



# DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

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## Experiment-9

Name: Ashmit Agrawal

Branch: CSE

Semester: 5th

Subject Name: ADBMS

UID: 23BCS11854

Section/Group: KRG\_1-B

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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



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## 2. Navigating to RDS Service

The screenshot shows the Aurora and RDS service dashboard. The left sidebar includes links for Dashboard, Databases (selected), Performance insights, Snapshots, Exports in Amazon S3, Automated backups, Reserved instances, Proxies, Subnet groups, Parameter groups, Option groups, Custom engine versions, Zero-ETL integrations, Events, Event subscriptions, Recommendations (0), and Certificate update. The main content area displays a heading 'Databases (0)' with a search bar and filter options for DB identifier, Status, Role, Engine, Region, and Size. A central illustration of a robot standing next to a cloud is present, with the text 'No resources' and 'No resources to display'. A prominent orange 'Create database' button is located at the bottom right of the main area. The top navigation bar shows the AWS logo, a search bar, account information (Account ID: 3961-8352-6319, Europe (Stockholm)), and user name (Shivanshu Ranjan). The bottom navigation bar includes CloudShell, Feedback, Privacy, Terms, and Cookie preferences.

## 3. Amazon RDS Dashboard Overview

The screenshot shows the Amazon RDS Dashboard. The left sidebar includes links for Dashboard (selected), Databases, Performance insights, Snapshots, Exports in Amazon S3, Automated backups, Reserved instances, Proxies, Subnet groups, Parameter groups, Option groups, Custom engine versions, Zero-ETL integrations, Events, Event subscriptions, Recommendations (0), and Certificate update. The main content area is divided into sections: 'Resources' (listing DB Instances (0/40), DB Clusters (0/40), Reserved instances (0/40), Snapshots (0), and Automated resources like DB Cluster (0) and DB Instance (0)), 'Explore RDS' (status: Not started, complete by April 30, 2026, reward value USD 20.00, estimated duration 2-5 minutes, with a 'Start tutorial' button), 'Create a database' (instructions for setting up, operating, and scaling a relational database in the cloud, with 'Create a database' and 'Restore from S3' buttons), and 'Recommended services' (no recommendations yet). The top navigation bar shows the AWS logo, a search bar, account information (Account ID: 3961-8352-6319, Europe (Stockholm)), and user name (Shivanshu Ranjan). The bottom navigation bar includes CloudShell, Feedback, Privacy, Terms, and Cookie preferences.



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## 4. Creating a New Database Instance

The screenshot shows the AWS RDS 'Create database' interface. At the top, there's a message about a free plan having limited features. Below it, two creation methods are shown: 'Standard create' (selected) and 'Easy create'. Under 'Configuration', 'PostgreSQL' is selected from several options: Aurora (MySQL Compatible), Aurora (PostgreSQL Compatible), MySQL, MariaDB, and Oracle. The PostgreSQL option has a blue icon of a brain-like shape. The PostgreSQL configuration section shows: 4 vCPUs, 32 GB RAM, 400 GB, and 1.946 USD/hour. The MySQL configuration section shows: 2 vCPUs, 16 GB RAM, 200 GB, and 0.278 USD/hour. At the bottom, there are links for CloudShell, Feedback, and various AWS terms like Privacy, Terms, and Cookie preferences.

## 5. Selecting PostgreSQL as Database Engine

This screenshot continues the AWS RDS setup process. It shows the 'DB instance identifier' field containing 'shivanshu-DB' and the 'Master username' field containing 'postgres'. Under 'Credentials management', 'Self managed' is selected. The 'Master password' field contains a masked password, and the 'Password strength' bar is at 'Neutral'. The 'Confirm master password' field also contains a masked password. The configuration section for PostgreSQL remains the same as in the previous screenshot. The bottom of the page includes standard AWS footer links for CloudShell, Feedback, Privacy, Terms, and Cookie preferences.



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## 6. Choosing Deployment Option and Template

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

## 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.

DB identifier	Status	Role	Engine	Region ...	Size
shivanshu-db	Creating	Instance	PostgreSQL	-	db.t4g.micro



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## 8. Setting Up Instance Size and Storage

The screenshot shows the pgAdmin 4 interface. In the top navigation bar, 'Dashboard' is selected. The left sidebar shows a tree view of 'Servers (3)' containing 'PostgreSQL 17', 'PostgreSQL 18', and 'shivanshu-DB'. A context menu is open over the 'shivanshu-DB' entry, with 'Server...' highlighted. Below the menu, a banner for 'pyAUMITI Management Tools for PostgreSQL' is visible, stating 'Maximises PostgreSQL | Open Source'. The main content area includes 'Quick Links' for 'Add New Server' and 'Configure pgAdmin', and 'Getting Started' links for 'PostgreSQL Documentation', 'pgAdmin Website', 'Planet PostgreSQL', and 'Community Support'.

## 9. Configuring Connectivity and VPC Settings

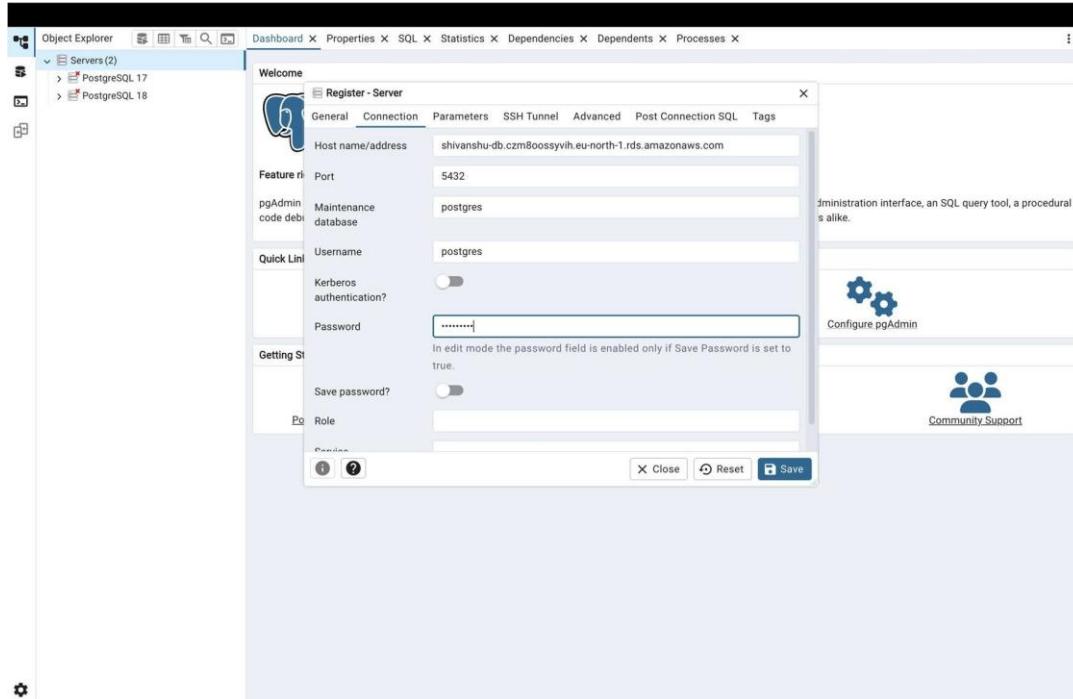
The screenshot shows the 'Register - Server' dialog box in pgAdmin 4. The 'General' tab is selected, showing the 'Name' field set to 'shivanshu-DB'. Other tabs include 'Connection', 'Parameters', 'SSH Tunnel', 'Advanced', and 'Post Connection SQL'. The 'Background' and 'Foreground' quick links are shown as disabled. The 'Comments' field is empty. At the bottom, there are 'Close', 'Reset', and 'Save' buttons.



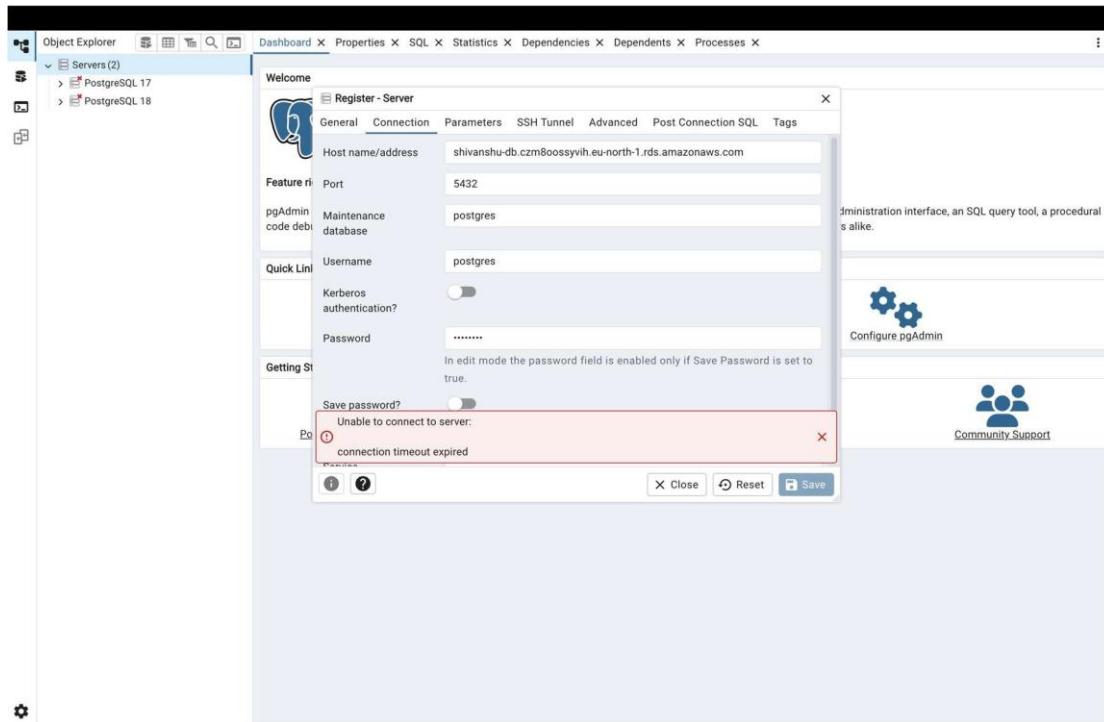
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## 10. Gr Setting Up Security Groups for RDS Access



## 11. Additional Database Configuration Options





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## 12. Reviewing and Creating the Database Instance

The screenshot shows the AWS RDS console for the 'shivanshu-db' database. The 'Summary' tab is selected, displaying basic information: DB identifier (shivanshu-db), Status (Available), Role (Instance), Engine (PostgreSQL), and Region & AZ (eu-north-1a). Below the summary, there are tabs for Connectivity & security, Monitoring, Logs & events, Configuration, Zero-ETL integrations, and Maintenance & backups. The 'Connectivity & security' tab is active, showing details like Endpoint (shivanshu-db.czmoossyvih.eu-north-1.rds.amazonaws.com), Port (5432), VPC (vpc-086507ee77883ae1b), Subnet group (default-vpc-086507ee77883ae1b), and Subnets (subnet-0db6b45e321b7000a, subnet-087377db566f545dc, subnet-0bac42bdab1e990c5).

## 13. RDS Instance Creation in Progress

The screenshot shows the AWS EC2 Security Groups page for the 'sg-0b4c8dc4647072099 - default' group. An inbound rule is being edited for a PostgreSQL instance. The rule configuration includes Type (All traffic), Protocol (TCP), Port range (5432), Source (My IP), and Description (optional). A new rule has been added with the source IP 47.247.118.30/32. At the bottom, there are buttons for Add rule, Preview changes, and Save rules.



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## 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.czr8oossyvih.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

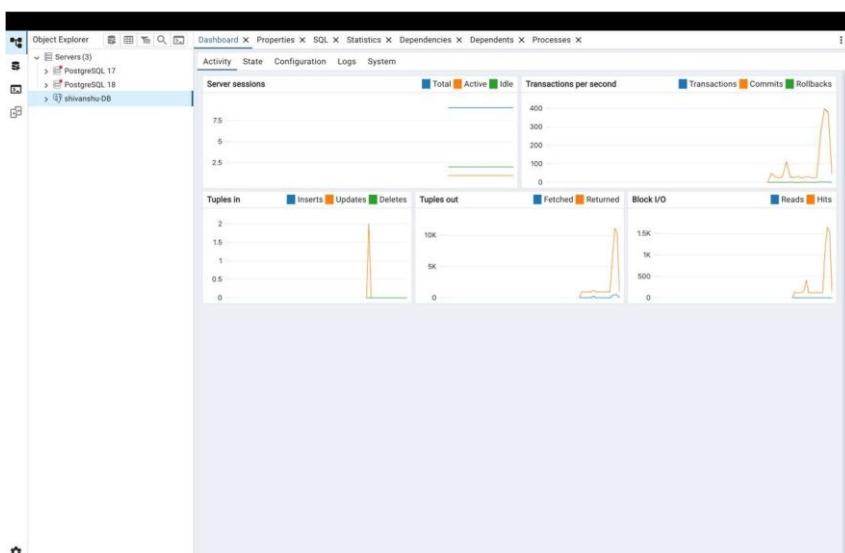
**Publicly accessible**  
Yes

**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

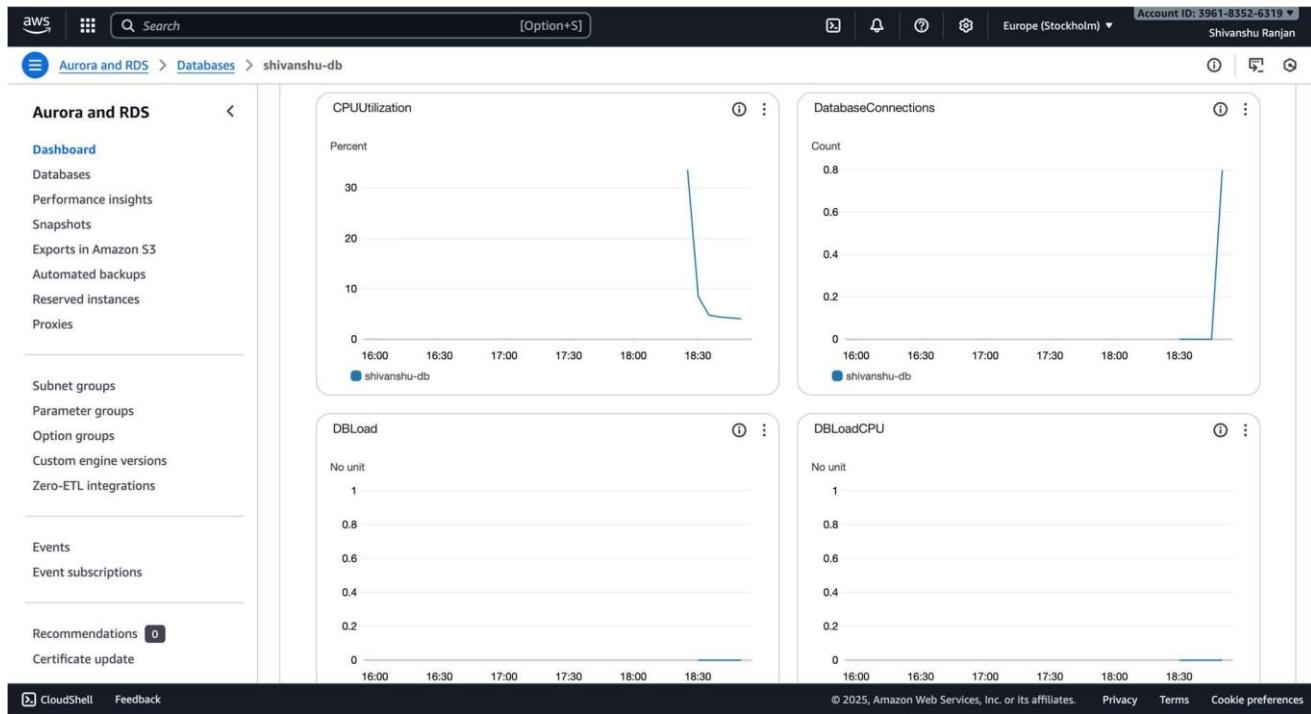




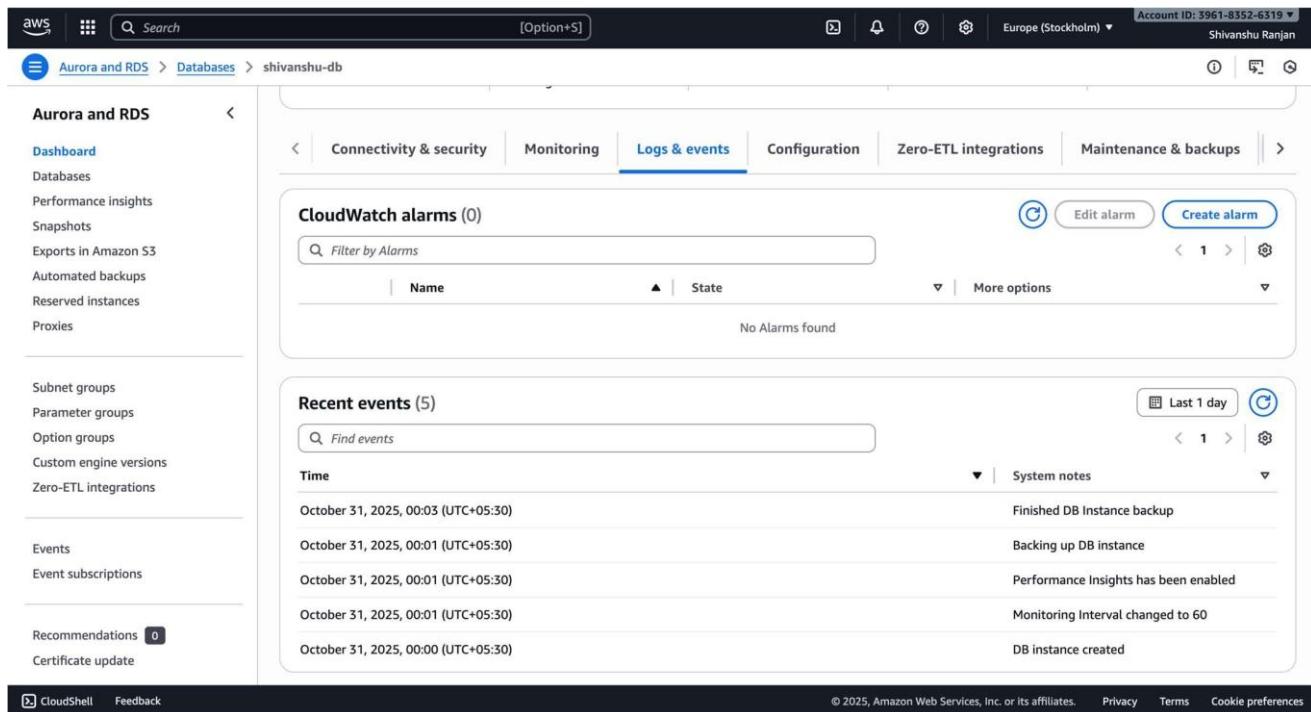
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## 17. Adding a New Server in pgAdmin



## 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 RDS console interface. On the left, there's a sidebar with various navigation options like Dashboard, Databases, Performance insights, etc. The main area is titled 'Deleting DB instance shivanshu-db' and shows a table of databases. The table has columns for DB identifier, Status, Role, Engine, Region, and Size. One row is selected, showing 'shivanshu-db' with a status of 'Deleting'. At the top right of the main area, there are buttons for Group resources, Modify, Actions (with a dropdown arrow), Create database, and a dropdown menu. The top bar also shows account information (Account ID: 3961-8352-6319) and the region (Europe (Stockholm)).

## 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.