Hands-on tutorials

Create and Connect to a MySQL Database with Amazon RDS

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AWS experience	Beginner
Time to complete	10 minutes
Cost to complete	$0.005 per hour **Note** You will only incur charges if you select In-use Public IPv4 Address.
Services used	Amazon RDS
Last updated	February 3, 2023

Overview

In this tutorial, you will learn how to create an environment to run your MySQL database (we call this environment an instance), connect to the database, and delete the database instance. We will do this using Amazon Relational Database Service (Amazon RDS).

What you will accomplish

In this tutorial, you will:

- Create an environment to run your MySQL database
- Connect to the database
- Delete the database instance

Prerequisites

Before starting this tutorial, you will need:

- **An AWS account:** If you don't already have an account, follow the Setting Up Your AWS Environment getting started guide for a quick overview.

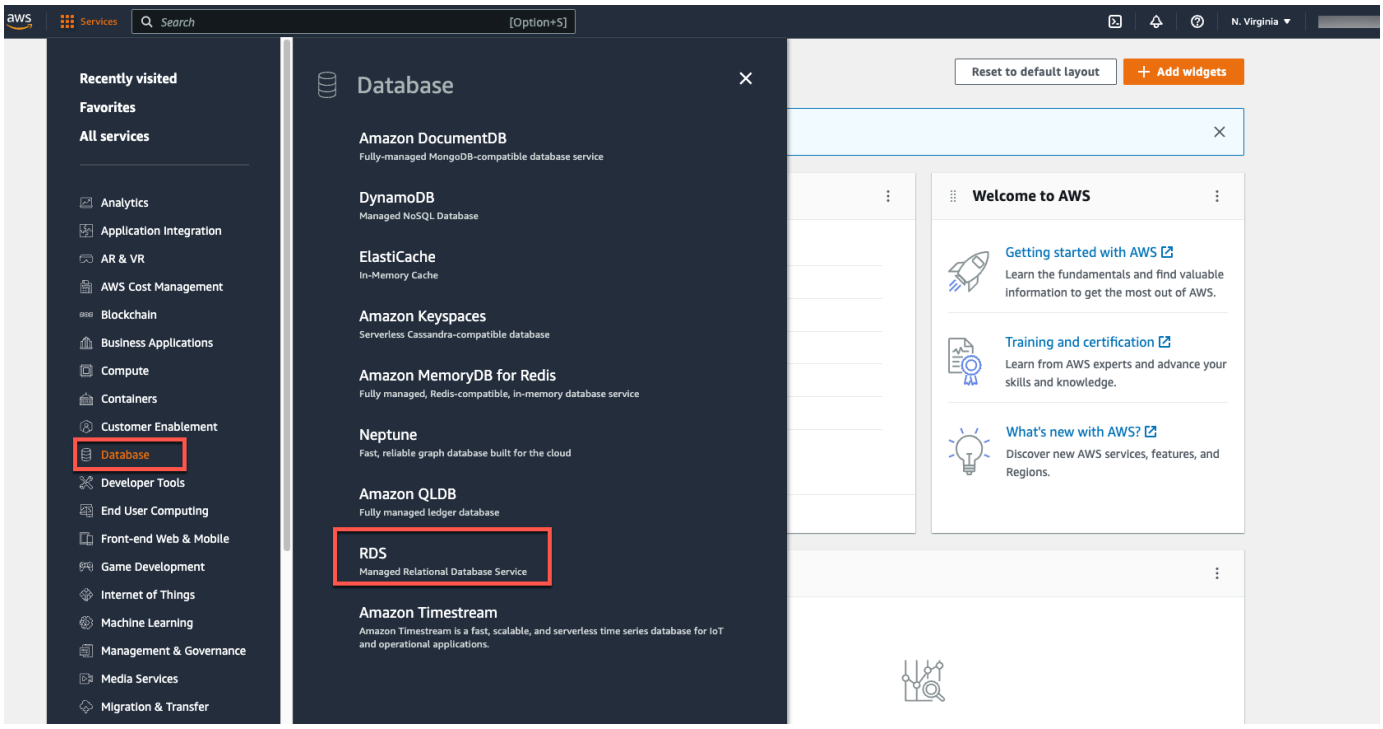
Implementation

Step 1: Create a MySQL DB instance

In this step, we will use Amazon RDS to create a MySQL DB Instance with db.t2.micro DB instance class, 20 GB of storage, and automated backups enabled with a retention period of one day.

1. Open the AWS Management Console

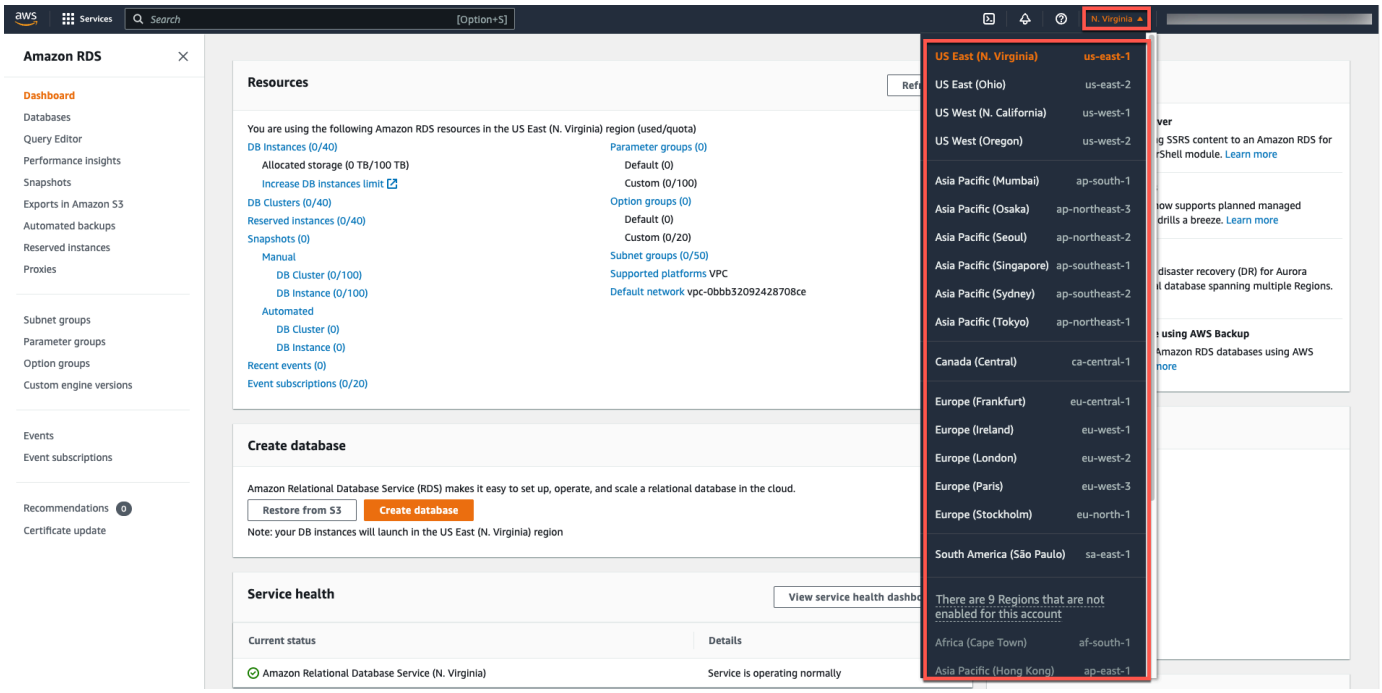
   Open the AWS Management Console in a new browser window, so you can keep this step-by-step guide open. When the console opens, select **Database** from the left navigation pane and choose **RDS** to open the **Amazon RDS console.**



2. Select Region

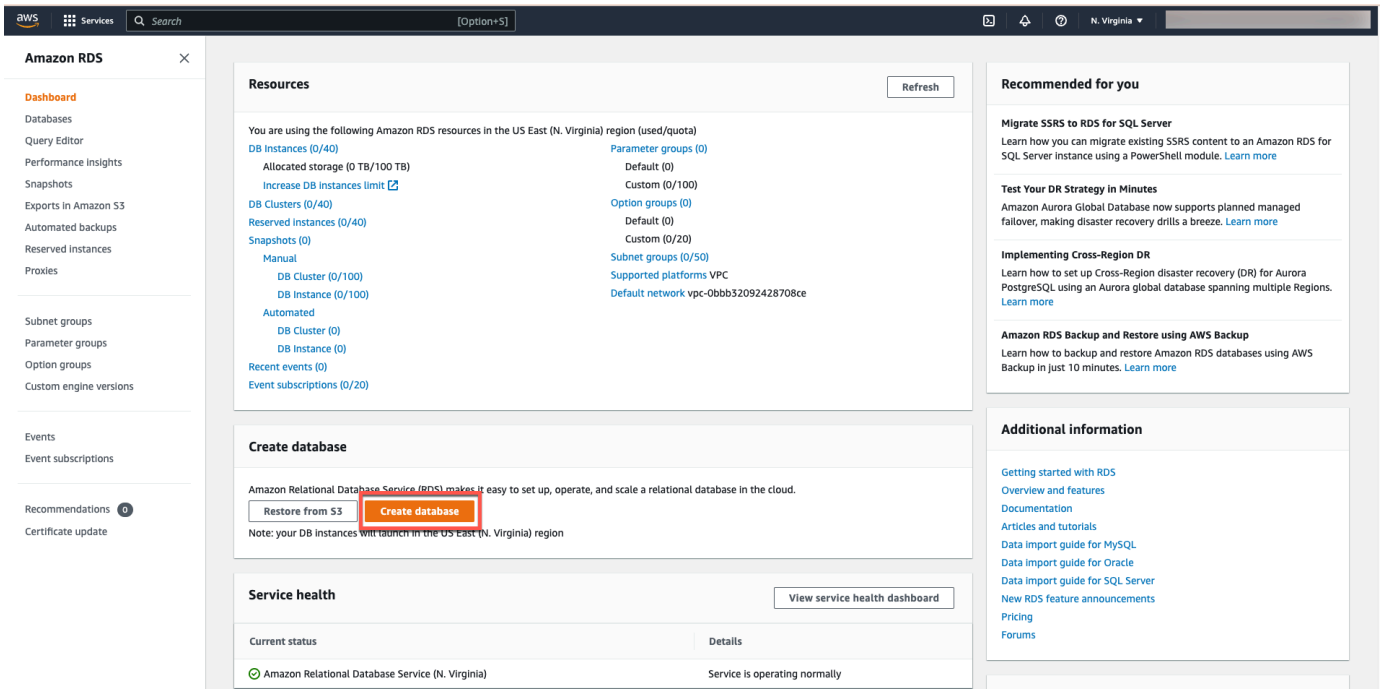
In the top right corner of the Amazon RDS console, select the Region in which you want to create the DB instance.

> **Note**
>
> AWS Cloud resources are housed in highly available data center facilities in different areas of the world. Each Region contains multiple distinct locations called Availability Zones. You have the ability to choose which Region to host your Amazon RDS activity in.



3. Create database

   In the **Create database** section, choose **Create database**.



4. Select database engine

You now have options to select your engine. For this tutorial, choose the **MySQL** icon, leave the default value of edition and engine version, and select the **Free Tier** template. **Multi-AZ deployment:** You will have to pay for Multi-AZ deployment. Using a Multi-AZ deployment will automatically provision and maintain a synchronous standby replica in a different Availability Zone. For more information, see [High Availability Deployment.]

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.

Engine options

Engine type Info

- Amazon Aurora
- MySQL
- MariaDB
- PostgreSQL
- Oracle
- Microsoft SQL Server

Edition

MySQL Community

Known issues/limitations
Review the Known issues/limitations to learn about potential compatibility issues with specific database versions.

▼ Hide filters

Show versions that support the Multi-AZ DB cluster Info
Create a A Multi-AZ DB cluster with one primary DB instance and two readable standby DB instances. Multi-AZ DB clusters provide up to 2x faster transaction commit latency and automatic failover in typically under 35 seconds.

Show versions that support the Amazon RDS Optimized Writes Info
Amazon RDS Optimized Writes improves write throughput by up to 2x at no additional cost.

Engine Version

MySQL 8.0.28

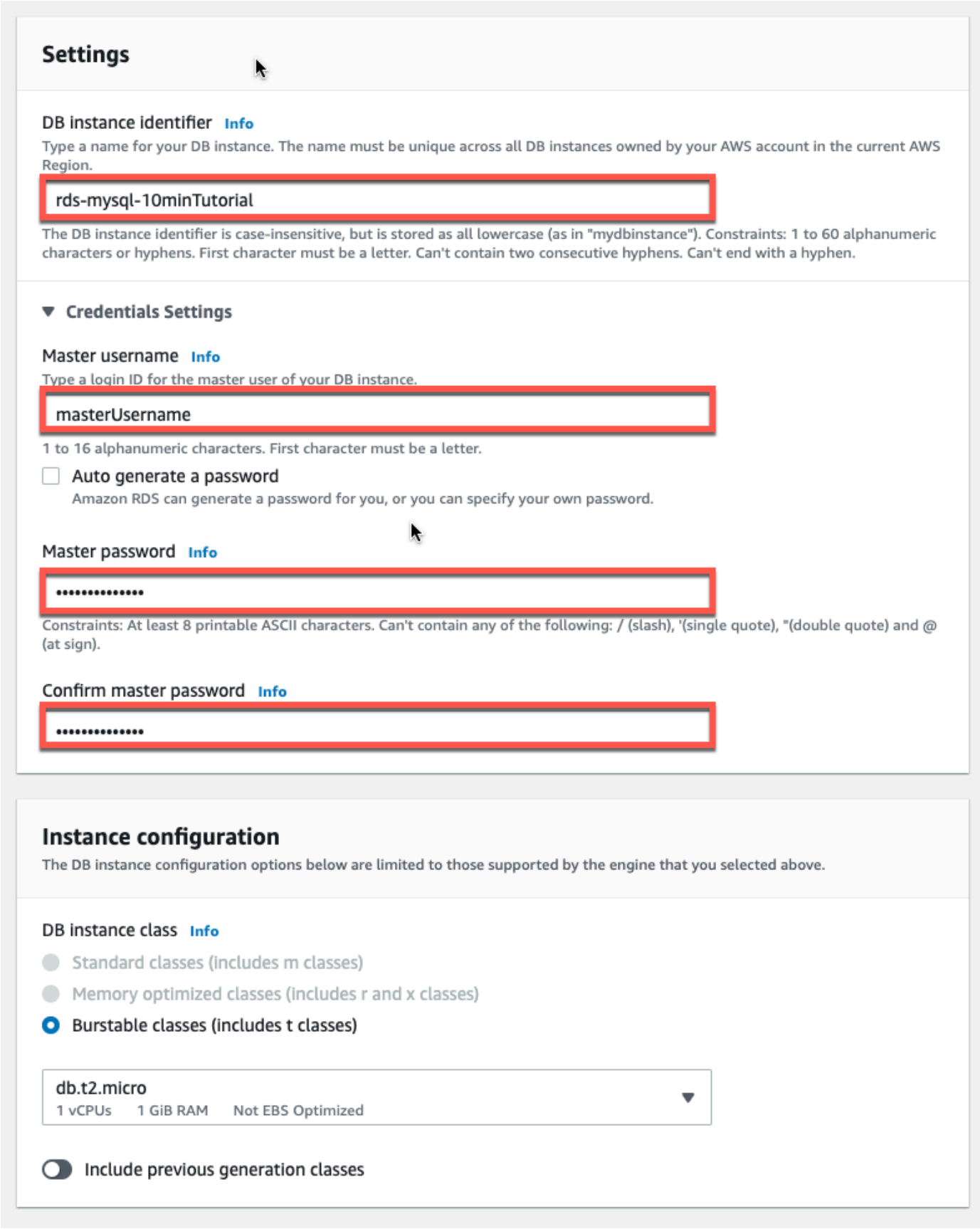
Templates

5. Configure DB instance

   You will now configure your DB instance. The list below shows the example settings you can use for this tutorial:

   Settings:

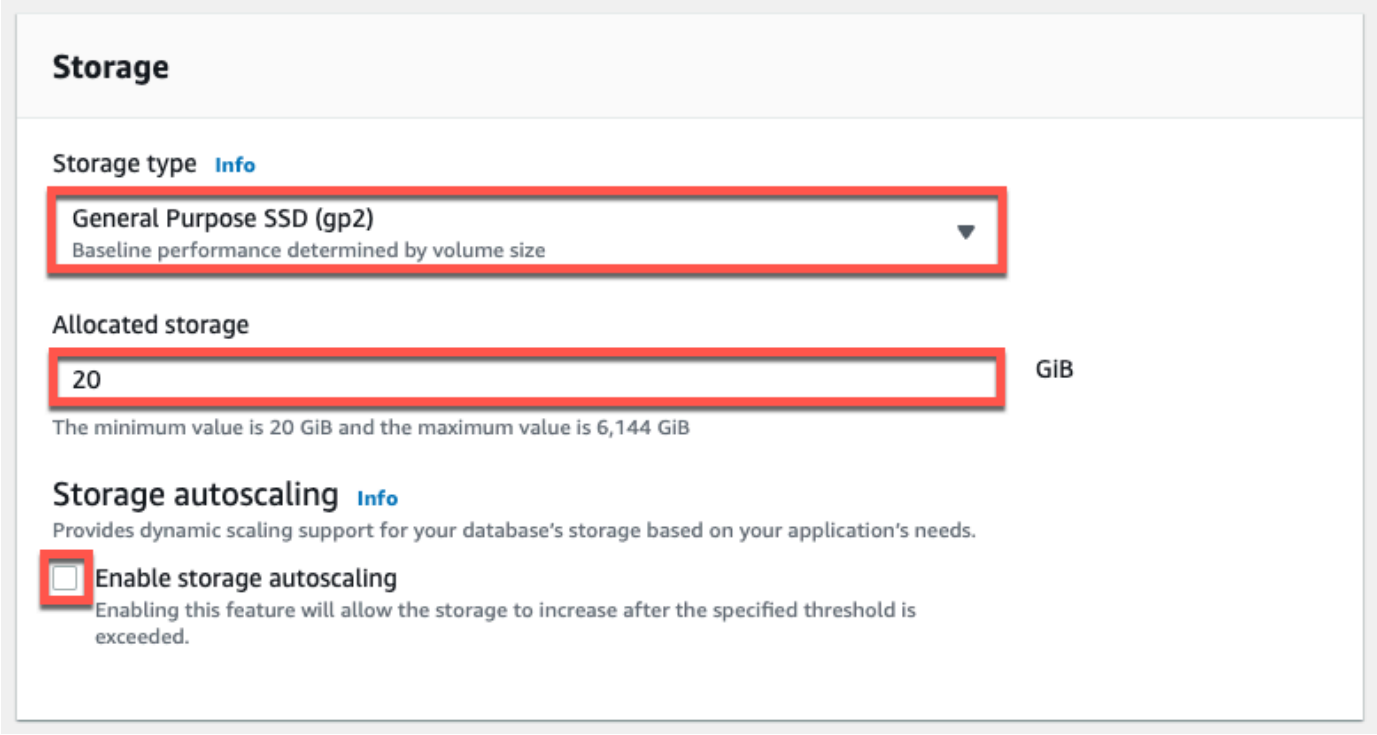
   - **DB instance identifier**: Type a name for the DB instance that is unique for your account in the Region that you selected. For this tutorial, we will name it **rds-mysql-10minTutorial.**
   - **Master username**: Type a username that you will use to log in to your DB instance. We will use masterUsername in this example.
   - **Master password**: Type a password that contains from 8 to 41 printable ASCII characters (excluding /,", and @) for your master user password.
   - **Confirm password**: Retype your password


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.
rds-mysql-10minTutorial
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.
masterUsername
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
Instance configuration
The DB instance configuration options below are limited to those supported by the engine that you selected above.
DB instance class Info
Standard classes (includes m classes)
Memory optimized classes (includes r and x classes)
Burstable classes (includes t classes)
db.t2.micro
1 vCPUs 1 GiB RAM Not EBS Optimized
Include previous generation classes

6. Additional DB instance configuration

   Instance specifications:

   - **DB instance class**: Select **db.t2.micro — 1vCPU, 1 GiB RAM.** This equates to 1 GB memory and 1 vCPU. To see a list of supported instance classes, see Amazon RDS Pricing.
   - **Storage type**: Select **General Purpose (SSD)**. For more information about storage, see Storage for Amazon RDS.
   - **Allocated storage**: Select the default of 20 to allocate 20 GB of storage for your database. You can scale up to a maximum of 64 TB with Amazon RDS for MySQL.
   - **Enable storage autoscaling**: If your workload is cyclical or unpredictable, you would enable storage autoscaling to enable Amazon RDS to automatically scale up your storage when needed. This option does not apply to this tutorial.
   - **Multi-AZ deployment**: You will have to pay for Multi-AZ deployment. Using a Multi-AZ deployment will automatically provision and maintain a synchronous standby replica in a different Availability Zone. For more information, see High Availability Deployment.



7. Configure connectivity

You are now in the **Connectivity** section where you can provide information that Amazon RDS needs to launch your MySQL DB instance. The following list shows settings for our example DB instance.

Connectivity

- **Compute resource**: Choose **Don't connect to an EC2 compute resource.** You can manually set up a connection to a compute resource later.
- **Virtual Private Cloud (VPC)**: Select **Default VPC.** For more information about VPC, see Amazon RDS and Amazon Virtual Private Cloud (VPC).

Additional connectivity configurations

- **Subnet group**: Choose the **default** subnet group. For more information about subnet groups, see Working with DB Subnet Groups.
- **Public accessibility**: Choose **Yes.** This will allocate an IP address for your database instance so that you can directly connect to the database from your own device.

> **Note**
>
> You will incur charges of $0.005 per hour.

- **VPC security groups**: Select **Create new VPC security group.** This will create a security group that will allow connection from the IP address of the device that you are currently using to the database created.
- **Availability Zone**: Choose **No preference.** See Regions and Availability Zones for more details.
- **RDS Proxy**: By using Amazon RDS Proxy, you can allow your applications to pool and share database connections to improve their ability to scale. Leave the **RDS Proxy** unchecked.
- **Port**: Leave the default value of 3306.

Connectivity Info

Compute resource

Choose whether to set up a connection to a compute resource for this database. Setting up a connection will automatically change connectivity settings so that the compute resource can connect to this database.

- **Don't connect to an EC2 compute resource**
  Don't set up a connection to a compute resource for this database. You can manually set up a connection to a compute resource later.
- **Connect to an EC2 compute resource**
  Set up a connection to an EC2 compute resource for this database.

Virtual private cloud (VPC) Info

Choose the VPC. The VPC defines the virtual networking environment for this DB instance.

Default VPC (vpc-0bbb32092428708ce)

Only VPCs with a corresponding DB subnet group are listed.

After a database is created, you can't change its VPC.

DB Subnet group Info

Choose the DB subnet group. The DB subnet group defines which subnets and IP ranges the DB instance can use in the VPC that you selected.

default

Public access Info

- **Yes**
  RDS assigns a public IP address to the database. Amazon EC2 instances and other resources outside of the VPC can connect to your database. Resources inside the VPC can also connect to the database. Choose one or more VPC security groups that specify which resources can connect to the database.
- **No**
  RDS doesn't assign a public IP address to the database. Only Amazon EC2 instances and other resources inside the VPC can connect to your database. Choose one or more VPC security groups that specify which resources can connect to the database.

VPC security group (firewall) Info

Choose one or more VPC security groups to allow access to your database. Make sure that the security group rules allow the appropriate incoming traffic.

- **Choose existing**
  Choose existing VPC security groups
- **Create new**
  Create new VPC security group

New VPC security group name

Enter new VPC security group name

Availability Zone Info

No preference

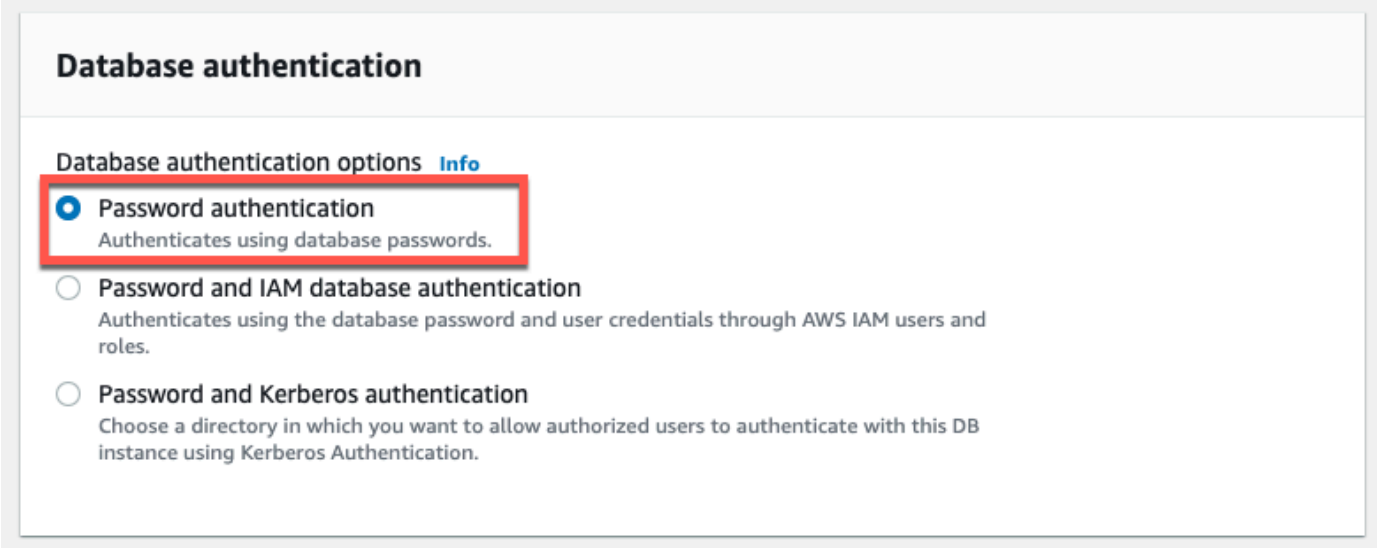
RDS Proxy

RDS Proxy is a fully managed, highly available database proxy that improves application scalability, resiliency, and security.

- **Create an RDS Proxy** Info
  RDS automatically creates an IAM role and a Secrets Manager secret for the proxy. RDS Proxy has additional costs. For more information, see Amazon RDS Proxy pricing.

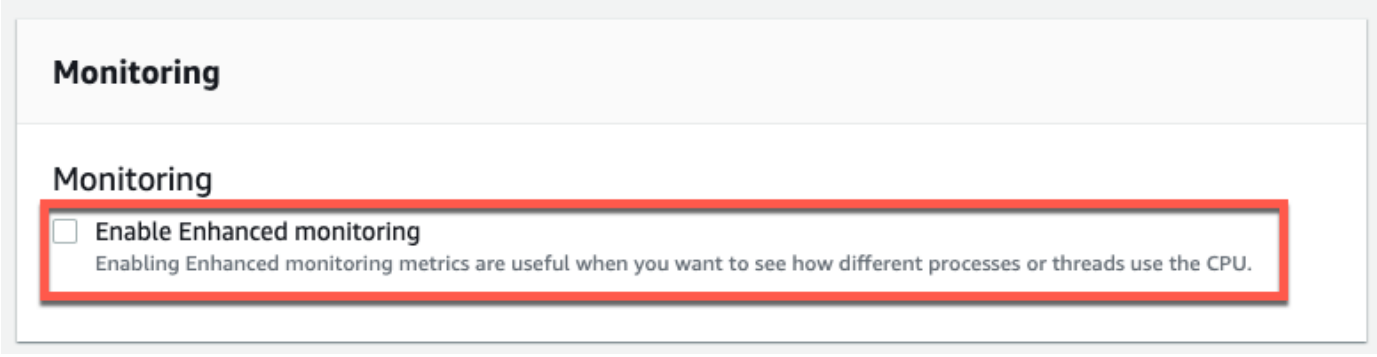
8. Choose authentication option

   Amazon RDS supports several ways to authenticate database users. Choose **Password authentication** from the list of options



9. Verify monitoring

   Leave **Enable enhanced monitoring** unchecked to stay within the Free Tier. Enabling enhanced monitoring will give you metrics in real time for the operating system (OS) that your DB instance runs on. For more information, see Viewing DB Instance Metrics.



10. Set additional configuration options

    In the **Additional configurations** section**:**

    Database options

    - **Database name**: Enter a database name that is 1 to 64 alphanumeric characters. If you do not provide a name, Amazon RDS will not automatically create a database on the DB instance you are creating.

- **DB parameter group**: Leave the default value. For more information, see Working with DB Parameter Groups.
- **Option group**: Leave the default value. Amazon RDS uses option groups to enable and configure additional features. For more information, see Working with Option Groups.

Encryption: This option is not available in the Free Tier. For more information, see Encrypting Amazon RDS Resources.

Backup

- **Backup retention period**: You can choose the number of days to retain the backup you take. For this tutorial, set this value to **1 day.**
- **Backup window**: Use the default o**f No preference.**

Maintenance

- **Auto minor version upgrade**: Select **Enable auto minor version upgrade** to receive automatic updates when they become available.
- **Maintenance Window**: Select **No preference.**

Deletion protection: Turn off **Enable deletion protection** for this tutorial. When this option is enabled, you're prevented from accidentally deleting the database.

Choose **Create Database**.

Additional configuration

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

Database options

Initial database name Info

dbname

If you do not specify a database name, Amazon RDS does not create a database.

DB parameter group Info

default.mysql8.0

Option group Info

default:mysql-8-0

Backup

Enable automated backups

Creates a point-in-time snapshot of your database

Please note that automated backups are currently supported for InnoDB storage engine only. If you are using MyISAM, refer to details here.

Backup retention period Info

The number of days (1-35) for which automatic backups are kept.

1 day

Backup window Info

The daily time range (in UTC) during which RDS takes automated backups.

Choose a window

No preference

Copy tags to snapshots

Log exports

Select the log types to publish to Amazon CloudWatch Logs

Audit log

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

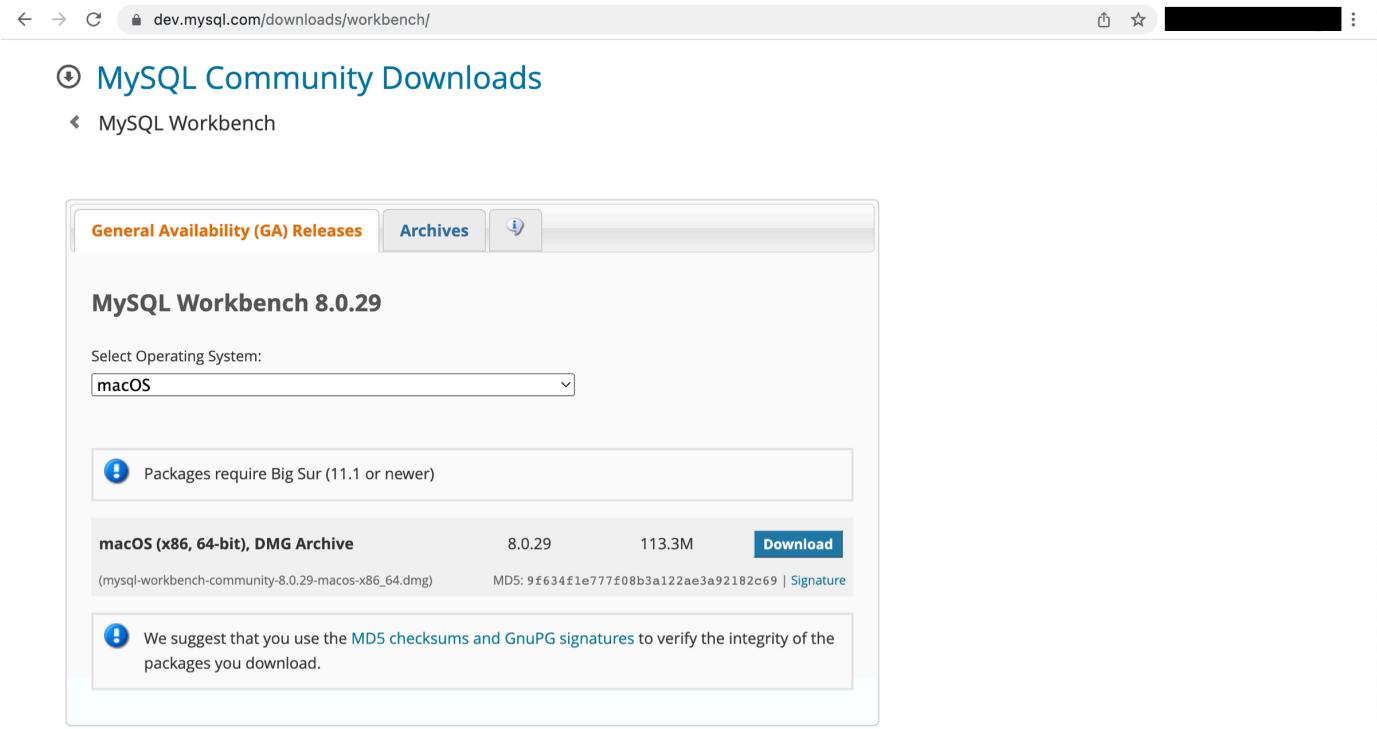
Step 2: Download a SQL client

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. In this step, we will download MySQL Workbench, which is a popular SQL client.

1. Install MySQL Workbench

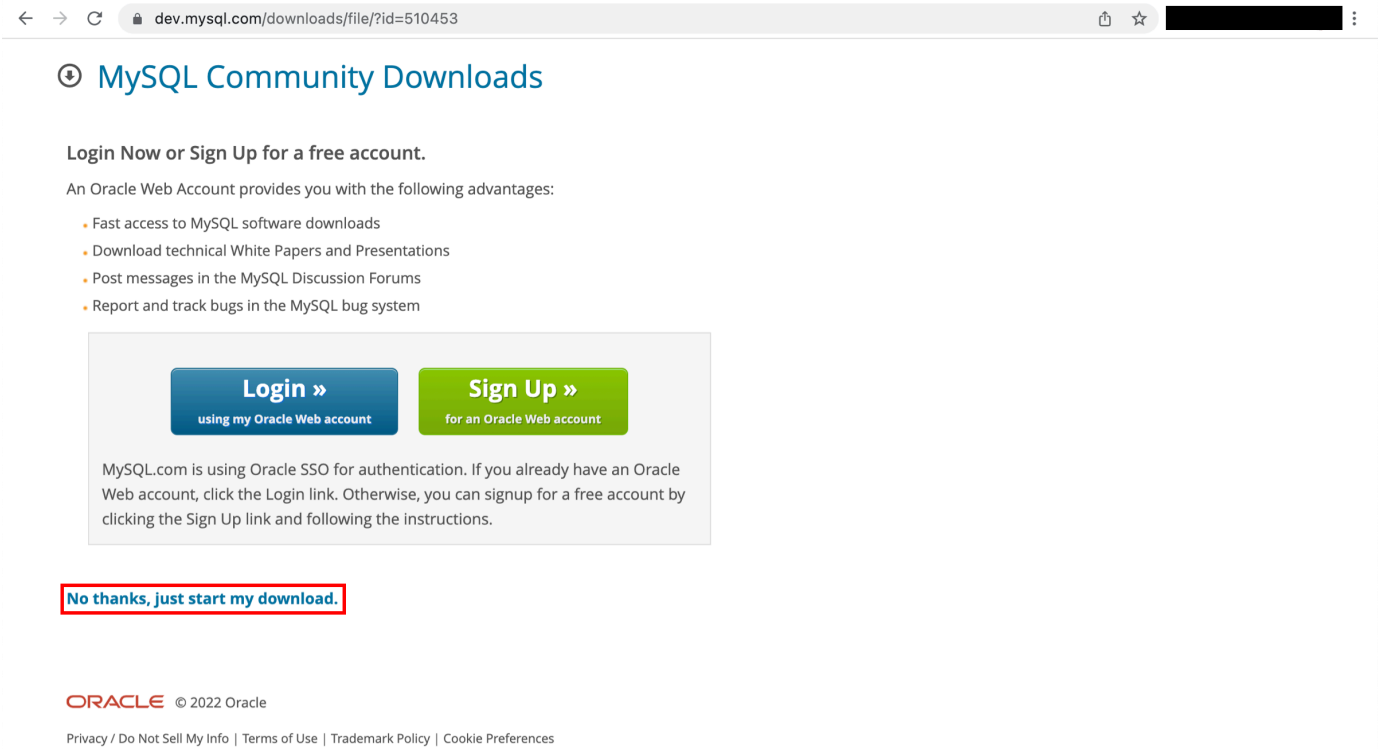
   Go to the Download MySQL Workbench page to download and install MySQL Workbench. For more information on using MySQL, see the MySQL Documentation.

   > **Note**
   >
   > Remember to run MySQL Workbench from the same device from which you created the DB instance. The security group your database is placed in is configured to allow connection only from the device from which you created the DB instance.



2. Download client

   You will be prompted to log in, sign up, or begin your download. You can choose **No thanks, just start my download** for a quick download.

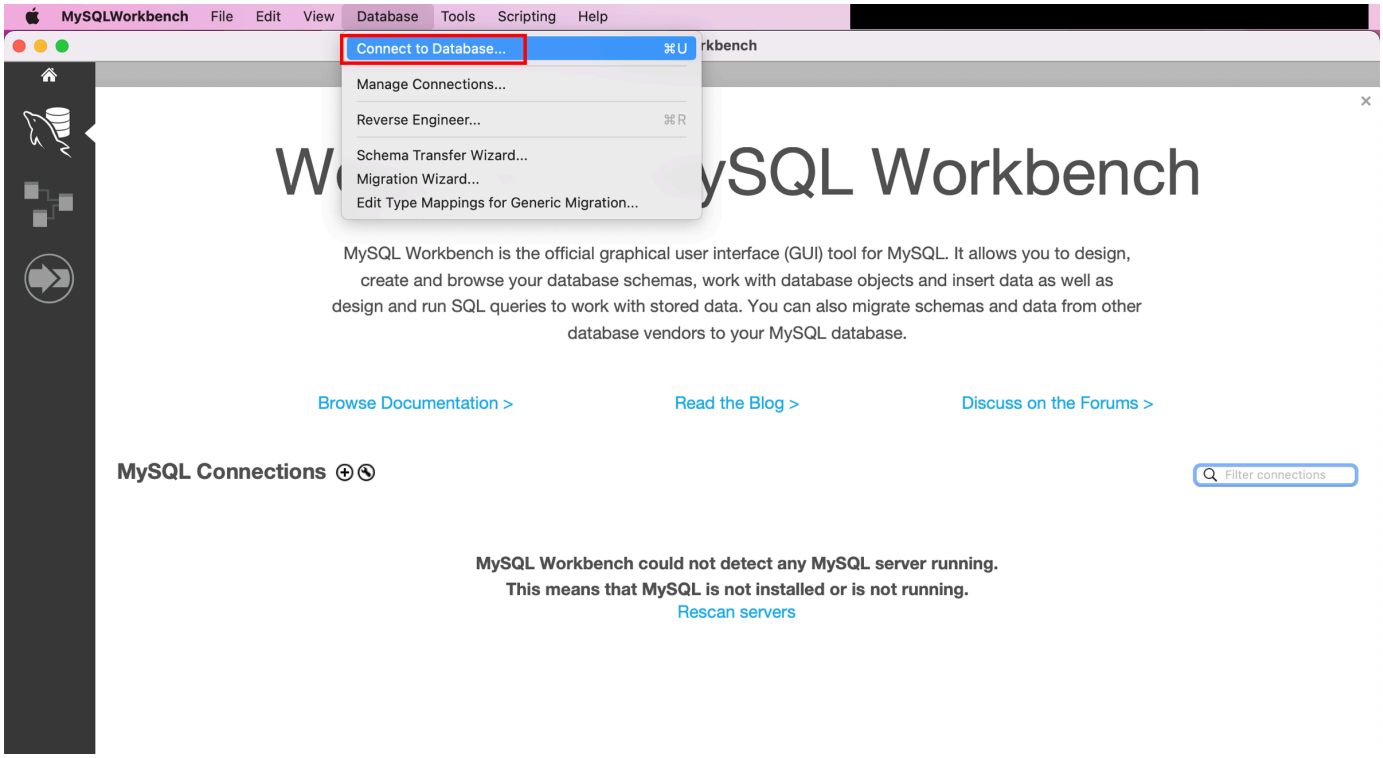


Step 3: Connect to the MySQL database

In this step, we will connect to the database you created using MySQL Workbench.

1. Launch MySQL Workbench

   Launch the MySQL Workbench application and go to **Database > Connect to Database** (Ctrl +U) from the menu bar.

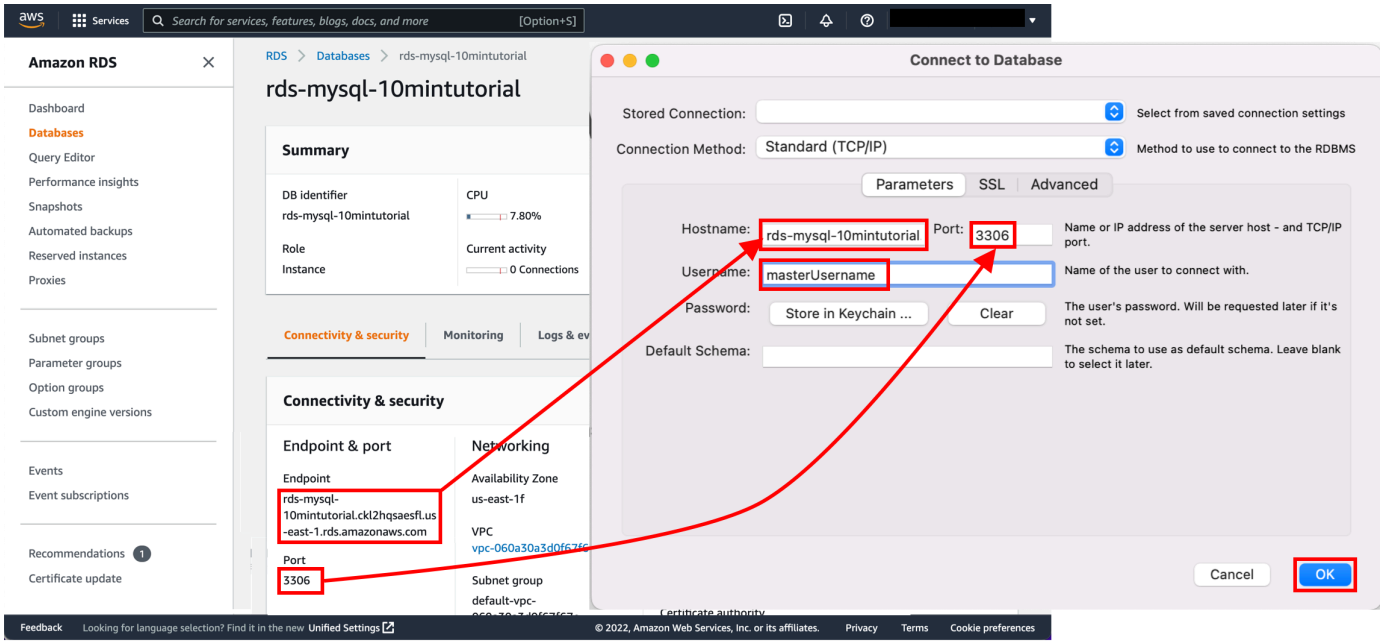


2. Specify connection options

   A dialog box appears. Enter the following:

   - **Hostname**: You can find your hostname on the Amazon RDS console as shown in the screenshot.
   - **Port**: The default value should be 3306.
   - **Username**: Type in the username you created for the Amazon RDS database. In this tutorial, it is '**masterUsername**.'
   - **Password**: Choose **Store in Vault** (or **Store in Keychain** on MacOS) and enter the password that you used when creating the Amazon RDS database.

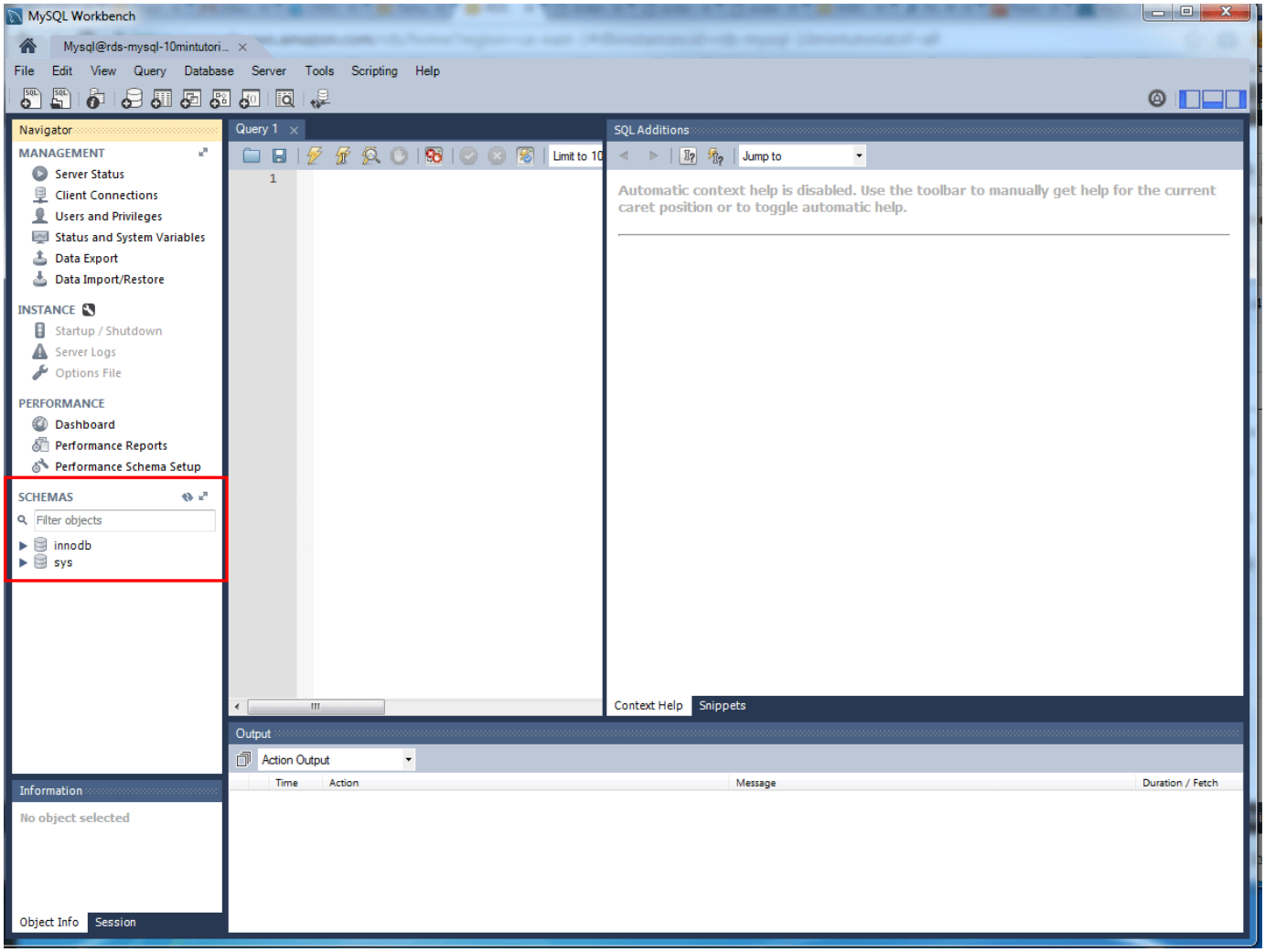
   Choose **OK.**



Amazon RDS Console MySQL Workbench

3. Verify database connection

   You are now connected to the database! On the MySQL Workbench, you will see various schema objects available in the database. Now you can create tables, insert data, and run queries.

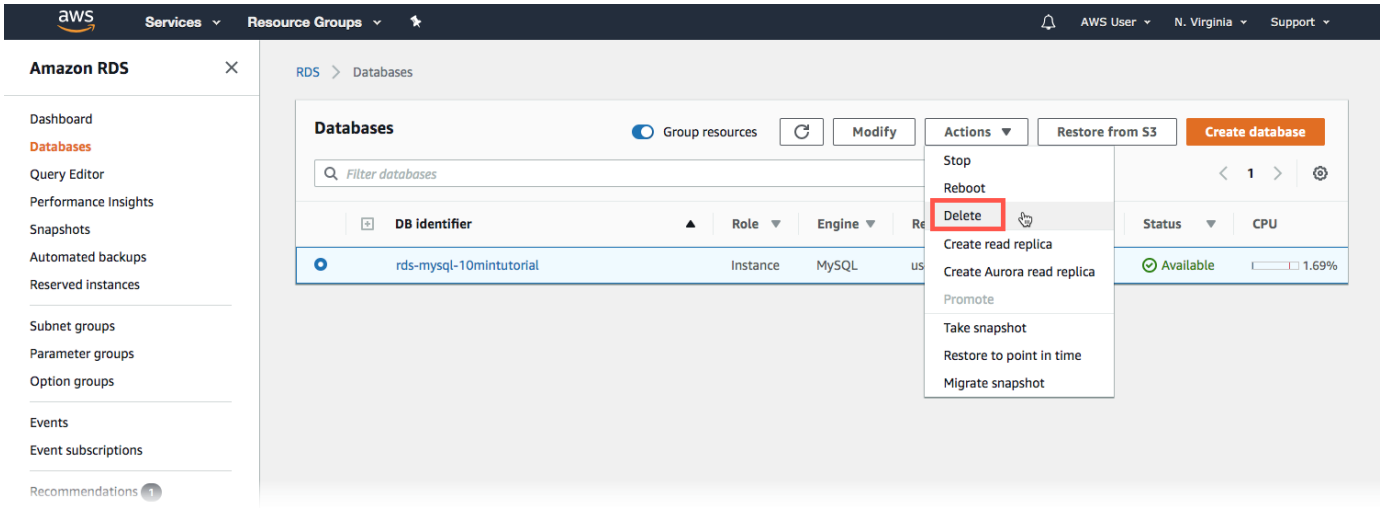


Step 4: Delete the DB instance

You can easily delete the MySQL DB instance from the Amazon RDS console. It is a best practice to delete instances that you are no longer using so that you don't keep getting charged for them.

1. Choose the DB instance

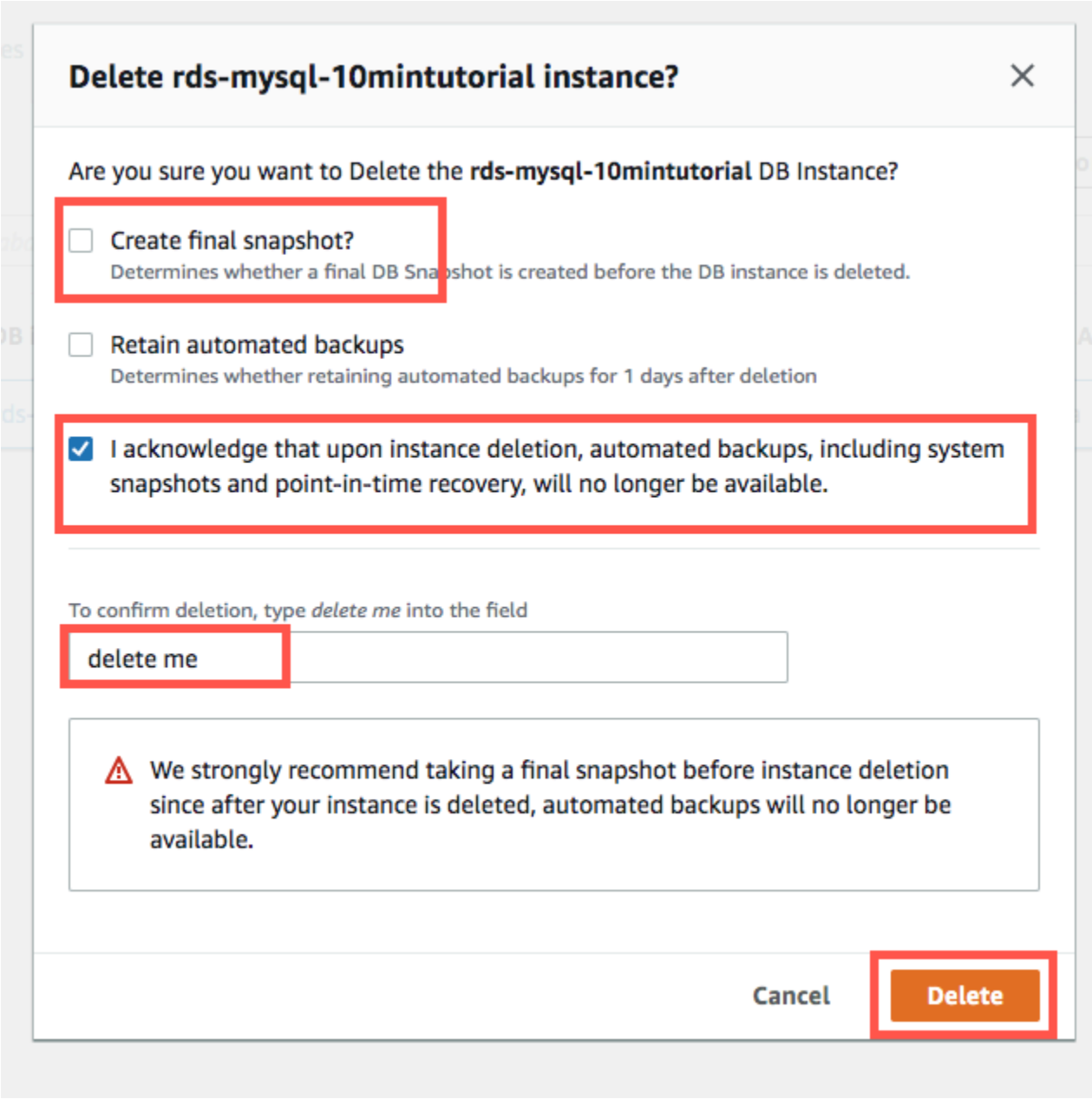
   Go back to the Amazon RDS console. Select **Databases**, choose the instance that you want to delete, and then select **Delete** from the **Actions** dropdown menu.



2. Confirm instance deletion

You are asked to create a final snapshot and to confirm the deletion. For our example, do not create a final snapshot, acknowledge that you want to delete the instance, and then choose **Delete**.

> **Note**
>
> Deleting your DB instance may take a few minutes



Congratulations!

You have created, connected to, and deleted a MySQL database instance with Amazon RDS. Amazon RDS makes it easy to set up, operate, and scale a relational database in the cloud. It provides cost-efficient and resizable capacity while managing time-consuming database administration tasks, freeing you up to focus on your applications and business.

Create a Web Server and Amazon RDS DB