



# DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

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## Worksheet 9

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**Branch:** CSE  
**Semester:** 5th  
**Subject Name:** ADBMS

**UID:** 23BCS10864  
**Section/Group:** KRG 1-B  
**Date of Performance:** 30/10/2025  
**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

The screenshot shows the AWS sign-in interface. On the left, there is a sidebar titled "Root user sign in" with a blue info icon. It contains fields for "Enter the password for" (with the email "sumedhvats2004@gmail.com" and a "not you?" link), a "Password" field containing masked text, and buttons for "Show password" and "Forgot password?". Below these are "Sign in" and "Sign in to a different account" buttons, and a "Create a new AWS account" link. On the right, there is a large advertisement for "Amazon Lightsail" featuring a cartoon robot character giving a thumbs up. The ad text says "Amazon Lightsail" and "Lightsail is the easiest way to get started on AWS", with a "Learn more »" button.



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## 2. Navigating to RDS Service

The screenshot shows the AWS CloudWatch Metrics Insights search interface. The left sidebar lists services like Aurora and RDS, Database Migration Service, and Kinesis. Under Features, it shows Database Insights (CloudWatch Metrics feature), Reserved Instances (Aurora and RDS feature), and Proxies (Aurora and RDS feature). The main search bar at the top has the query "aws lambda invoke". Below the search bar, there's a "Recent filters" section with "arn:aws:lambda:ap-south-1:123456789012:function:my-lambda" and a "Create filter" button. The search results table has columns for "Metric", "Dimensions", "Time range", and "Last updated". One result is highlighted: "arn:aws:lambda:ap-south-1:123456789012:function:my-lambda" with dimensions "FunctionName:my-lambda" and "Region:ap-south-1". The "Metrics" tab is selected. A tooltip for "Include cross Region metrics" is shown. On the right, there's a sidebar for "My applications" with sections for "Create application", "My app aliases", "Create alias", and "Go to myApplications". It also shows "Usage" with a plan upgrade notice and "Billing" with a 137-day grace period.

### 3. Amazon RDS Dashboard Overview

The screenshot shows the AWS Aurora and RDS dashboard. On the left sidebar, there are sections for Aurora and RDS, including Dashboard, Databases, Performance Insights, Snapshots, Export to Amazon S3, Automated backups, Reserved instances, and Proxies. Below these are Subnet groups, Parameter groups, Option groups, Custom engine versions, Zero-ETL Integrations, Events, Event subscriptions, Recommendations, and Certificate updates.

The main content area has a title "Resources". It displays usage statistics: 184 Instances (1/20), 184 Clusters (0/40), 184 Reserved resources (0/20), and 184 Snapshots (0). It also lists Parameter groups (1), Option groups (1), and Subnet groups (1/20). A "Create a database" button is present. A note says "Note: your DB instances will launch in the Asia Pacific (Mumbai) region".

A "Explore RDS" section on the right provides a tutorial to create a database, mentioning supported platforms (VPC) and default network type (Public). It also lists recommended services: Amazon Augmented AI, AWS Step Functions, AWS Lambda, AWS Data Exchange, Fargate, and AWS Firewall Manager.



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## 4. Creating a New Database Instance

The screenshot shows the 'Create database' page in the AWS Aurora and RDS service. At the top, there's a note about free plans having limited features. Below it, under 'Choose a database creation method', the 'Easy create' option is selected. In the 'Configuration' section, the 'Engine type' dropdown is set to 'PostgreSQL'. Other options shown include 'Aurora MySQL Compatible', 'Aurora PostgreSQL Compatible', 'MySQL', 'Oracle', and 'Microsoft SQL Server'. The PostgreSQL option is highlighted with a blue border and a small PostgreSQL icon. At the bottom of the configuration section, there are tabs for 'CloudShell', 'CloudWatch Metrics', and 'Feedback'.

## 5. Selecting PostgreSQL as Database Engine

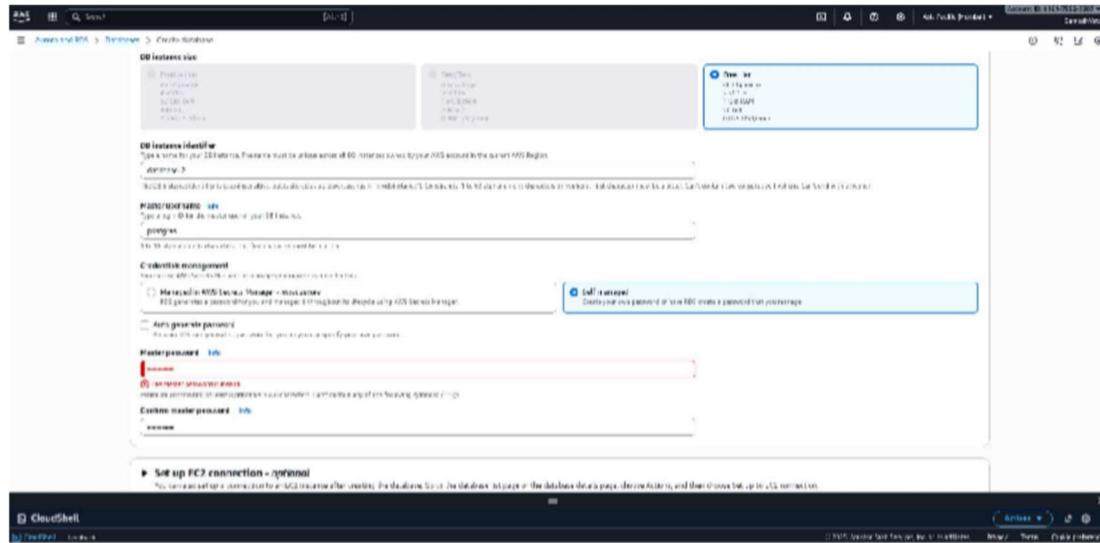
This screenshot is from the same 'Create database' page as the previous one, but it shows a different configuration. The 'Engine type' dropdown is now set to 'PostgreSQL', which is highlighted with a blue border and a small PostgreSQL icon. The other engine options ('Aurora MySQL Compatible', 'Aurora PostgreSQL Compatible', 'MySQL', 'Oracle', and 'Microsoft SQL Server') are shown without borders or icons. Below the engine selection, there's a 'DB instance size' section with options for 'Production', 'Dev/Test', and 'Free tier'. The 'Free tier' option is selected and highlighted with a blue border. The bottom of the screen shows standard AWS navigation and monitoring links like 'CloudShell', 'CloudWatch Metrics', and 'Feedback'.



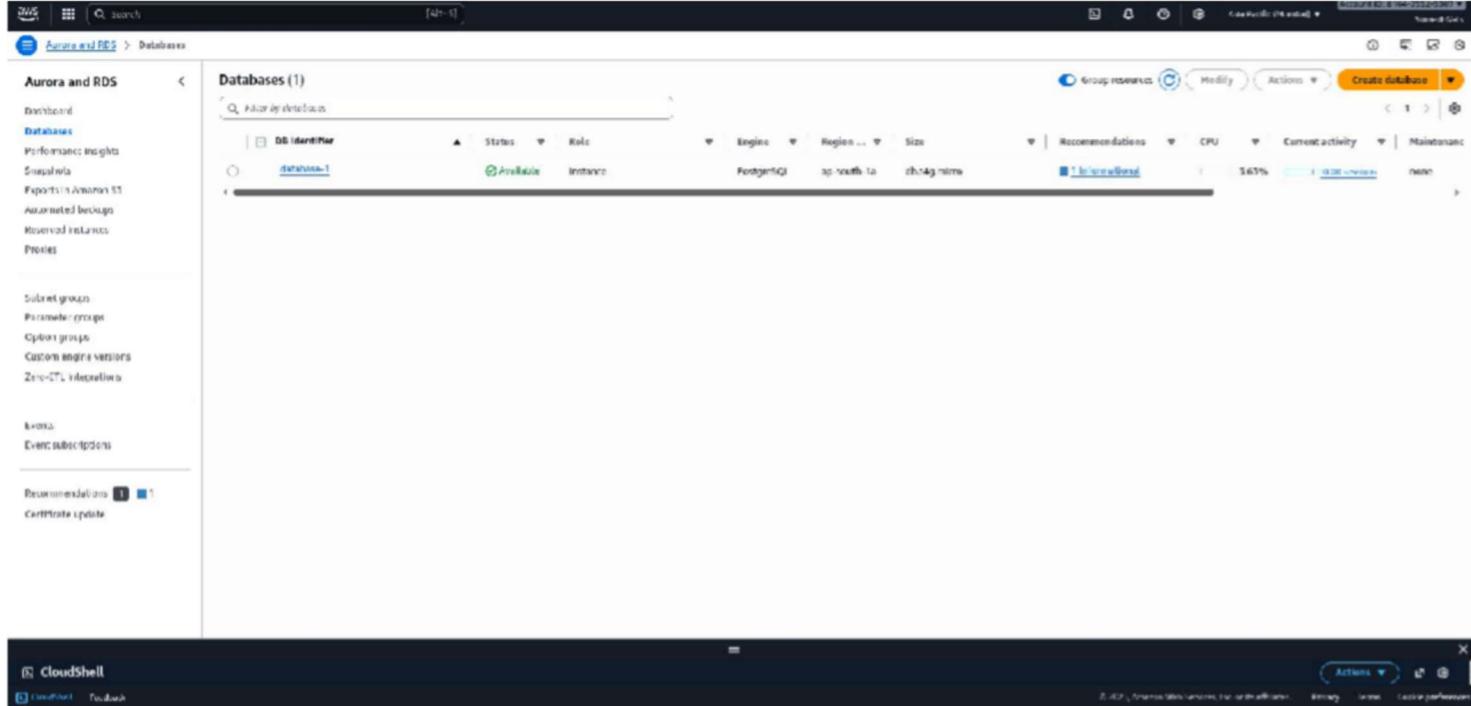
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## 6. Choosing Deployment Option and Template



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

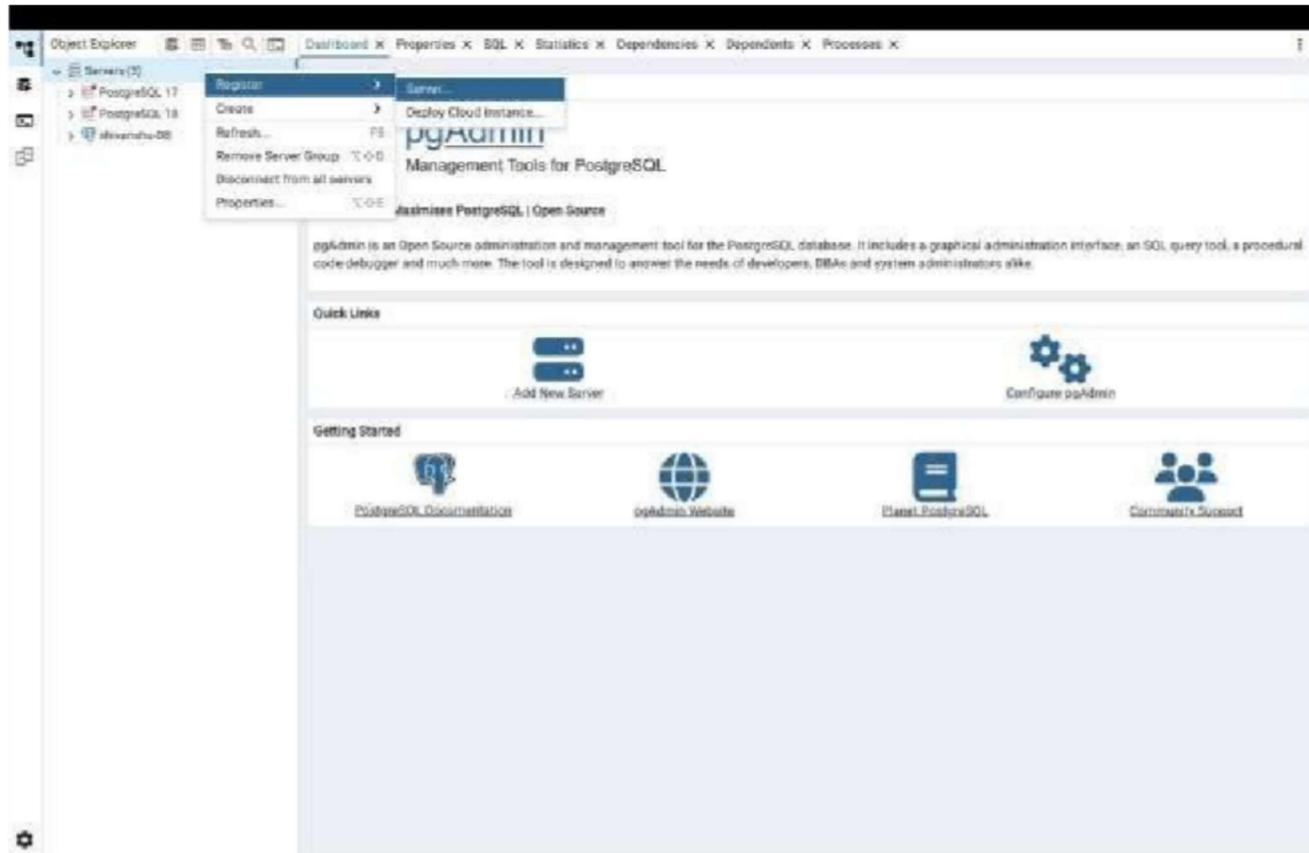




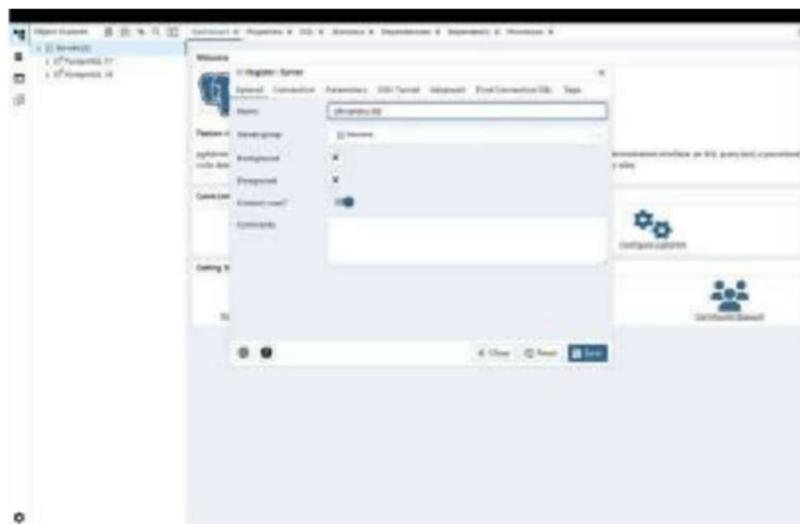
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## 8. Setting Up Instance Size and Storage



## 9. Configuring Connectivity and VPC Settings

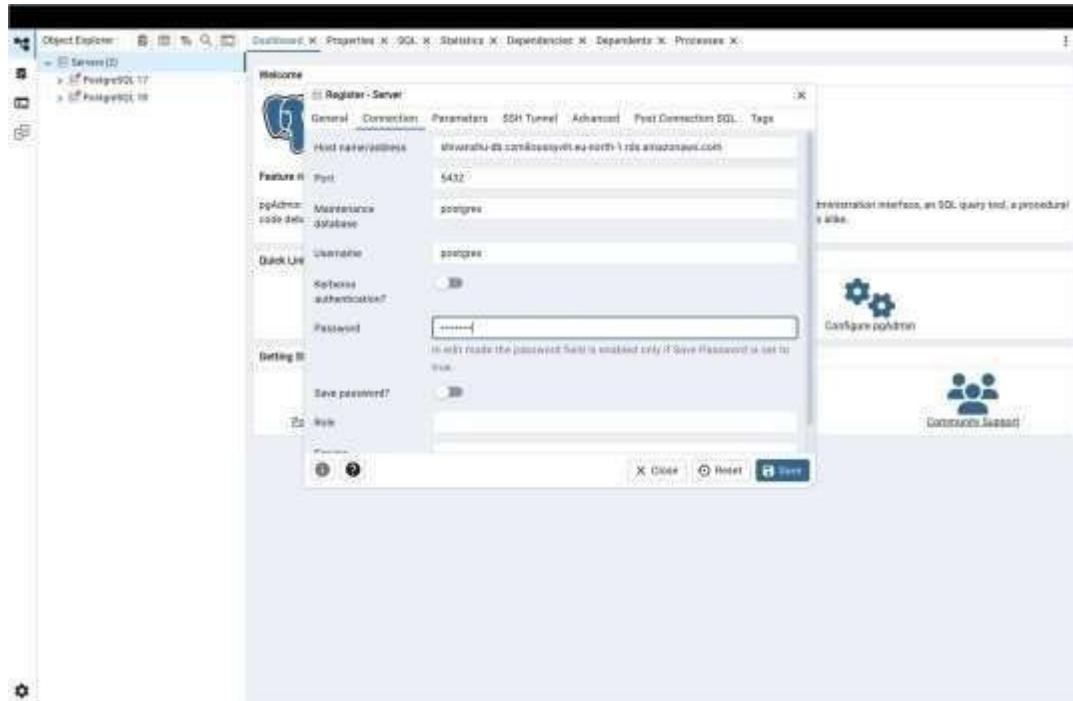




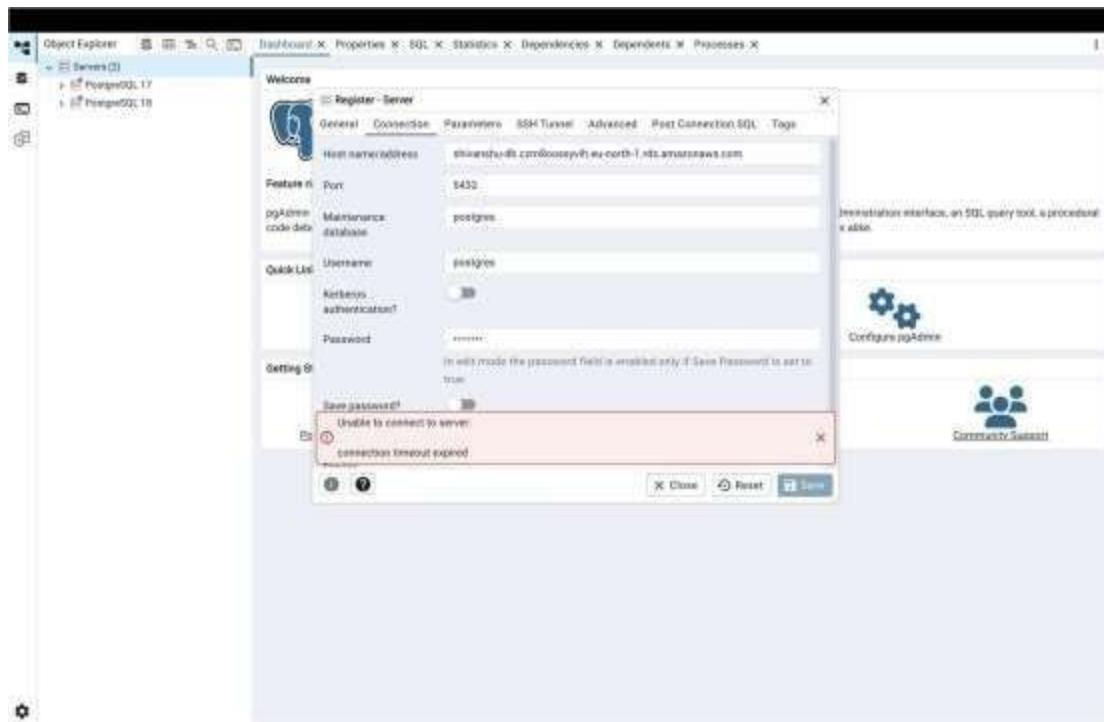
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## 10. Gr Setting Up Security Groups for RDS Access



## 11. Additional Database Configuration Options





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## 12. Reviewing and Creating the Database Instance

The screenshot shows the AWS Aurora RDS console. The main page displays the 'Summary' of the database instance 'database-1'. Key details include:

- DB identifier:** database-1
- Status:** Available
- Role:** Primary
- Engine:** PostgreSQL
- Region & AZ:** ap-south-1a

The 'Connectivity & security' tab is selected. It provides information about the endpoint, VPC, subnet group, and security groups. The endpoint is listed as `database-1.1c9gjwv27jyjw.us-east-1.rds.amazonaws.com` on port 5432. The VPC security group is `defau...t-jug-425-102-198-198-198`. The subnet group is `defau...t-jug-425-102-198-198-198`. The security group is `defau...t-jug-425-102-198-198-198`.

At the bottom, there are tabs for Monitoring, Logs & events, Configuration, Zero-ETL Integrations, Maintenance & backups, Data migrations, Tags, and Recommendations.

## 13. RDS Instance Creation in Progress

The screenshot shows the AWS CloudShell interface. A modal window titled 'Edit inbound rules' is open, allowing the creation of security group rules. The 'Inbound rules' section contains two entries:

- Security group rule ID:** sgr-004c30823631c1
- Type:** All traffic
- Protocol:** All
- Port range:** All
- Source:** Custom
- Description:** optional

A second rule is listed below it:

- Security group rule ID:** sgr-004c30823631c1
- Type:** All traffic
- Protocol:** All
- Port range:** All
- Source:** Custom
- Description:** optional

At the bottom of the modal, there is a note: "Note: only one of CIDR or IP address is allowed to access your instance. We recommend using security groups to allow access from known IP addresses only." Below the note are buttons for 'Cancel', 'Preview changes', and 'Save rule'.



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## 14. Viewing Database Instance Details

**▼ Additional configuration**

**Public access**

**Publicly accessible**  
RDS assigns a public IP address to the database. Anywhere 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/UDP 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

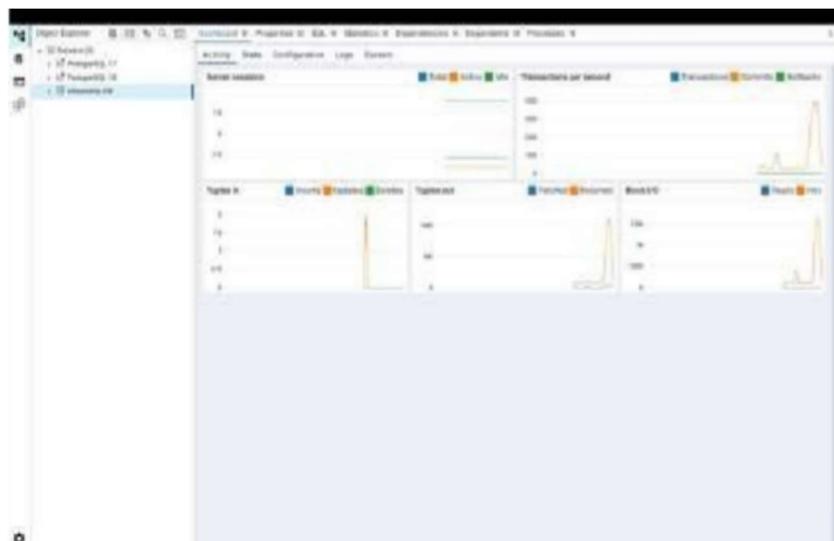
## 15. Copying the RDS Endpoint for Connection

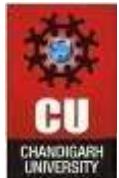
[Connectivity & security](#) | [Monitoring](#) | [Logs & events](#) | [Configuration](#) | [Zero-ETL integrations](#) | [Maintenance & backups](#) | [Data migrations](#) | [Tags](#) | [Recommendations](#)

**Connectivity & security**

Endpoint & port	Networking	Security
Endpoint database.lczologq22pxe.co.south-1.rds.amazonaws.com	Availability zone ap-south-1a	VPC security groups default (sg_05c3b0fb496219658) <input checked="" type="checkbox"/> Active
Port 5432	VPC vpc-0db5aa879fc2f20c9	Publicly accessible No
	Subnet group default-vpc-0db5aa879fc2f20c9	Certificate authority <a href="#">Info</a> rds-ca-rsa2048-g1
	Subnets subnet-0372b3f5d45e47fb045 subnet-02354c37780cf58c2f subnet-00cc0a66f1c64e78d	Certificate authority date May 20, 2051, 00:10 (UTC+05:30)
	Network type IPv4	DB instance certificate expiration date November 04, 2026, 09:43 (UTC+05:30)

## 16. Launching pgAdmin on Local Machine

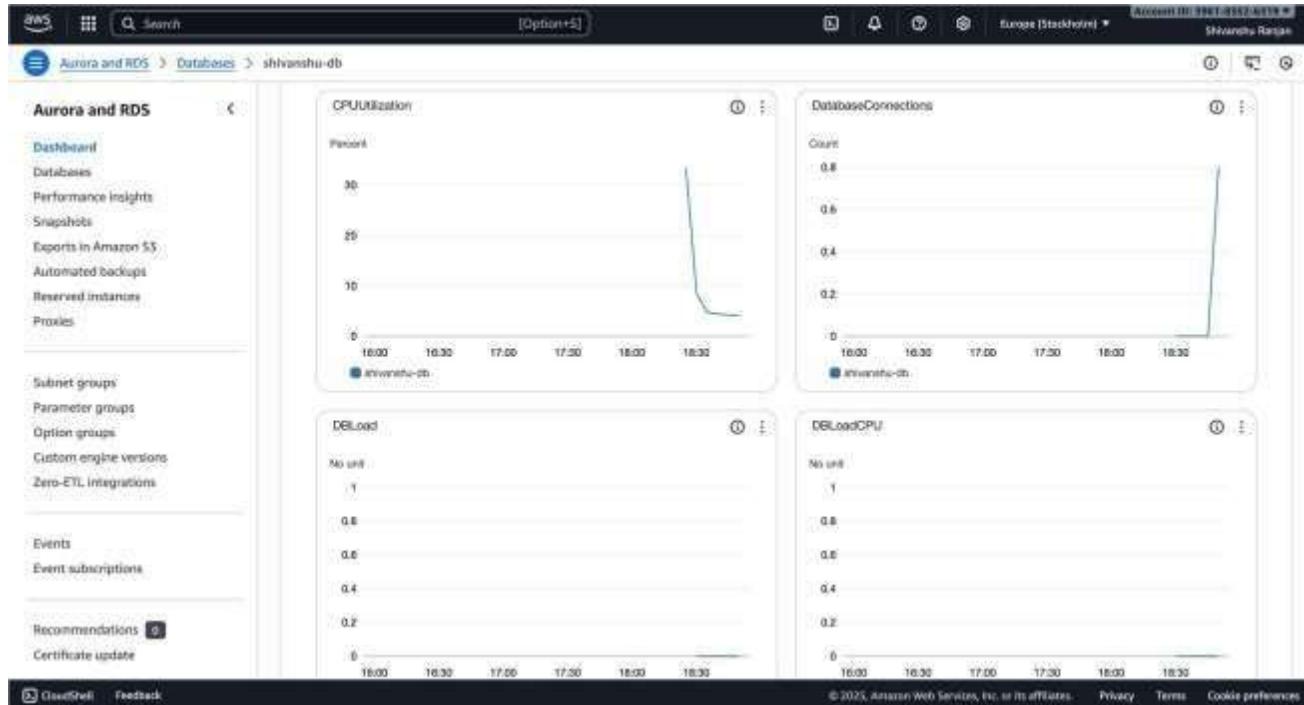




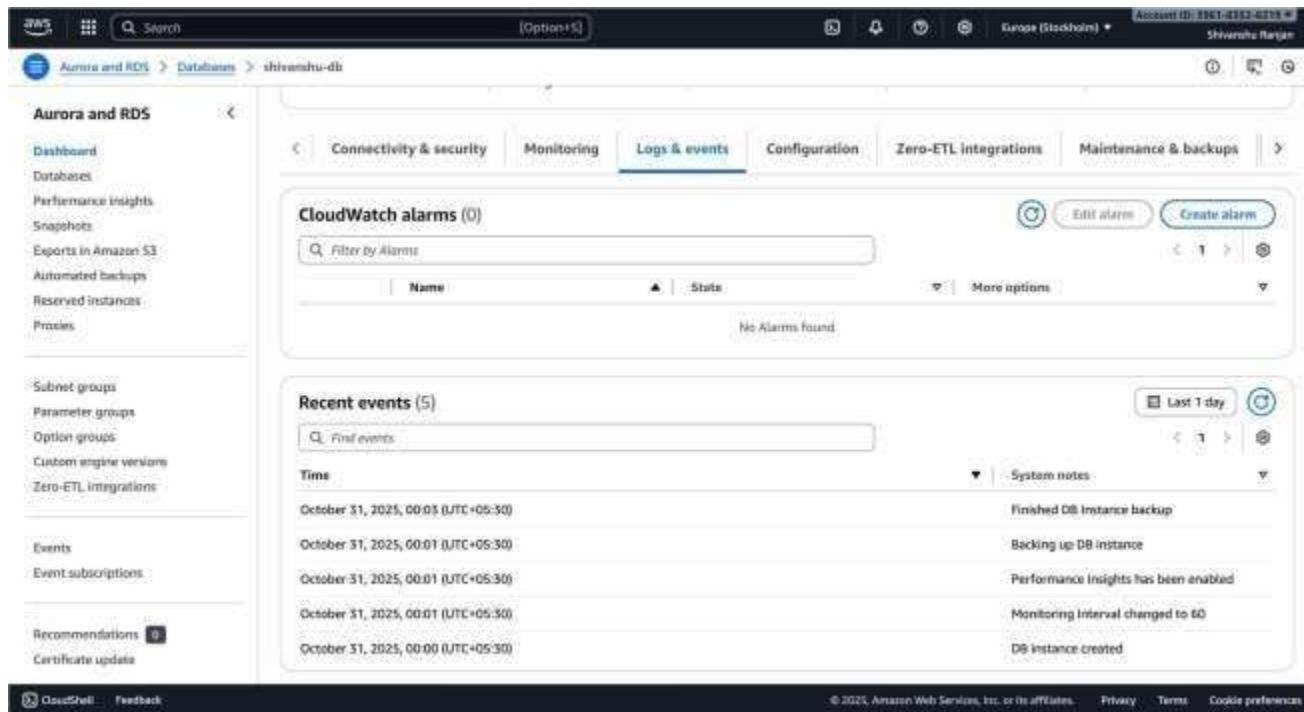
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## 17. Adding a New Server in pgAdmin



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





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

The screenshot shows the AWS CloudShell interface with the following details:

- Left Sidebar (Aurora and RDS):** Contains links for Dashboard, Databases, Performance Insights, Snapshots, Export to Amazon S3, Automated backups, Reserved Instances, Profiles, Subnet groups, Parameter groups, Option groups, Custom engine versions, and AWS Lambda integrations.
- Central Area:** Shows a table of logs with 73 entries. The columns are Name, Last written, and Size. The logs are named in a pattern like `error/postgres.log.2025-11-07-10` through `error/postgres.log.2025-11-09-06`. The last log entry is from November 09, 2025, at 12:29 UTC+05:30, with a size of 4.4 kB.
- Right Side:** Includes sections for System notes (with entries for "Finished DB instance backup" and "Scaling up DB instance"), View, Watch, Download, and pagination controls (1, 2, 3, 4, >).

## 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.