

## Worksheet 9

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**Branch:** CSE

**Semester:** 5<sup>th</sup>

**Subject Name:** ADBMS

**UID:** 23BCS14046

**Section/Group:** KRG 3-B

**Date of Performance:** 31/10/2025

**Subject Code:** 23CSP-333

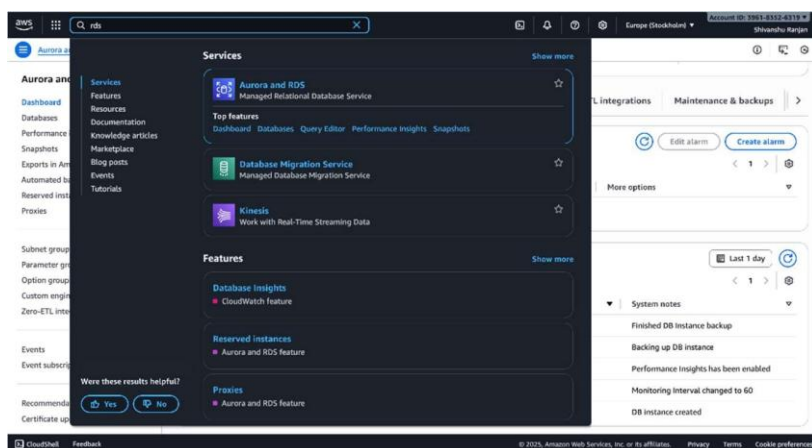
**1. Aim:** To understand and implement the setup of Amazon Relational Database Service (AWS RDS) by creating a database instance, configuring security groups, and establishing a secure connection between the local pgAdmin tool and the RDS instance hosted on the AWS Cloud.

### 2. Objective:

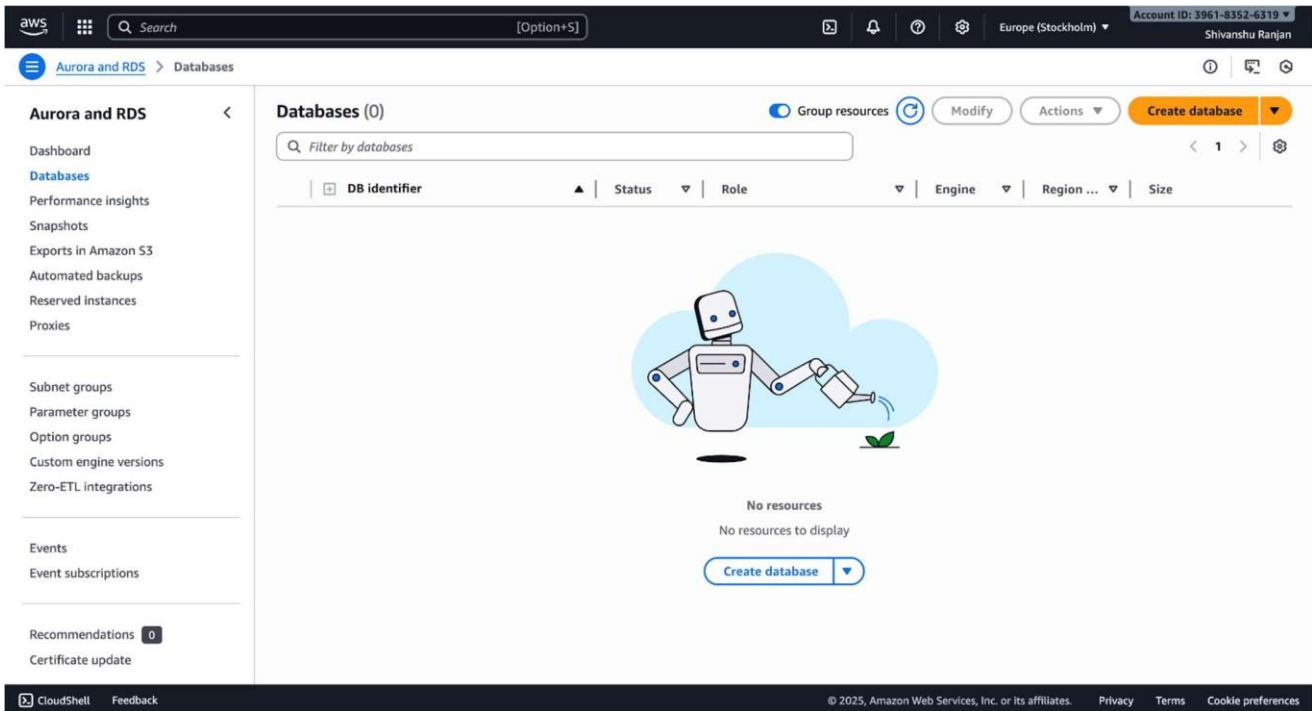
- To learn the basic concepts and features of Amazon Relational Database Service (AWS RDS).
- To create and configure a new RDS database instance on the AWS Management Console.
- To understand the role and configuration of security groups for controlling database access.
- To connect a local pgAdmin client to the AWS RDS instance securely using proper credentials and endpoint details.
- To verify successful database connectivity and perform basic operations through pgAdmin.

### 3. Code & Output:

#### 1. Sign-in

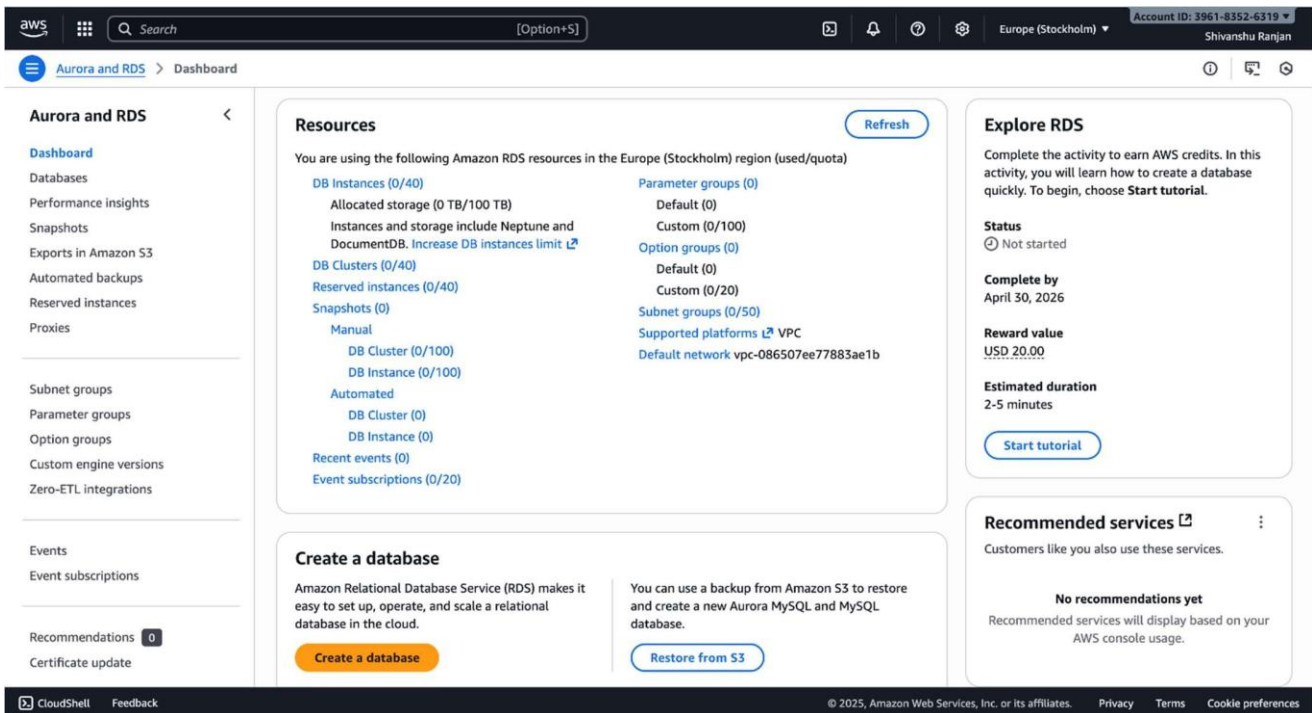


## 2. Navigating to RDS Service



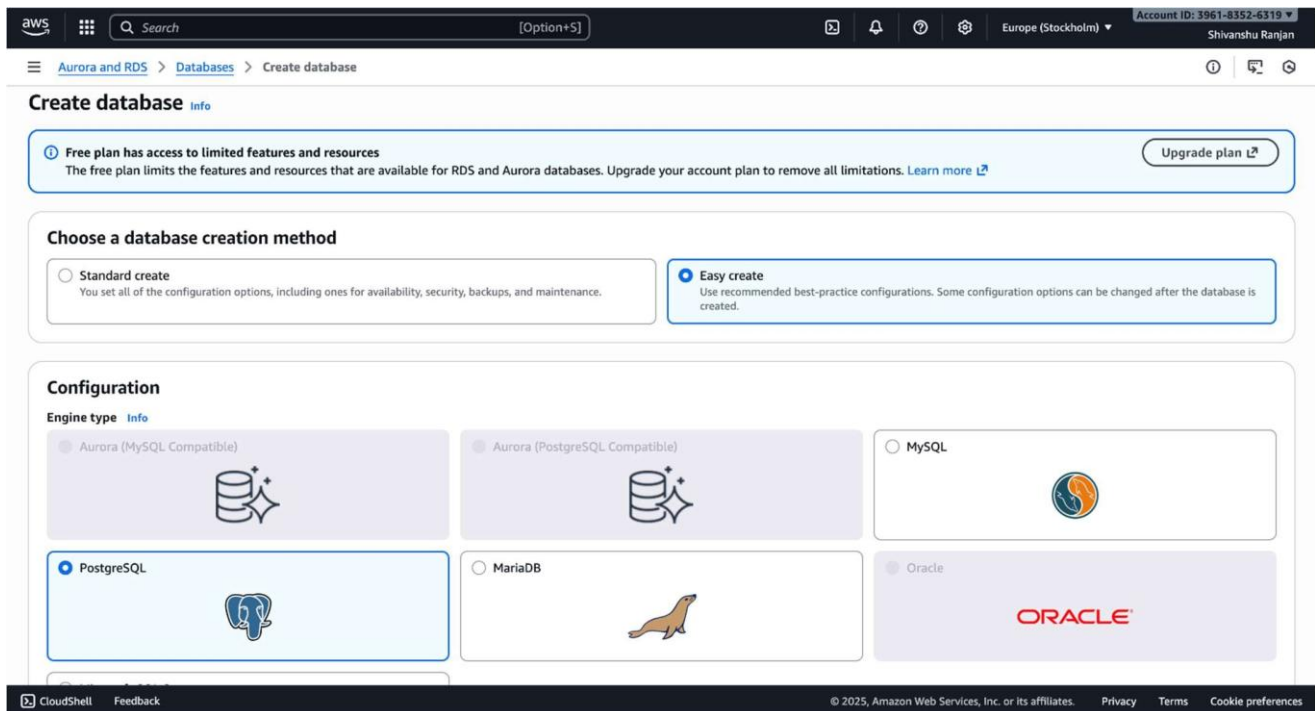
The screenshot shows the AWS Aurora and RDS Databases console. The left sidebar contains navigation links for various database-related services. The main content area displays 'Databases (0)' with a search bar and a 'Create database' button. A robot icon is shown with the text 'No resources' and 'No resources to display'.

## 3. Amazon RDS Dashboard Overview



The screenshot shows the AWS Aurora and RDS Dashboard. The left sidebar contains navigation links for various database-related services. The main content area is divided into three sections: 'Resources', 'Explore RDS', and 'Recommended services'. The 'Resources' section lists various RDS resources (DB Instances, DB Clusters, Snapshots, Manual, Automated, Recent events, Event subscriptions) and a 'Create a database' button. The 'Explore RDS' section shows a progress bar for completing the activity to earn AWS credits. The 'Recommended services' section shows 'No recommendations yet'.

## 4. Creating a New Database Instance



**Create database** [info](#)

**Free plan has access to limited features and resources**  
The free plan limits the features and resources that are available for RDS and Aurora databases. Upgrade your account plan to remove all limitations. [Learn more](#)

**Choose a database creation method**

☐ **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.

**Configuration**

**Engine type** [info](#)

☐ Aurora (MySQL Compatible)

☐ Aurora (PostgreSQL Compatible)

☐ MySQL

☒ **PostgreSQL**

☐ MariaDB

☐ Oracle

**DB instance identifier**  
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.

The DB instance identifier is case-insensitive, but is stored as all lowercase (as in "mydbinstance"). Constraints: 1 to 63 alphanumeric characters or hyphens. First character must be a letter. Can't contain two consecutive hyphens. Can't end with a hyphen.

**Master username** [info](#)  
Type a login ID for the master user of your DB instance.

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.

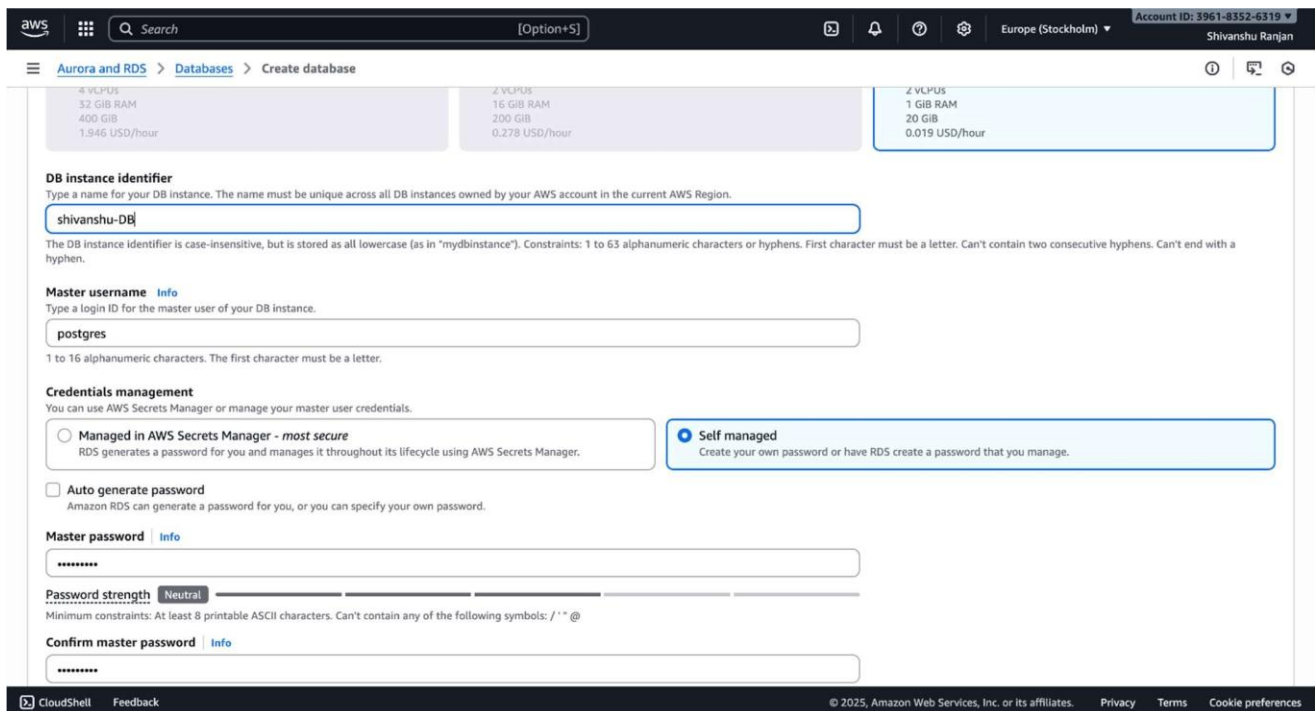
☐ **Auto generate password**  
Amazon RDS can generate a password for you, or you can specify your own password.

**Master password** [info](#)

**Password strength** [info](#) Neutral  
Minimum constraints: At least 8 printable ASCII characters. Can't contain any of the following symbols: / \* @

**Confirm master password** [info](#)

## 5. Selecting PostgreSQL as Database Engine



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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.

The DB instance identifier is case-insensitive, but is stored as all lowercase (as in "mydbinstance"). Constraints: 1 to 63 alphanumeric characters or hyphens. First character must be a letter. Can't contain two consecutive hyphens. Can't end with a hyphen.

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**Confirm master password** [info](#)



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## 6. Choosing Deployment Option and Template

Configuration option	Value	Required
VPC security group	default	Yes
Publicly accessible	No	Yes
Database port	5432	Yes
DB instance identifier	shivanshu-DB	Yes
DB engine version	17.4	Yes
DB parameter group	default.postgres17	Yes
Monitoring type	Database Insights - Standard	Yes
Performance insights	Enabled	Yes
Monitoring	Enabled	Yes
Maintenance	Auto minor version upgrade enabled	Yes
Delete protection	Not enabled	Yes

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](#)

## 7. Configuring Database Settings (Name, Username, Password)

**Creating database shivanshu-db**  
Your database might take a few minutes to launch. You can use settings from shivanshu-db to simplify configuration of suggested database add-ons while we finish creating your DB for you.

[View connection details](#)

**Databases (1)** [Group resources](#) [Modify](#) [Actions](#) [Create database](#)

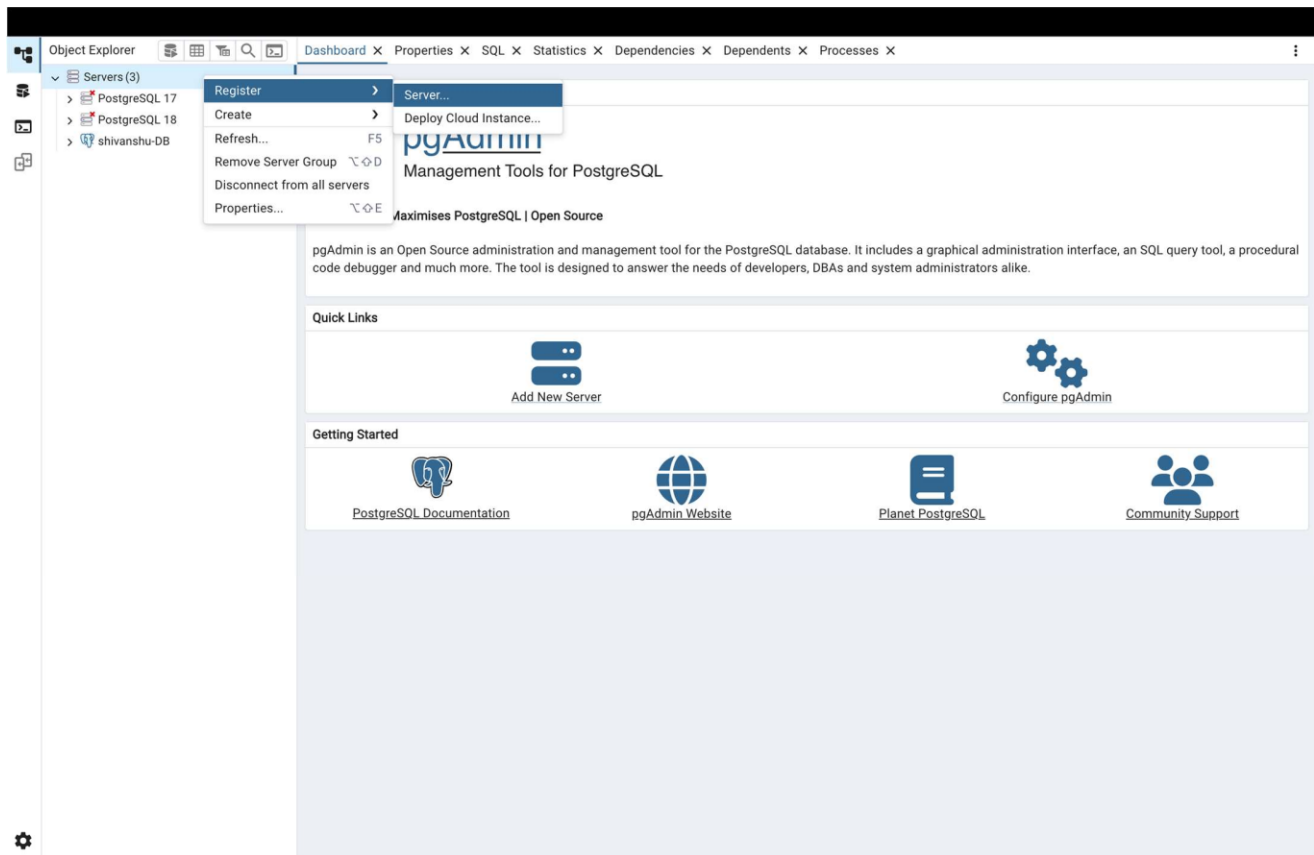
Filter by databases

DB identifier	Status	Role	Engine	Region	Size
<a href="#">shivanshu-db</a>	Creating	Instance	PostgreSQL	-	db.t4g.micro

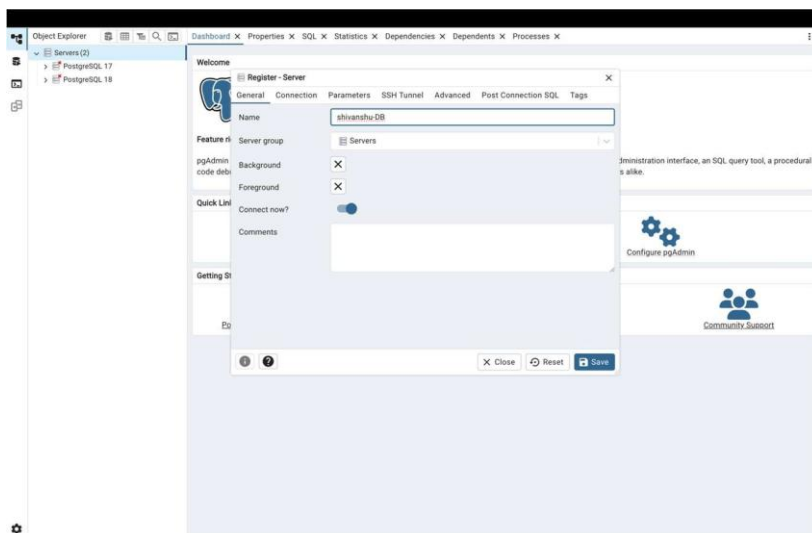
[CloudShell](#) [Feedback](#)

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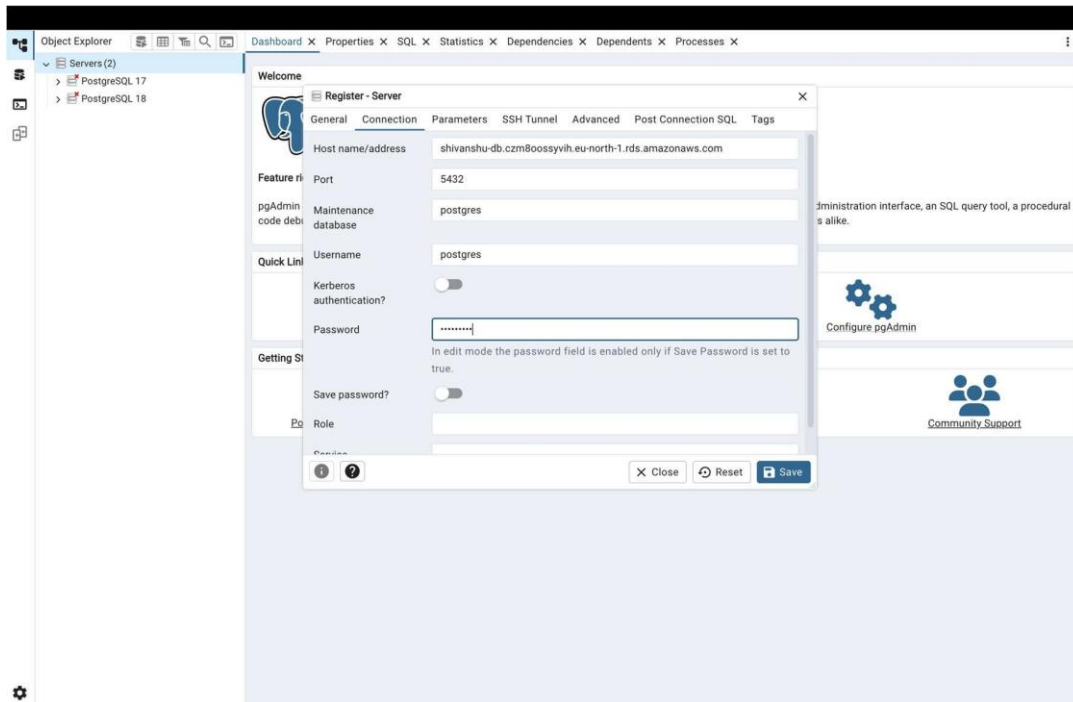
## 8. Setting Up Instance Size and Storage



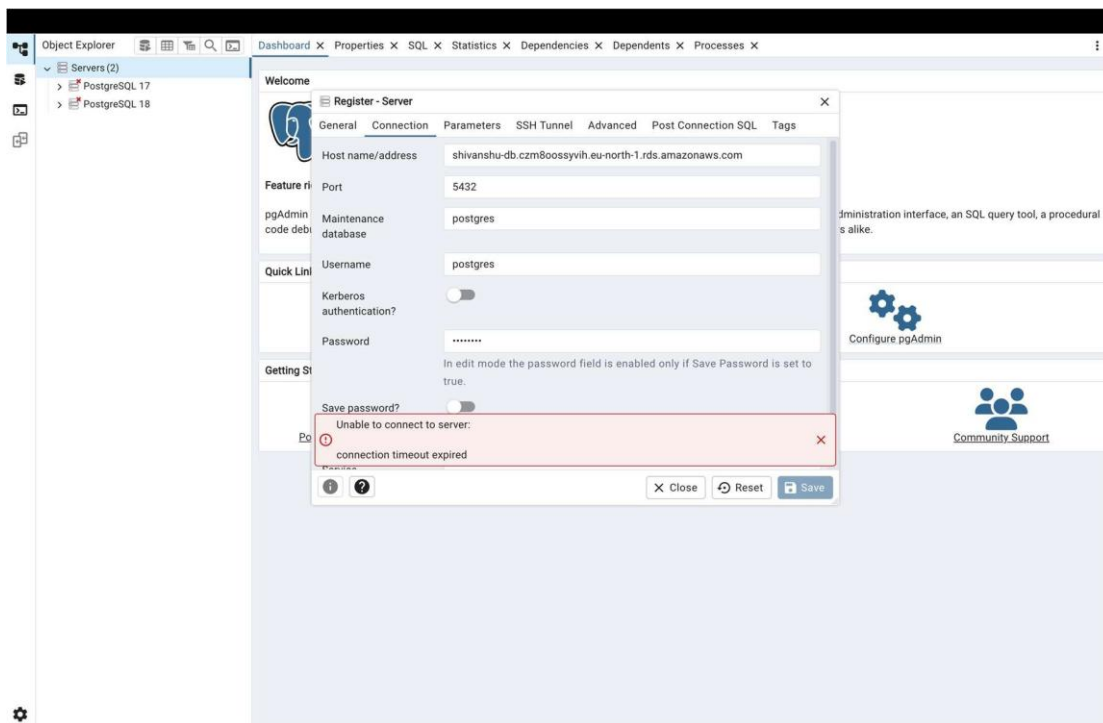
## 9. Configuring Connectivity and VPC Settings



## 10. Gr Setting Up Security Groups for RDS Access

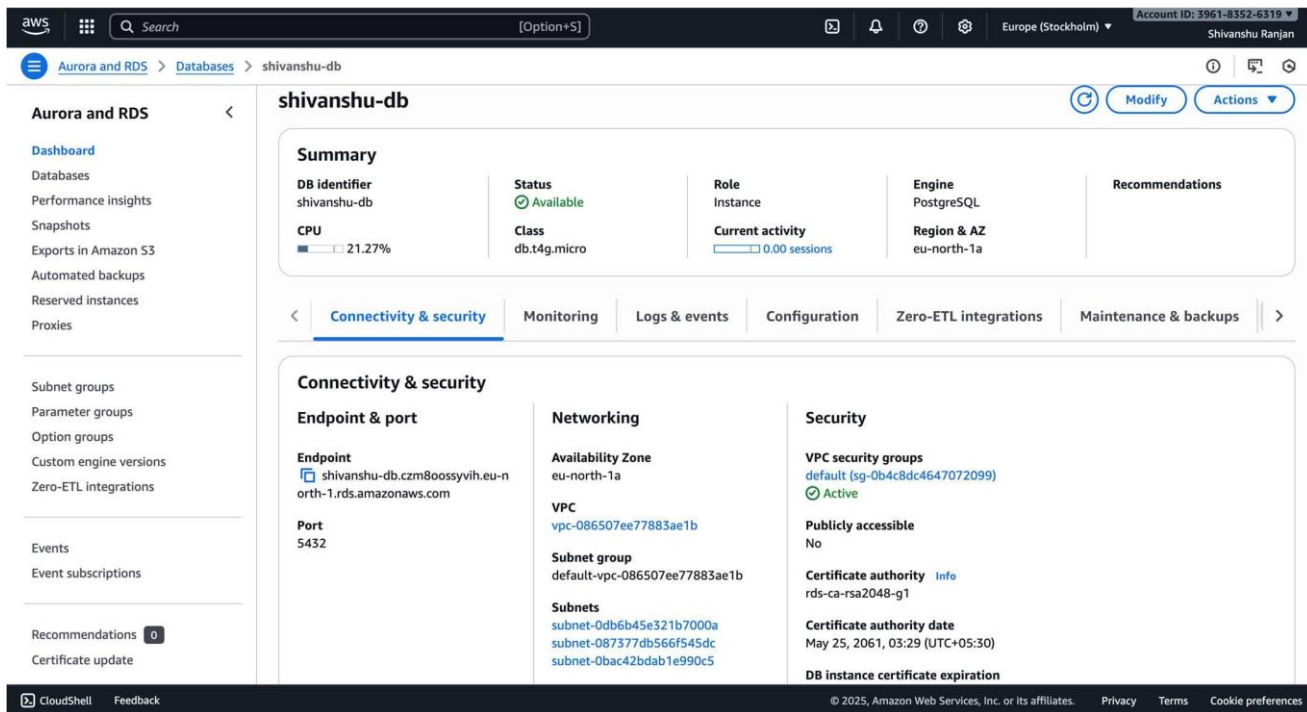


## 11. Additional Database Configuration Options





## 12. Reviewing and Creating the Database Instance



The screenshot shows the AWS Management Console interface for an Amazon RDS instance named 'shivanshu-db'. The console is in the 'Europe (Stockholm)' region, and the user is 'Shivanshu Ranjan' with account ID '3961-8352-6319'.

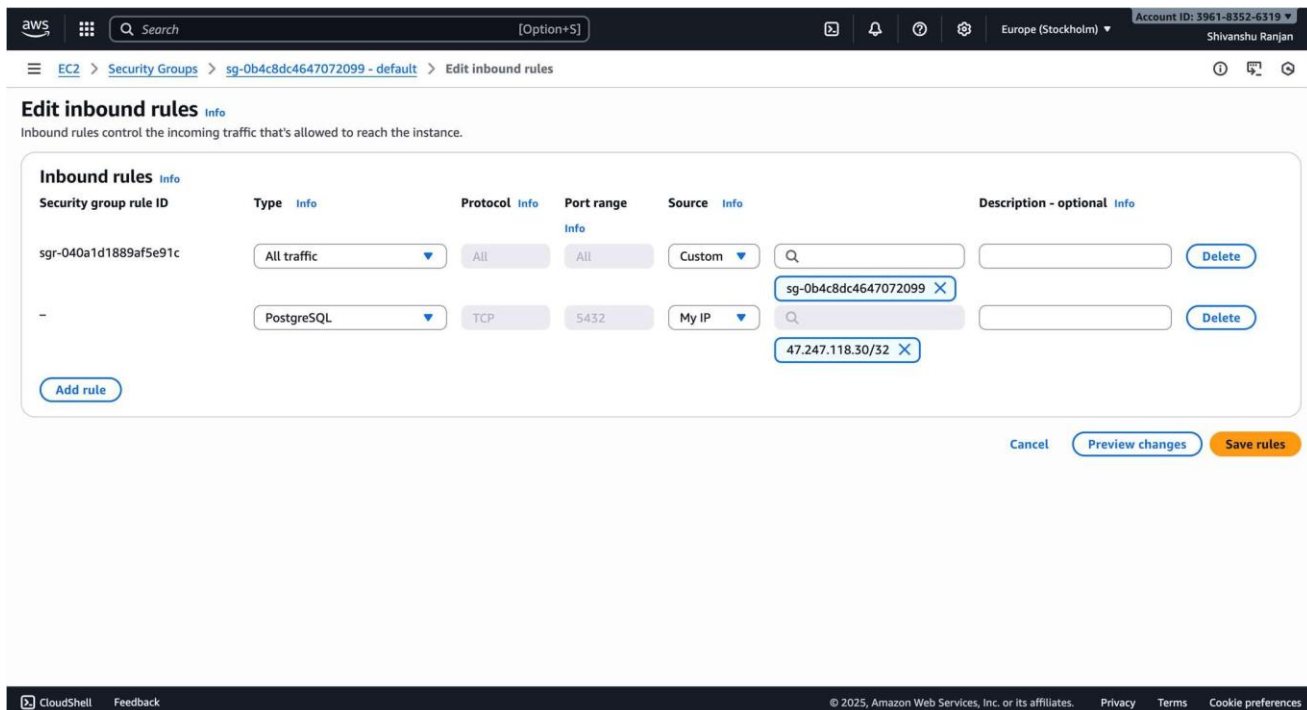
**Summary:**

- DB identifier:** shivanshu-db
- Status:** Available
- Role:** Instance
- Engine:** PostgreSQL
- Region & AZ:** eu-north-1a
- CPU:** 21.27%
- Class:** db.t4g.micro
- Current activity:** 0.00 sessions

**Connectivity & security:**

- Endpoint & port:**
  - Endpoint:** shivanshu-db.czm8oosyvih.eu-north-1.rds.amazonaws.com
  - Port:** 5432
- Networking:**
  - Availability Zone:** eu-north-1a
  - VPC:** vpc-086507ee77883ae1b
  - Subnet group:** default-vpc-086507ee77883ae1b
  - Subnets:**
    - subnet-0db6b45e321b7000a
    - subnet-087377db566f545dc
    - subnet-0bac42bdab1e990c5
- Security:**
  - VPC security groups:** default (sg-0b4c8dc4647072099) - Active
  - Publicly accessible:** No
  - Certificate authority:** rds-ca-rsa2048-g1
  - Certificate authority date:** May 25, 2061, 03:29 (UTC+05:30)
  - DB instance certificate expiration:**

## 13. RDS Instance Creation in Progress



The screenshot shows the 'Edit inbound rules' page for a Security Group in the AWS Management Console. The page is for the Security Group 'sg-0b4c8dc4647072099' in the 'Europe (Stockholm)' region, owned by 'Shivanshu Ranjan'.

**Edit inbound rules**

Inbound rules control the incoming traffic that's allowed to reach the instance.

**Inbound rules:**

Security group rule ID	Type	Protocol	Port range	Source	Description - optional	Actions
sgr-040a1d1889af5e91c	All traffic	All	All	Custom		Delete
-	PostgreSQL	TCP	5432	My IP	sg-0b4c8dc4647072099	Delete
					47.247.118.30/32	

[Add rule](#) [Cancel](#) [Preview changes](#) [Save rules](#)

## 14. Viewing Database Instance Details

### ▼ Additional configuration

#### Public access

##### ☒ Publicly accessible

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.

##### ☐ Not publicly accessible

No IP address is assigned to the DB instance. EC2 instances and devices outside the VPC can't connect.

#### Database port

Specify the TCP/IP port that the DB instance will use for application connections. The application connection string must specify the port number. The DB security group and your firewall must allow connections to the port. [Learn more](#)

5432

## 15. Copying the RDS Endpoint for Connection

### Connectivity & security

#### Endpoint & port

##### Endpoint

 shivanshu-db.czm8oossyviu.eu-north-1.rds.amazonaws.com

##### Port

5432

#### Networking

##### Availability Zone

eu-north-1a

##### VPC

vpc-086507ee77883ae1b

##### Subnet group

default-vpc-086507ee77883ae1b

##### Subnets

subnet-0db6b45e321b7000a

subnet-087377db566f545dc

subnet-0bac42bdab1e990c5

##### Network type

IPv4

#### Security

##### VPC security groups

default (sg-0b4c8dc4647072099)

 Active

##### Publicly accessible

Yes

##### Certificate authority [Info](#)

rds-ca-rsa2048-g1

##### Certificate authority date

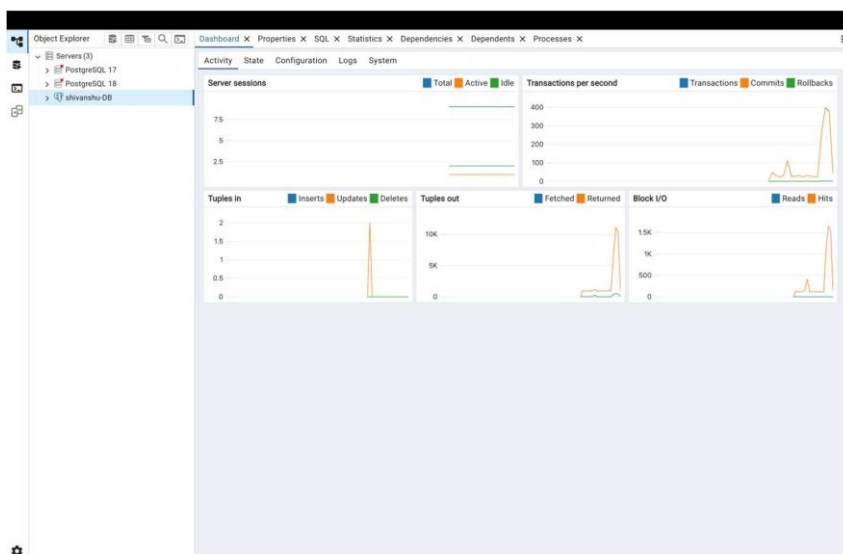
May 25, 2061, 03:29 (UTC+05:30)

##### DB instance certificate expiration

date

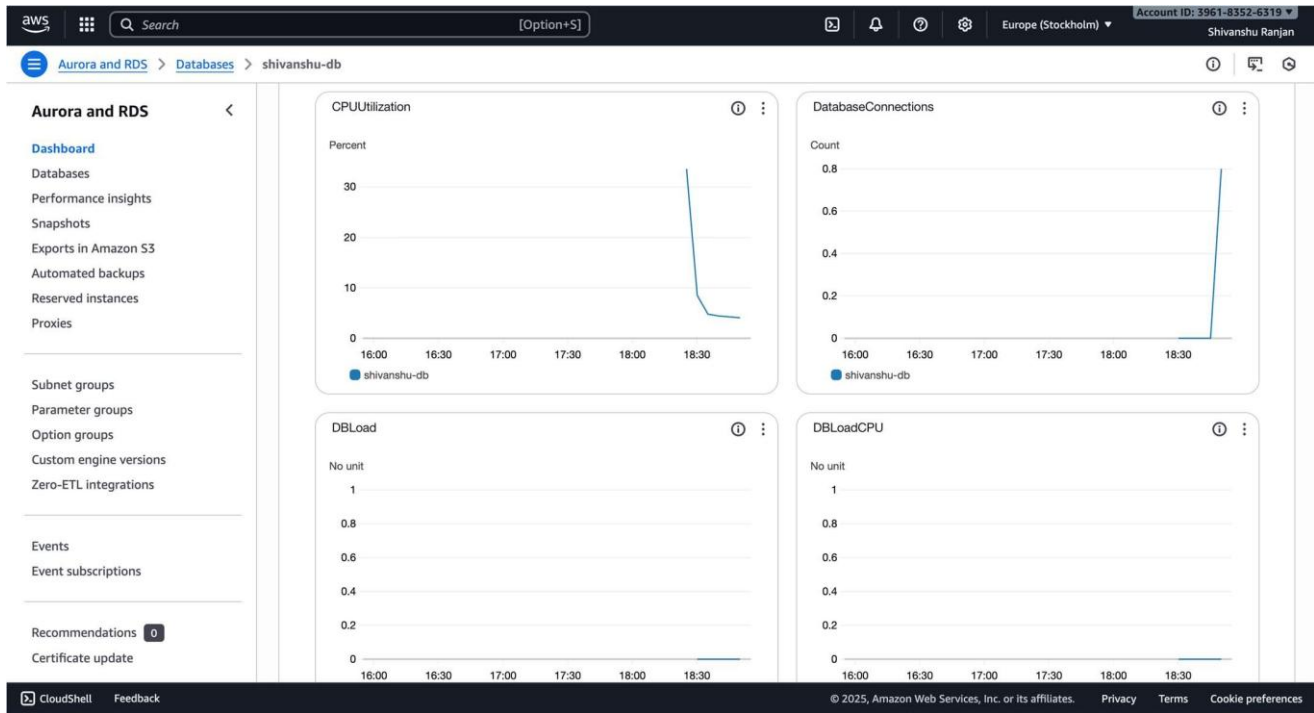
October 30, 2026, 23:59 (UTC+05:30)

## 16. Launching pgAdmin on Local Machine

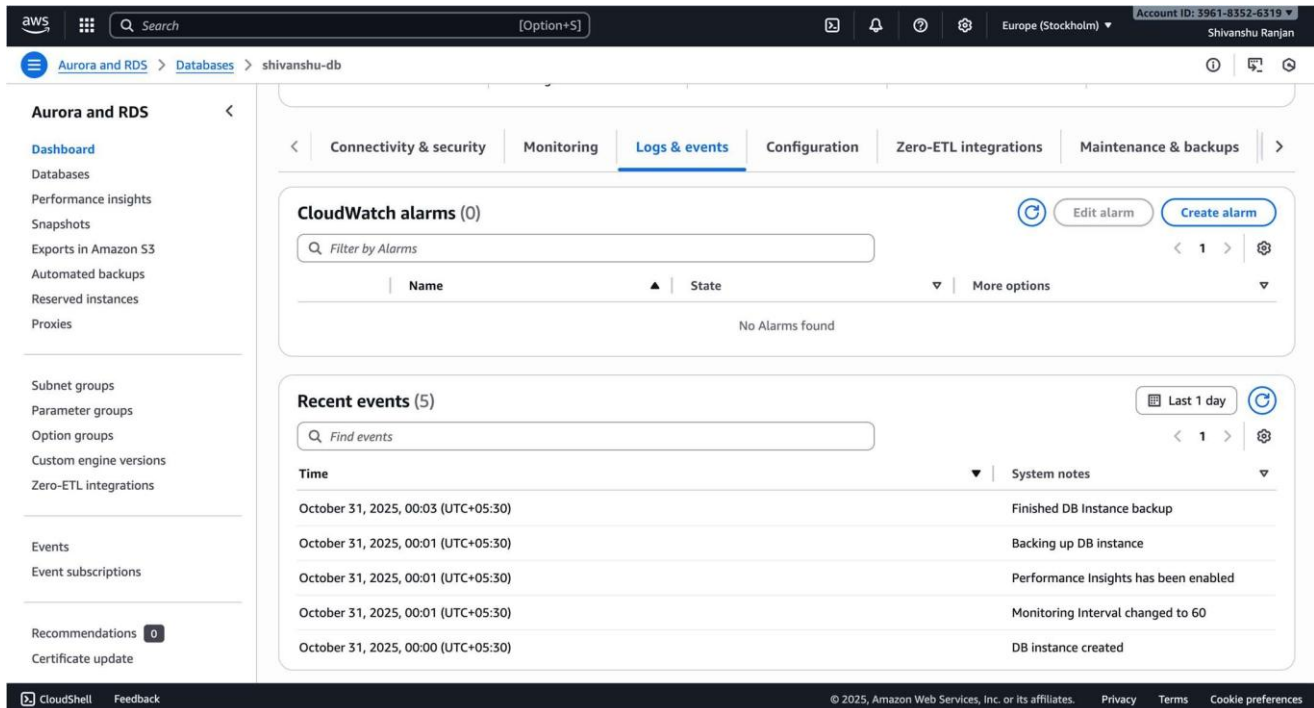




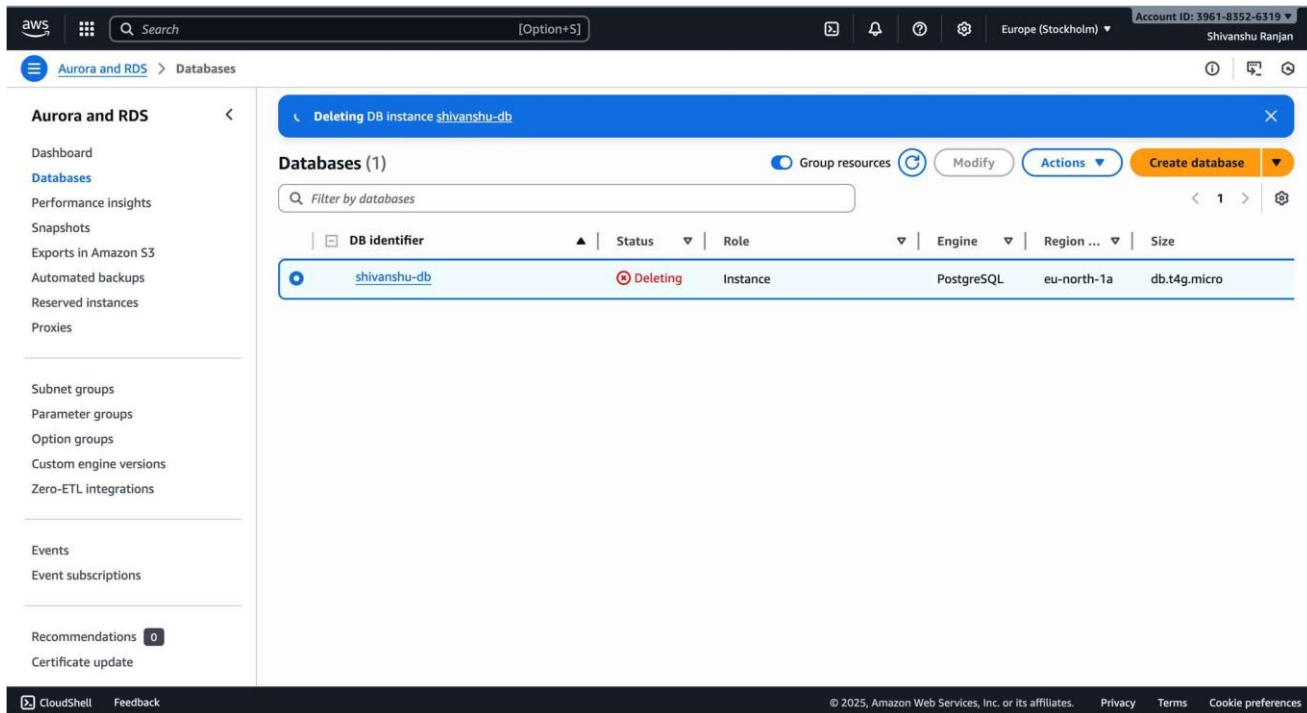
## 17. Adding a New Server in pgAdmin



## 18. Entering Connection Details (Endpoint, Username, Password)



## 19. Successful Connection to AWS RDS Database via pgAdmin



The screenshot displays the AWS Management Console interface. At the top, the AWS logo and account information (Account ID: 3961-8352-6319, Shivanshu Ranjan) are visible. The left sidebar shows the navigation menu with 'Aurora and RDS' selected. The main content area shows the 'Deleting DB instance shivanshu-db' confirmation screen. Below this, a table lists the database instances. The table has columns for DB identifier, Status, Role, Engine, Region, and Size. The instance 'shivanshu-db' is shown with a status of 'Deleting'.

DB identifier	Status	Role	Engine	Region	Size
shivanshu-db	Deleting	Instance	PostgreSQL	eu-north-1a	db.t4g.micro

## 4. Learning Outcomes:

- Understand the fundamental concepts and benefits of using Amazon RDS for relational database management in the cloud.
- Gain practical knowledge of creating and configuring an RDS database instance on AWS.
- Learn how to manage and secure database access using AWS security groups.
- Develop skills to connect a local pgAdmin client to a cloud-hosted RDS instance.
- Be able to monitor, manage, and test database connectivity and performance in a cloud environment.