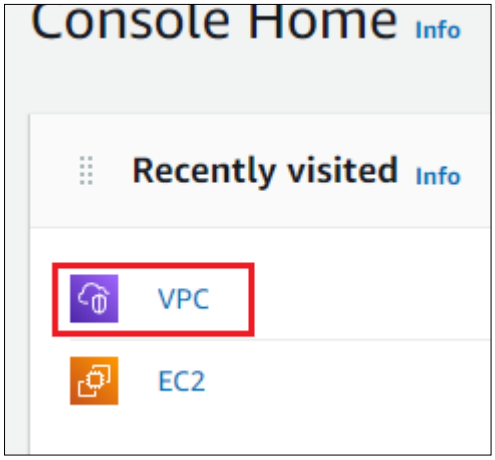
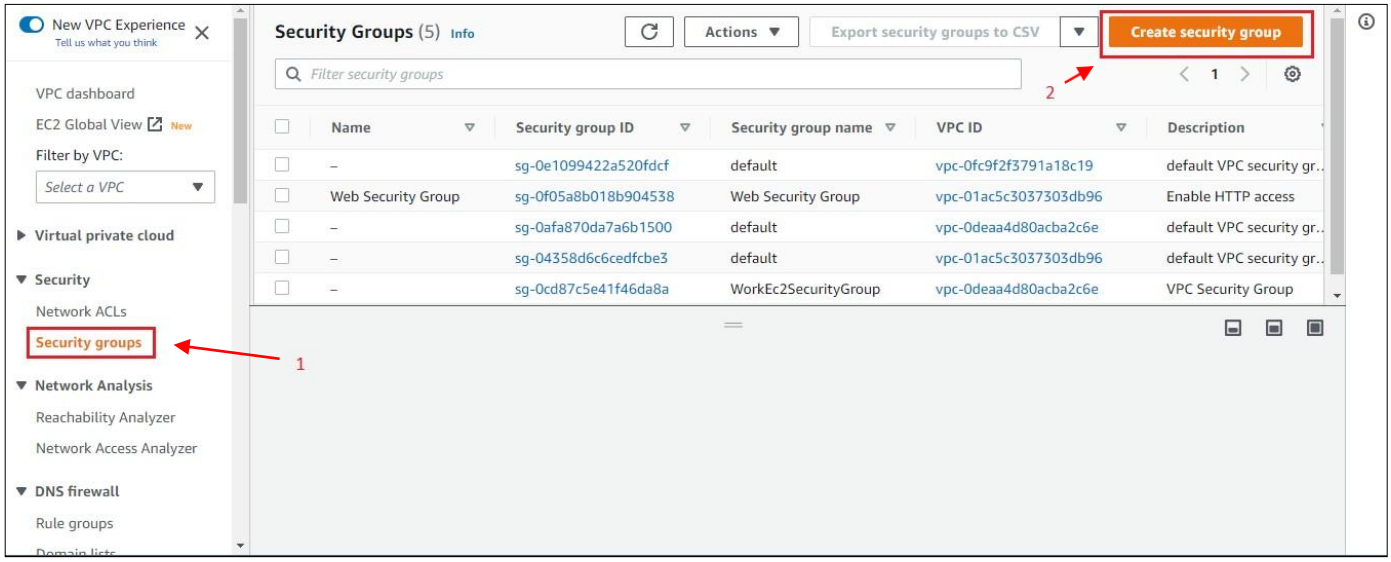
Practical 5:- Build Your DB Server and Interact With Your DB Using an App.

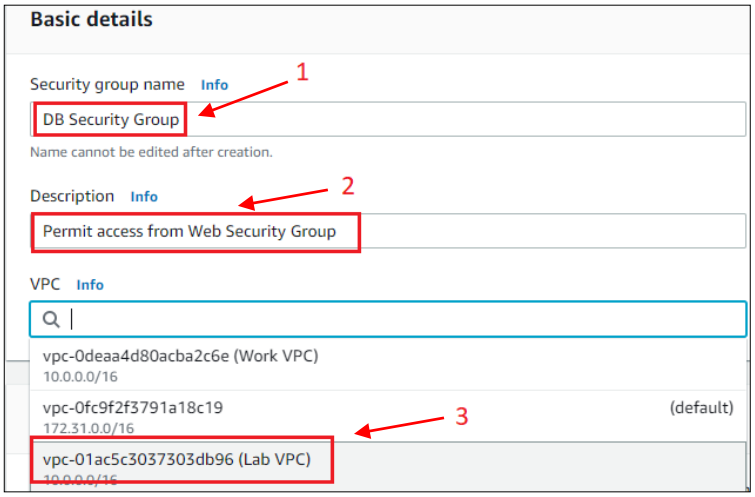
Task 1: Create a Security Group for the RDS DB Instance



1. In the **AWS Management Console**, on the Services menu, choose **VPC**.
2. In the left navigation pane, choose **Security Groups**.

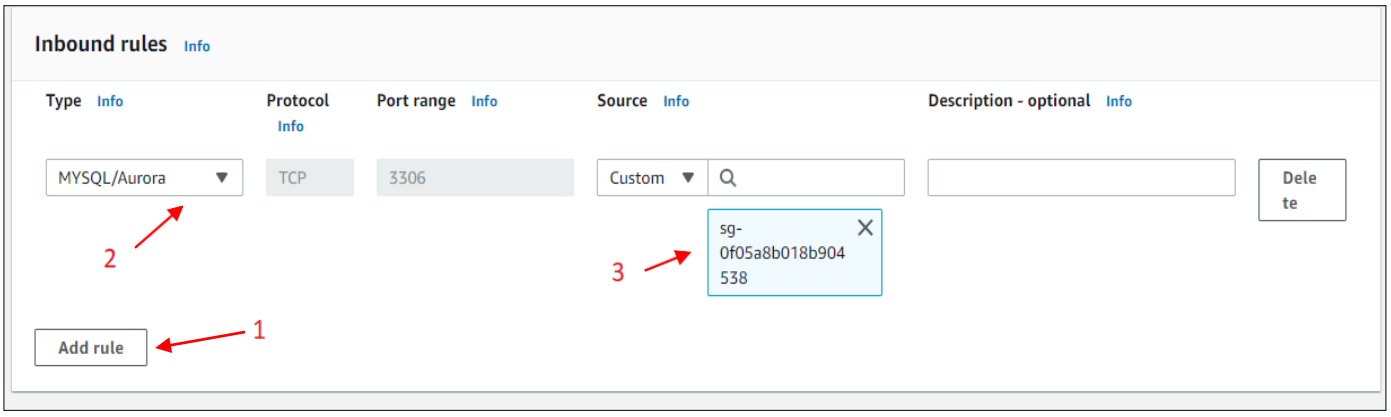


3. Choose Create security group and then configure:
   - **Security group name:** DB Security Group
   - **Description:** Permit access from Web Security Group
   - **VPC:** *Lab VPC*



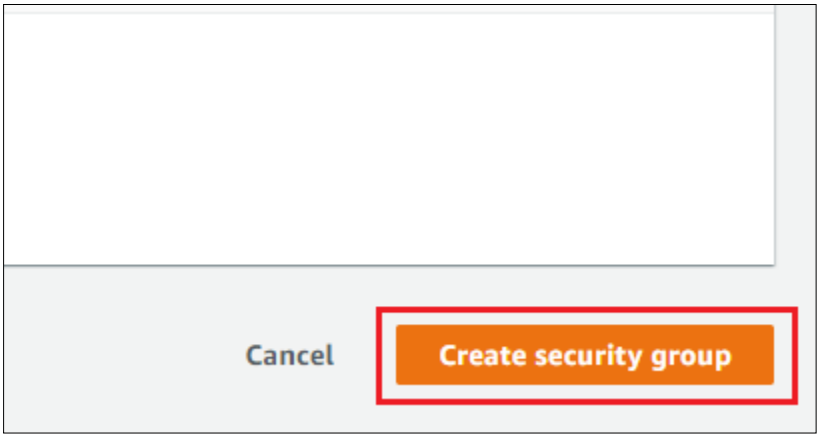
4. In the **Inbound rules** pane, choose Add rule
5. Configure the following settings:
   - **Type:** *MySQL/Aurora (3306)*
   - **CIDR, IP, Security Group or Prefix List:** Type sg and then select *Web Security Group*.

   This configures the Database security group to permit inbound traffic on port 3306 from any EC2 instance that is associated with the *Web Security Group*.



6. Choose Create security group

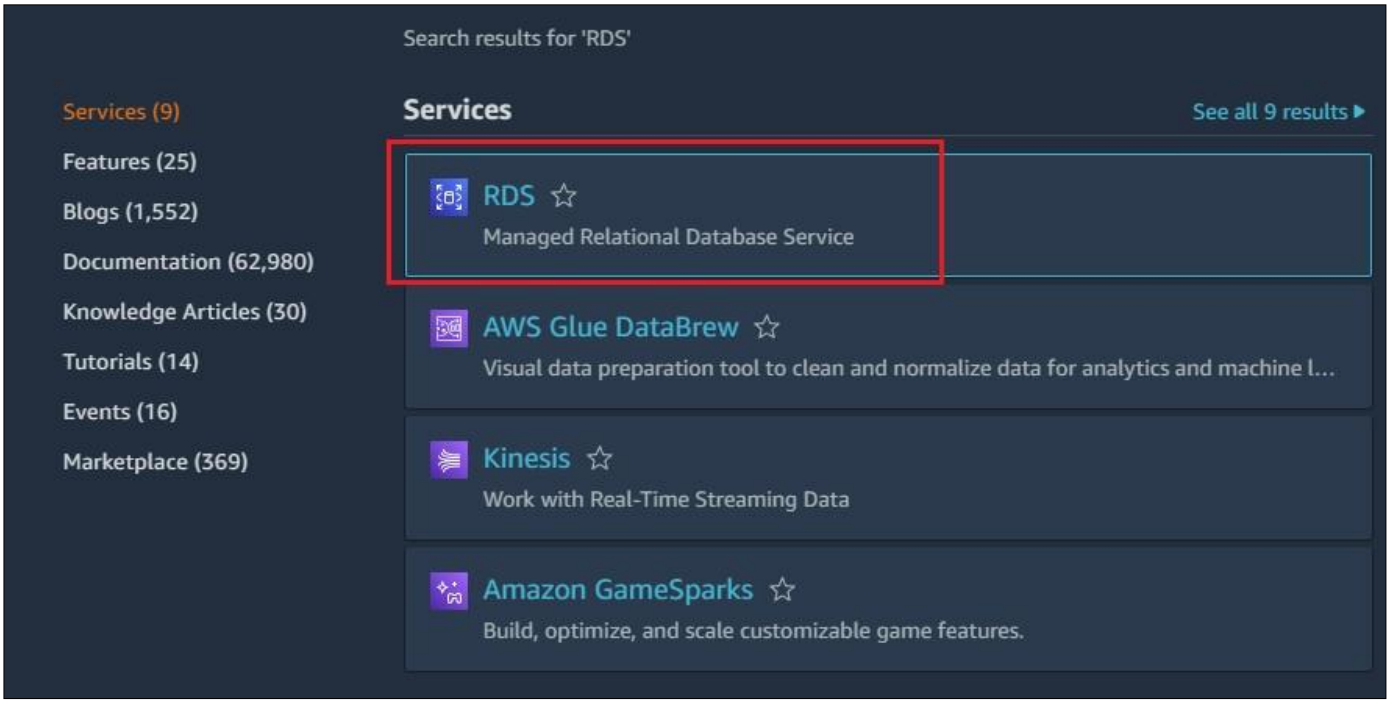
   You will use this security group when launching the Amazon RDS database.



Task 2: Create a DB Subnet Group

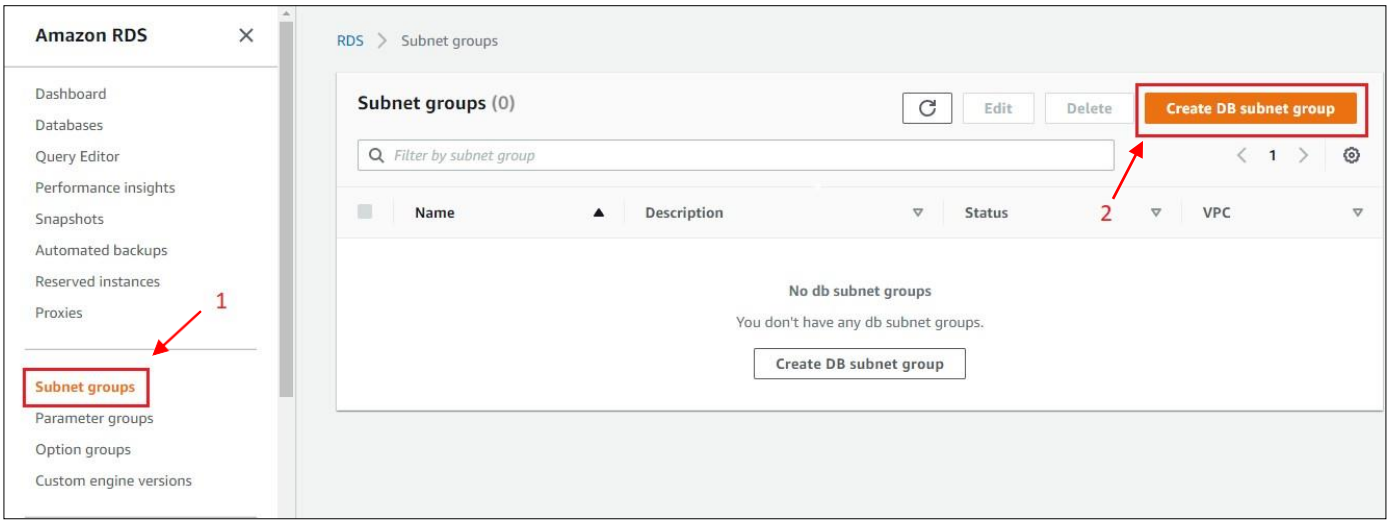
In this task, you will create a *DB subnet group* that is used to tell RDS which subnets can be used for the database. Each DB subnet group requires subnets in at least two Availability Zones.

7. On the Services menu, choose **RDS**.

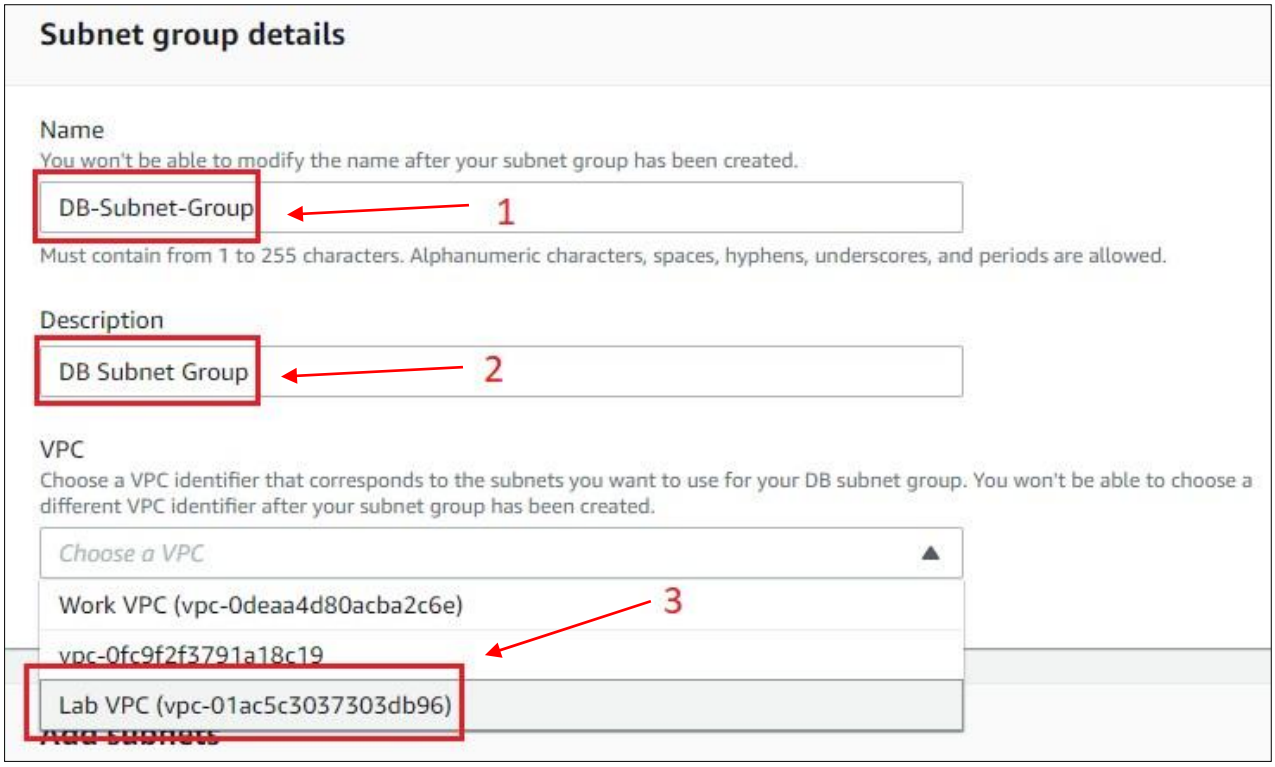


8. In the left navigation pane, choose **Subnet groups**.

   If the navigation pane is not visible, choose the menu icon in the top-left corner.



9. Choose Create DB Subnet Group then configure:
    - **Name:** DB-Subnet-Group
    - **Description:** DB Subnet Group
    - **VPC:** *Lab VPC*

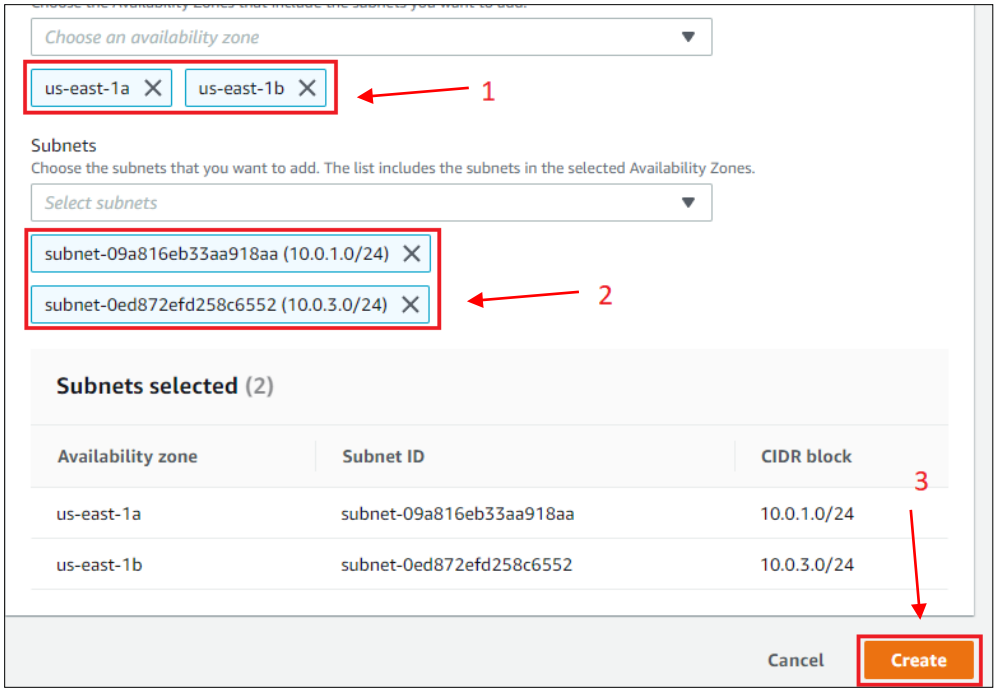


10. Scroll down to the **Add Subnets** section.
11. Expand the list of values under **Availability Zones** and select the first two zones: **us-east-1a** and **us-east-1b**.

12. Expand the list of values under **Subnets** and select the subnets associated with the CIDR ranges **10.0.1.0/24** and **10.0.3.0/24**.

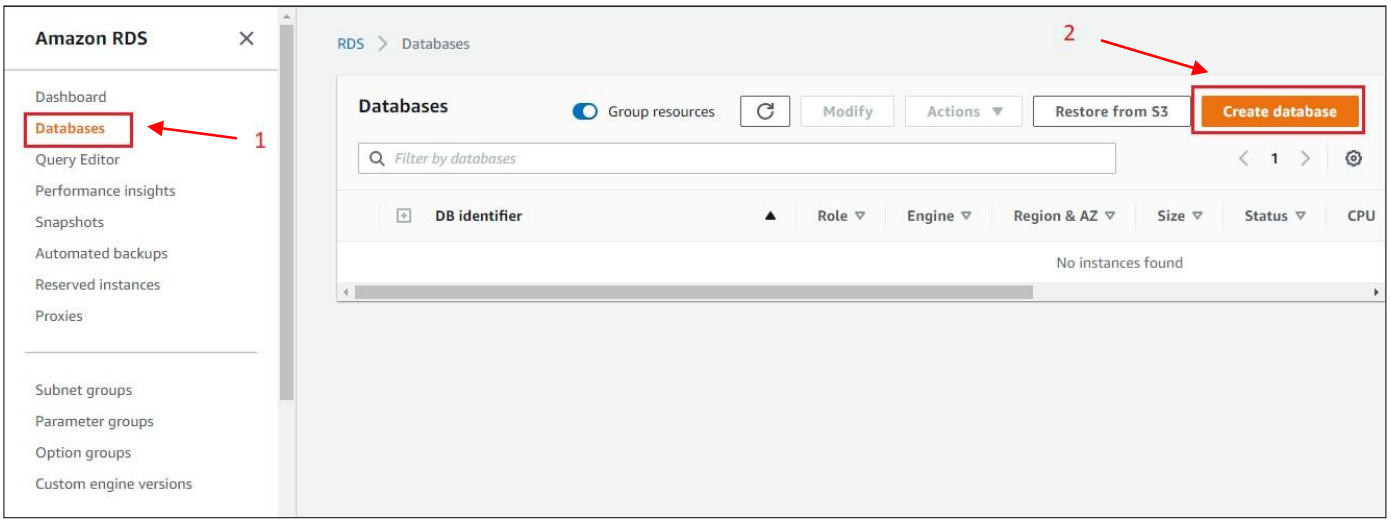
    These subnets should now be shown in the **Subnets selected** table.

13. Choose Create

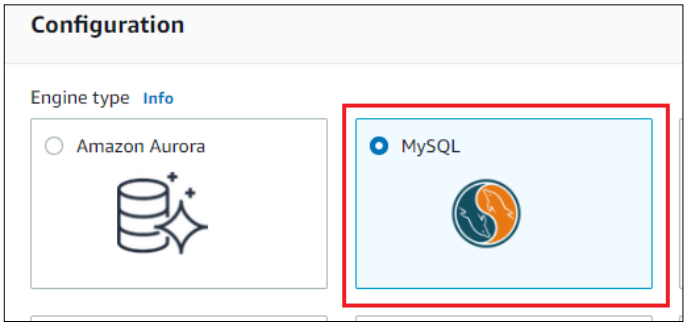


Task 3: Create an Amazon RDS DB Instance

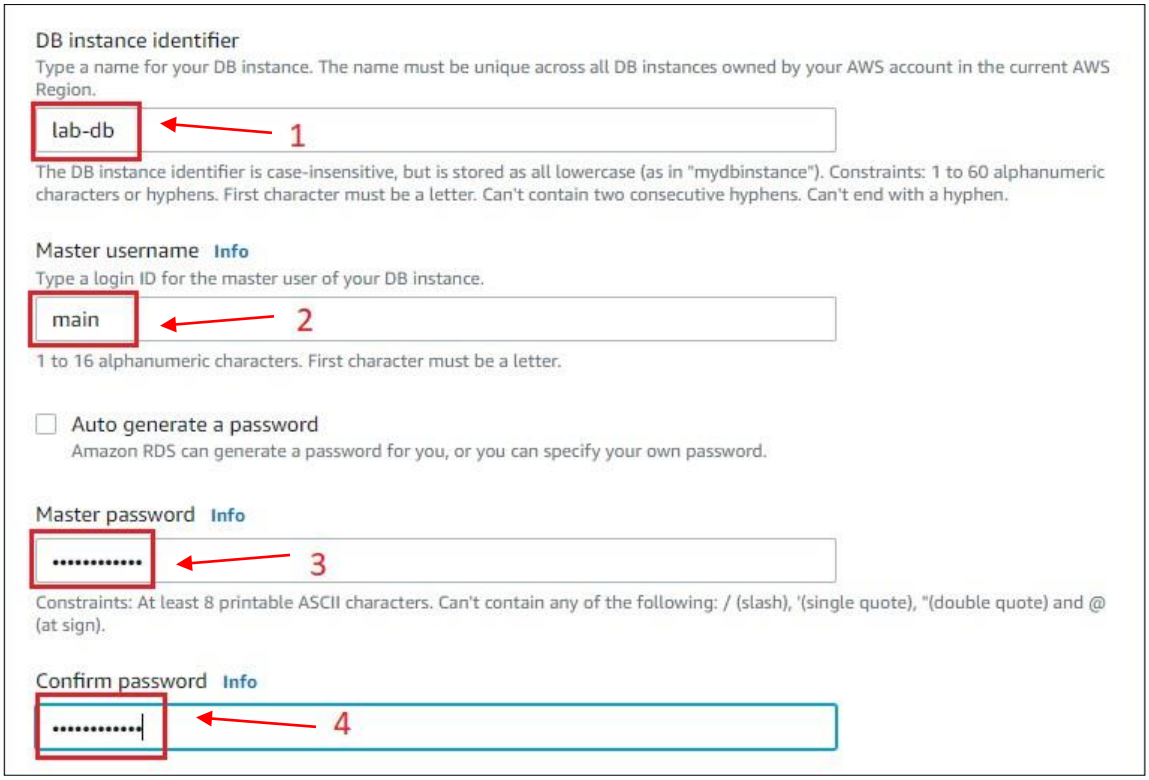
14. In the left navigation pane, choose **Databases**.
15. Choose Create database



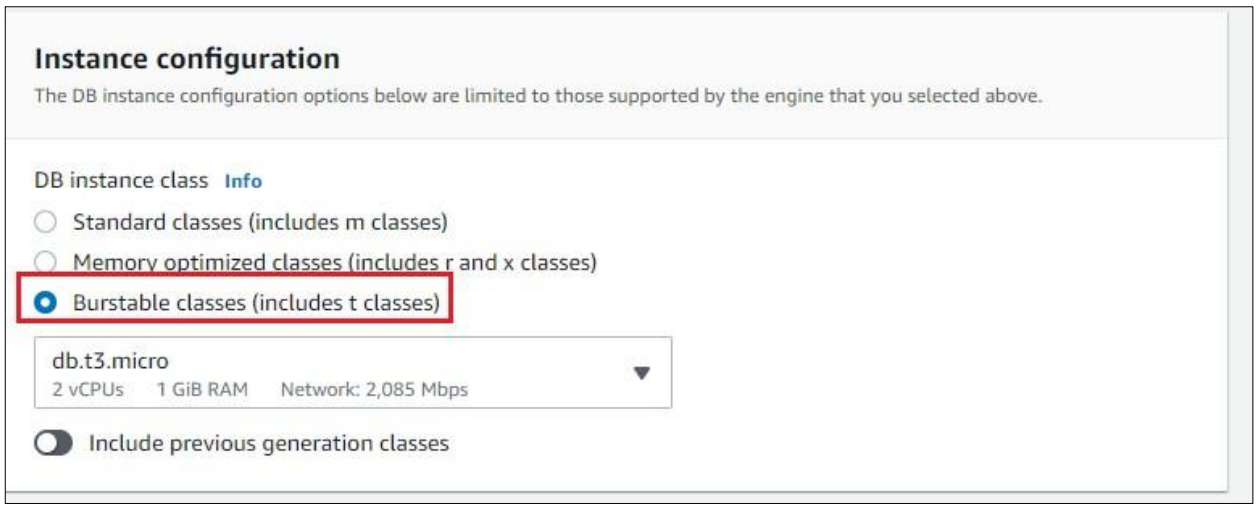
16. Select **MySQL**.



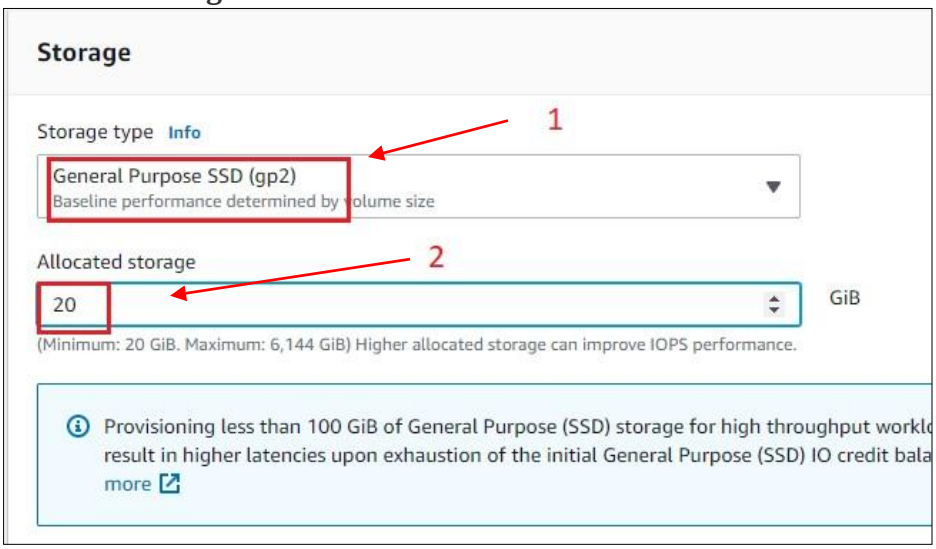
17. Under **Settings**, configure:
    - **DB instance identifier:** lab-db
    - **Master username:** main
    - **Master password:** lab-password
    - **Confirm password:** lab-password



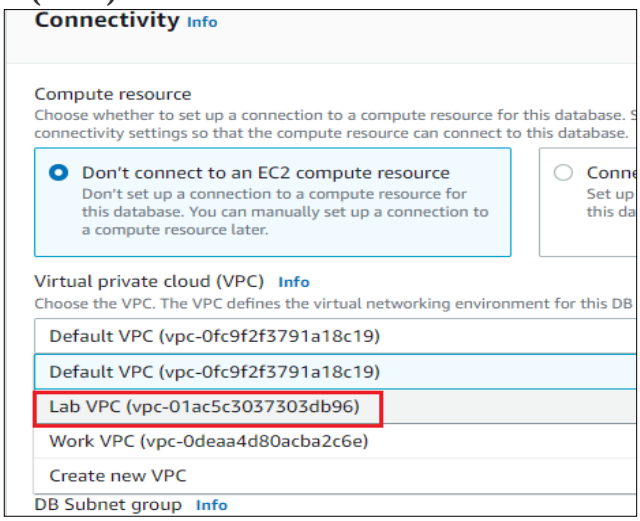
18. Under **DB instance class**, configure:
    - Select **Burstable classes (includes t classes)**.
    - Select *db.t3.micro*



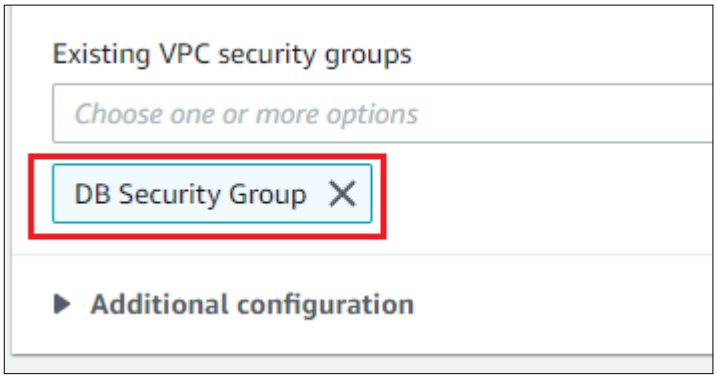
19. Under **Storage**, configure:
    - **Storage type:** *General Purpose (SSD)*
    - **Allocated storage:** *20*



20. Under **Connectivity**, configure:
    - **Virtual Private Cloud (VPC):** *Lab VPC*

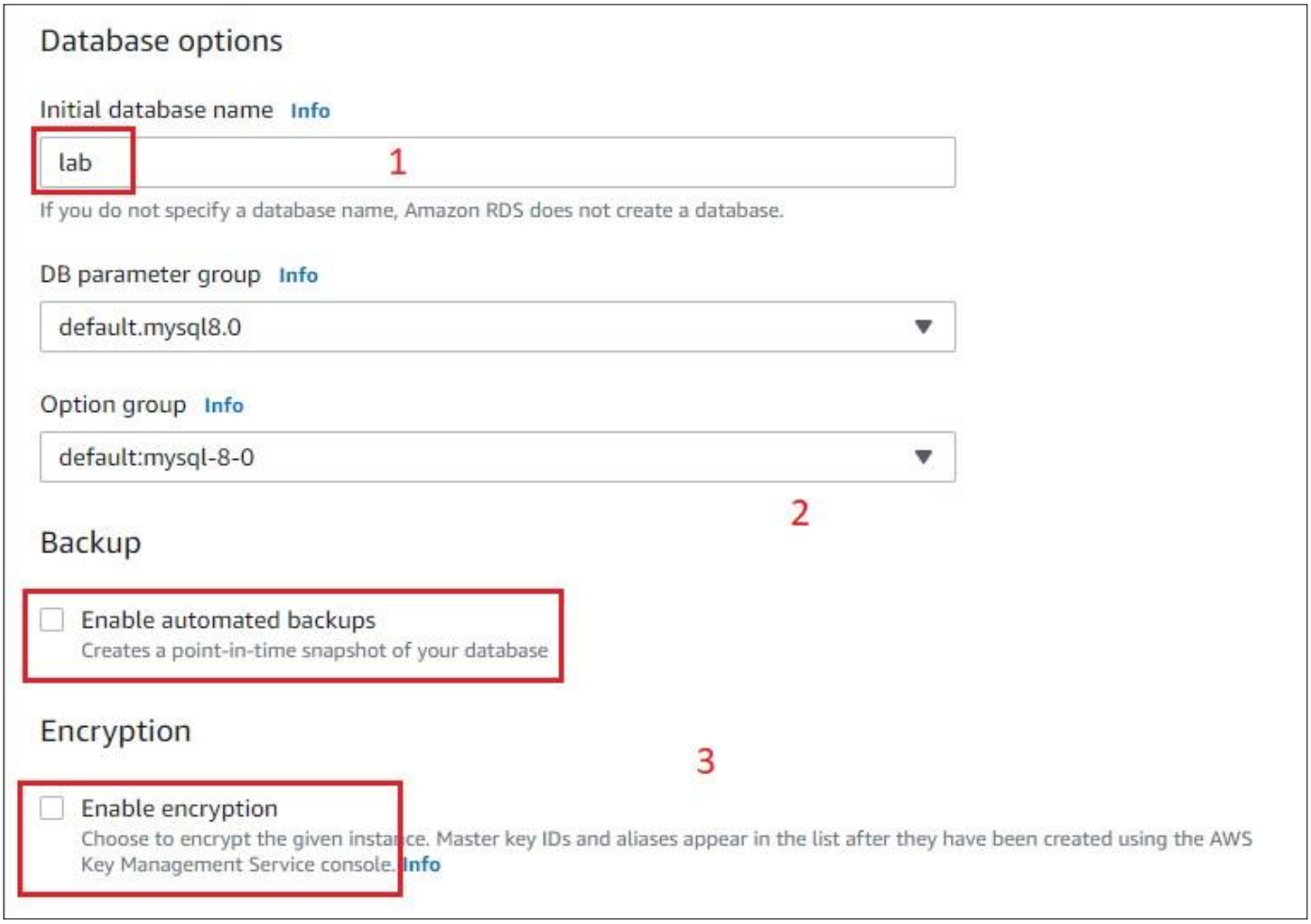


21. Under **Existing VPC security groups**, from the dropdown list:
    - Choose *DB Security Group*.
    - Deselect *default*.

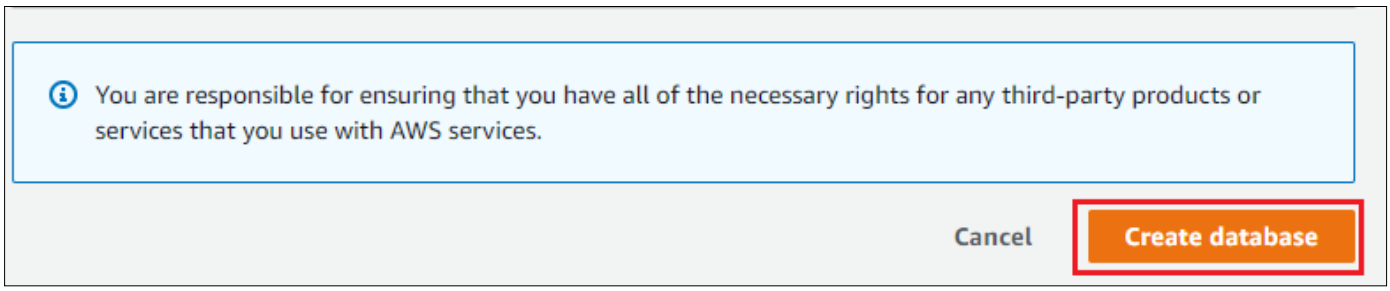


22. Expand **Additional configuration**, then configure:
    - **Initial database name:** lab
    - Uncheck **Enable automatic backups**.
    - Uncheck **Enable encryption**
    - Uncheck **Enable Enhanced monitoring**.

    This will turn off backups, which is not normally recommended, but will make the database deploy faster for this lab.



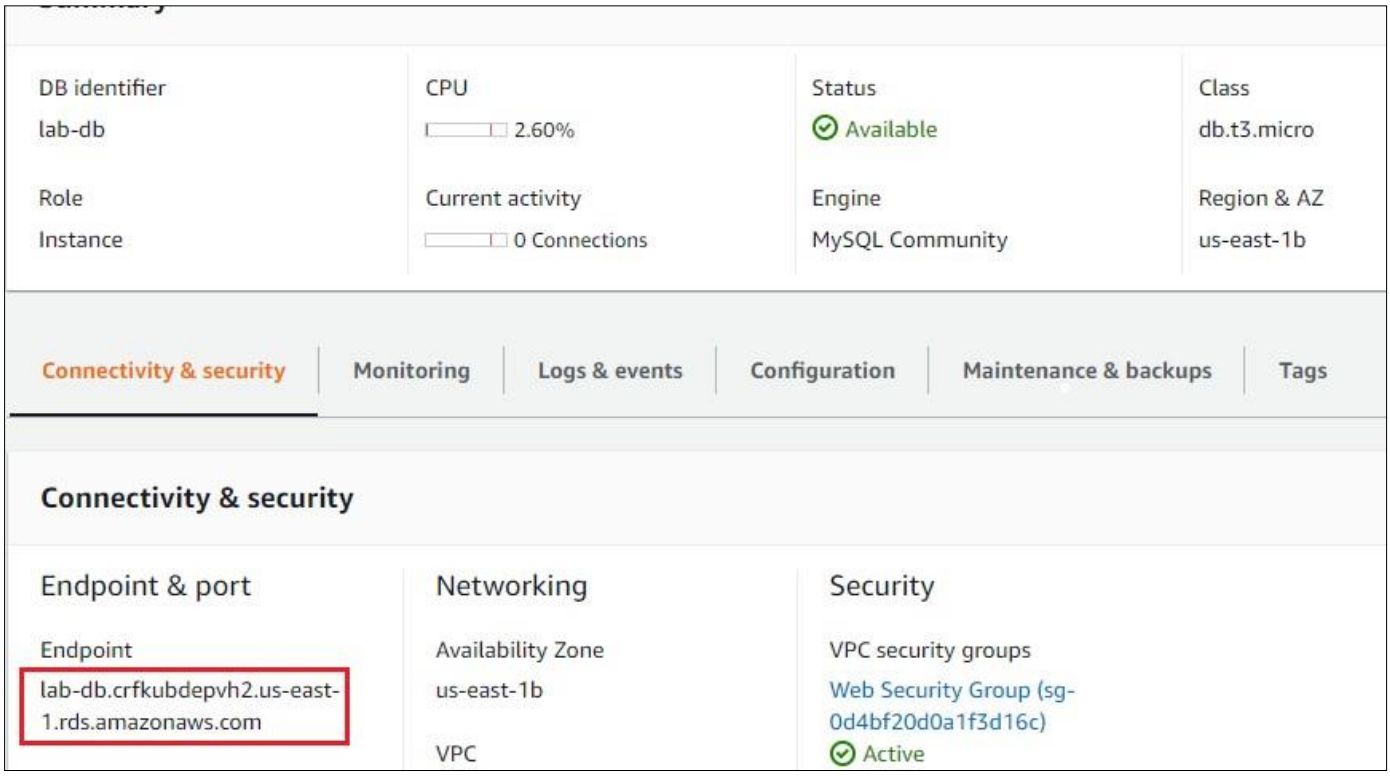
23. Choose Create database



24. Choose **lab-db** (choose the link itself).
25. Wait until **Info** changes to **Modifying** or **Available**.
26. Scroll down to the **Connectivity & security** section and copy the **Endpoint** field.

    It will look similar to: *lab-db.cggq8lhnxvnv.us-west-2.rds.amazonaws.com*

27. Paste the Endpoint value into a text editor. You will use it later in the lab.



Task 4: Interact with Your Database

In this task, you will open a web application running on your web server and configure it to use the database.

28. To copy the **WebServer** IP address, choose on the Details drop down menu above these instructions, and then choose Show.
29. Open a new web browser tab, paste the *WebServer* IP address and press Enter.

    The web application will be displayed, showing information about the EC2 instance.

30. Choose the **RDS** link at the top of the page.

    You will now configure the application to connect to your database.

31. Configure the following settings:
    - **Endpoint:** Paste the Endpoint you copied to a text editor earlier
    - **Database:** lab

- **Username:** main
- **Password:** lab-password
- Choose **Submit**

A message will appear explaining that the application is running a command to copy information to the database. After a few seconds the application will display an **Address Book**.

The Address Book application is using the RDS database to store information.

32. Test the web application by adding, editing and removing contacts.

    The data is being persisted to the database and is automatically replicating to the second Availability Zone.