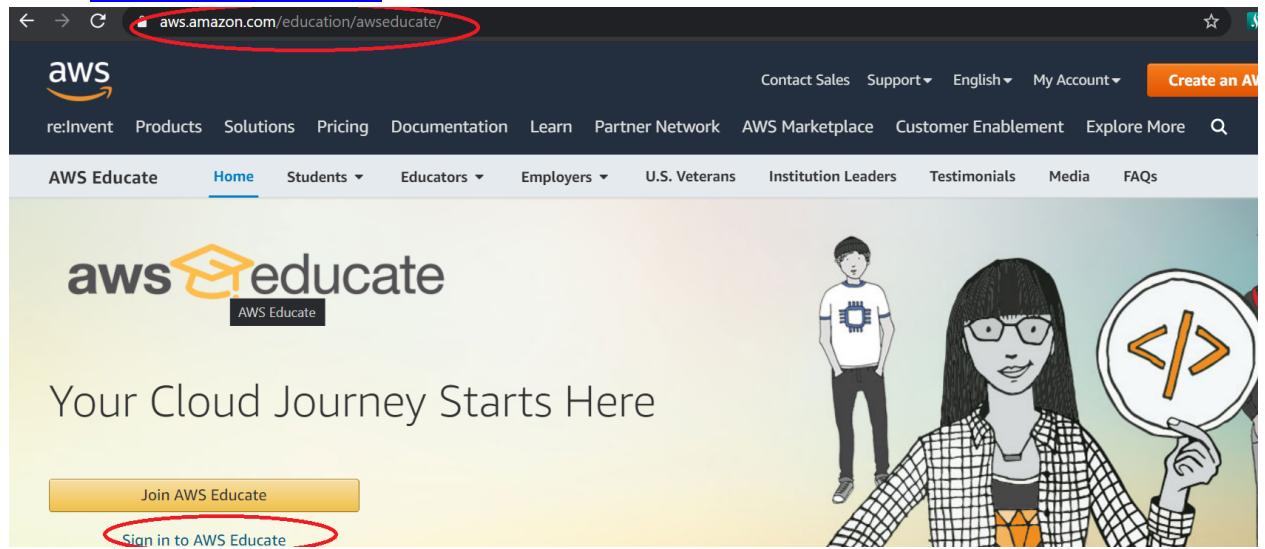


AWS Infra Setup for SQL Server

1. Setup the AWS RDS MYSQL webserver

1.1. Go to www.awseducate.com



1.2. Login to the AWS account and select AWS console.

A screenshot of a web browser showing the Vocabareum login page. The URL in the address bar is 'labs.vocabareum.com/main/main.php?m=editor&nav=1&asnid=308141&stepid=308142'. A red circle highlights the address bar. The page has a header 'Vocabareum' and a 'My Classes' link. The main content area is titled 'Welcome to your AWS Educate Account'. It says 'AWS Educate provides you with access to a wide variety of AWS Services for you to get your hands on and build on AWS! To get started, click on the AWS Console button to log in to your AWS console.' Below this, there's a section titled 'Please read the FAQ below to help you get started on your Starter Account.' with a list of questions. To the right, there's a 'Your AWS Account Status' section with three items: 'Active' (full access), '\$50' (remaining credits), and '00:00:00' (session time). A red circle highlights the 'AWS Console' button. At the bottom, a note says 'Please use AWS Educate Account responsibly. Remember to shut down'.

1.3. Select the RDS:

The screenshot shows the AWS Management Console navigation bar. On the left, there is a sidebar with various service links. In the center, a main content area displays a grid of AWS services. The 'Database' section, which includes 'RDS', is circled in red. To the right, there is a sidebar for 'Amazon SageMaker Autopilot' with a feedback submission link. At the bottom, there is a search bar and a toolbar with common AWS icons.

1.4. Click on the create database option:

The screenshot shows the 'Amazon RDS' service dashboard. The left sidebar lists various RDS management options like Dashboard, Databases, and Query Editor. The main content area displays resource usage statistics for the US East (N. Virginia) region, including DB Instances, DB Clusters, and snapshots. Below this, a 'Create database' section is shown with a 'Create database' button highlighted with a red circle. The right side of the screen features promotional banners for RDS Proxy, RDS Multi-AZ, Database Performance Tuning, and RDS Read replicas.

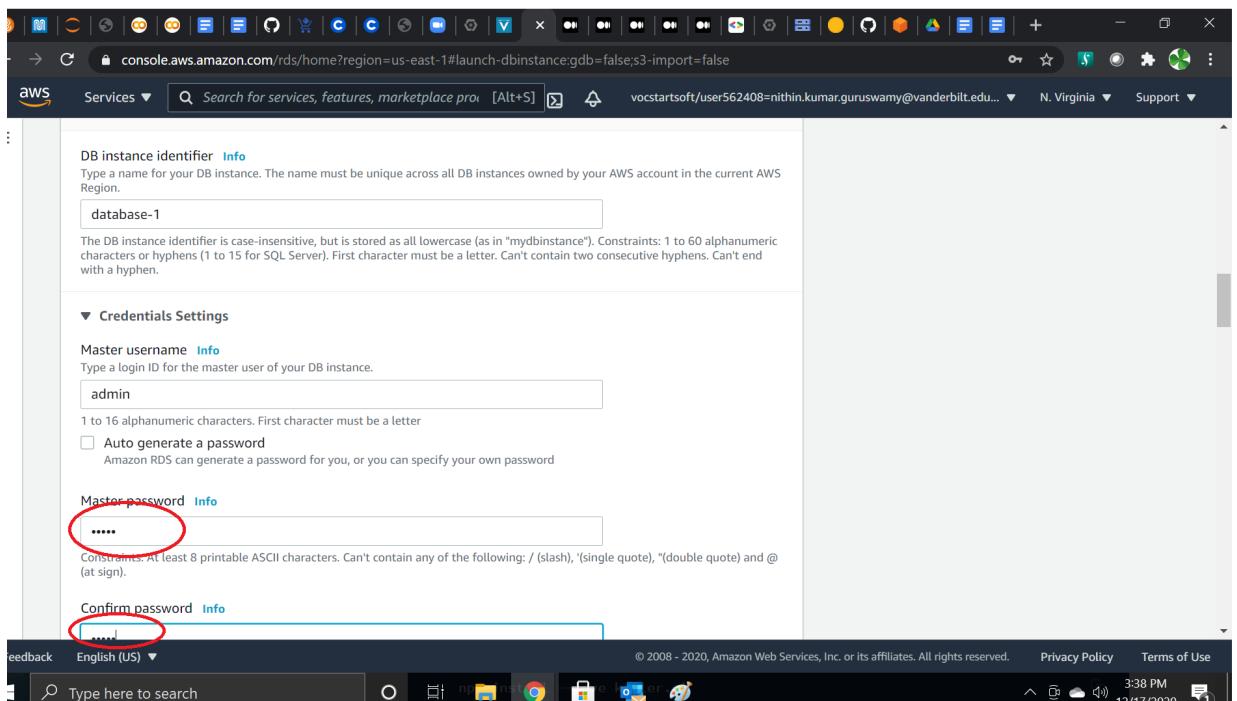
1.5. Select the standard option:

The screenshot shows the AWS RDS console interface for creating a new database instance. At the top, there are two options: "Standard create" and "Easy create". "Standard create" is selected, with a tooltip explaining: "You set all of the configuration options, including ones for availability, security, backups, and maintenance." "Easy create" is described as using recommended best-practice configurations. Below this, the "Engine options" section is shown, featuring MySQL as the selected engine (indicated by a blue border), along with other options: Amazon Aurora, MariaDB, PostgreSQL, Oracle, and Microsoft SQL Server. Each engine has its respective logo. At the bottom of the screen, the Windows taskbar is visible, showing various open applications like File Explorer, Edge, and Google Chrome.

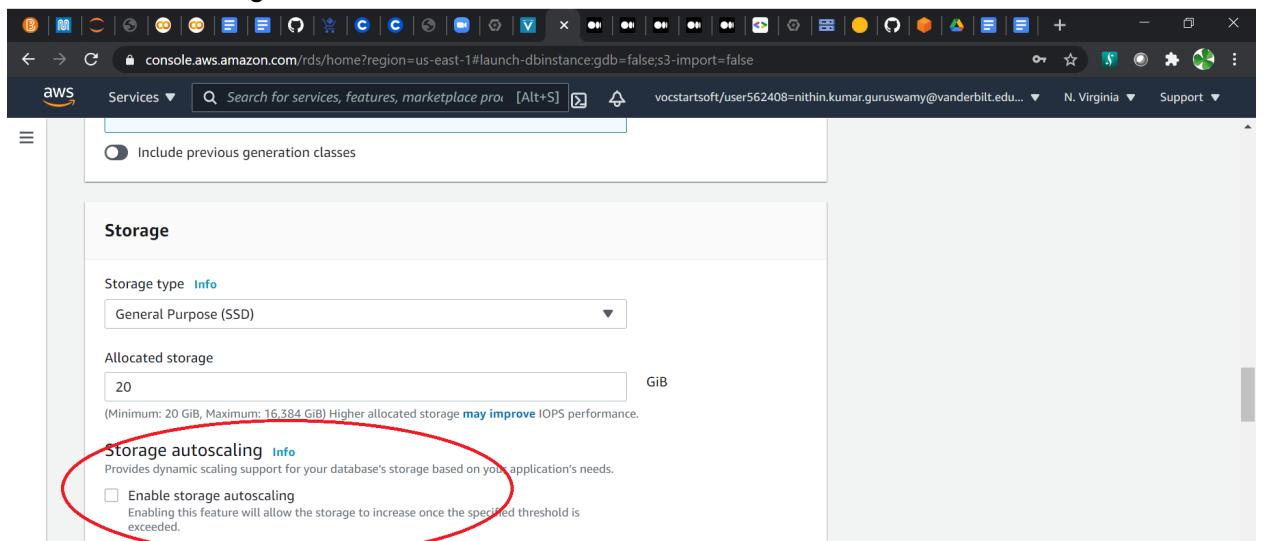
1.6. Select free tier

The screenshot shows the continuation of the AWS RDS instance creation process. In the "Known Issues/Limitations" section, a note says: "Review the [Known Issues/Limitations](#) to learn about potential compatibility issues with specific database versions." Below this, the "Version" dropdown is set to "MySQL 8.0.20". In the "Templates" section, three options are listed: "Production" (selected), "Dev/Test", and "Free tier". "Free tier" is selected, with a tooltip explaining: "Use RDS Free Tier to develop new applications, test existing applications, or gain hands-on experience with Amazon RDS." At the bottom, the "Settings" section is partially visible. The Windows taskbar at the bottom of the screen shows the same set of open applications as in the previous screenshot.

1.7. Give a username and password



1.8. Disable Autoscaling:



1.9. External connectivity:

The screenshot shows the AWS RDS console for creating a new database instance. The 'Publicly accessible' section is set to 'Yes'. The 'VPC security group' section is set to 'Create new' with a new group named 'Test-group'. The 'Database port' is set to 3306.

Publicly accessible [Info](#)

Yes

Amazon EC2 instances and devices outside the VPC can connect to your database. Choose one or more VPC security groups that specify which EC2 instances and devices inside the VPC can connect to the database.

No

RDS will not assign a public IP address to the database. Only Amazon EC2 instances and devices inside the VPC can connect to your database.

VPC security group

Choose one or more RDS security groups to allow access to your database. Ensure that the security group rules allow incoming traffic from EC2 instances and devices outside your VPC. (Security groups are required for publicly accessible databases.)

Choose existing

Choose existing VPC security groups

Create new

Create new VPC security group

New VPC security group name

Test-group

Availability Zone [Info](#)

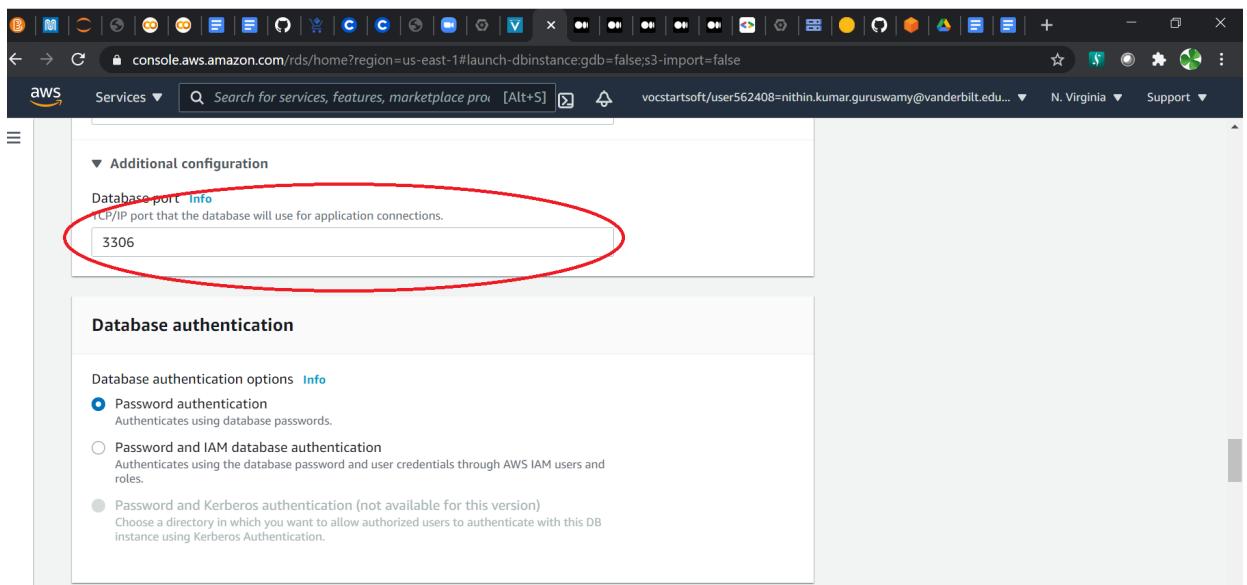
No preference

Database port [Info](#)

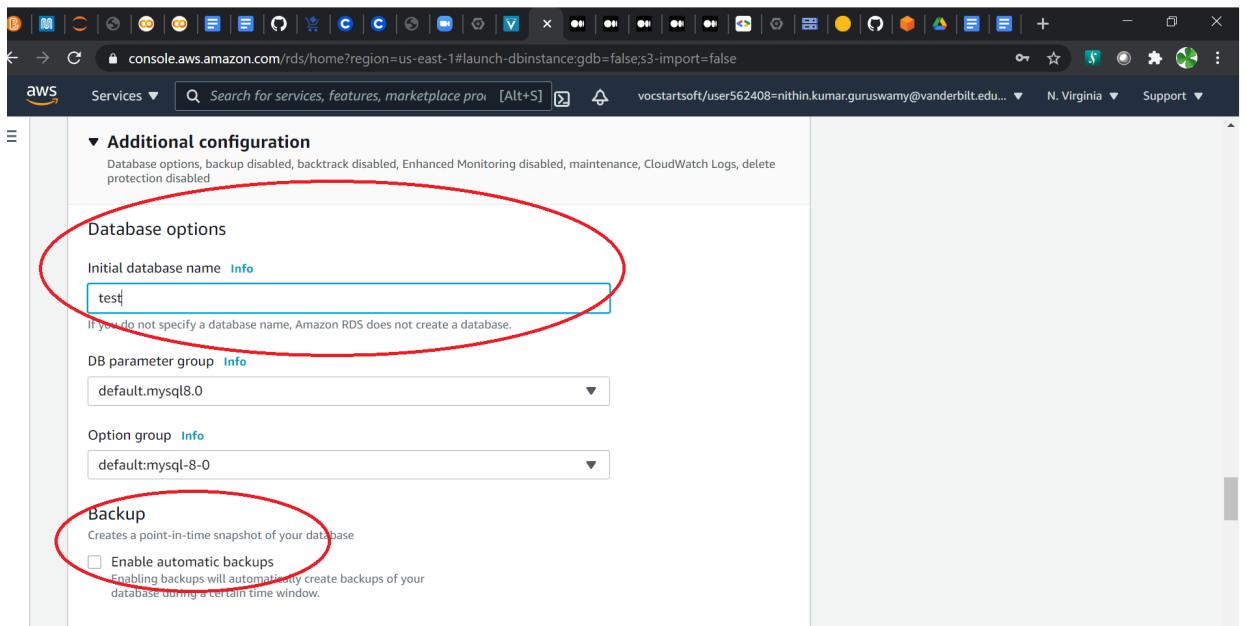
TCP/IP port that the database will use for application connections.

3306

1.10. Leave the Database port to 3306



1.11. Give a name to the database and Backup



1.12. Enable auto minor version upgrade:

The screenshot shows the AWS RDS console interface for creating a new database. The 'Maintenance' section is circled in red, specifically highlighting the 'Enable auto minor version upgrade' checkbox which is checked. Below this, the 'Estimated monthly costs' section is partially visible. At the bottom right, the 'Create database' button is also circled in red.

Monitoring

Enable Enhanced monitoring
Enabling Enhanced monitoring metrics are useful when you want to see how different processes or threads use the CPU

Log exports

Select the log types to publish to Amazon CloudWatch Logs

Error log
 General log
 Slow query log

IAM role

The following service-linked role is used for publishing logs to CloudWatch Logs.

RDS service-linked role

Maintenance

Auto minor version upgrade [Info](#)

Enable auto minor version upgrade

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 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](#).

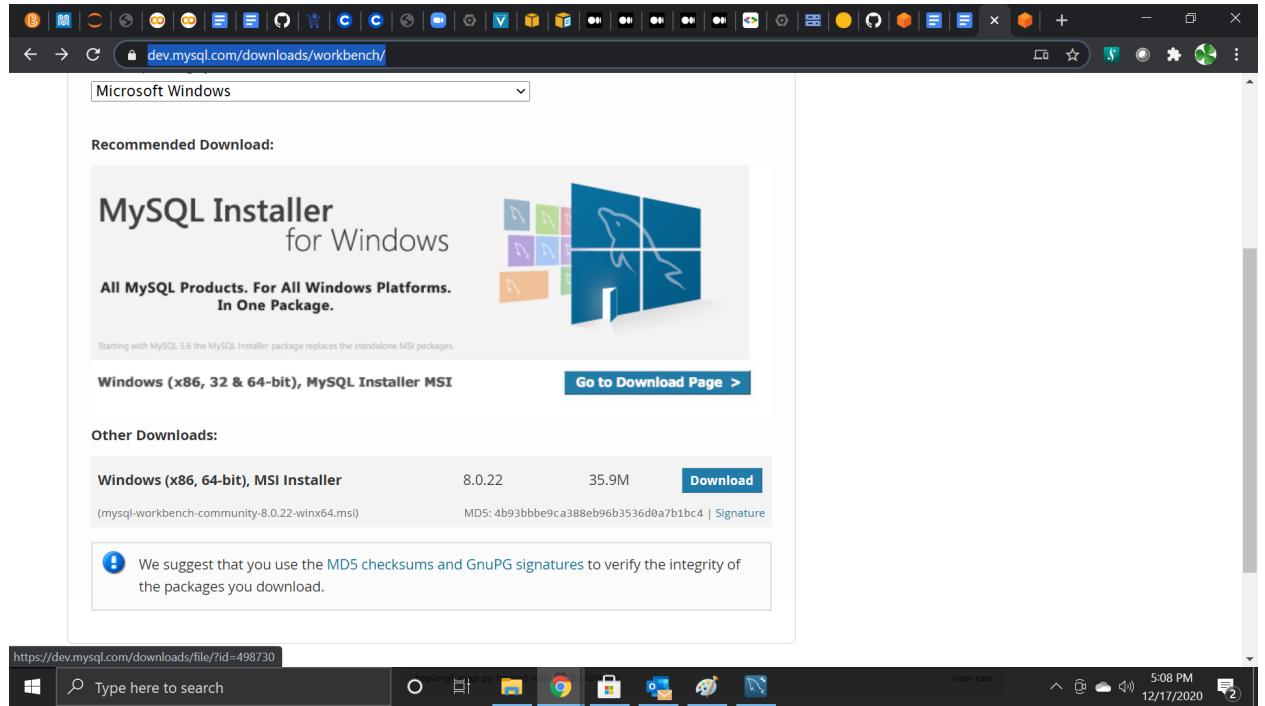
Note: You are responsible for ensuring that you have all of the necessary rights for any third-party products or services that you use with AWS services.

Cancel **Create database**

2. Use the SQL workbench DB client software to test the AWS mysql server:

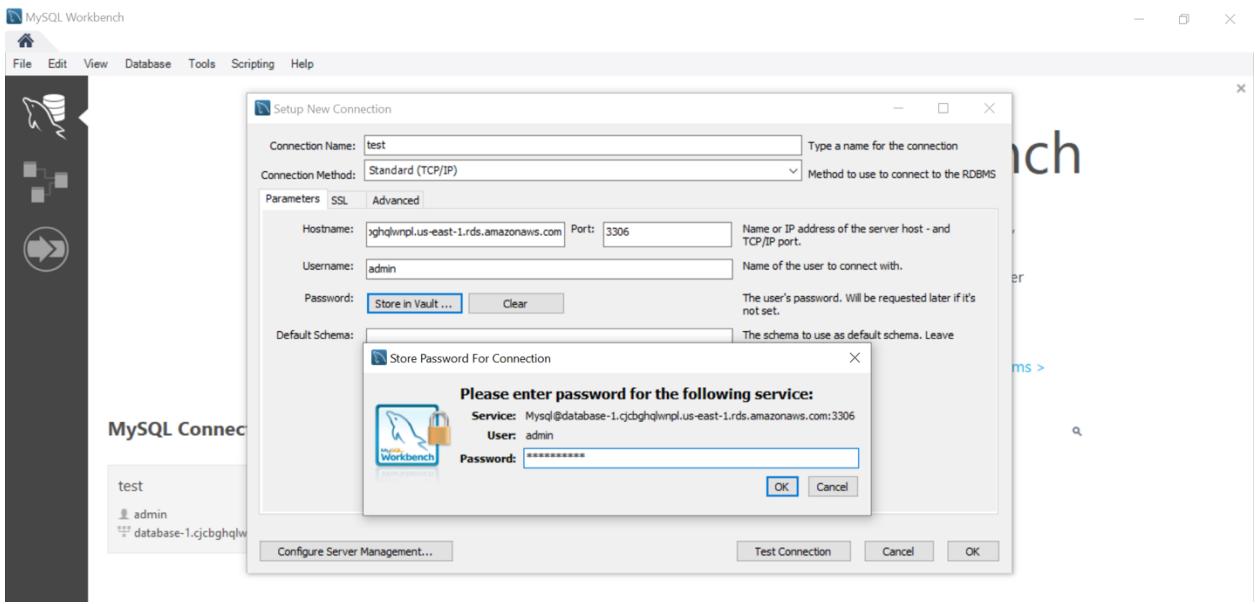
2.1. Download and install the mysql workbench from below:

<https://dev.mysql.com/downloads/workbench/>



2.2. Get the hostname of the database and connect to it through workbench as below;

A screenshot of the AWS RDS 'Connectivity & security' details page. The endpoint listed is database-2.cjcbghqlwnpl.us-east-1.rds.amazonaws.com. The port is set to 3306. In the networking section, the availability zone is us-east-1f and the VPC is vpc-8101defc. Under security, it shows VPC security groups: test-group (sg-0fe4a1f12308d9031) (active). Public accessibility is set to Yes.



If connectivity is fine then we have successfully AWS MySQL server database.

2.3 Then load data into AWS MySQL database by running a well-written SQL script. The following example shows the process of importing the Lahman baseball sql file:

<http://seanlahman.com/files/database/lahman2012-sql.zip>

```

SET NAMES 'UTF8';

-- 
-- Database:  lahman
-- 

CREATE DATABASE  lahman  DEFAULT CHARACTER SET utf8 COLLATE utf8_general_ci;
USE  lahman ;
DROP TABLE IF EXISTS `AllstarFull`;

```

2.4 Run the queries like show databases:

The screenshot shows the MySQL Workbench interface. In the 'Query' editor tab, the query 'show databases' is run, and the results are displayed in a grid. The results show several database names: 'information_schema', 'test', 'mysql', 'performance_schema', and 'sys'. The 'Result Grid' tab is selected. On the right side, there is a sidebar with various tools and a message about context help.

2.5 Once data are imported into the remote MySQL server, you can perform some queries in Google Colab using [MySQL python library](#).

3. Connect and Query AWS-RDB-MySQL from Colab

- 3.1. Please ensure 3306 has been opened in your security group.
- 3.2. Otherwise add 3306 to security group and make sure all public addresses (0.0.0.0/0) can access it.

The screenshot shows the 'Inbound rules' section of the AWS CloudFormation configuration. It lists two rules. Rule 1: Type is 'MySQL/Aurora', Protocol is 'TCP', Port range is '3306', Source is 'Custom' with IP '107.142.101.85/32' highlighted, and Description is 'MySQL'. Rule 2: Type is 'Custom TCP', Protocol is 'TCP', Port range is '3306', Source is 'Custom' with IP '0.0.0.0/0' highlighted, and Description is 'MySQL'. Both rules have a 'Delete' button.

- 3.3. Please check example in notebook: Colab + AWS-RDS-MySQL Example.ipynb for more details of connecting and querying MySQL through Colab.

4. Make sure to shutdown the AWS RDS MYSQL server using actions Menu:

The screenshot shows the AWS RDS console interface. At the top, a green banner displays the message "Successfully created database database-1." Below this, the main page shows the "database-1" entry under the "Databases" section. The "Summary" tab is selected, providing details about the database identifier (database-1), CPU usage (2.00%), status (Stopped), role (Instance), current activity, engine (MySQL Community), class (db.t2.micro), region (us-east-1), and other options like Create read replica, Promote, Take snapshot, and Restore to point in time. The "Actions" menu is open, showing options like Start, Reboot, Delete, and others. Below the summary, there are tabs for Connectivity & security, Monitoring, Logs & events, Configuration, Maintenance & backups, and Tags. The bottom of the screen shows the Windows taskbar with various pinned icons and a search bar.