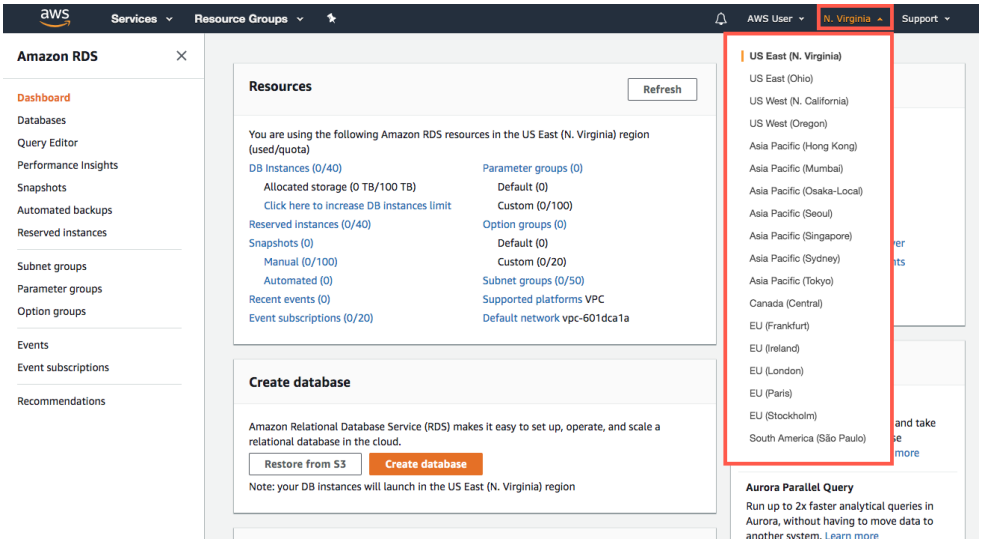
IT3061 – Massive Data Processing and Cloud Computing
Year 3, Semester 2
Practical Sheet 4

Database Services – Amazon Relational Database Service (RDS)

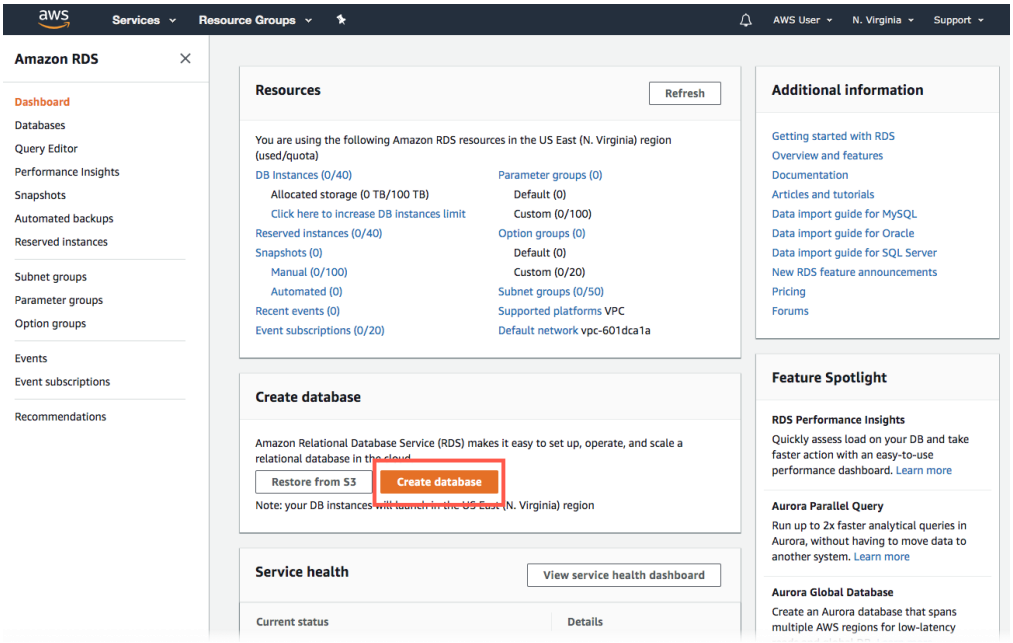
Create a MySQL DB instance

In this practical, 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. As a reminder, all of this is free tier eligible.

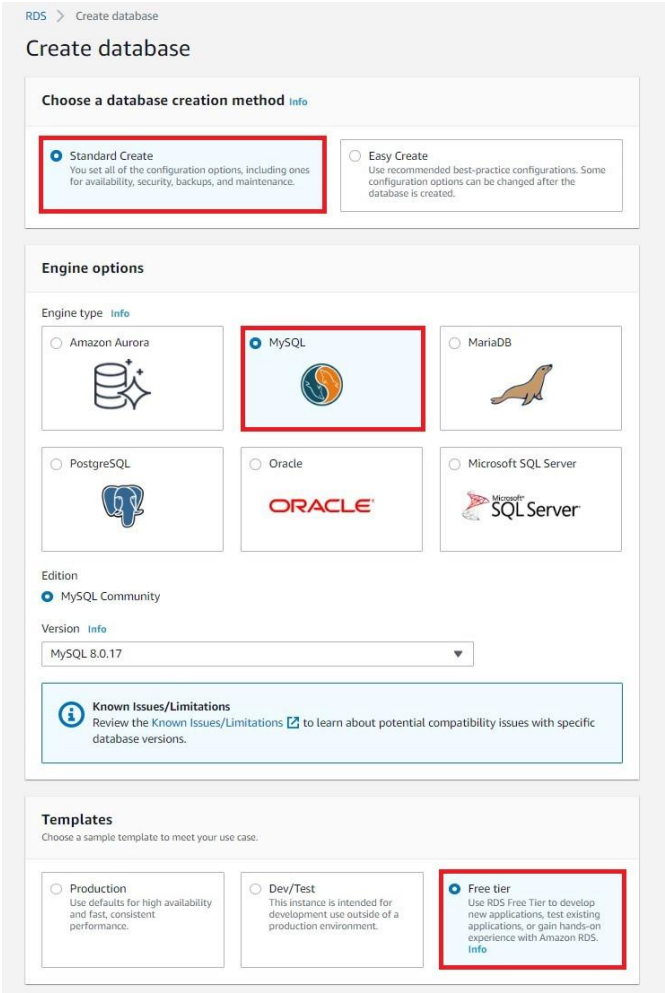
1. Open AWS Management Console and select ***Amazon RDS*** service.
2. In the top right corner of the Amazon RDS console, select the ***Region*** in which you want to create the DB instance.



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



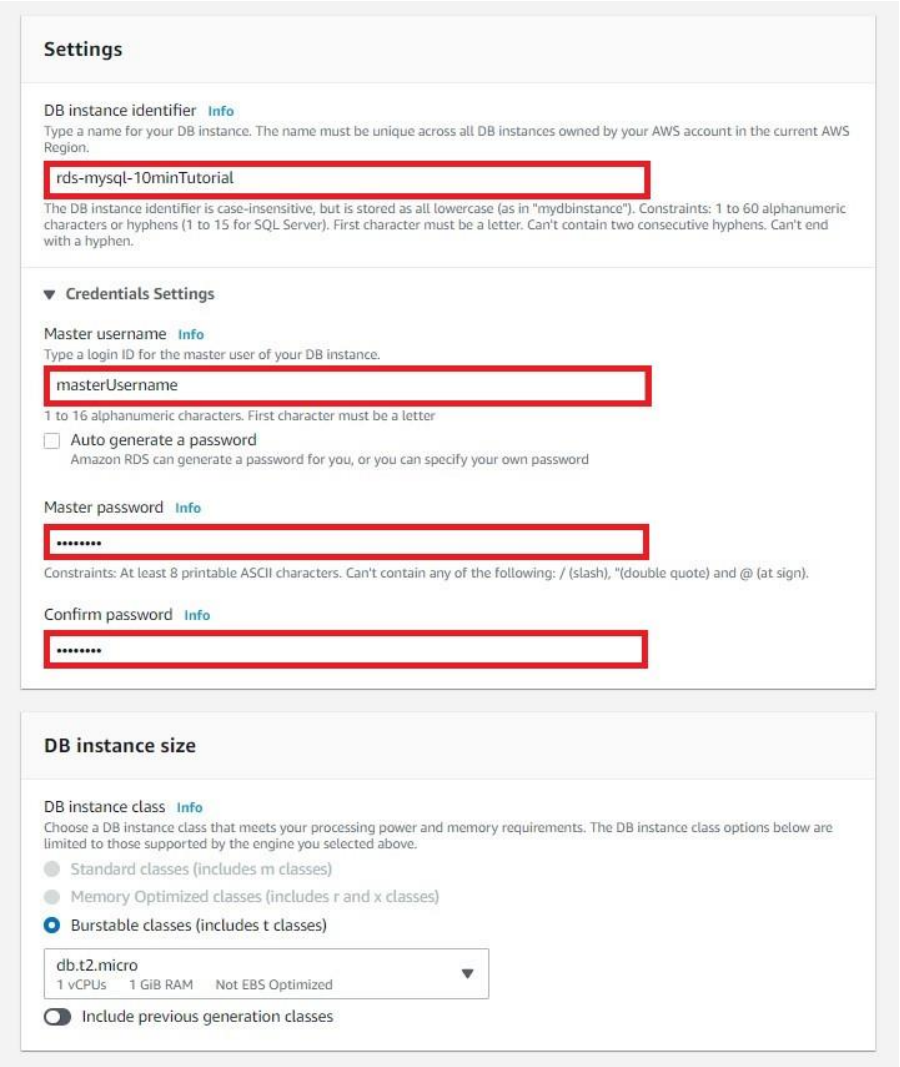
4. You now have options to select your engine. For this practical, click the ***MySQL*** *icon*, leave the default value of edition and engine version, and select the ***Free Tier*** template.



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

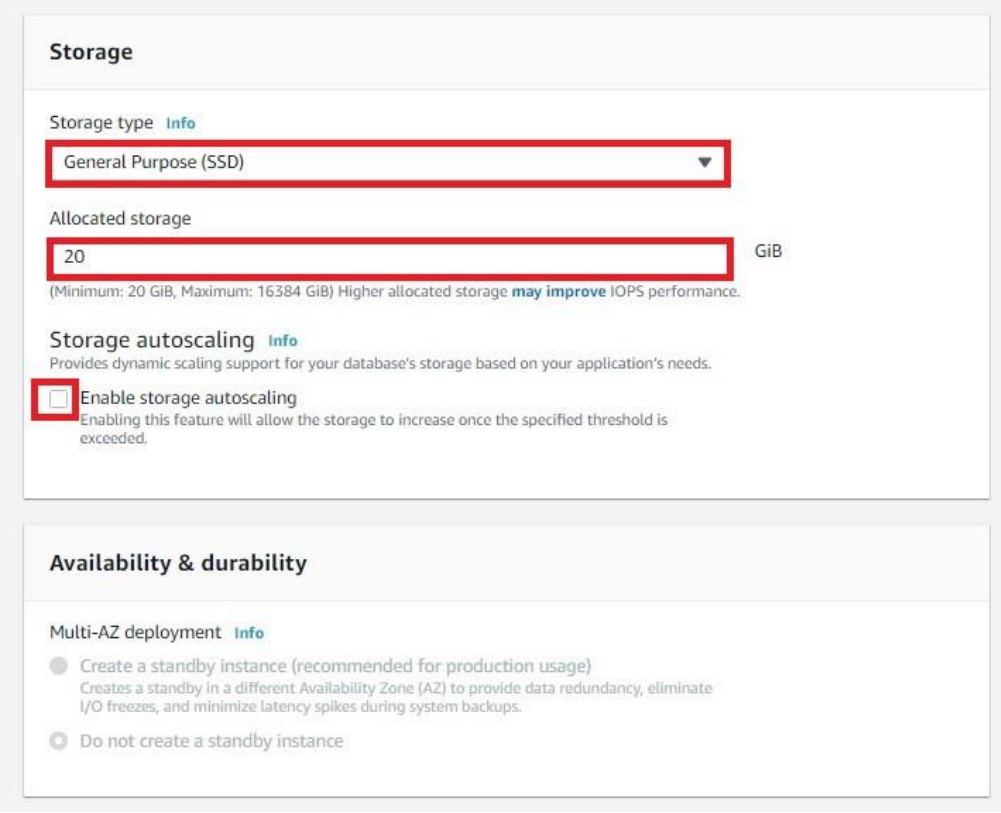
Settings:

- √ ***DB instance identifier:***
  Type a name for the DB instance that is unique for your account in the Region that you selected. For this practical, we will name it rds-mysql-test.
- √ ***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



Instance specifications:

- √ ***DB instance class:***
  Select *db.t2.micro --- 1vCPU, 1 GIB RAM*. This equates to 1 GB memory and 1 vCPU.
- √ ***Storage type:***
  Select *General Purpose (SSD)*.
- √ ***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 RDS to automatically scale up your storage when needed. This option does not apply to this practical.
- √ ***Multi-AZ deployment:***
  Note that 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.



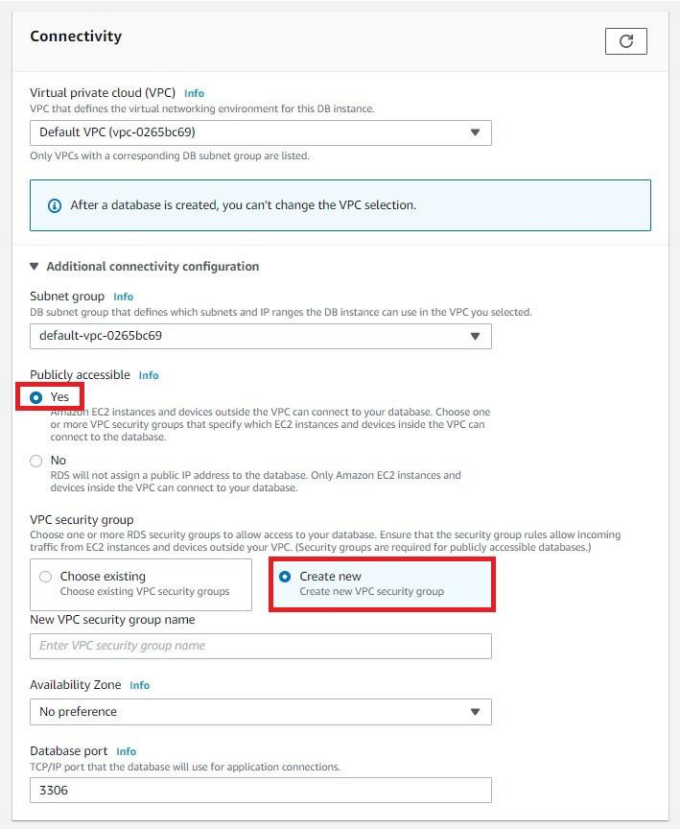
6. You are now on the Connectivity section where you can provide information that RDS needs to launch your MySQL DB instance. The list below shows settings for our example DB instance.

Connectivity

- ***Virtual Private Cloud (VPC):***
  Select ***Default*** *VPC*.

Additional connectivity configurations

- ***Subnet group:***
  Choose the ***default*** subnet group.
- ***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.
- ***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***.
- ***Port:***
  Leave the default value of 3306.



In the Additional configurations section:

Database options

- ***Database name:***
  Type a database name that is 1 to 64 alpha-numeric 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.
- ***Option group:***
  Leave the default value. Amazon RDS uses option groups to enable and configure additional features.

Encryption

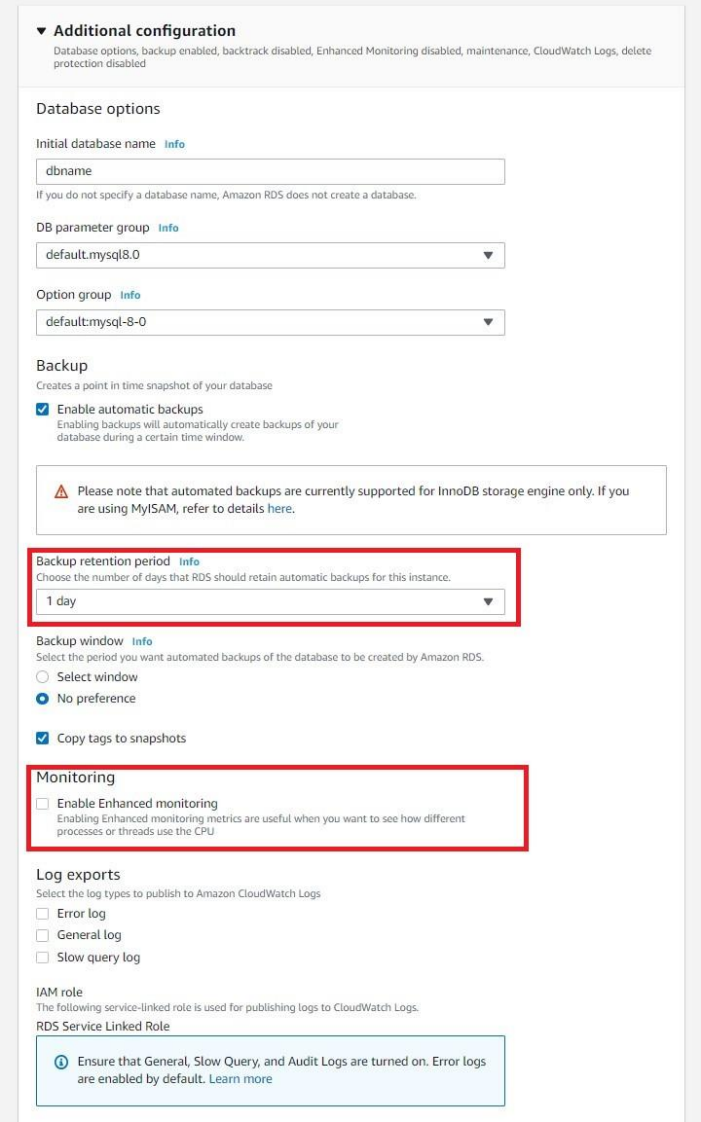
This option is not available in the Free Tier.

Backup

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

Monitoring

- Enhanced Monitoring:
  Select ***Disable enhanced monitoring*** 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.



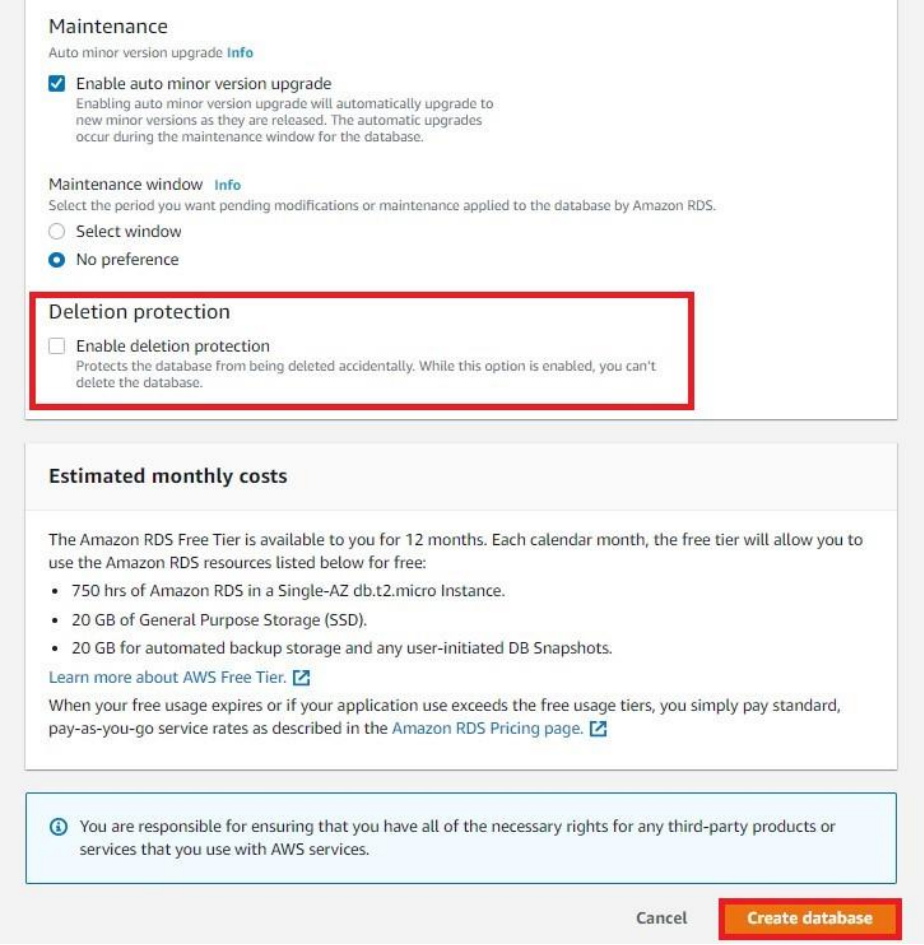
Maintenance

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

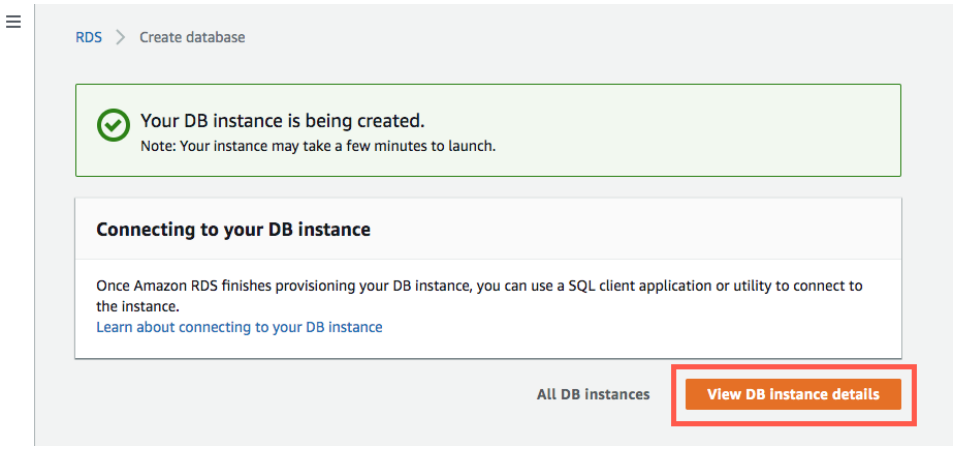
Deletion protection

Clear ***Enable deletion*** protection for this practical. When this option is enabled, you're prevented from accidentally deleting the database.

Click ***Create Database***.



7. Your DB Instance is now being created. Click ***View Your DB Instances.***

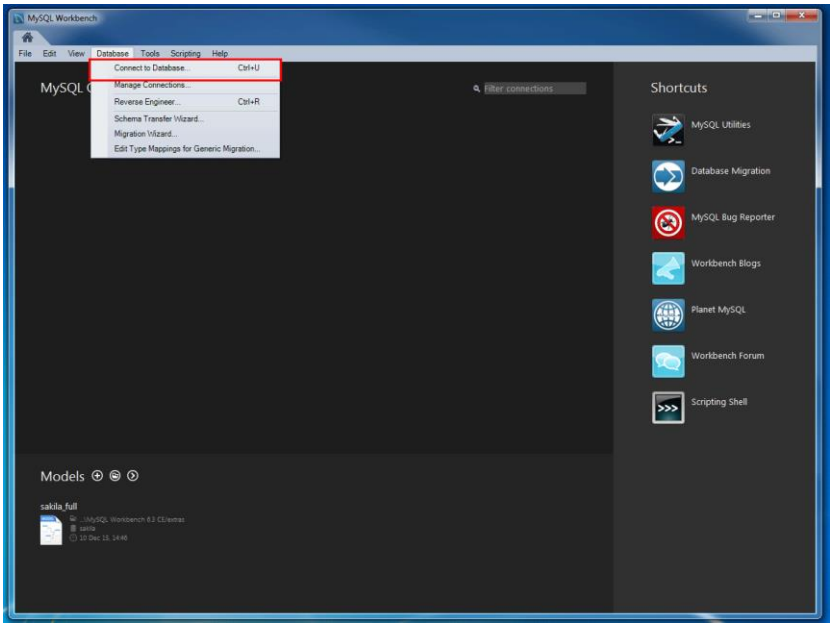


The new DB instance appears in the list of DB instances on the RDS console. The DB instance will have a status of creating until the DB instance is created and ready for use. When the state changes to available, you can connect to a database on the DB instance.

Connect to the MySQL Database using a SQL Client

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

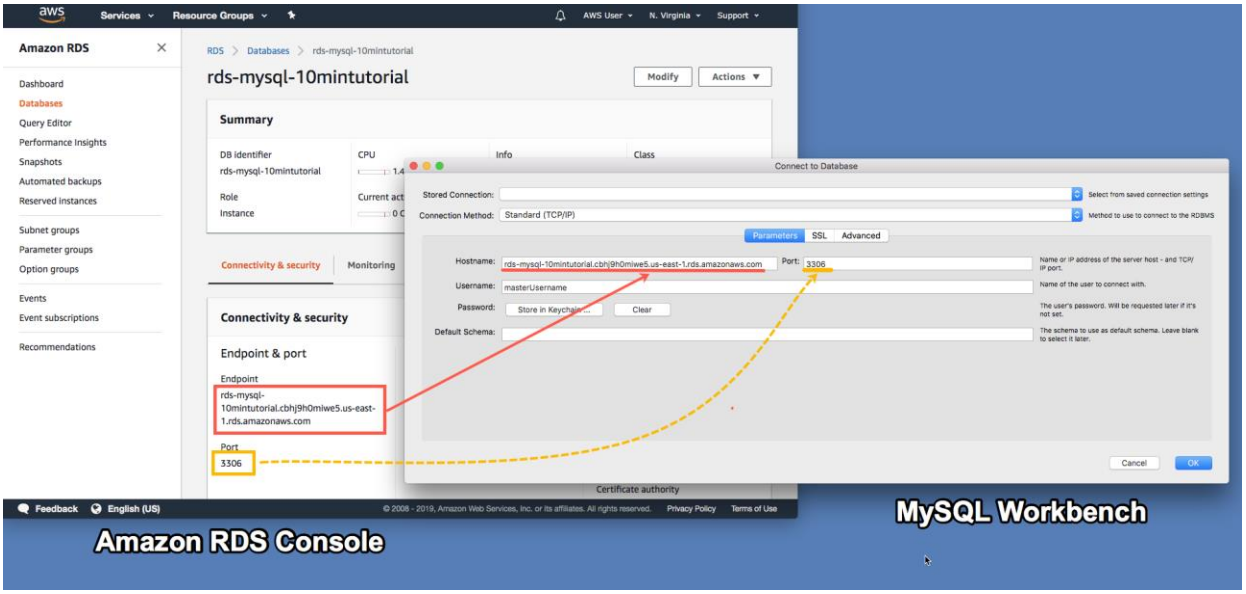
2. Launch the MySQL Workbench application and go to Database > Connect to Database (Ctrl+U) from the menu bar.



3. A dialog box appears. Enter the following:

- ***Hostname:***
  You can find your hostname on the Amazon RDS console.
- ***Port:***
  The default value should be 3306.
- ***Username:***
  Type in the username you created for the Amazon RDS database.
- ***Password:***
  Click *Store in Vault* (or *Store in Keychain* on macOS) and enter the password that you used when creating the Amazon RDS database.

Click OK.



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