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ROLL NO	20BIS020
SUBJECT/SUBJECT-CODE	ODD 22-23-U18ISE0006-CLOUD ARCHITECTURE AND COMPUTING

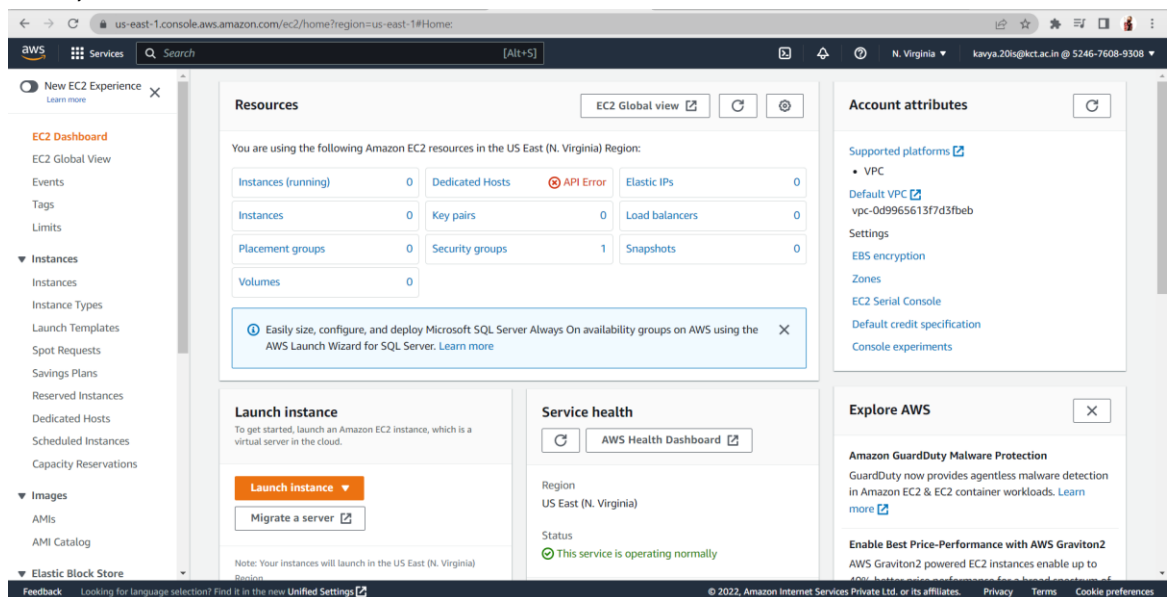
## Creating a student database with two tables in mariadb using AWS RDS

### Aim:

Exploring the use of RDS service in amazon.

### Required AWS services:

RDS, EC2



### Procedure:

1. Create a Linux instance
  - a. AMI - Redhat linux

us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#LaunchInstances:

Services Search [Alt+S]

EC2 > Instances > Launch an instance

### Launch an instance [Info](#)

Amazon EC2 allows you to create virtual machines, or instances, that run on the AWS Cloud. Quickly get started by following the simple steps below.

#### Name and tags [Info](#)

Name

linux [Add additional tags](#)

#### Summary

Number of instances [Info](#)

1

Software Image (AMI)

Amazon Linux 2 Kernel 5.10 AMI...[read more](#)  
ami-0b0dc5067f052a63

Virtual server type (instance type)

t2.micro

Firewall (security group)

### ▼ Application and OS Images (Amazon Machine Image) [Info](#)

An AMI is a template that contains the software configuration (operating system, application server, and applications) required to launch your instance. Search or Browse for AMIs if you don't see what you are looking for below

#### Quick Start

Amazon Linux  
aws

macOS  
Mac

Ubuntu  
ubuntu

Windows  
Microsoft

Red Hat  
Red Hat

[Browse more AMIs](#)  
Including AMIs from AWS, Marketplace and the Community

#### Amazon Machine Image (AMI)

Red Hat Enterprise Linux 9 (HVM), SSD Volume Type  
ami-08e637cea2f053dfa (64-bit (x86)) / ami-05c5c474dfb6af922 (64-bit (Arm))  
Virtualization: hvm    ENA enabled: true    Root device type: ebs

Free tier eligible ▼

#### Description

Provided by Red Hat, Inc.

### b. Instance type- t2.micro

### ▼ Instance type [Info](#)

#### Instance type

t2.micro

Free tier eligible ▼

Family: t2    1 vCPU    1 GiB Memory  
On-Demand Linux pricing: 0.0116 USD per Hour  
On-Demand Windows pricing: 0.0162 USD per Hour

[Compare instance types](#)

c. Create keypair – create

### Create key pair

×

Key pairs allow you to connect to your instance securely.

Enter the name of the key pair below. When prompted, store the private key in a secure and accessible location on your computer. **You will need it later to connect to your instance.** [Learn more](#)

Key pair name

linux

The name can include upto 255 ASCII characters. It can't include leading or trailing spaces.

Key pair type

☒ RSA  
RSA encrypted private and public key pair

☐ ED25519  
ED25519 encrypted private and public key pair (Not supported for Windows instances)

Private key file format

☒ .pem  
For use with OpenSSH

☐ .ppk  
For use with PuTTY

CancelCreate key pair


d. Network setting

i). Subnet- no preference



ii). Auto Assign public ip- enable

▼ Network settings Info

VPC - required Info

vpc-0d9965613f7d3fbeb172.31.0.0/16(default)▼

Subnet Info

No preference▼ [Create new subnet](#) 

Auto-assign public IP Info

Enable▼

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

linux

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

linux created 2022-12-10T10:58:57.722Z

### iii).create security group

SSH – Myip , HTTP - Anywhere, HTTPS – Anywhere

Inbound security groups rules

▼ Security group rule 1 (TCP, 22, 0.0.0.0/0)

Remove

Type [Info](#)

ssh

Protocol [Info](#)

TCP

Port range [Info](#)

22

Source type [Info](#)

Anywhere

Source [Info](#)

Q Add CIDR, prefix list or security

0.0.0.0/0 X

Description - optional [Info](#)

e.g. SSH for admin desktop

▼ Security group rule 2 (TCP, 80, 0.0.0.0/0)

Remove

Type [Info](#)

HTTP

Protocol [Info](#)

TCP

Port range [Info](#)

80

Source type [Info](#)

Anywhere

Source [Info](#)

Q Add CIDR, prefix list or security

0.0.0.0/0 X

Description - optional [Info](#)

e.g. SSH for admin desktop

▼ Security group rule 3 (TCP, 443, 0.0.0.0/0)

Remove

Type [Info](#)

HTTPS

Protocol [Info](#)

TCP

Port range [Info](#)

443

Source type [Info](#)

Anywhere

Source [Info](#)

Q Add CIDR, prefix list or security

0.0.0.0/0 X

Description - optional [Info](#)

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.

X

Add security group rule

e. Launch the instance

▼ Summary

Number of instances [Info](#)

1

Software Image (AMI)

Provided by Red Hat, Inc.  
ami-08e637cea2f053dfa

Virtual server type (instance type)

t2.micro

Firewall (security group)

New security group

Storage (volumes)

1 volume(s) - 10 GiB

❗

**Free tier:** In your first year includes 750 hours of t2.micro (or t3.micro in the

×

Cancel

Launch instance

Services

Search

[Alt+S]

N. Virginia

kavya.2018@lkt.ac.in @ 5246-7608-9308

EC2 > Instances > Launch an instance

✓ Success

Successfully initiated launch of instance (i-02038f9cbeb894c40)

▶ Launch log

Next Steps

Create billing and free tier usage alerts

To manage costs and avoid surprise bills, set up email notifications for billing and free tier usage thresholds.

Create billing alerts

Connect to your instance

Once your instance is running, log into it from your local computer.

Connect to instance

Learn more

Connect an RDS database

Configure the connection between an EC2 instance and a database to allow traffic flow between them.

Connect an RDS database

Create a new RDS database

Learn more

Feedback

Looking for language selection? Find it in the new Unified Settings

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Privacy

Terms

Cookie preferences

## 2. Create database

### a. Choose RDS service

### Connect an RDS database

Configure the connection between an EC2 instance and a database to allow traffic flow between them.

[Connect an RDS database](#)

[Create a new RDS database](#)

[Learn more](#)

### b. Click create database - standard create – mysql

aws Services Search [Alt+S]

We listened to your feedback!

Now, create a database with a single click using our pre-built configurations! Or choose your own configurations.

RDS > Create database

Create database

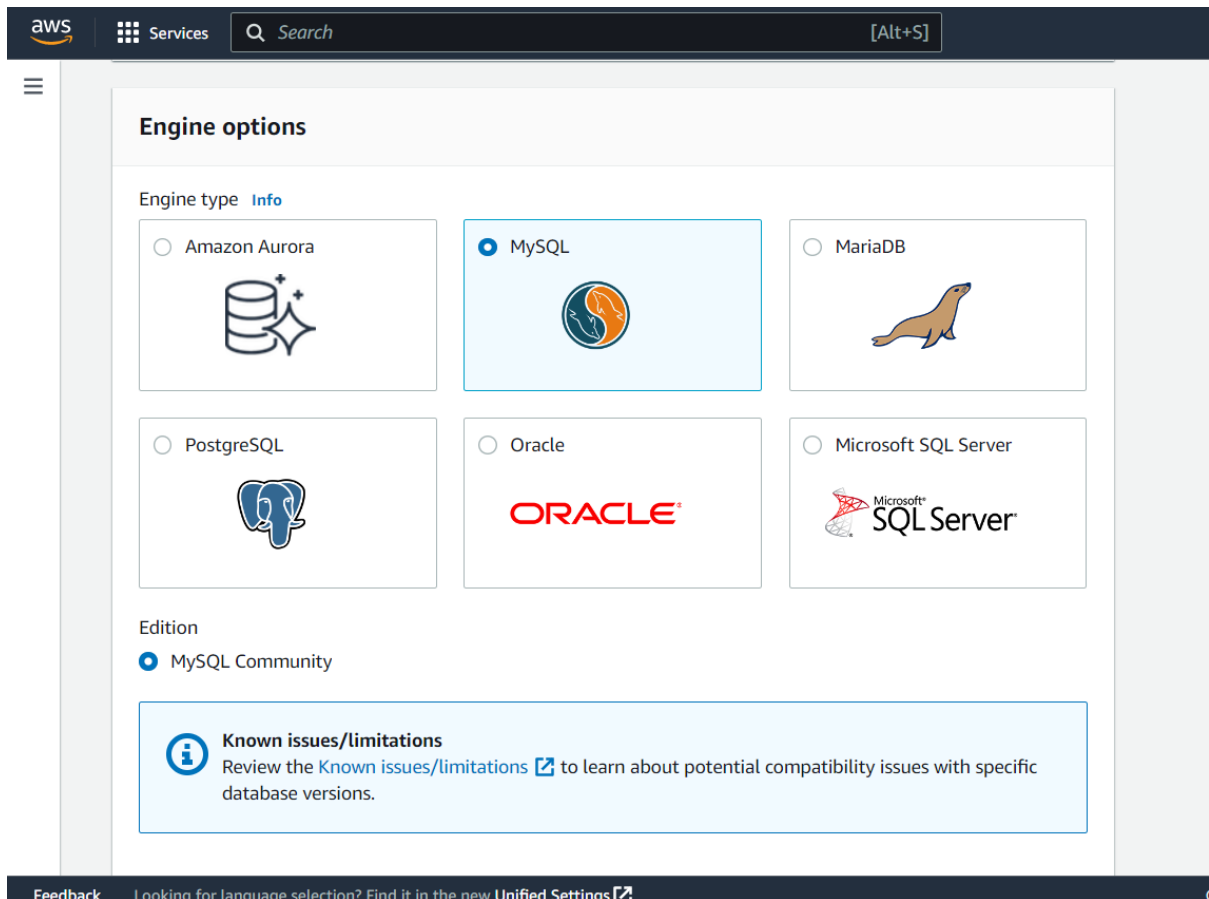
Choose a database creation method Info

☒ Standard create

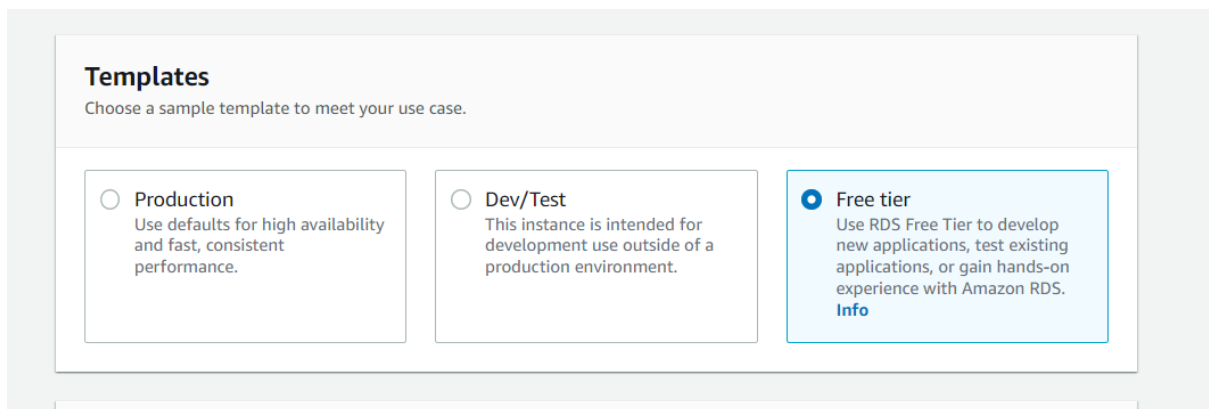
You set all of the configuration options, including ones for availability, security, backups, and maintenance.

☐ Easy create

Use recommended best-practice configurations. Some configuration options can be changed after the database is created.



### c. Free tier



### d. Settings

- i). DB instance identifier – enter a name
- ii). Master user name: enter a name
- iii). Master password – enter password
- iv). Confirm



## Settings

### DB instance identifier [Info](#)

Type a name for your DB instance. The name must be unique across all DB instances owned by your AWS account in the current AWS Region.

The DB instance identifier is case-insensitive, but is stored as all lowercase (as in "mydbinstance"). Constraints: 1 to 60 alphanumeric characters or hyphens. First character must be a letter. Can't contain two consecutive hyphens. Can't end with a hyphen.

### ▼ Credentials Settings

#### Master username [Info](#)

Type a login ID for the master user of your DB instance.

1 to 16 alphanumeric characters. First character must be a letter.

#### ☐ Auto generate a password

Amazon RDS can generate a password for you, or you can specify your own password.

#### Master password [Info](#)

Constraints: At least 8 printable ASCII characters. Can't contain any of the following: / (slash), ' (single quote), " (double quote) and @ (at sign).

#### Confirm master password [Info](#)

## e. Click create database

### ► Additional configuration

Database options, encryption turned on, backup turned on, backtrack turned off, maintenance, CloudWatch Logs, delete protection turned off.

### Estimated monthly costs

The Amazon RDS Free Tier is available to you for 12 months. Each calendar month, the free tier will allow you to use the Amazon RDS resources listed below for free:

- 750 hrs of Amazon RDS in a Single-AZ db.t2.micro, db.t3.micro or db.t4g.micro Instance.
- 20 GB of General Purpose Storage (SSD).
- 20 GB for automated backup storage and any user-initiated DB Snapshots.

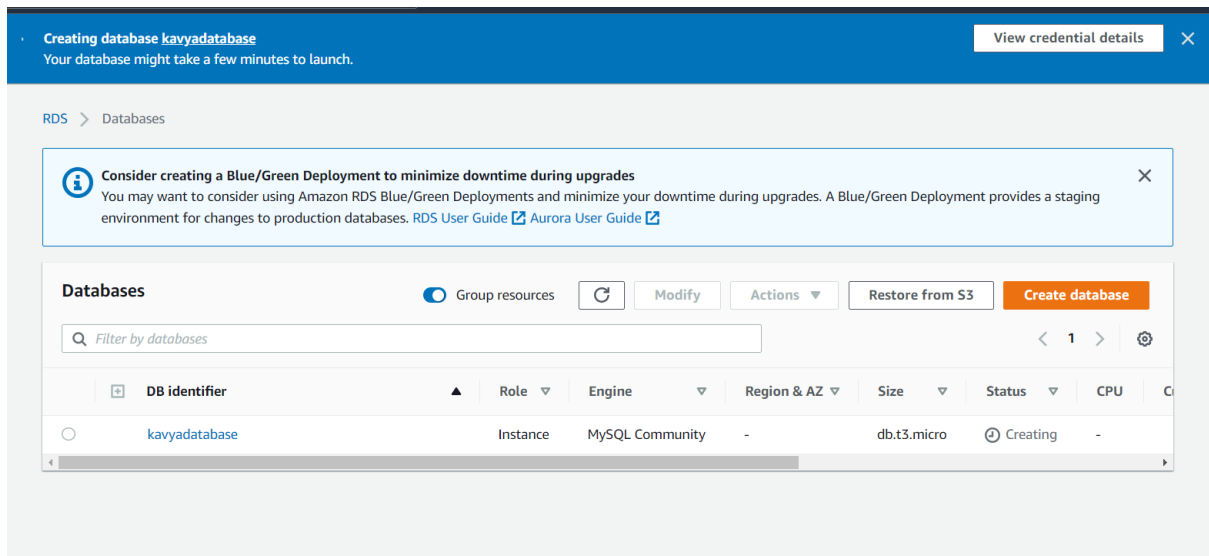
[Learn more about AWS Free Tier.](#) [↗](#)

When your free usage expires or if your application use exceeds the free usage tiers, you simply pay standard, pay-as-you-go service rates as described in the [Amazon RDS Pricing page](#). [↗](#)

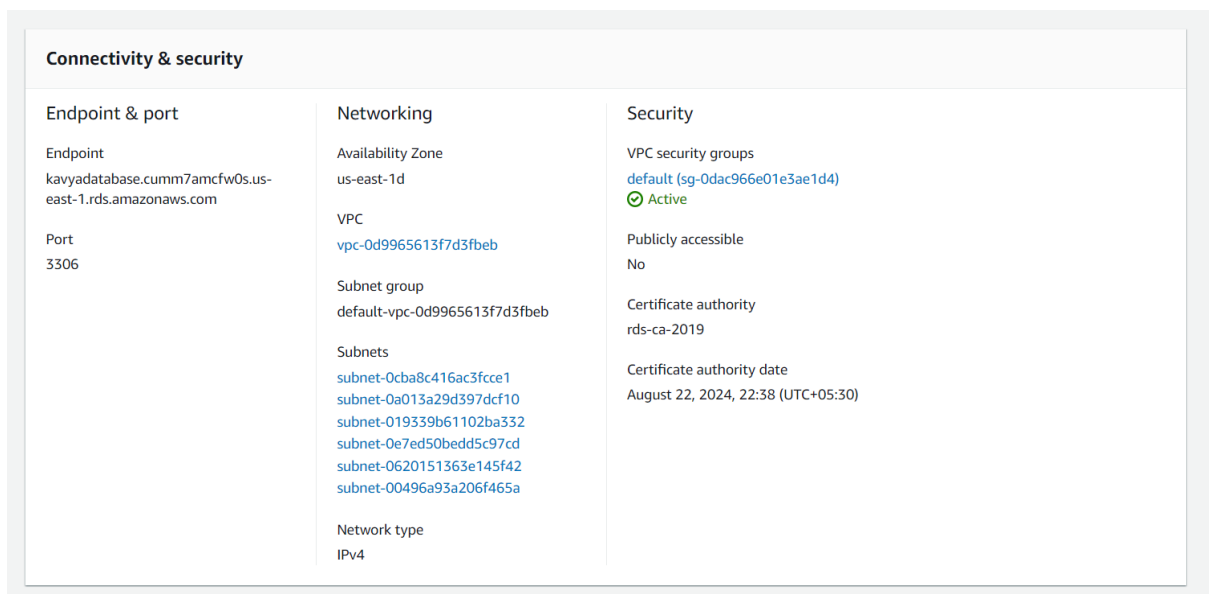
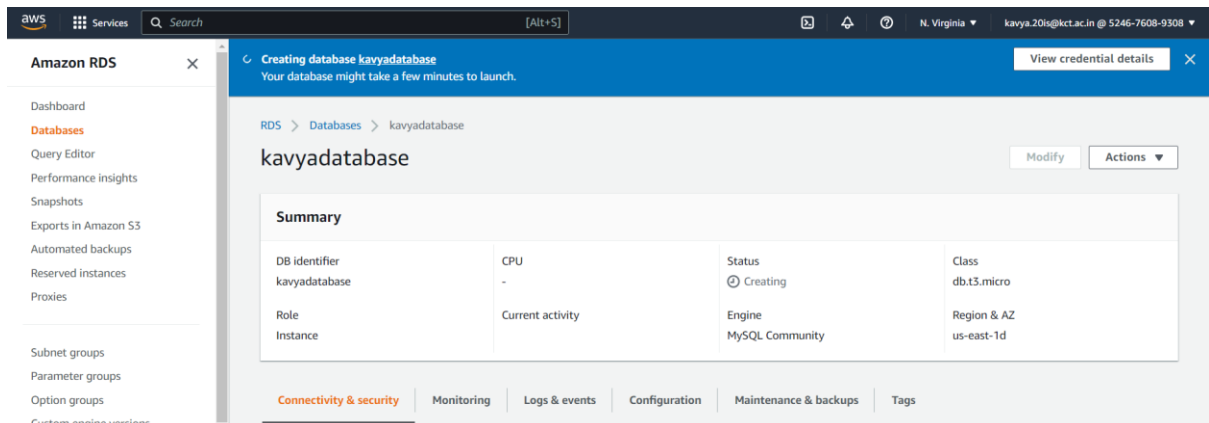
**i** You are responsible for ensuring that you have all of the necessary rights for any third-party products or services that you use with AWS services.

Cancel

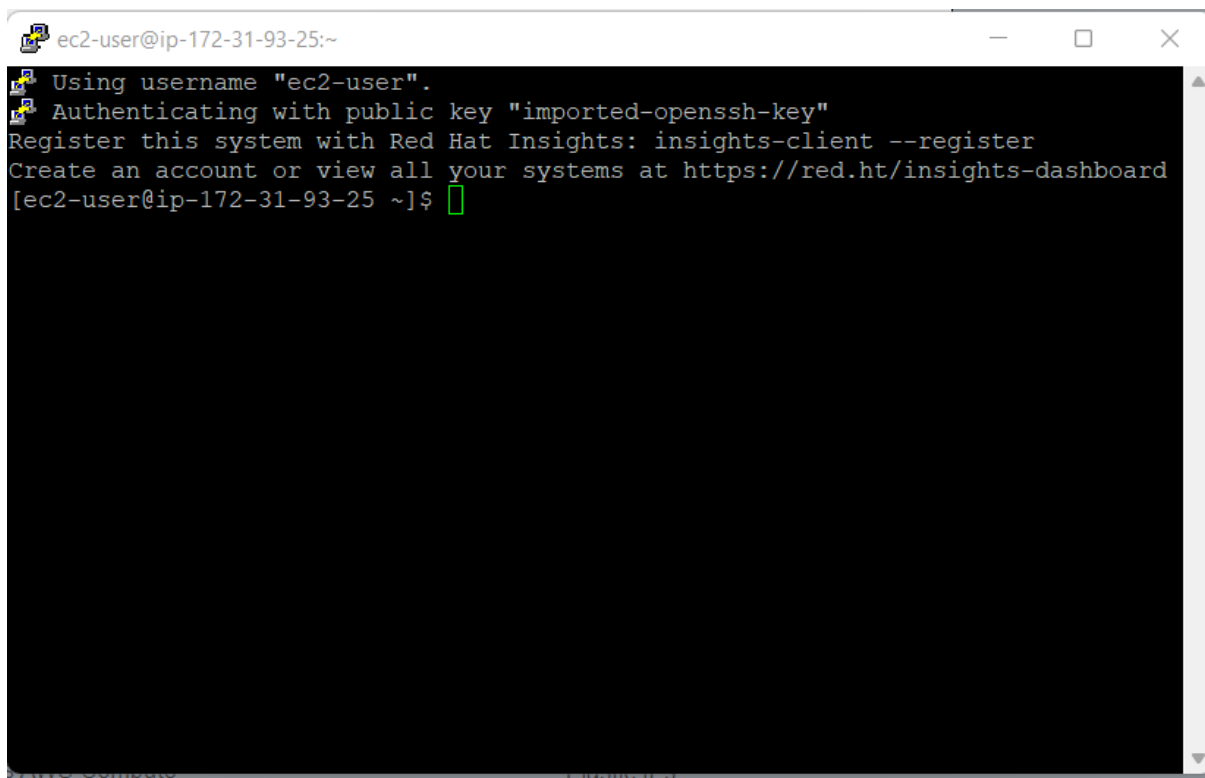
Create database



f. once it is created you can view “end point” and port number.



### 3. Connect with the instance using putty



```
ec2-user@ip-172-31-93-25:~  
Using username "ec2-user".  
Authenticating with public key "imported-openssh-key"  
Register this system with Red Hat Insights: insights-client --register  
Create an account or view all your systems at https://red.ht/insights-dashboard  
[ec2-user@ip-172-31-93-25 ~]$
```

### 4. Install mariadb

#### a. sudo yum install mariadb

```
[ec2-user@ip-172-31-93-25 ~]$ sudo yum install mariadb  
Updating Subscription Management repositories.  
Unable to read consumer identity  
  
This system is not registered with an entitlement server. You can use subscription-manager to register.  
  
Last metadata expiration check: 0:18:42 ago on Sat 10 Dec 2022 11:53:20 AM UTC.  
Dependencies resolved.  
=====
```

Package	Arch	Version	Repository	Size
Installing:				
mariadb	x86_64	3:10.5.16-2.el9_0	rhel-9-appstream-rhui-rpms	1.6 M
Installing dependencies:				
mariadb-common	x86_64	3:10.5.16-2.el9_0	rhel-9-appstream-rhui-rpms	39 k
mariadb-connector-c	x86_64	3.2.6-1.el9_0	rhel-9-appstream-rhui-rpms	203 k
mariadb-connector-c-config	noarch	3.2.6-1.el9_0	rhel-9-appstream-rhui-rpms	11 k
perl-AutoLoader	noarch	5.74-479.el9	rhel-9-appstream-rhui-rpms	31 k

```
=====
```

## b. mysql -version

```
Complete!
[ec2-user@ip-172-31-93-25 ~]$ mysql -version
ERROR 2002 (HY000): Can't connect to local MySQL server through socket '/var/lib
/mysql/mysql.sock' (2)
[ec2-user@ip-172-31-93-25 ~]$ mysql --version
mysql Ver 15.1 Distrib 10.5.16-MariaDB, for Linux (x86_64) using EditLine wrap
per
[ec2-user@ip-172-31-93-25 ~]$
```

5. Copy the end point once the db instance is ready

6. paste it in putty after `mysql -h endpoint -P 3306 sample -p`

Ex: `mysql -h endpoint -P 3306 -u username -p`

```
[ec2-user@ip-172-31-93-25 ~]$ mysql -h kavyadatabase.cumm7amcfw0s.us-east-1.rds.
amazonaws.com -P 3306 -u ec2-user -p
Enter password:
```

```
Welcome to the MariaDB monitor.  Commands end
Your MySQL connection id is 15
Server version: 8.0.28 Source distribution

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

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

## 7. Execute SQL commands

```
MySQL [(none)]> create database linux;
Query OK, 1 row affected (0.007 sec)

MySQL [(none)]> use linux;
Database changed
MySQL [linux]>
```

Reference :

[https://docs.aws.amazon.com/AmazonRDS/latest/UserGuide/USER\\_ConnectToInstance.html](https://docs.aws.amazon.com/AmazonRDS/latest/UserGuide/USER_ConnectToInstance.html)