

CLOUD COMPUTING PRACTICAL ASSIGNMENT NO:12

Launch the RDS Instance(AWS) and connect.

Prepare a Screen shots file and write down the steps.

Make a single Word or PDF file.

Do the following tasks

1) Use Amazon RDS to create a MySQL DB Instance

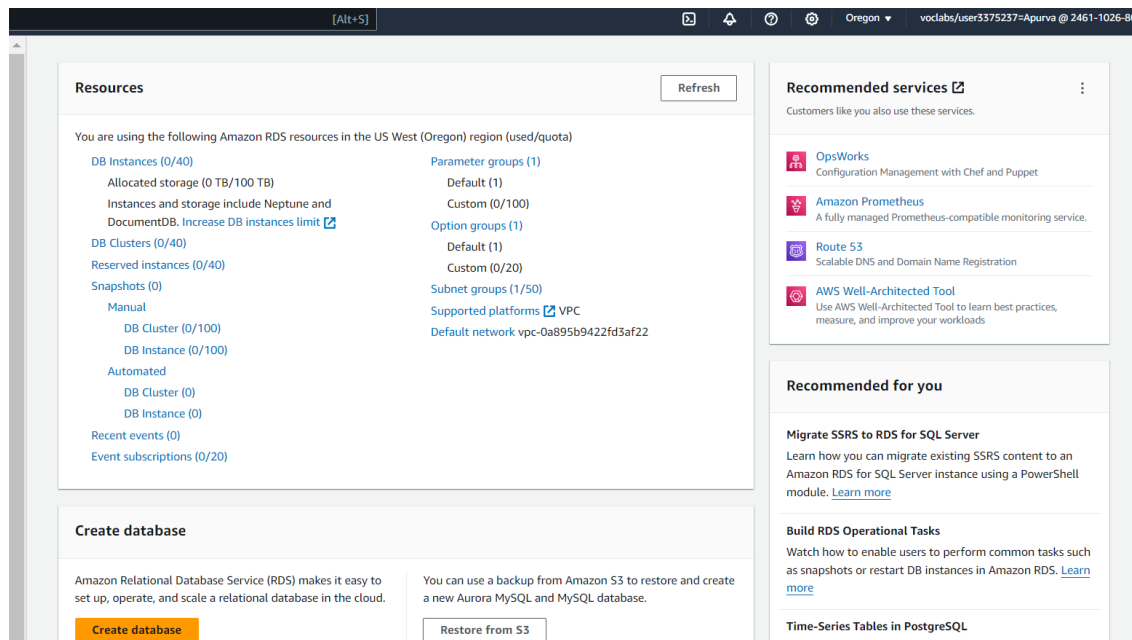
Once the database instance creation is complete and the status changes to available, you can connect to a database on the DB instance using any standard SQL client. Download MySQL Workbench, which is a popular SQL client.

connect to the database you created using MySQL Workbench.

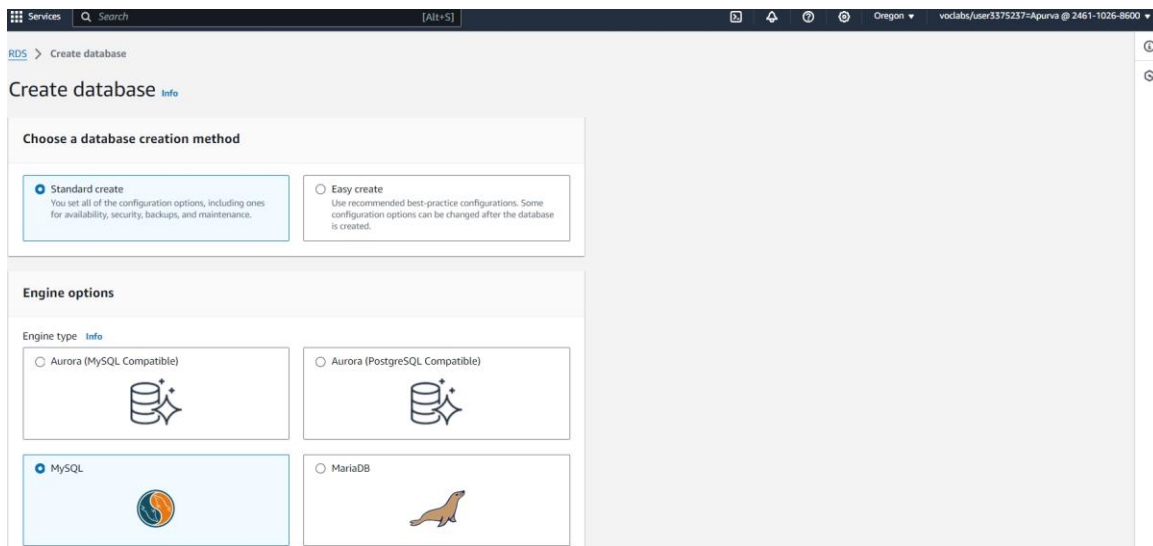
2) launch an EC2 instance, launch an RDS instance, and connect RDS from the EC2 instance.

Step 1: Create an Amazon RDS MySQL DB Instance

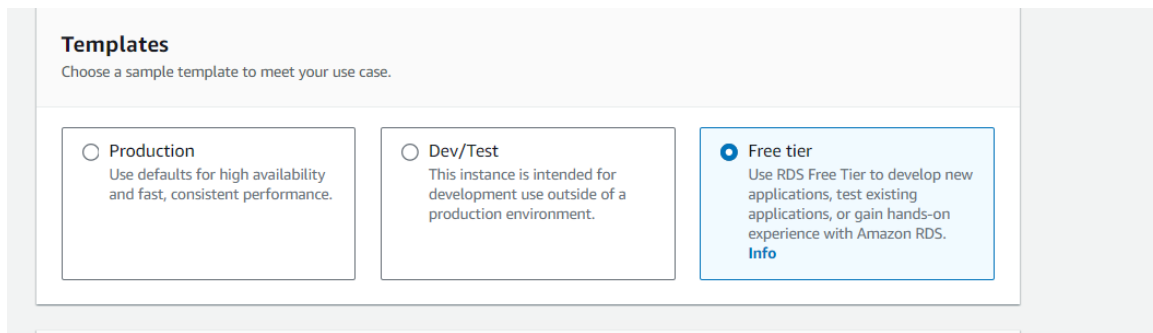
1. Log in to AWS Management Console and navigate to RDS.



2. On the RDS Dashboard, click Create database.
3. In the Engine options:
 - Select MySQL.
4. In the Database creation method, choose Standard create.
5. In the Version, select your preferred MySQL version.



6. In Templates, select Free Tier if applicable.



7. Settings:
 - Set DB instance identifier (e.g., `dbinstance`).
 - Set Master username (e.g., `admin`).
 - Set Master password and Confirm password.

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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.

dbinstance

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.

admin

1 to 16 alphanumeric characters. The first character must be a letter.

Credentials management
You can use AWS Secrets Manager or manage your master user credentials.

☐ Managed in AWS Secrets Manager - most secure
RDS generates a password for you and manages it throughout its lifecycle using AWS Secrets Manager.

☒ Self managed
Create your own password or have RDS create a password that you manage.

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

Master password [Info](#)

Password strength [Weak](#)

Minimum constraints: At least 8 printable ASCII characters. Can't contain any of the following symbols: / * @

Confirm master password [Info](#)

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8. In the DB instance size, choose `db.t2.micro` (Free Tier eligible).

9. In Storage, leave the default settings (e.g., 20 GB of SSD storage).

Instance configuration

The DB instance configuration options below are limited to those supported by the engine that you selected above.

DB instance class [Info](#)

▼ Hide filters

☐ Show instance classes that support Amazon RDS Optimized Writes [Info](#)
Amazon RDS Optimized Writes improves write throughput by up to 2x at no additional cost.

☐ Include previous generation classes

☐ Standard classes (includes m classes)

☐ Memory optimized classes (includes r and x classes)

☒ Burstable classes (includes t classes)

db.t3.micro
2 vCPUs 1 GiB RAM Network: Up to 2,085 Mbps

Storage

Storage type [Info](#)
Provisioned IOPS SSD (io2) storage volumes are now available.

General Purpose SSD (gp3)
Performance scales independently from storage

Allocated storage [Info](#)

20 GiB

Step 2: Configure Connectivity

1. In Connectivity:

- Select the VPC where your EC2 instance will be launched.

The screenshot shows the 'Connectivity' configuration page for an Amazon RDS instance. The page is divided into several sections:

- Compute resource:** Two radio buttons are present. The first, 'Don't connect to an EC2 compute resource', is selected. The second, 'Connect to an EC2 compute resource', is unselected.
- Virtual private cloud (VPC):** A dropdown menu shows 'Default VPC (vpc-0a895b9422615f22)' selected. Below it, a note states: 'After a database is created, you can't change its VPC.'
- DB subnet group:** A dropdown menu shows 'db-subnet-group' selected.
- Public access:** Two radio buttons are present. The first, 'Yes', is unselected. The second, 'No', is selected.
- VPC security group (firewall):** Two radio buttons are present. The first, 'Choose existing', is selected. The second, 'Create new', is unselected.
- Existing VPC security groups:** A dropdown menu shows 'default' selected.
- Availability Zone:** A dropdown menu shows 'us-west-2a' selected.

- Set Publicly Accessible to Yes if you want to connect externally.

- Choose your existing VPC security group or create a new one allowing inbound MySQL traffic on port `3306`.

Step 3: Disable Backup and Maintenance Preferences

1. Disable Backups:

- Scroll down to the Additional configuration section.
- In the Backup section, uncheck Enable automatic backups.

The screenshot shows the 'Additional configuration' page for an Amazon RDS instance. The page is divided into several sections:

- Database options:**
 - Initial database name:** A text input field contains 'database1'.
 - DB parameter group:** A dropdown menu shows 'default.mysql8.0' selected.
 - Option group:** A dropdown menu shows 'default.mysql-8.0' selected.
- Backup:**
 - Enable automated backups:** A checkbox is unselected.
- Encryption:**
 - Enable encryption:** A checkbox is unselected.
- Log exports:**
 - Audit log:** A checkbox is unselected.
 - Error log:** A checkbox is unselected.

2. Disable Maintenance:

- In the Maintenance section, uncheck Enable auto minor version upgrade.

3. Disable Performance Insights:

- In the Monitoring section, uncheck Enable Performance Insights.

Maintenance

Auto minor version upgrade [Info](#)

☐ **Enable auto minor version upgrade**
Enabling auto minor version upgrade will automatically upgrade to new minor versions as they are released. The automatic upgrades occur during the maintenance window for the database.

Maintenance window [Info](#)
Select the period you want pending modifications or maintenance applied to the database by Amazon RDS.

☐ Choose a window

☒ No preference

Deletion protection

☐ **Enable deletion protection**
Protects the database from being deleted accidentally. While this option is enabled, you can't delete the database.

Step 4: Create the Database

1. Click Create database to finish creating your RDS instance.

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.

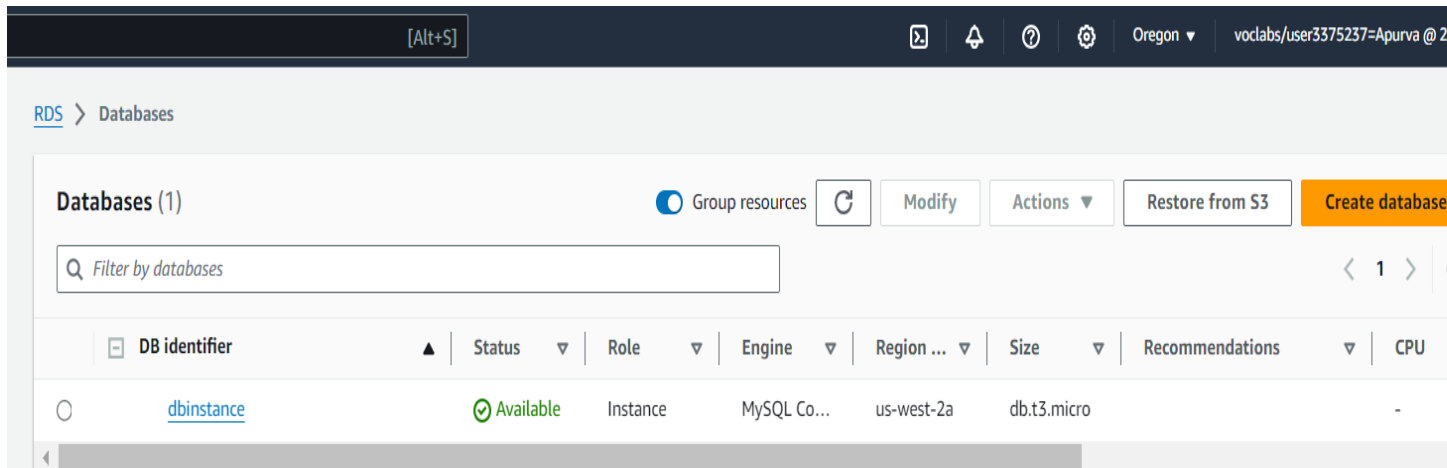
[Learn more about AWS Free Tier.](#)

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.](#)

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

2. Wait for the instance to become available. Note down the Endpoint (RDS URL) and Port(usually `3306`).

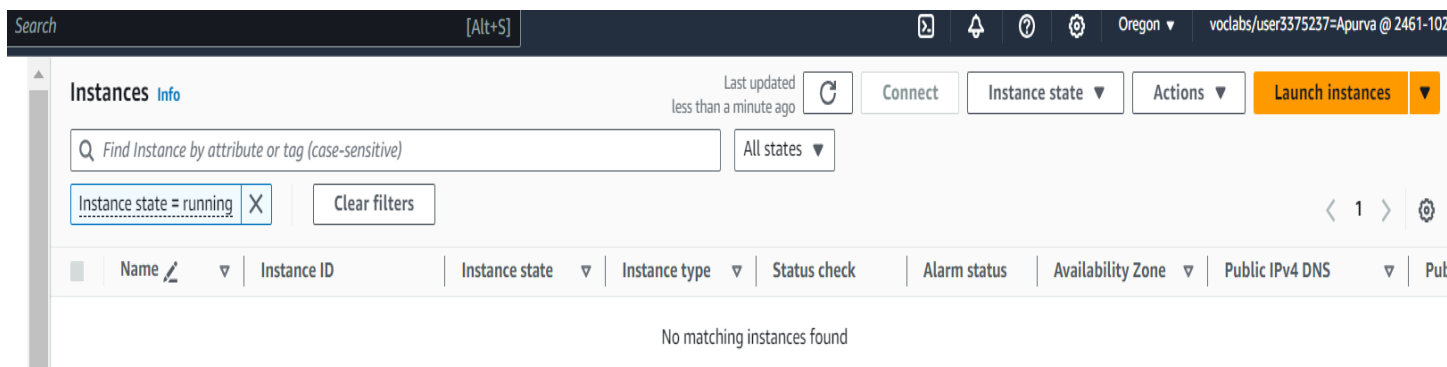


Part 2: Launching an EC2 Instance and Connecting to the RDS Instance Using `mariadb105`

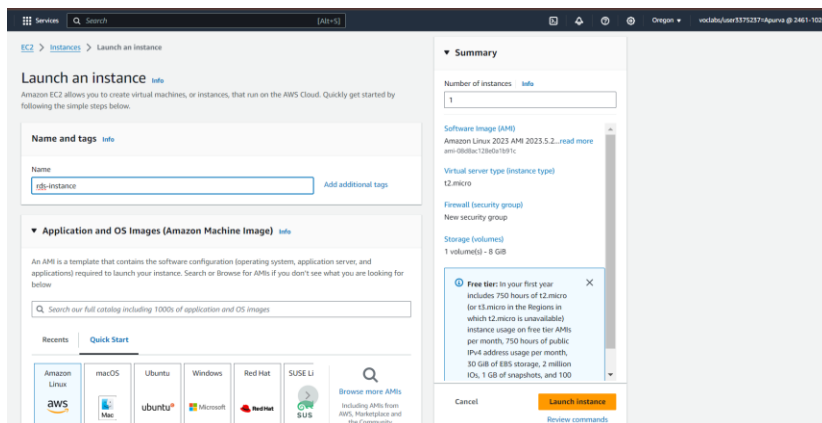
Step 1: Launch an EC2 Instance

1. Go to AWS console, In EC2 service click on to launch instance.

2. Click Launch Instance.



3. Choose an Amazon Machine Image (AMI) Amazon Linux AMI.



4. Select Instance Type `t2.micro` for Free Tier.

The screenshot shows the AWS Management Console interface for configuring an EC2 instance. The 'Instance type' section on the left lists 't2.micro' as the selected instance type, which is 'Free tier eligible'. It also shows details like 'Family: t2', '1 vCPU', and '1 GiB Memory'. The 'Summary' section on the right shows 'Number of instances' set to 1, 'Software Image (AMI)' as 'Amazon Linux 2023 AMI 2023.5.2', 'Virtual server type (instance type)' as 't2.micro', 'Firewall (security group)' as 'New security group', and 'Storage (volumes)' as '1 volume(s) - 8 GiB'. A blue banner at the bottom of the summary section states: 'Free tier: In your first year includes 750 hours of t2.micro (or t3.micro in the Regions in)'. The top navigation bar shows 'Services', a search bar, and the user's account information.

5. Click Next: Configure Instance Details.

- Select the same VPC as your RDS instance.
- Select Auto-assign Public IP to enable access via SSH.

The screenshot shows the 'Network settings' section of the AWS Management Console. It includes a 'VPC - required' dropdown menu with the selected value 'vpc-0a895b9422fd3af22 (default)'. Below it is a 'Subnet' dropdown menu with the selected value 'subnet-09bfa8f53ba93a842'. The 'Auto-assign public IP' dropdown menu is set to 'Enable'. A note at the bottom states: 'Additional charges apply when outside of free tier allowance'. The top navigation bar shows 'Services', a search bar, and the user's account information.

6. Add Storage (default settings are sufficient).

7. Configure Security Group:

- Add a rule to allow SSH access (port `22`) from your IP.
- Add a rule to allow MySQL/Aurora access (port `3306`) from your IP or from anywhere if required

Inbound Security Group Rules

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

Type: [Info](#) Protocol: [Info](#) Port range: [Info](#)

Source type: [Info](#) Source: [Info](#) Description - optional: [Info](#)

▼ Security group rule 2 (TCP: 0-65535, 0.0.0.0/0) Remove

Type: [Info](#) Protocol: [Info](#) Port range: [Info](#)

Source type: [Info](#) Source: [Info](#) Description - optional: [Info](#)

▼ Security group rule 3 (TCP: 3306, 0.0.0.0/0) Remove

Type: [Info](#) Protocol: [Info](#) Port range: [Info](#)

Source type: [Info](#) Source: [Info](#) Description - optional: [Info](#)

▼ Security group rule 4 (TCP: 80, 0.0.0.0/0) Remove

Type: [Info](#) Protocol: [Info](#) Port range: [Info](#)

Source type: [Info](#) Source: [Info](#) Description - optional: [Info](#)

⚠ 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. ×

8. Click Review and Launch.

9. Select an existing key pair or create a new key pair for SSH access.

10. Click Launch.

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⚠ 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](#)

► **Advanced network configuration**

▼ **Configure storage** [Info](#) [Advanced](#)

1x GiB Root volume (Not encrypted)

ℹ Free tier eligible customers can get up to 30 GB of EBS General Purpose (SSD) or Magnetic storage ×

[Add new volume](#)

ℹ Click refresh to view backup information
The tags that you assign determine whether the instance will be backed up by any Data Lifecycle Manager policies. ↻

0 x File systems [Edit](#)

▼ **Summary**

Number of instances [Info](#)

Software Image (AMI)
Amazon Linux 2023 AMI 2023.5.2...[read more](#)
ami-08d8ac128e0a1b91c

Virtual server type (instance type)
t2.micro

Firewall (security group)
New security group

Storage (volumes)
1 volume(s) - 8 GiB

ℹ **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, 750 hours of public IPv4 address usage per month, 30 GiB of EBS storage, 2 million IOs, 1 GB of snapshots, and 100 ×

[Cancel](#) [Launch instance](#)

Search [Alt+S]

Instances (1) Info Last updated less than a minute ago Connect Instance state ▼ Actions ▼ Launch instances ▼

Find Instance by attribute or tag (case-sensitive) Running ▼

| Name | Instance ID | Instance state | Instance type | Status check | Alarm status | Availability Zone | Public IPv4 DNS | Public IP |
|--------------|---------------------|----------------|---------------|-------------------|---------------|-------------------|--------------------------|-----------|
| rds-instance | i-0cb71445291782e19 | Running | t2.micro | 2/2 checks passed | View alarms + | us-west-2a | ec2-44-243-2-246.us-w... | 44.24... |

Step 2: Install `mariadb105` on EC2 Instance

1. Once the EC2 instance is running, click to connect

2. Update the instance and install

```
sudo yum update -y
```

```
sudo yum install mariadb105 -y
```

aws Services Search [Alt+S]

```
[ec2-user@ip-172-31-45-224 ~]$ sudo yum update -y
Last metadata expiration check: 0:03:12 ago on Mon Sep 30 07:01:06 2024.
Dependencies resolved.
Nothing to do.
Complete!
[ec2-user@ip-172-31-45-224 ~]$ sudo su
[root@ip-172-31-45-224 ec2-user]# yum install mariadb105 -y
Last metadata expiration check: 0:03:30 ago on Mon Sep 30 07:01:06 2024.
Dependencies resolved.
```

| Package | Architecture | Version | Repository | Size |
|---------------------------------|--------------|--------------------------|-------------|-------|
| Installing: | | | | |
| mariadb105 | x86_64 | 3:10.5.25-1.amzn2023.0.1 | amazonlinux | 1.6 M |
| Installing dependencies: | | | | |
| mariadb-connector-c | x86_64 | 3.1.13-1.amzn2023.0.3 | amazonlinux | 196 k |
| mariadb-connector-c-config | noarch | 3.1.13-1.amzn2023.0.3 | amazonlinux | 9.2 k |
| mariadb105-common | x86_64 | 3:10.5.25-1.amzn2023.0.1 | amazonlinux | 29 k |
| perl-Sys-Hostname | x86_64 | 1.23-477.amzn2023.0.6 | amazonlinux | 18 k |

Transaction Summary

```
Install 5 Packages
Total download size: 1.8 M
Installed size: 19 M
Downloading Packages:
(1/5): mariadb-connector-c-3.1.13-1.amzn2023.0.3.x86_64.rpm 3.9 MB/s | 196 kB 00:00
(2/5): mariadb-connector-c-config-3.1.13-1.amzn2023.0.3.noarch.rpm 169 kB/s | 9.2 kB 00:00
(3/5): mariadb105-common-10.5.25-1.amzn2023.0.1.x86_64.rpm 1.4 MB/s | 29 kB 00:00
(4/5): mariadb105-10.5.25-1.amzn2023.0.1.x86_64.rpm 19 MB/s | 1.6 MB 00:00
(5/5): perl-Sys-Hostname-1.23-477.amzn2023.0.6.x86_64.rpm 571 kB/s | 18 kB 00:00
```

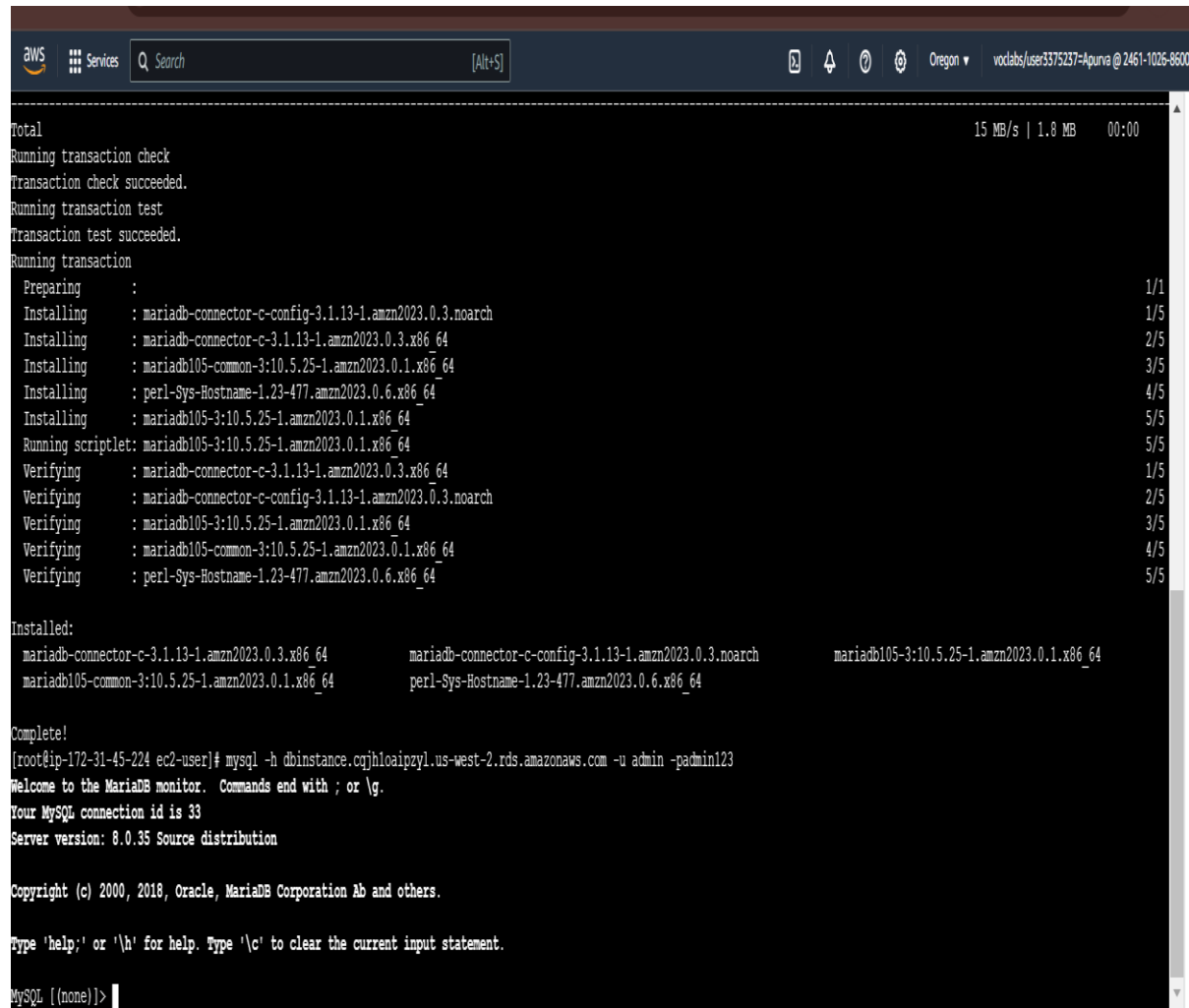
Step 3: Connect to RDS from EC2 Using mariadb105

1. Use the `mariadb` client to connect to the RDS MySQL instance:

```
mysql -h your-rds-endpoint -u admin -p
```

- Replace `your-rds-endpoint` with the endpoint of your RDS instance.
- Enter the Master password when prompted.

2. You should now be connected to your MySQL RDS instance from the EC2 instance.



```
aws
Services
Q Search [Alt+S]
Oregon
voclabs/user3375237-Apunva @ 2461-1026-8600

Total 15 MB/s | 1.8 MB 00:00
Running transaction check
Transaction check succeeded.
Running transaction test
Transaction test succeeded.
Running transaction
  Preparing      : 1/1
  Installing      : mariadb-connector-c-3.1.13-1.amzn2023.0.3.noarch 1/5
  Installing      : mariadb-connector-c-3.1.13-1.amzn2023.0.3.x86_64 2/5
  Installing      : mariadb105-common-3:10.5.25-1.amzn2023.0.1.x86_64 3/5
  Installing      : perl-Sys-Hostname-1.23-477.amzn2023.0.6.x86_64 4/5
  Installing      : mariadb105-3:10.5.25-1.amzn2023.0.1.x86_64 5/5
  Running scriptlet: mariadb105-3:10.5.25-1.amzn2023.0.1.x86_64 5/5
  Verifying       : mariadb-connector-c-3.1.13-1.amzn2023.0.3.x86_64 1/5
  Verifying       : mariadb-connector-c-3.1.13-1.amzn2023.0.3.noarch 2/5
  Verifying       : mariadb105-3:10.5.25-1.amzn2023.0.1.x86_64 3/5
  Verifying       : mariadb105-common-3:10.5.25-1.amzn2023.0.1.x86_64 4/5
  Verifying       : perl-Sys-Hostname-1.23-477.amzn2023.0.6.x86_64 5/5

Installed:
  mariadb-connector-c-3.1.13-1.amzn2023.0.3.x86_64      mariadb-connector-c-config-3.1.13-1.amzn2023.0.3.noarch      mariadb105-3:10.5.25-1.amzn2023.0.1.x86_64
  mariadb105-common-3:10.5.25-1.amzn2023.0.1.x86_64    perl-Sys-Hostname-1.23-477.amzn2023.0.6.x86_64

Complete!
[root@ip-172-31-45-224 ec2-user]# mysql -h dbinstance.cqjhloaipzyl.us-west-2.rds.amazonaws.com -u admin -padmin123
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MySQL connection id is 33
Server version: 8.0.35 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.

MySQL [(none)]>
```

Step 4: Verify Connection

1. After connecting, run basic SQL commands to verify the connection:

```
SHOW DATABASES;
```

```
us-west-2.console.aws.amazon.com/ec2-instance-connect/ssh?region=us-west-2&connType=standard&instanceId=i-0cb71445291782e19&osUser=ec2-u...
AWS Services Search [Alt+S] Oregon voclabs/user3375237-Apunva @ 2461-1026-8600
[root@ip-172-31-45-224 ec2-user]# mysql -h dbinstance.cqjh1oaipzyl.us-west-2.rds.amazonaws.com -u admin -padmin123
Welcome to the MariaDB monitor. Commands end with ; or \g.
Your MySQL connection id is 35
Server version: 8.0.35 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.

MySQL [(none)]> Show databases;
+-----+
| Database |
+-----+
| database1 |
| information_schema |
| mysql |
| performance_schema |
| sys |
+-----+
5 rows in set (0.001 sec)
```

Create Test Database and Show it.

```
MySQL [(none)]> Create database Test;
Query OK, 1 row affected (0.002 sec)

MySQL [(none)]> show databases;
+-----+
| Database |
+-----+
| Test |
| database1 |
| information_schema |
| mysql |
| performance_schema |
| sys |
+-----+
6 rows in set (0.001 sec)
```