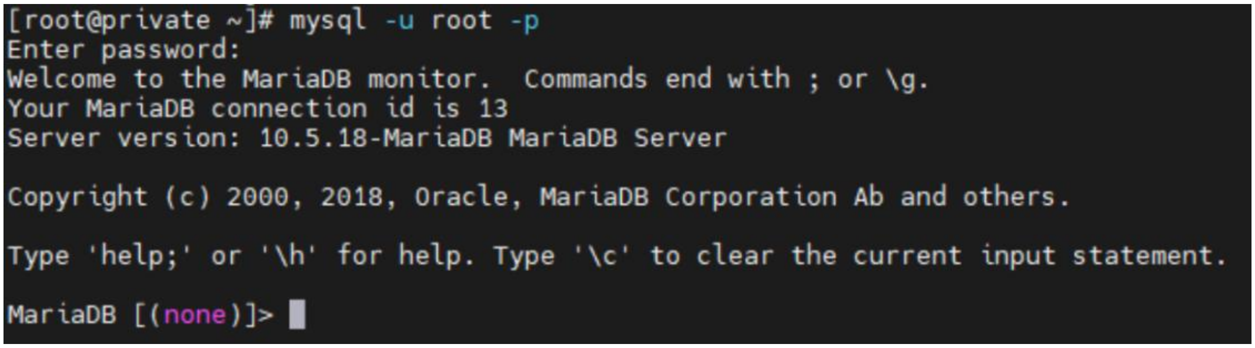
Now run command mysql_secure_installation to configure and secure your data tables. And configure it.



```
[root@private ~]# mysql_secure_installation

NOTE: RUNNING ALL PARTS OF THIS SCRIPT IS RECOMMENDED FOR ALL MariaDB
      SERVERS IN PRODUCTION USE!  PLEASE READ EACH STEP CAREFULLY!

In order to log into MariaDB to secure it, we'll need the current
password for the root user. If you've just installed MariaDB, and
haven't set the root password yet, you should just press enter here.

Enter current password for root (enter for none):
OK, successfully used password, moving on...
```

Step 39-

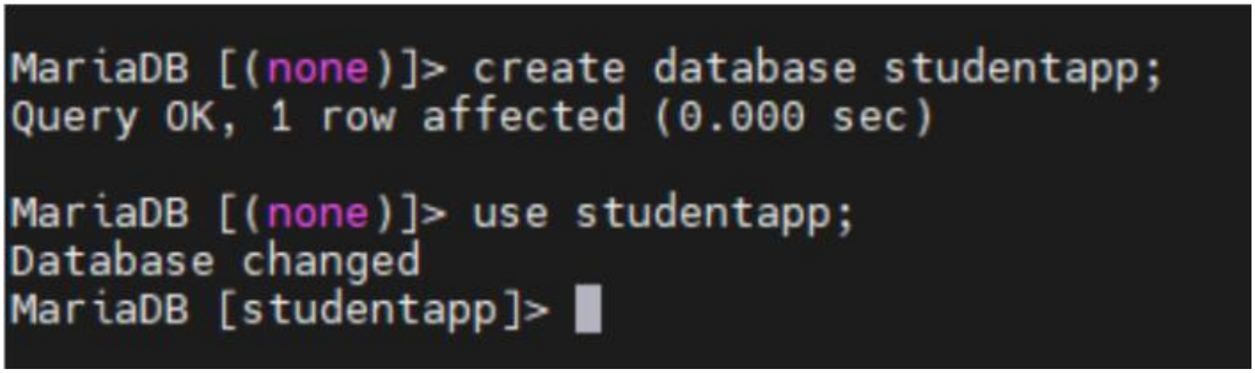
Now login to your MariaDB table by entering command mysql –u root –p12345.



```
[root@private ~]# mysql -u root -p
Enter password:
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MariaDB connection id is 13
Server version: 10.5.18-MariaDB MariaDB Server

Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

MariaDB [(none)]> 
```

Step 40:-

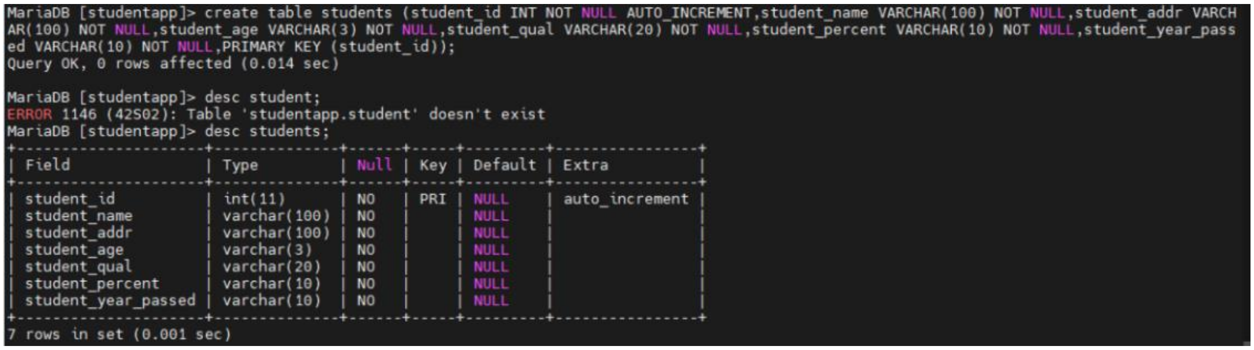
Create data base as name studentapp.



```
MariaDB [(none)]> create database studentapp;
Query OK, 1 row affected (0.000 sec)

MariaDB [(none)]> use studentapp;
Database changed
MariaDB [studentapp]> 
```

Step 41:-

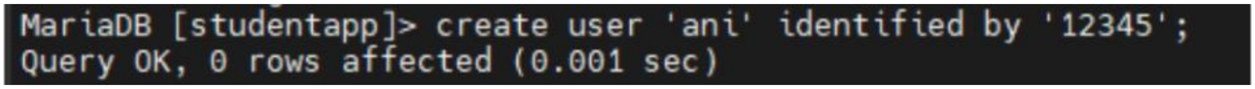
Now you have to create table as name students with its table configuration.



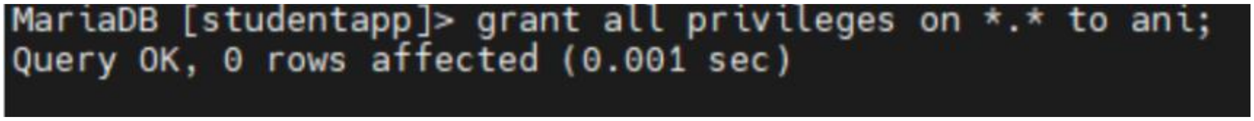
```
MariaDB [studentapp]> create table students (student_id INT NOT NULL AUTO_INCREMENT,student_name VARCHAR(100) NOT NULL,student_addr VARCH
AR(100) NOT NULL,student_age VARCHAR(3) NOT NULL,student_qual VARCHAR(20) NOT NULL,student_percent VARCHAR(10) NOT NULL,student_year_pass
ed VARCHAR(10) NOT NULL,PRIMARY KEY (student_id));
Query OK, 0 rows affected (0.014 sec)

MariaDB [studentapp]> desc student;
ERROR 1146 (42S02): Table 'studentapp.student' doesn't exist
MariaDB [studentapp]> desc students;
+--------------------+--------------+------+-----+---------+----------------+
| Field              | Type         | Null | Key | Default | Extra          |
+--------------------+--------------+------+-----+---------+----------------+
| student_id         | int(11)      | NO   | PRI | NULL    | auto_increment |
| student_name       | varchar(100) | NO   |     | NULL    |                |
| student_addr       | varchar(100) | NO   |     | NULL    |                |
| student_age        | varchar(3)   | NO   |     | NULL    |                |
| student_qual       | varchar(20)  | NO   |     | NULL    |                |
| student_percent    | varchar(10)  | NO   |     | NULL    |                |
| student_year_passed | varchar(10) | NO   |     | NULL    |                |
+--------------------+--------------+------+-----+---------+----------------+
7 rows in set (0.001 sec)
```

Step 42:-

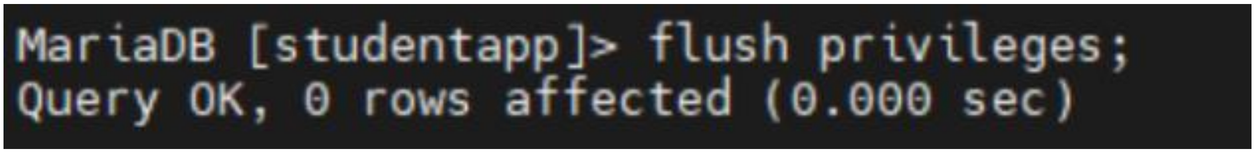
After that create user of MariaDB to use that table and gave it all privileges.



```
MariaDB [studentapp]> create user 'ani' identified by '12345';
Query OK, 0 rows affected (0.001 sec)
```



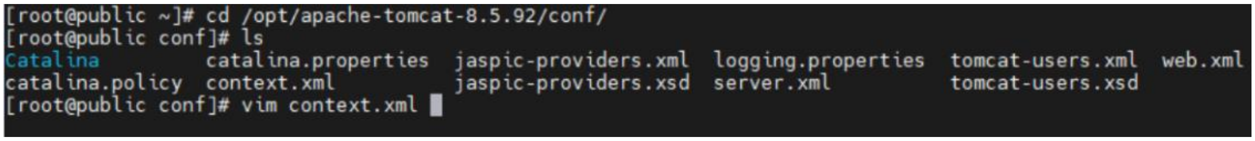
```
MariaDB [studentapp]> grant all privileges on *.* to ani;
Query OK, 0 rows affected (0.001 sec)
```



```
MariaDB [studentapp]> flush privileges;
Query OK, 0 rows affected (0.000 sec)
```

Step 43:-

Now, go back to your public instance to give endpoint of MariaDB. When you get back go /opt/apache-tomcat-8.5.92/conf and vim cntext.xml



```
[root@public ~]# cd /opt/apache-tomcat-8.5.92/conf/
[root@public conf]# ls
Catalina        catalina.properties  jaspic-providers.xml  logging.properties  tomcat-users.xml  web.xml
catalina.policy context.xml          jaspic-providers.xsd  server.xml          tomcat-users.xsd
[root@public conf]# vim context.xml
```

Step 44:-

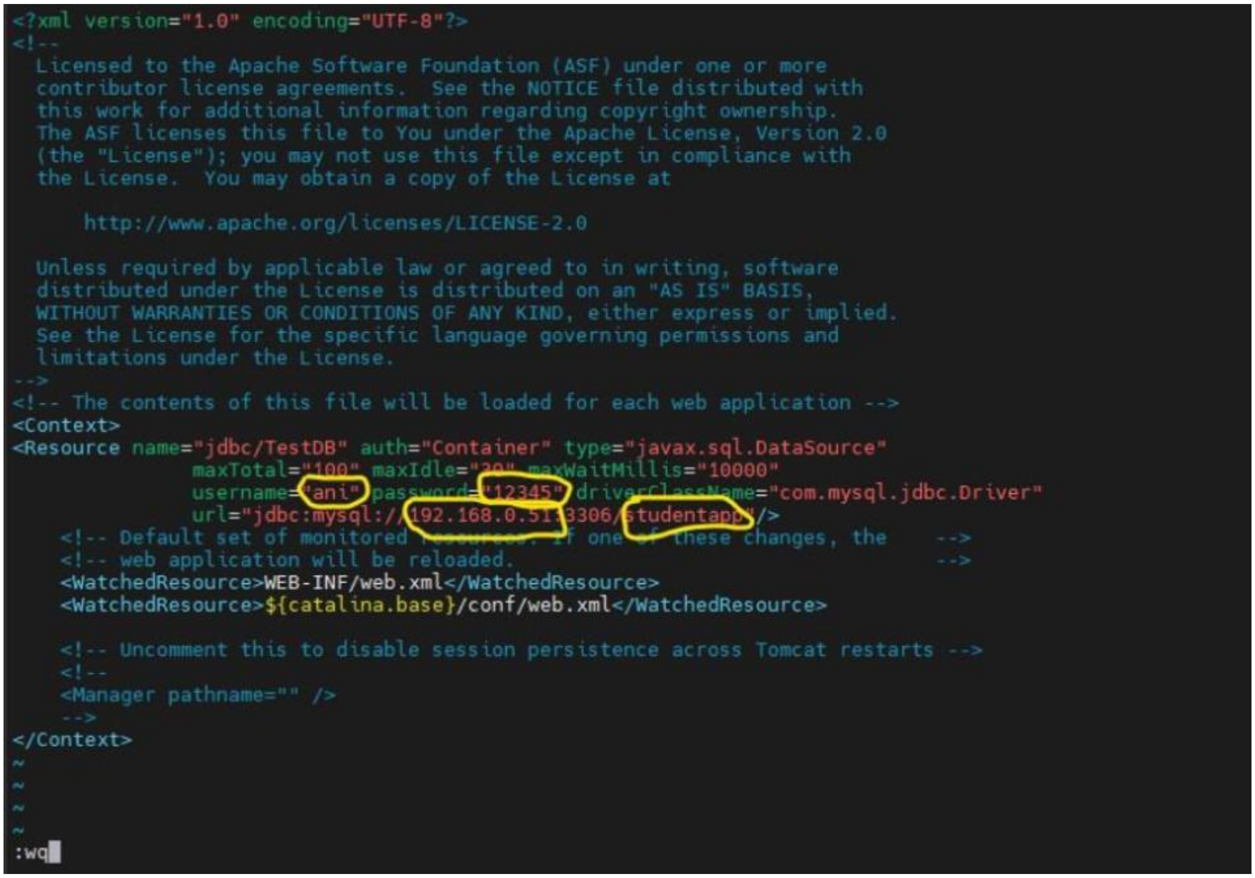
Go to line number 21 and write there following script with edition of it username and its password of MariaDB and then endpoint of DB and then database name and then save it.

<Resource name="jdbc/TestDB" auth="Container" type="javax.sql.DataSource"

maxTotal="100" maxIdle="30" maxWaitMillis="10000"

username="USERNAME" password="PASSWORD" driverClassName="com.mysql.jdbc.Driver"

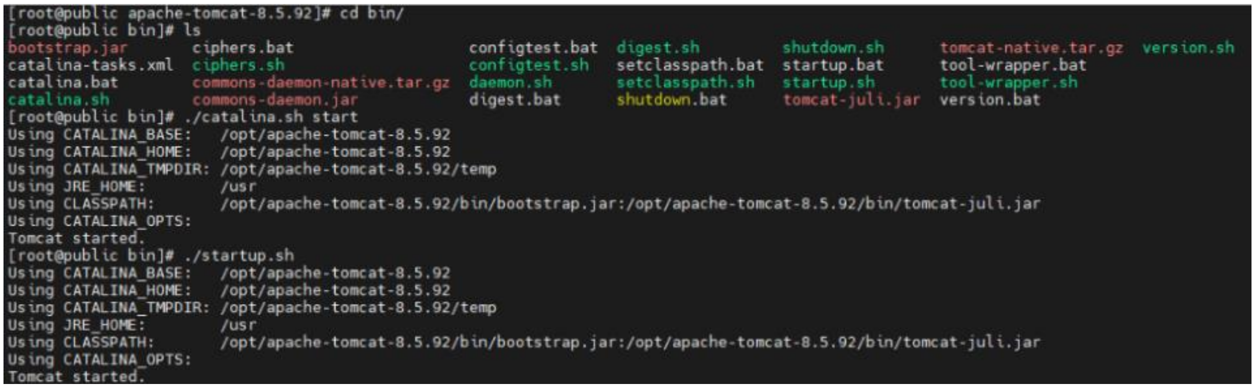
url="jdbc:mysql://DB-ENDPOINT:3306/DATABASE"/>



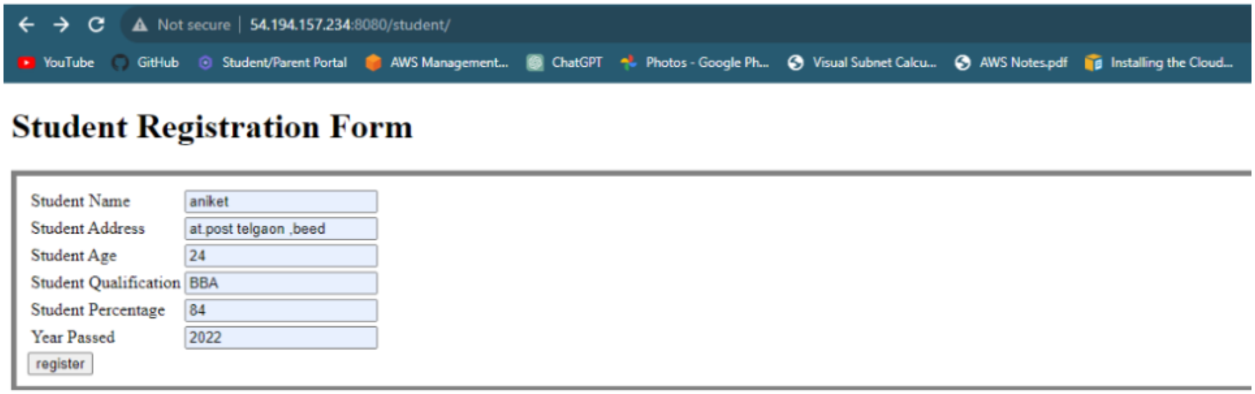
```
<?xml version="1.0" encoding="UTF-8"?>
<!--
  Licensed to the Apache Software Foundation (ASF) under one or more
  contributor license agreements.  See the NOTICE file distributed with
  this work for additional information regarding copyright ownership.
  The ASF licenses this file to You under the Apache License, Version 2.0
  (the "License"); you may not use this file except in compliance with
  the License.  You may obtain a copy of the License at

      http://www.apache.org/licenses/LICENSE-2.0

  Unless required by applicable law or agreed to in writing, software
  distributed under the License is distributed on an "AS IS" BASIS,
  WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
  See the License for the specific language governing permissions and
  limitations under the License.
-->
<!-- The contents of this file will be loaded for each web application -->
<Context>
<Resource name="jdbc/TestDB" auth="Container" type="javax.sql.DataSource"
               maxTotal="100" maxIdle="30" maxWaitMillis="10000"
               username="ani" password="12345" driverClassName="com.mysql.jdbc.Driver"
               url="jdbc:mysql://192.168.0.51:3306/studentapp"/>
    <!-- Default set of monitored resources. If one of these changes, the    -->
    <!-- web application will be reloaded.                                   -->
    <WatchedResource>WEB-INF/web.xml</WatchedResource>
    <WatchedResource>${catalina.base}/conf/web.xml</WatchedResource>

    <!-- Uncomment this to disable session persistence across Tomcat restarts -->
    <!--
    <Manager pathname="" />
    -->
</Context>
~
~
~
~
:wq
```

Step 45:-

After that Now, you have to restart catalina.sh file of bin an also startup.sh file, And your database was connect to tomcat.

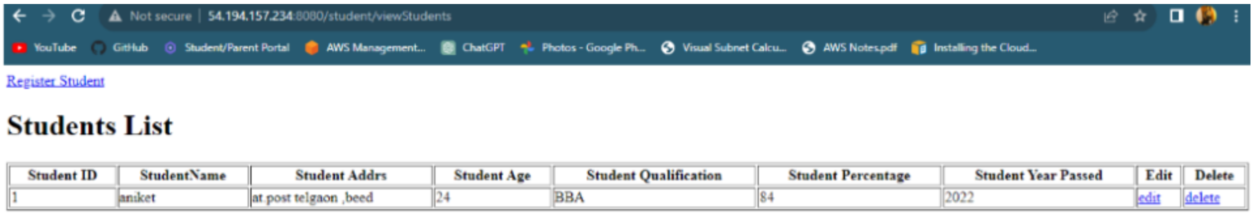


```
[root@public apache-tomcat-8.5.92]# cd bin/
[root@public bin]# ls
bootstrap.jar        ciphers.bat                  configtest.bat  digest.sh          shutdown.sh       tomcat-native.tar.gz  version.sh
catalina-tasks.xml   ciphers.sh                   configtest.sh   setclasspath.bat   startup.bat       tool-wrapper.bat
catalina.bat         commons-daemon-native.tar.gz daemon.sh       setclasspath.sh    startup.sh        tool-wrapper.sh
catalina.sh          commons-daemon.jar           digest.bat      shutdown.bat       tomcat-juli.jar   version.bat
[root@public bin]# ./catalina.sh start
Using CATALINA_BASE:   /opt/apache-tomcat-8.5.92
Using CATALINA_HOME:   /opt/apache-tomcat-8.5.92
Using CATALINA_TMPDIR: /opt/apache-tomcat-8.5.92/temp
Using JRE_HOME:        /usr
Using CLASSPATH:       /opt/apache-tomcat-8.5.92/bin/bootstrap.jar:/opt/apache-tomcat-8.5.92/bin/tomcat-juli.jar
Using CATALINA_OPTS:
Tomcat started.
[root@public bin]# ./startup.sh
Using CATALINA_BASE:   /opt/apache-tomcat-8.5.92
Using CATALINA_HOME:   /opt/apache-tomcat-8.5.92
Using CATALINA_TMPDIR: /opt/apache-tomcat-8.5.92/temp
Using JRE_HOME:        /usr
Using CLASSPATH:       /opt/apache-tomcat-8.5.92/bin/bootstrap.jar:/opt/apache-tomcat-8.5.92/bin/tomcat-juli.jar
Using CATALINA_OPTS:
Tomcat started.
```



Student Registration Form

Student Name	aniket
Student Address	at.post telgaon ,beed
Student Age	24
Student Qualification	BBA
Student Percentage	84
Year Passed	2022



Register Student

Students List

Student ID	StudentName	Student Addrs	Student Age	Student Qualification	Student Percentage	Student Year Passed	Edit	Delete
1	aniket	at.post telgaon ,beed	24	BBA	84	2022	edit	delete

THEN END