



# DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

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## Worksheet 9

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

**UID:** 23BCS10258  
**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 with the title "Root user sign in" and a note to enter the password for the email "sumedhvats2004@gmail.com (not you?)". It includes fields for "Password" (with a redacted input), "Show password", "Forgot password?", and "Sign in" buttons. Below these are links for "Sign in to a different account" and "Create a new AWS account". On the right, there is a large advertisement for "Amazon Lightsail" featuring a cartoon robot character giving a thumbs up. The ad text reads: "Amazon Lightsail" and "Lightsail is the easiest way to get started on AWS". There is also a "Learn more »" button.



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## 2. Navigating to RDS Service

The screenshot shows the AWS CloudSearch interface. In the search bar at the top, 'RDS' is typed. The results list three services: 'Aurora and RDS', 'Database Migration Service', and 'Kinesis'. On the left sidebar, there are sections for 'Services', 'Features', 'Resources', 'Performance insights', 'Encryption at rest', 'Master keys', 'Replication', 'Events', and 'Metrics'. A message at the bottom left says 'Were these results helpful?' with 'Yes' and 'No' buttons. At the bottom, there are links for 'CloudShell', 'Feedback', and 'Help'.

## 3. Amazon RDS Dashboard Overview

The screenshot shows the Amazon RDS Dashboard. The left sidebar includes links for 'Dashboard', 'Databases', 'Performance insights', 'Snapshots', 'Exports in Amazon S3', 'Automated backups', 'Kinesis and Lambda', 'Profiles', 'Subnet groups', 'Parameter groups', 'Option groups', 'Custom engine versions', 'Zero-ETL Integrations', 'Events', 'Event subscriptions', 'Recommendations', and 'CloudWatch Metrics'. The main content area has two main sections: 'Resources' and 'Create a database'. The 'Resources' section displays various metrics: DB Instances (17/20), Allocated Storage (0.07 TB / 100 TB), Instances and storage include Neptune and DocumentDB, Aurora DB instances (1/1), DB Clusters (0/40), Reserved Instances (0/20), Snapshots (0), Manual DB Cluster (0/100), DB Instances (1/100), Automated DB Cluster (0), DB Instances (7), Recent events (4), and Event subscriptions (0/20). It also lists Parameter groups (1), Option groups (1), and Subnet groups (1/20). The 'Create a database' section allows users to restore from a backup or create a new database. A note at the bottom states: 'Note: your DB instances will launch in the Asia Pacific (Mumbai) region'. To the right, there is a 'Explore RDS' section with a 'Start tutorial' button, and a 'Recommended services' section listing 'Amazon Augmented AI', 'AWS Step Functions', 'AWS Lambda', 'AWS Lambda@Edge', 'AWS Lambda', 'AWS Lambda', and 'AWS Firewall Manager'. At the bottom, there is an 'Additional Information' section and a footer with links for 'Actions', 'Privacy', 'Terms', and 'Cookie preferences'.



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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

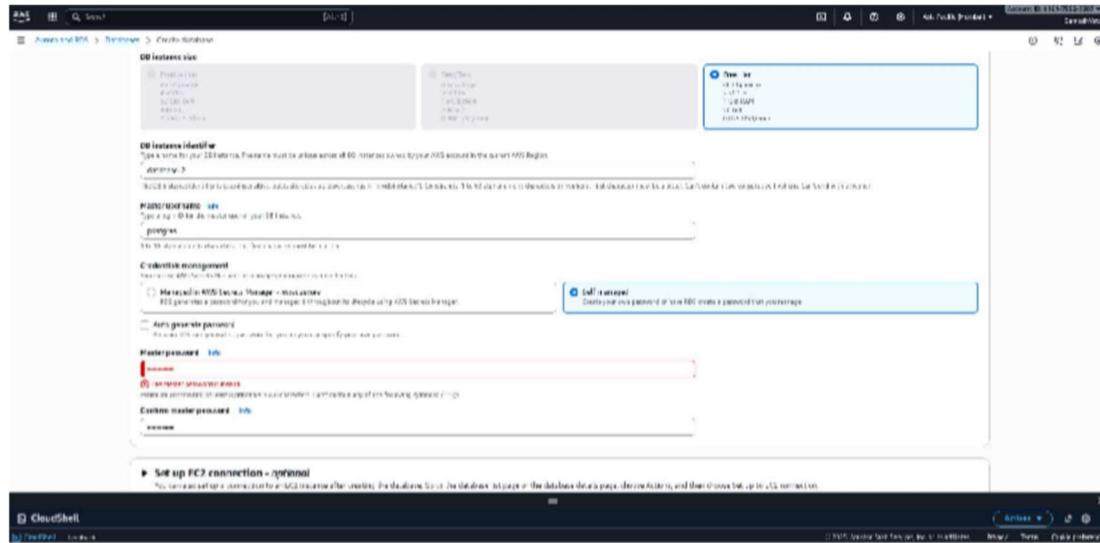
This screenshot continues from the previous one, showing the 'Create database' page. The 'PostgreSQL' engine type is still selected. Below it, the 'DB instance size' section is expanded, showing three options: 'Production' (4 vCPUs, 4000 MiB), 'Dev/Test' (2 vCPUs, 1600 MiB), and 'Free tier' (1 vCPU, 2 GiB). The 'Free tier' option is selected and highlighted with a blue border. Other visible sections include 'Actions', 'CloudShell', 'CloudWatch Metrics', and 'Feedback' at the bottom.



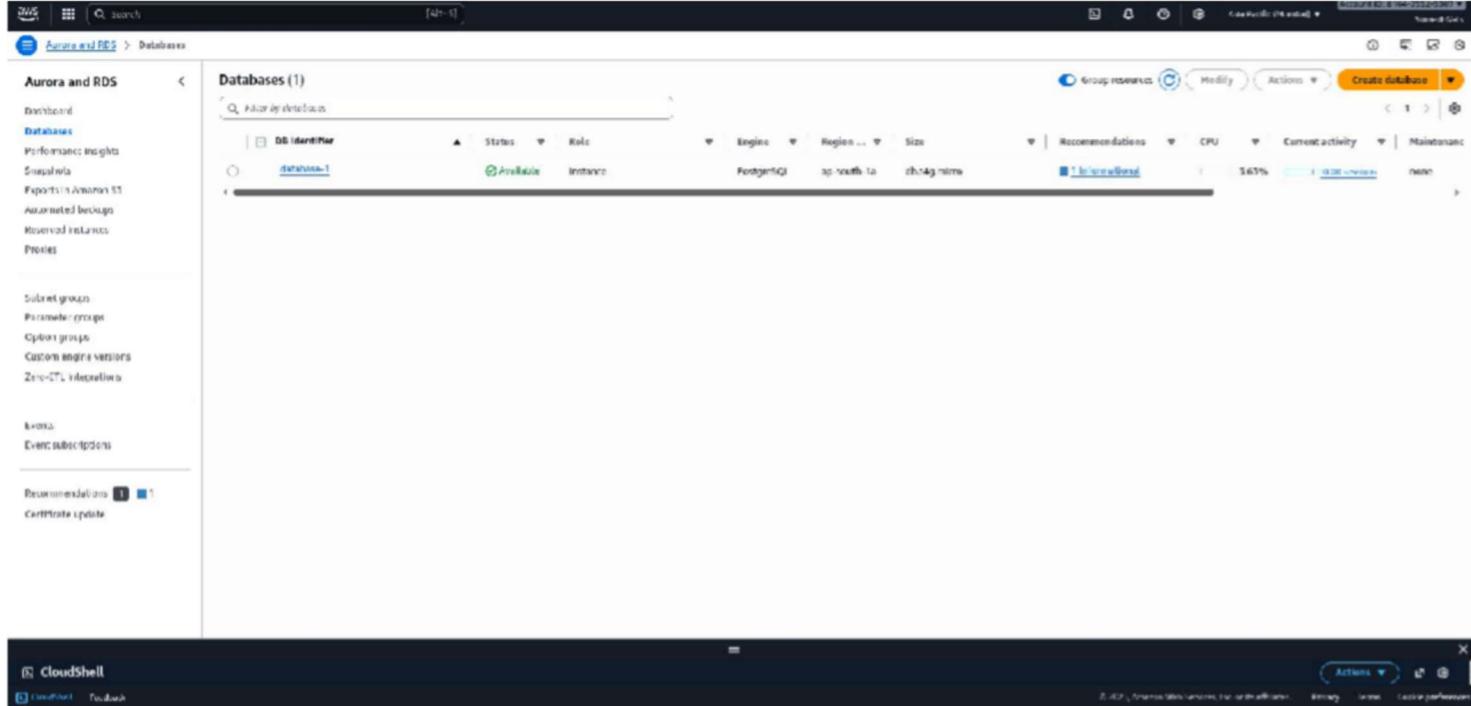
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## 6. Choosing Deployment Option and Template



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

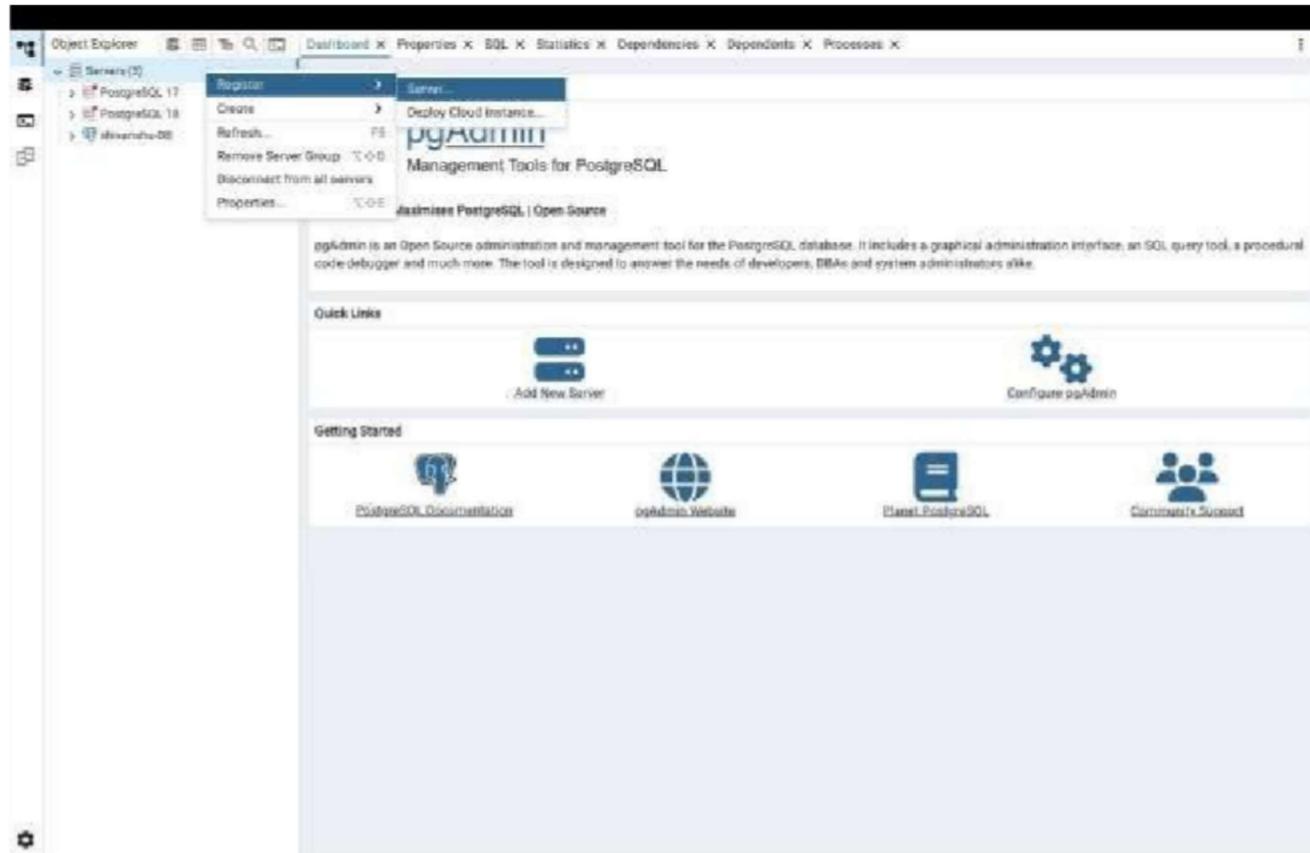




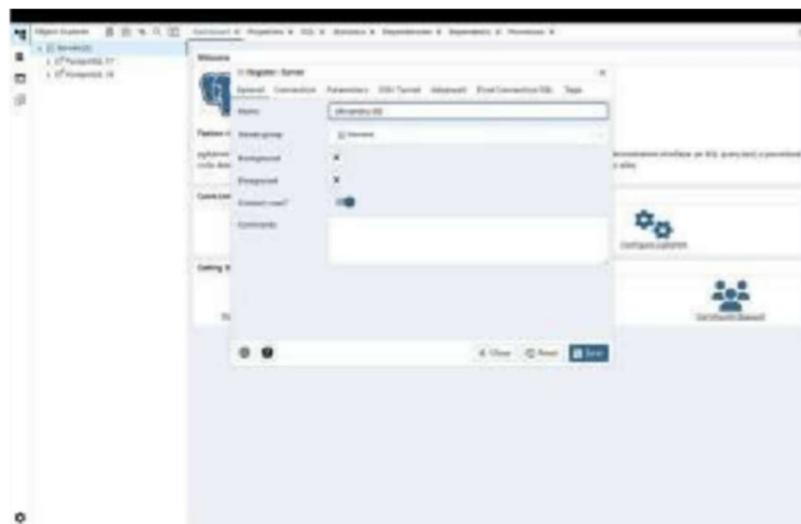
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## 8. Setting Up Instance Size and Storage



## 9. Configuring Connectivity and VPC Settings

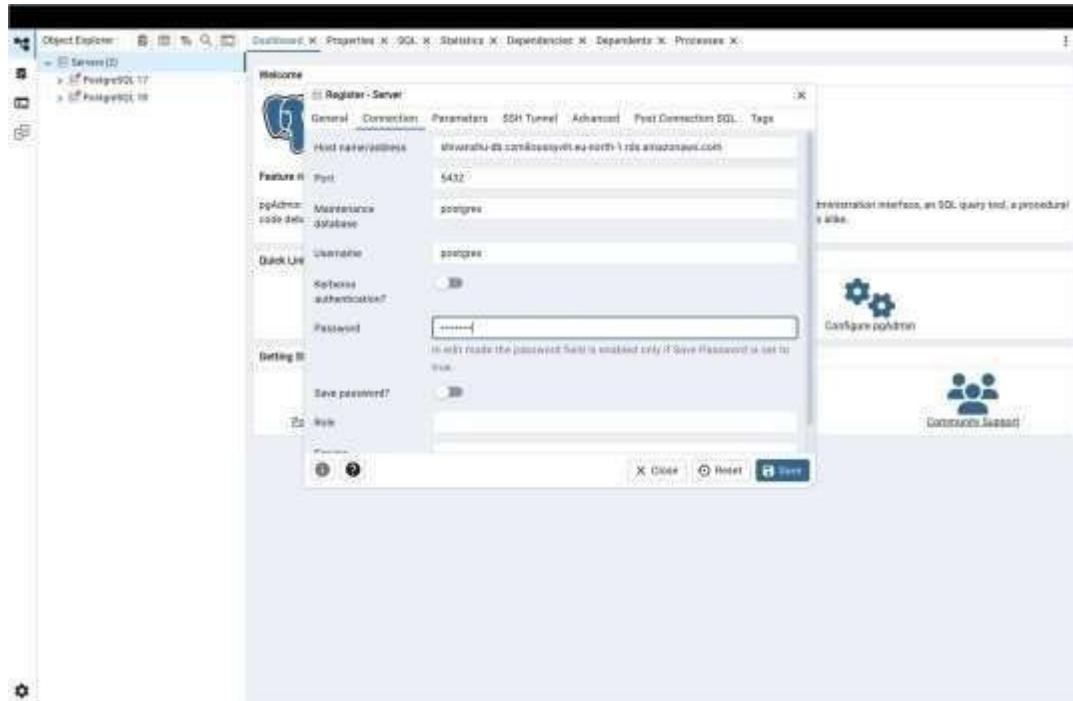




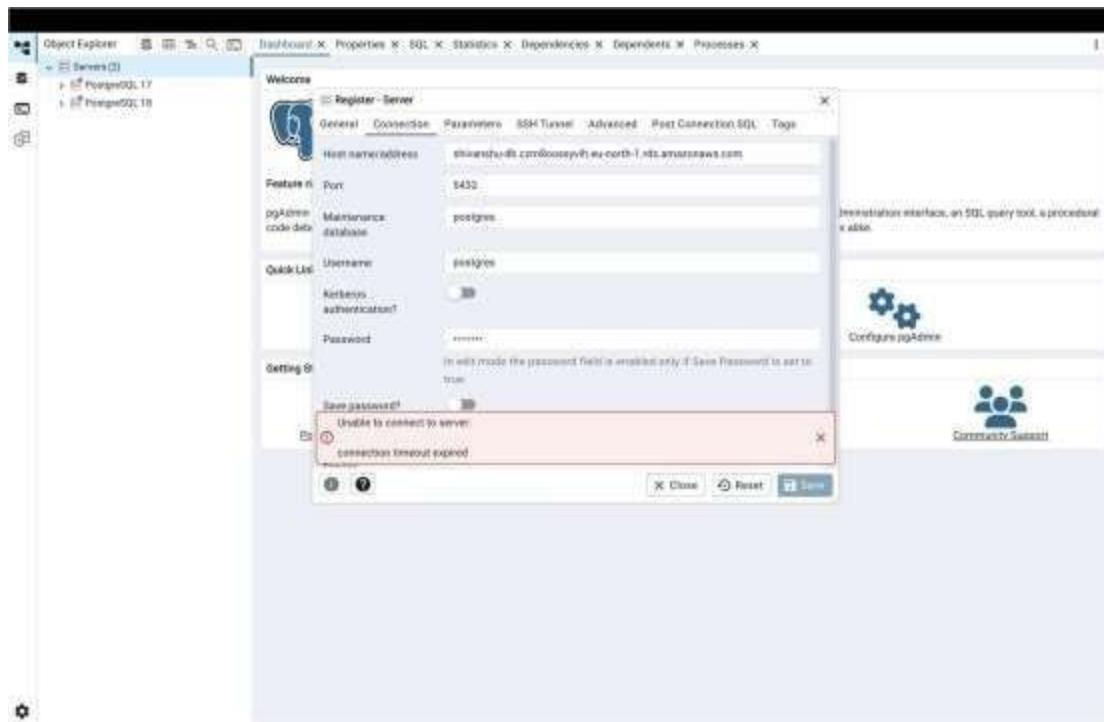
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## 10. Gr Setting Up Security Groups for RDS Access



## 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, showing the following configuration:

- Endpoint:** database-1.aurora-sql.ap-south-1.amazonaws.com
- Port:** 5432
- Subnet group:** default-aurora-sg-1
- Sets:** database-0770534347980-1, database-0224191612924-1, database-0000001851794
- Network type:** IPv4

On the left sidebar, there are links for Dashboard, Database, Performance Insights, Replicas, Export to Amazon S3, Automated Backups, Reserved Instances, and Projects. A 'Recommendations' section is also present.

## 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 rules for a specific security group. The modal contains two entries:

- Security group rule ID:** sg-004c30823631e1
- Type:** All traffic
- Protocol:** All
- Port range:** All
- Source:** Custom
- Description:** optional

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



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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

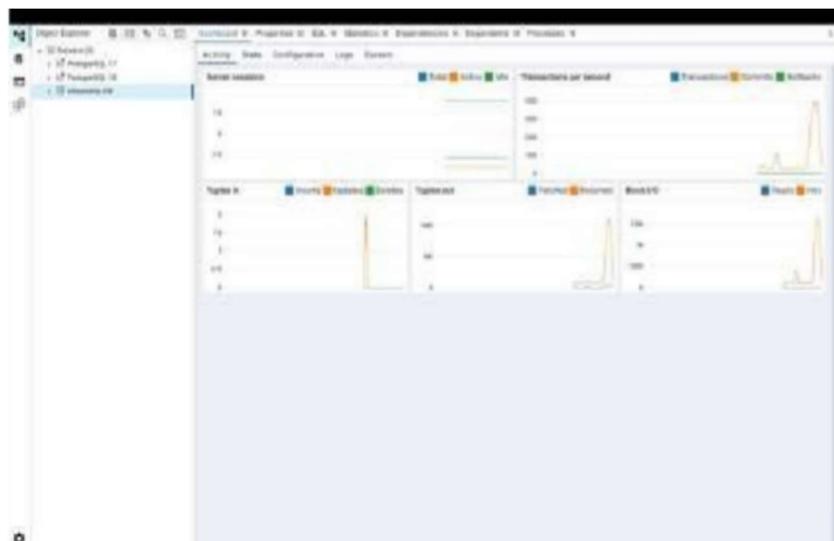
## 15. Copying the RDS Endpoint for Connection

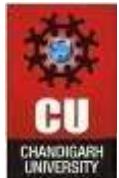
[Connectivity & security](#) | [Monitoring](#) | [Logs & events](#) | [Configuration](#) | [Zero-ETL integrations](#) | [Maintenance & backups](#) | [Data migrations](#) | [Tags](#) | [Recommendations](#)

**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-02354c37786cf58c2f 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

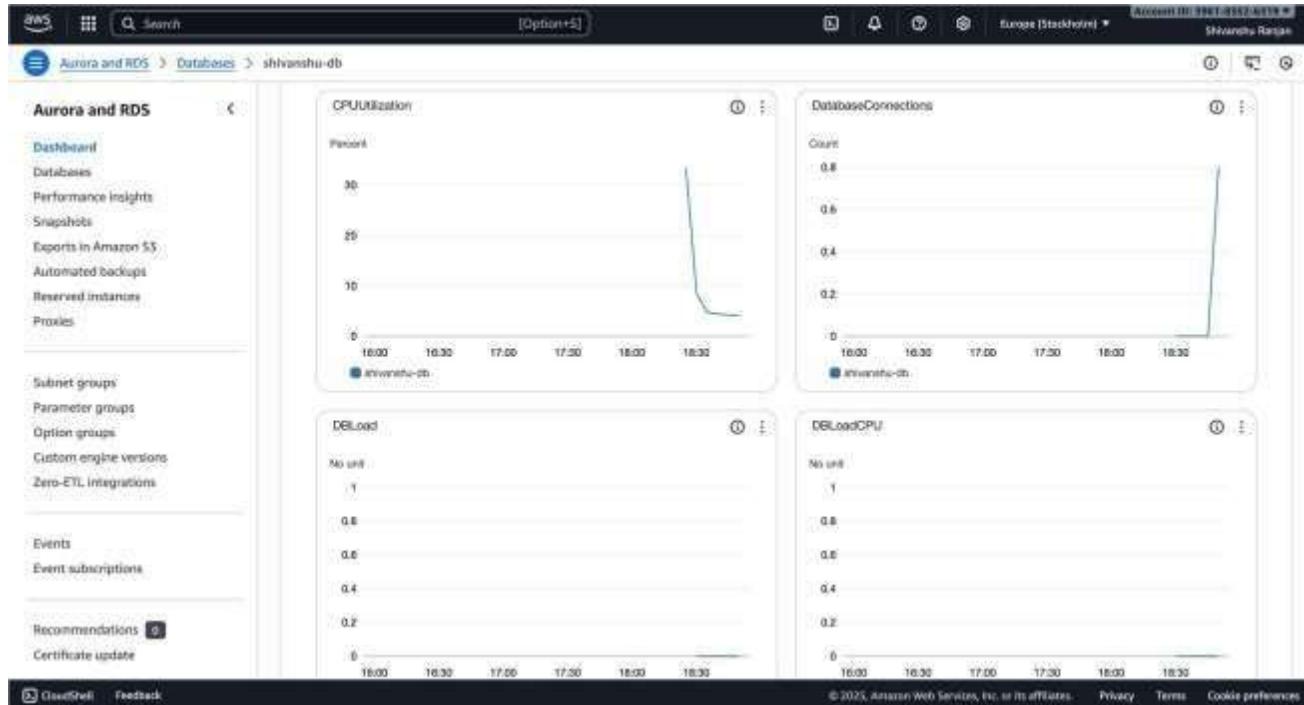




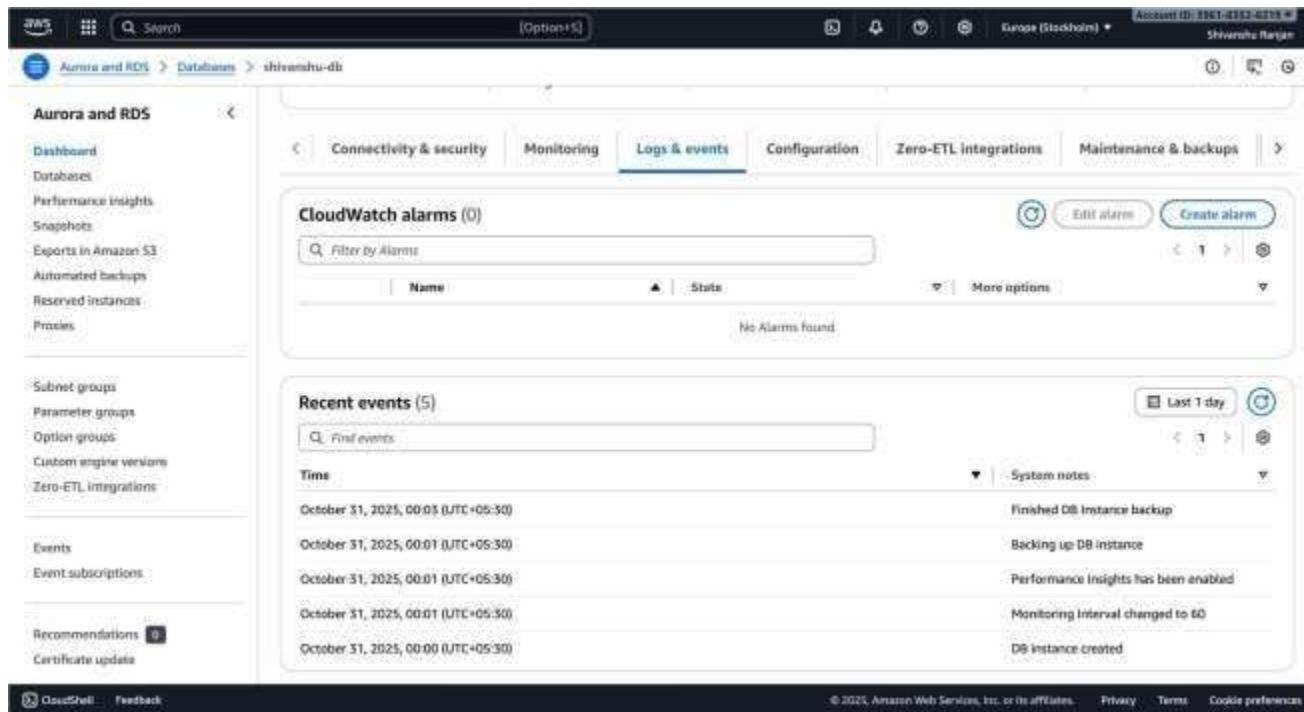
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## 17. Adding a New Server in pgAdmin



## 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.