PROJECT: AWS-BASED WEB APPLICATION

Course:IIB43203

Group Members:

- Arleena – Networking (AWS VPC)
- Amira – Compute (EC2 & Web Server)
- Aina – Database (RDS MySQL)
- Akif – Storage & Documentation

PROJECT OVERVIEW

This project demonstrates the deployment of a web-based application using Amazon Web Services (AWS).
The system utilizes multiple AWS services to ensure scalability, security, and availability.

Main Features:

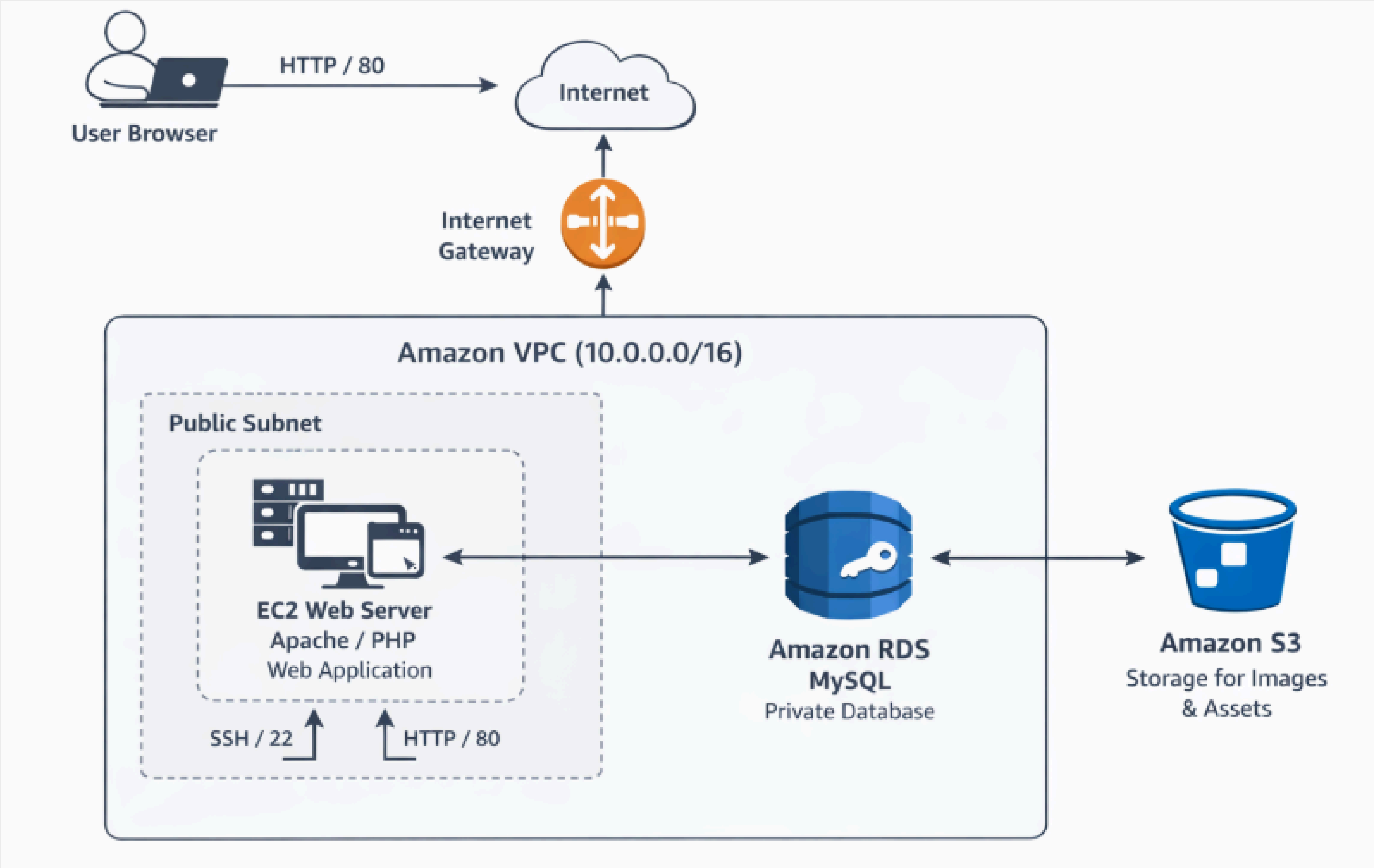
- Cloud-based web server
- Database-driven website
- Secure networking setup
- Cloud storage for assets

AWS SERVICES USED

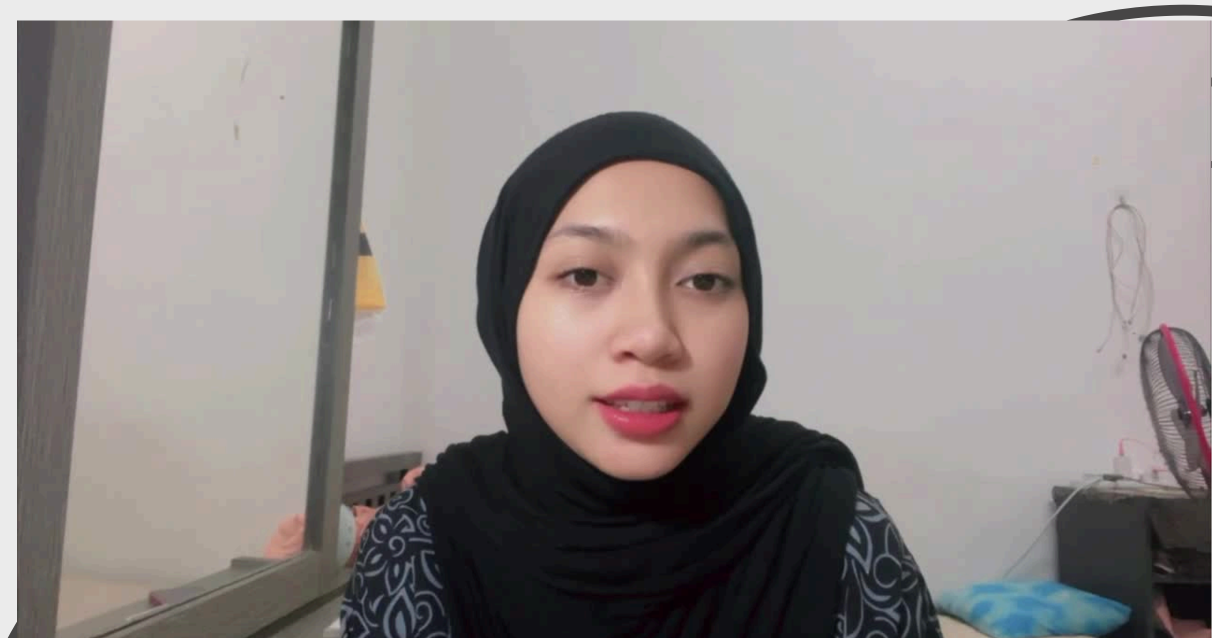
01 AWS Services Overview

- Amazon VPC – Network isolation and security
- Amazon EC2 – Web server hosting
- Amazon RDS (MySQL) – Database management
- Amazon S3 – Storage for images and backups
- Internet Gateway – Internet connectivity

SYSTEM ARCHITECTURE



This architecture shows a web application hosted on AWS. Users access the application via a browser through the Internet Gateway into a VPC. An EC2 instance in a public subnet runs Apache and PHP, connects securely to an Amazon RDS MySQL database, and uses Amazon S3 for storing images and application assets.



VPC & NETWORKING SETUP

Networking (AWS VPC)

Tasks performed:

- Created a custom VPC
- Created a public subnet
- Attached an Internet Gateway
- Configured Route Table for internet access
- Created Security Group

Security Rules:

- SSH (Port 22) – Admin access
- HTTP (Port 80) – Website access

EC2 & WEB SERVER SETUP

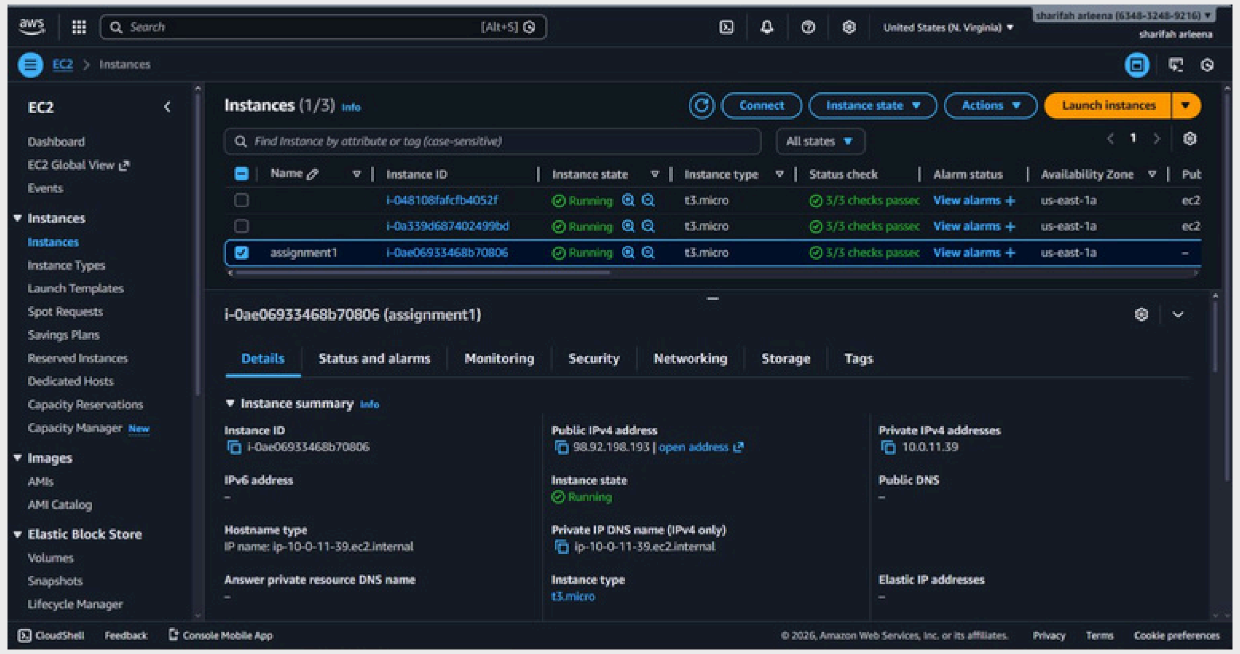
Compute (EC2 & Web Server)

Tasks performed:

- Launched EC2 using Amazon Linux
- Installed Apache Web Server
- Enabled and started Apache service
- Deployed website files
- Connected EC2 to RDS database

Tools Used:

- Amazon EC2
- Apache HTTP Server
- PHP



EC2 > Instances

Instances (1/3)

	Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Pul
□		i-048108fafcfb4052f	Running	t3.micro	3/3 checks passec	View alarms +	us-east-1a	ec2
□		i-0a339d687402499bd	Running	t3.micro	3/3 checks passec	View alarms +	us-east-1a	ec2
☑	assignment1	i-0ae06933468b70806	Running	t3.micro	3/3 checks passec	View alarms +	us-east-1a	–

i-0ae06933468b70806 (assignment1)

Instance summary

Instance ID: i-0ae06933468b70806

Public IPv4 address: 98.92.198.193 | open address

Private IPv4 addresses: 10.0.11.39

IPv6 address: –

Instance state: Running

Public DNS: –

Hostname type: IP name: ip-10-0-11-39.ec2.internal

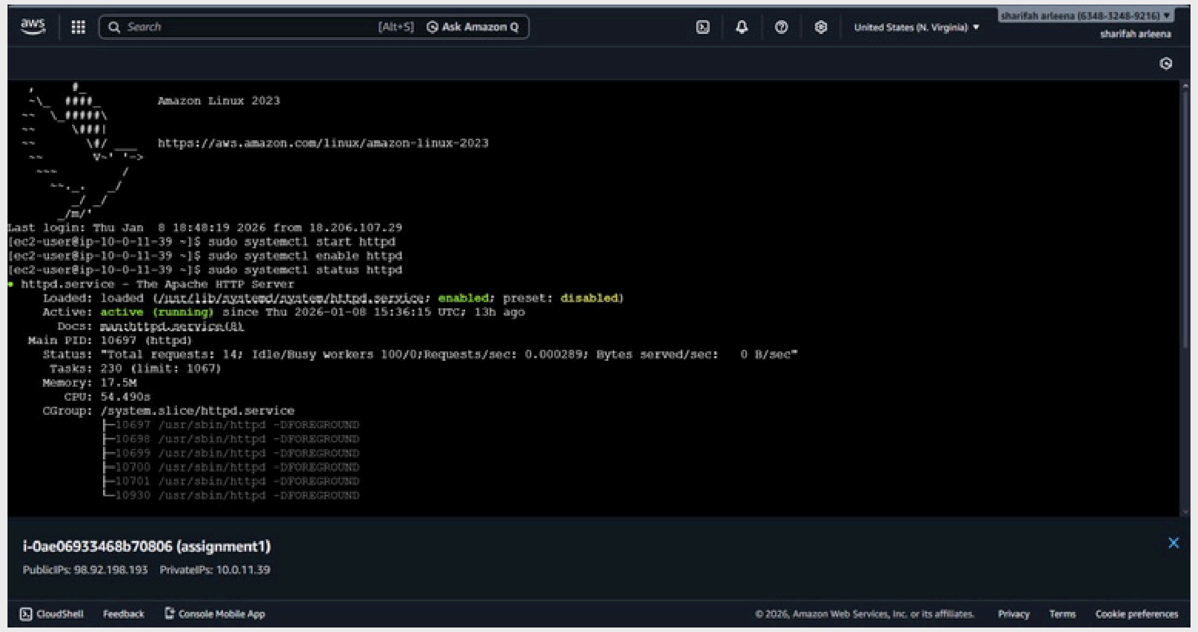
Private IP DNS name (IPv4 only): ip-10-0-11-39.ec2.internal

Answer private resource DNS name: –

Instance type: t3.micro

Elastic IP addresses: –

Website successfully deployed



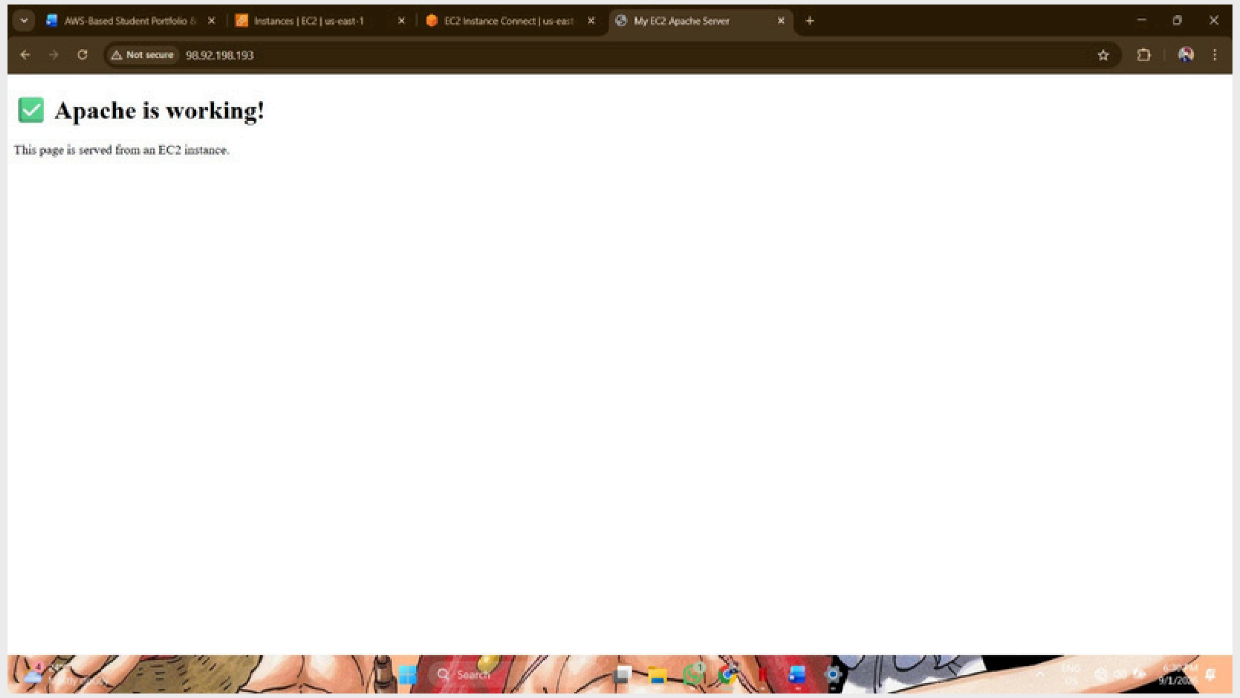
```
   ,     #_
   ~\_  ####_        Amazon Linux 2023
  ~~  \_#####\
  ~~     \###|
  ~~       \#/ ___   https://aws.amazon.com/linux/amazon-linux-2023
   ~~       V~' '->
    ~~~         /
      ~~._.   _/
         _/ _/
       _/m/'
Last login: Thu Jan  8 18:48:19 2026 from 18.206.107.29
[ec2-user@ip-10-0-11-39 ~]$ sudo systemctl start httpd
[ec2-user@ip-10-0-11-39 ~]$ sudo systemctl enable httpd
[ec2-user@ip-10-0-11-39 ~]$ sudo systemctl status httpd
● httpd.service - The Apache HTTP Server
     Loaded: loaded (/usr/lib/systemd/system/httpd.service; enabled; preset: disabled)
     Active: active (running) since Thu 2026-01-08 15:36:15 UTC; 13h ago
       Docs: man:httpd.service(8)
   Main PID: 10697 (httpd)
     Status: "Total requests: 14; Idle/Busy workers 100/0;Requests/sec: 0.000289; Bytes served/sec:   0 B/sec"
      Tasks: 230 (limit: 1067)
     Memory: 17.5M
        CPU: 54.490s
     CGroup: /system.slice/httpd.service
             ├─10697 /usr/sbin/httpd -DFOREGROUND
             ├─10698 /usr/sbin/httpd -DFOREGROUND
             ├─10699 /usr/sbin/httpd -DFOREGROUND
             ├─10700 /usr/sbin/httpd -DFOREGROUND
             ├─10701 /usr/sbin/httpd -DFOREGROUND
             └─10930 /usr/sbin/httpd -DFOREGROUND
```

i-0ae06933468b70806 (assignment1)

PublicIPs: 98.92.198.193 PrivateIPs: 10.0.11.39

Search
Ask Amazon Q
United States (N. Virginia)
sharifah arleena (6348-3248-9216)
sharifah arleena
CloudShell
Feedback
Console Mobile App
© 2026, Amazon Web Services, Inc. or its affiliates.
Privacy
Terms
Cookie preferences

Apache web server running



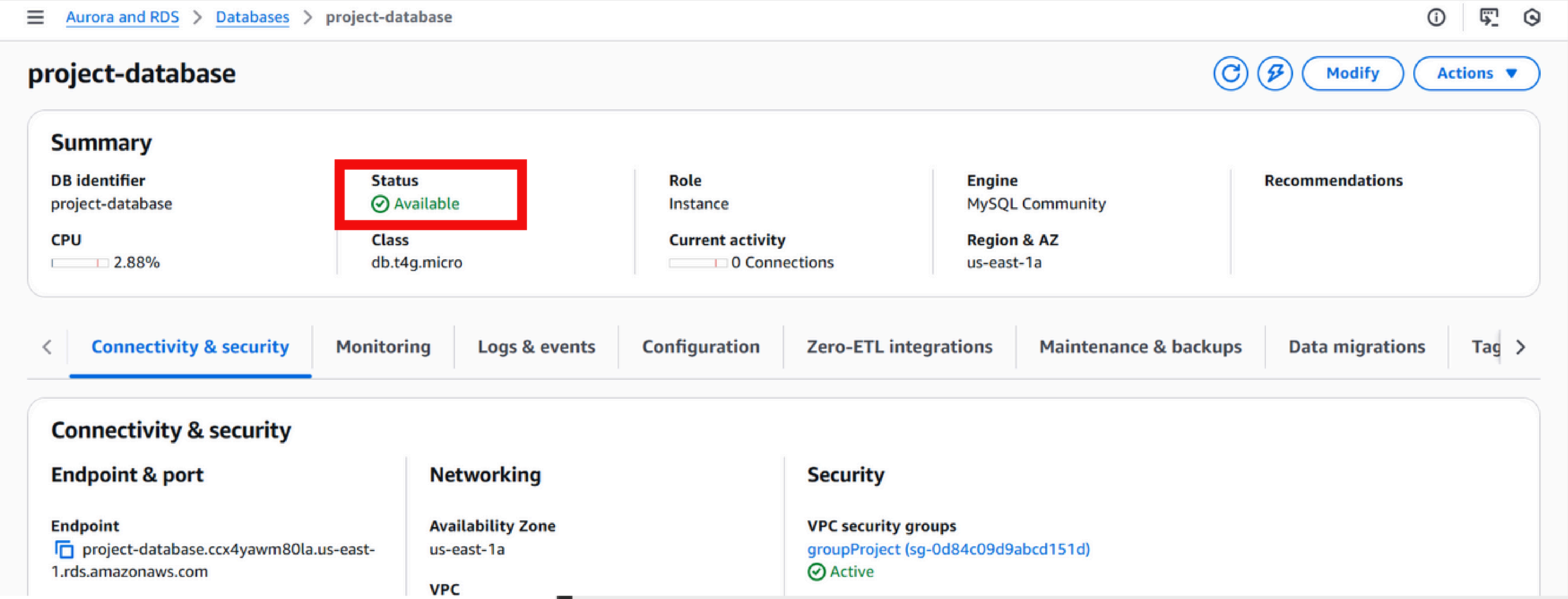
✅ Apache is working!

This page is served from an EC2 instance.

AWS-Based Student Portfolio
Instances | EC2 | us-east-1
EC2 Instance Connect | us-east
My EC2 Apache Server
Not secure
98.92.198.193
Search

DATABASE (RDS MYSQL)

- Engine : MySQL
- Instance : db.t3.micro (Free Tier)
- Status : Active & Managed



Aurora and RDS > Databases > project-database

project-database

Summary

DB identifier
project-database

CPU
2.88%

Status
Available

Class
db.t4g.micro

Role
Instance

Current activity
0 Connections

Engine
MySQL Community

Region & AZ
us-east-1a

Recommendations

Connectivity & security

Endpoint & port

Endpoint
project-database.ccx4yawm80la.us-east-1.rds.amazonaws.com

Networking

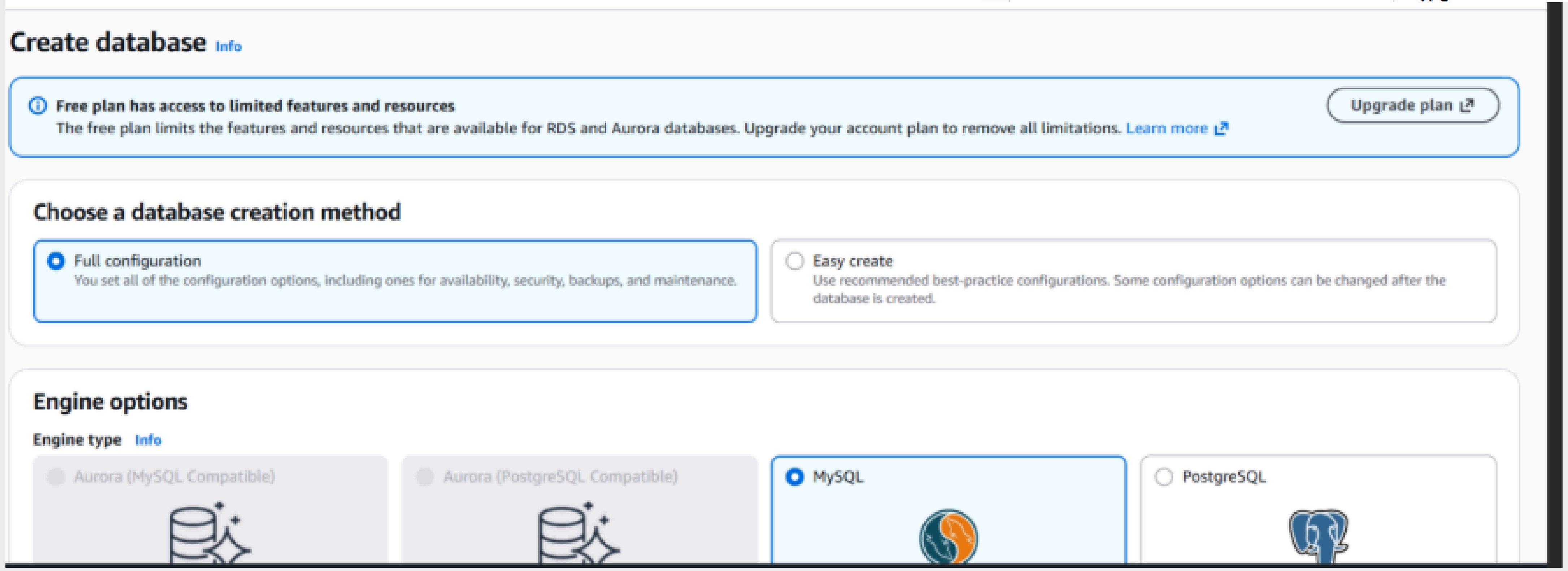
Availability Zone
us-east-1a

VPC

Security

VPC security groups
groupProject (sg-0d84c09d9abcd151d)
Active

Aurora and RDS > Databases > Create database



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

● Full configuration
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.

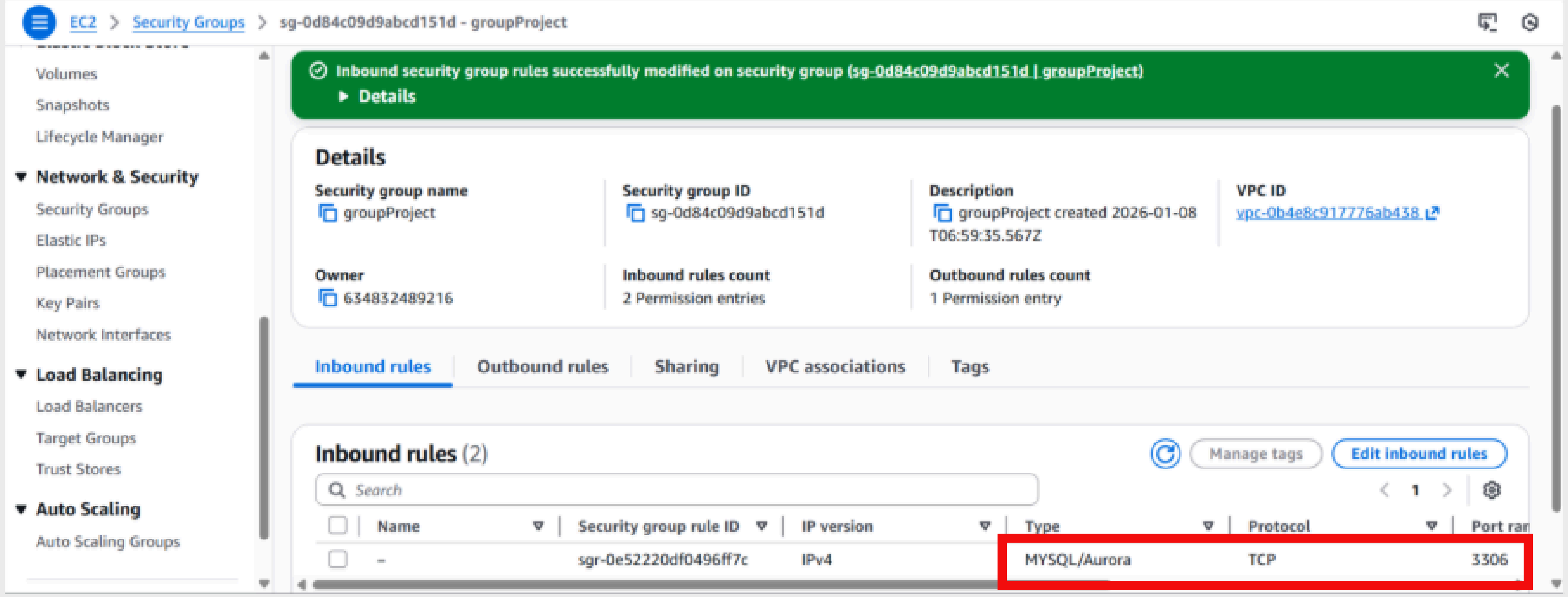
Engine options

Engine type Info

○ Aurora (MySQL Compatible)
○ Aurora (PostgreSQL Compatible)
● MySQL
○ PostgreSQL

RDS : SECURITY & CONNECTIVITY

- Port 3306 opened for EC2 access.
- Strict firewall rules to prevent unauthorized access.
- Self-correction: Mention fixing Error 115 here.



Inbound security group rules successfully modified on security group (sg-0d84c09d9abcd151d | groupProject)

▸ Details

Details

Security group name: groupProject

Security group ID: sg-0d84c09d9abcd151d

Description: groupProject created 2026-01-08 T06:59:35.567Z

VPC ID: vpc-0b4e8c917776ab438

Owner: 634832489216

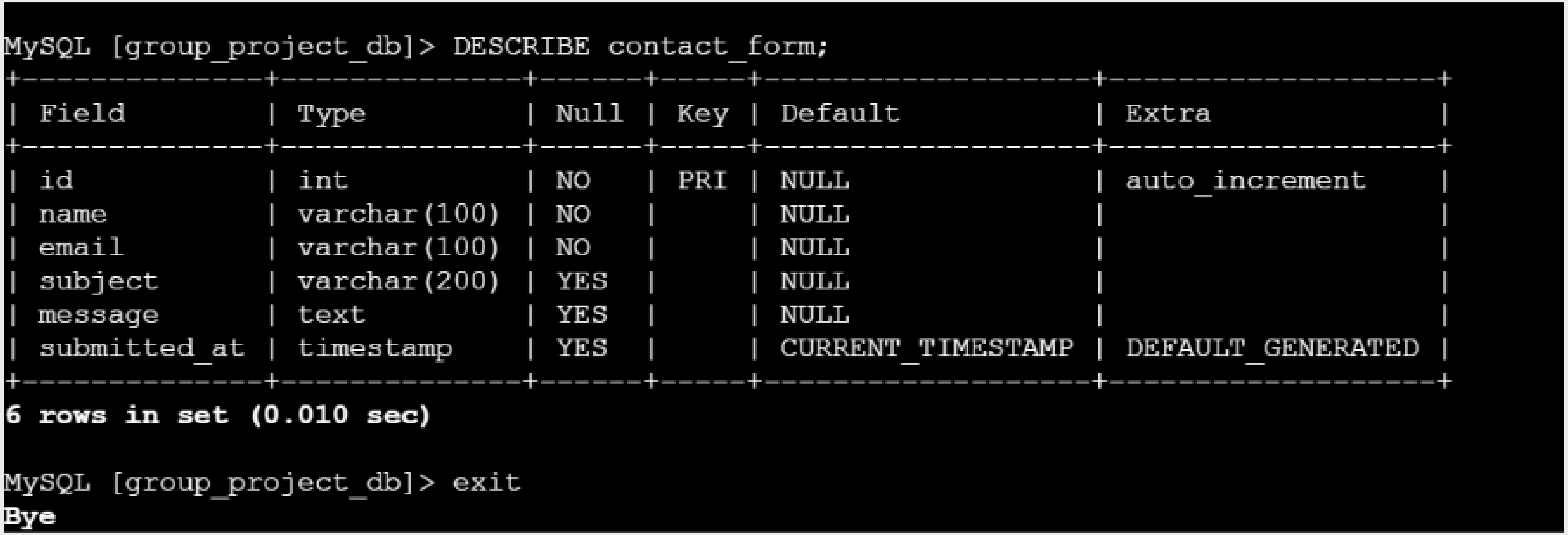
Inbound rules count: 2 Permission entries

Outbound rules count: 1 Permission entry

Inbound rules (2)

	Name	Security group rule ID	IP version	Type	Protocol	Port ran
□	-	sgr-0e52220df0496ff7c	IPv4	MYSQL/Aurora	TCP	3306

DATABASE SCHEMA



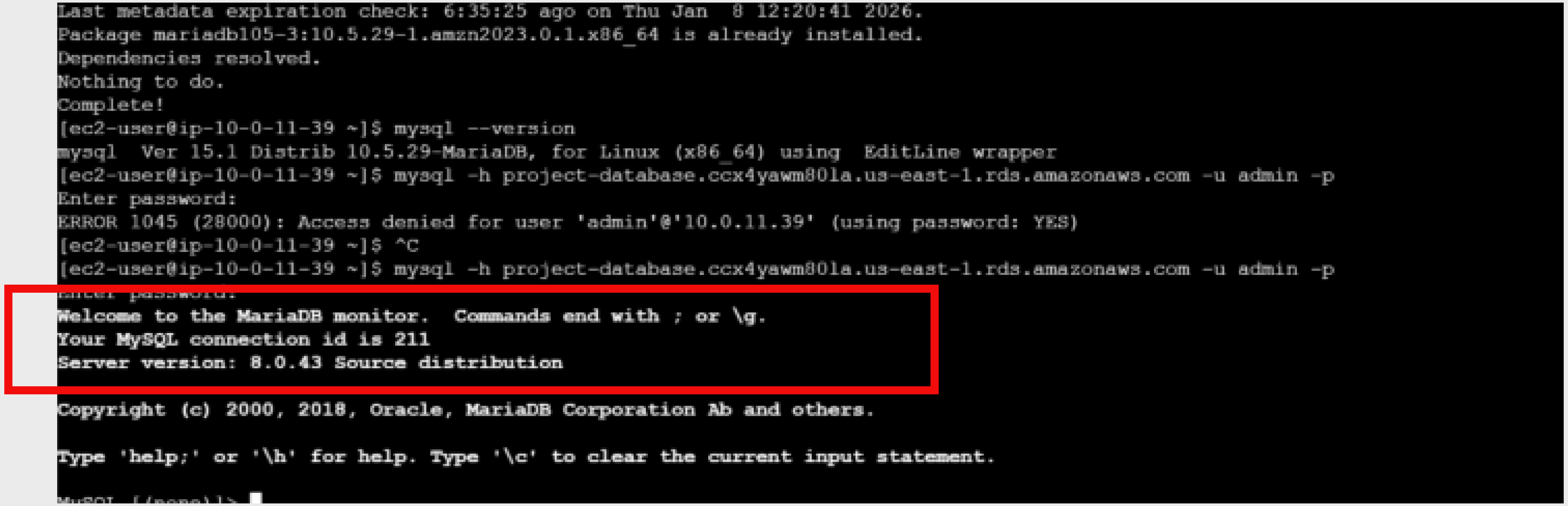
```
MySQL [group_project_db]> DESCRIBE contact_form;
+--------------+--------------+------+-----+-------------------+-------------------+
| Field        | Type         | Null | Key | Default           | Extra             |
+--------------+--------------+------+-----+-------------------+-------------------+
| id           | int          | NO   | PRI | NULL              | auto_increment    |
| name         | varchar(100) | NO   |     | NULL              |                   |
| email        | varchar(100) | NO   |     | NULL              |                   |
| subject      | varchar(200) | YES  |     | NULL              |                   |
| message      | text         | YES  |     | NULL              |                   |
| submitted_at | timestamp    | YES  |     | CURRENT_TIMESTAMP | DEFAULT_GENERATED |
+--------------+--------------+------+-----+-------------------+-------------------+
6 rows in set (0.010 sec)

MySQL [group_project_db]> exit
Bye
```

- Schema Name: group_project_db.
- Table: contact_form
- Auto-incrementing Primary Keys for data integrity.

TROUBLESHOOTING

- Challenge: Access Denied (Error 1045).
- Action: Reset Master Password via RDS Modify.
- Result: Successful handshake between EC2 and RDS.



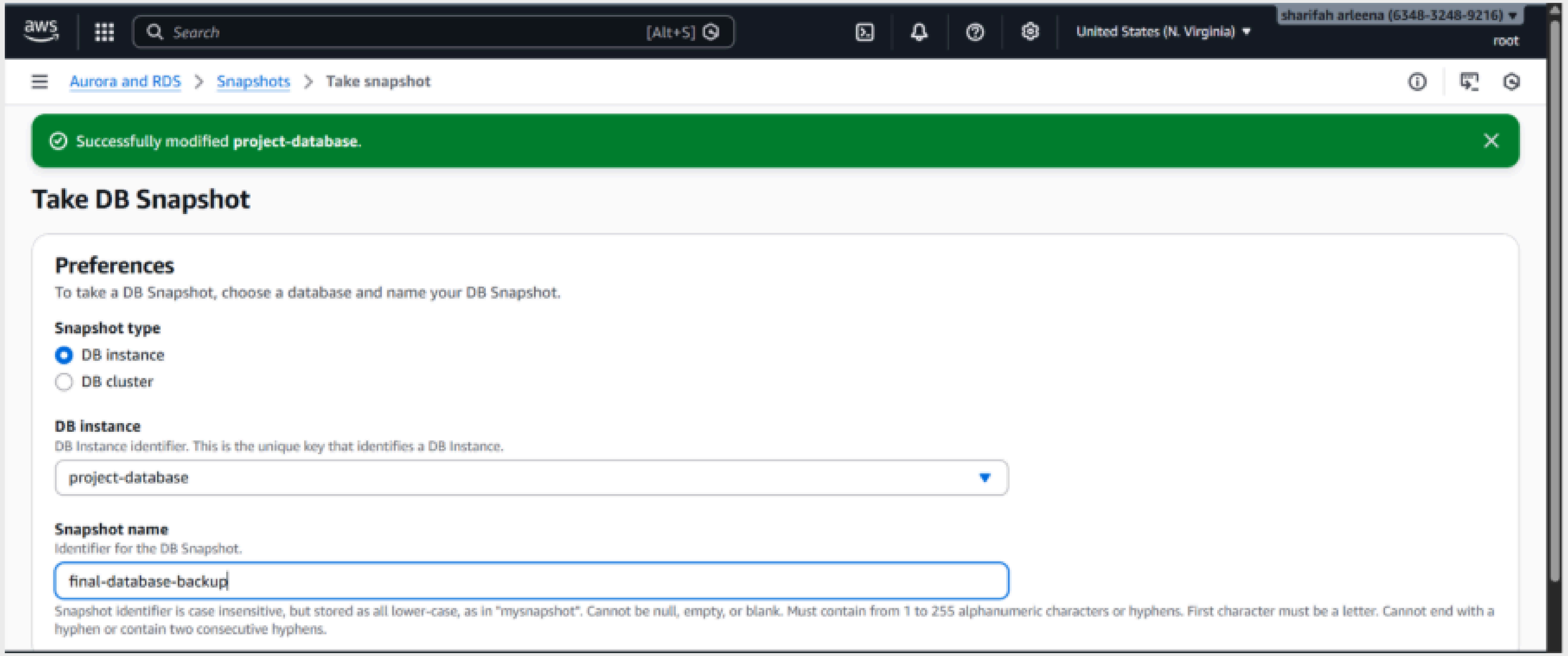
```
Last metadata expiration check: 6:35:25 ago on Thu Jan  8 12:20:41 2026.
Package mariadb105-3:10.5.29-1.amzn2023.0.1.x86_64 is already installed.
Dependencies resolved.
Nothing to do.
Complete!
[ec2-user@ip-10-0-11-39 ~]$ mysql --version
mysql  Ver 15.1 Distrib 10.5.29-MariaDB, for Linux (x86_64) using  EditLine wrapper
[ec2-user@ip-10-0-11-39 ~]$ mysql -h project-database.ccx4yawm80la.us-east-1.rds.amazonaws.com -u admin -p
Enter password:
ERROR 1045 (28000): Access denied for user 'admin'@'10.0.11.39' (using password: YES)
[ec2-user@ip-10-0-11-39 ~]$ ^C
[ec2-user@ip-10-0-11-39 ~]$ mysql -h project-database.ccx4yawm80la.us-east-1.rds.amazonaws.com -u admin -p
Enter password:
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MySQL connection id is 211
Server version: 8.0.43 Source distribution

Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

MySQL [(none)]>
```

DATA RELIABILITY


aws
Search
[Alt+S]
United States (N. Virginia) ▾
sharifah arleena (6348-3248-9216) ▾
root
Aurora and RDS > Snapshots > Take snapshot

Successfully modified **project-database**.

Take DB Snapshot

Preferences

To take a DB Snapshot, choose a database and name your DB Snapshot.

Snapshot type

● DB instance

○ DB cluster

DB instance

DB Instance identifier. This is the unique key that identifies a DB Instance.

project-database ▾

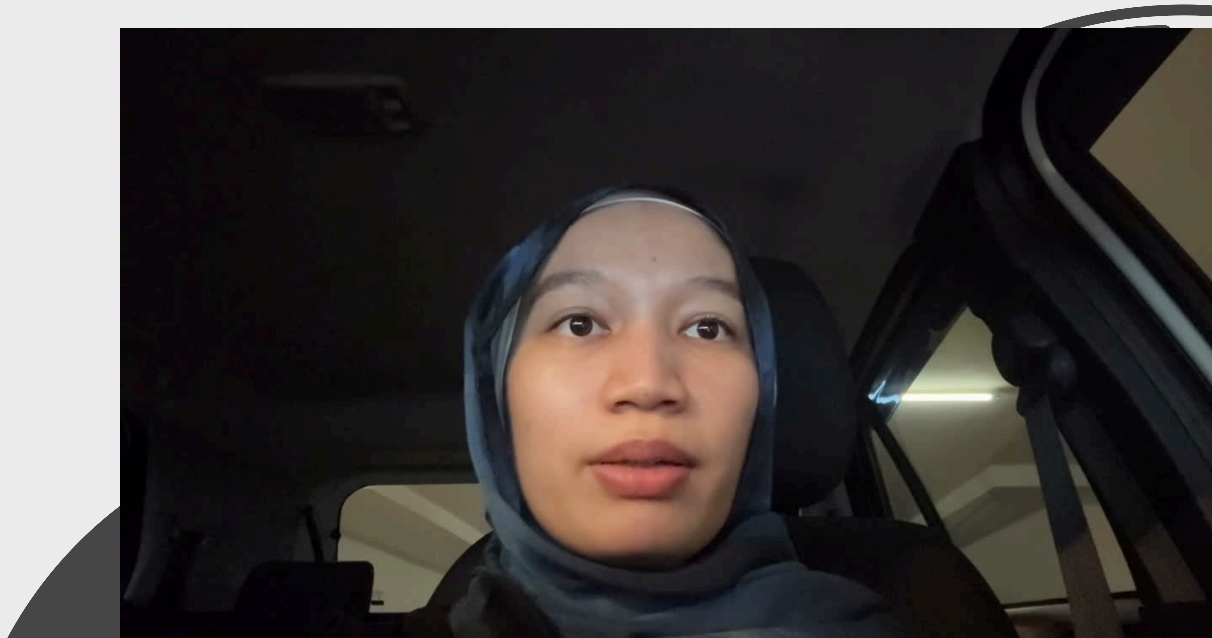
Snapshot name

Identifier for the DB Snapshot.

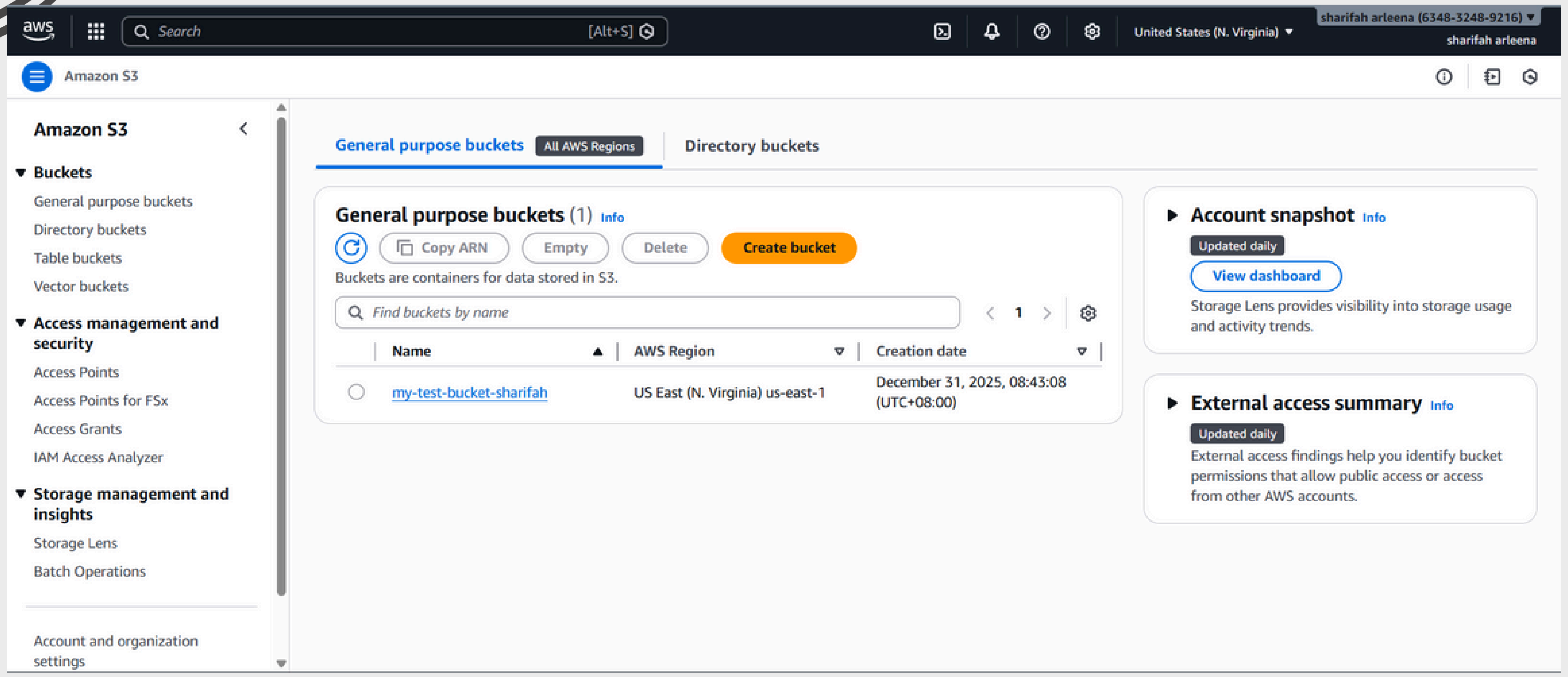
final-database-backup

Snapshot identifier is case insensitive, but stored as all lower-case, as in "mysnapshot". Cannot be null, empty, or blank. Must contain from 1 to 255 alphanumeric characters or hyphens. First character must be a letter. Cannot end with a hyphen or contain two consecutive hyphens.

- Manual Backup: group-project-db-final-backup.
- Ensures 100% data recovery in case of failure.



S3 BUCKET



General purpose buckets (1) Info

Buckets are containers for data stored in S3.

Name	AWS Region	Creation date
○ my-test-bucket-sharifah	US East (N. Virginia) us-east-1	December 31, 2025, 08:43:08 (UTC+08:00)

Account snapshot Info

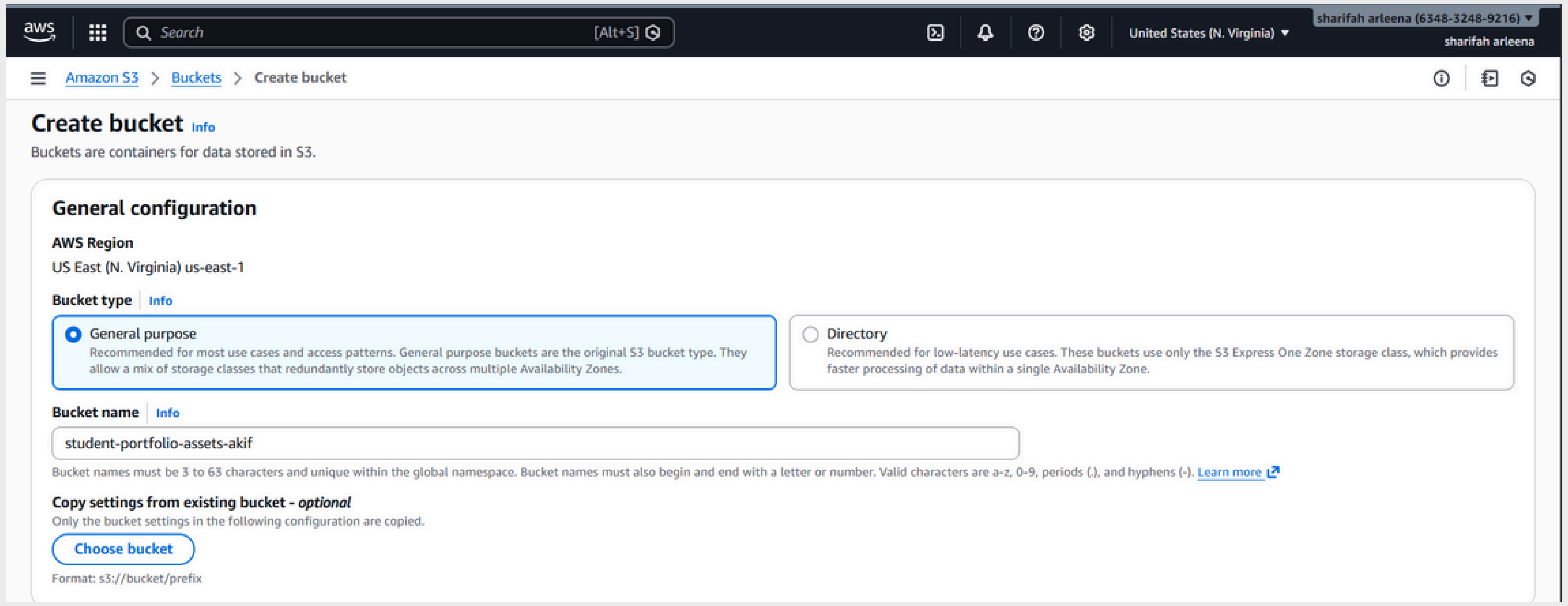
Updated daily

Storage Lens provides visibility into storage usage and activity trends.

External access summary Info

Updated daily

External access findings help you identify bucket permissions that allow public access or access from other AWS accounts.


aws
Search
[Alt+S]
United States (N. Virginia) ▾
sharifah arleena (6348-3248-9216) ▾
sharifah arleena
Amazon S3 > Buckets > Create bucket
Info
Choose bucket
Learn more

Create bucket Info

Buckets are containers for data stored in S3.

General configuration

AWS Region

US East (N. Virginia) us-east-1

Bucket type Info

● General purpose
Recommended for most use cases and access patterns. General purpose buckets are the original S3 bucket type. They allow a mix of storage classes that redundantly store objects across multiple Availability Zones.

○ Directory
Recommended for low-latency use cases. These buckets use only the S3 Express One Zone storage class, which provides faster processing of data within a single Availability Zone.

Bucket name Info

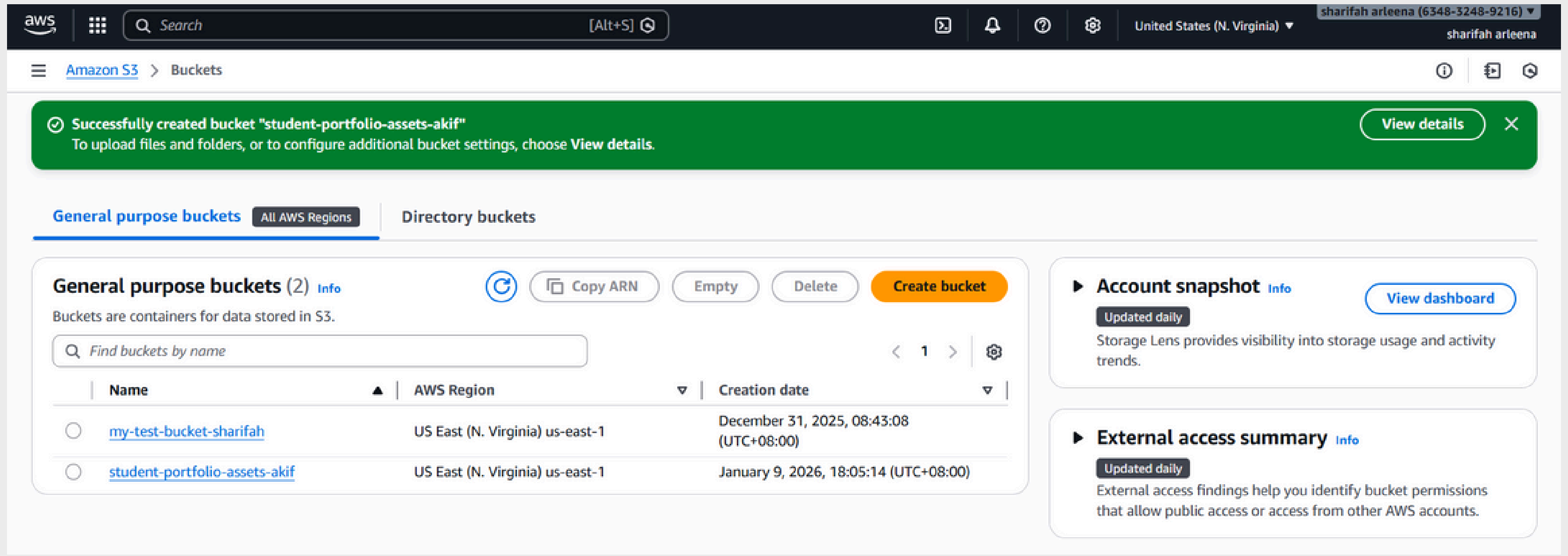
student-portfolio-assets-akif

Bucket names must be 3 to 63 characters and unique within the global namespace. Bucket names must also begin and end with a letter or number. Valid characters are a-z, 0-9, periods (.), and hyphens (-). Learn more

Copy settings from existing bucket - *optional*

Only the bucket settings in the following configuration are copied.

Format: s3://bucket/prefix



Successfully created bucket "student-portfolio-assets-akif"
To upload files and folders, or to configure additional bucket settings, choose **View details**.

General purpose buckets (2) Info

Buckets are containers for data stored in S3.

Name	AWS Region	Creation date
○ my-test-bucket-sharifah	US East (N. Virginia) us-east-1	December 31, 2025, 08:43:08 (UTC+08:00)
○ student-portfolio-assets-akif	US East (N. Virginia) us-east-1	January 9, 2026, 18:05:14 (UTC+08:00)

Account snapshot Info

Updated daily

Storage Lens provides visibility into storage usage and activity trends.

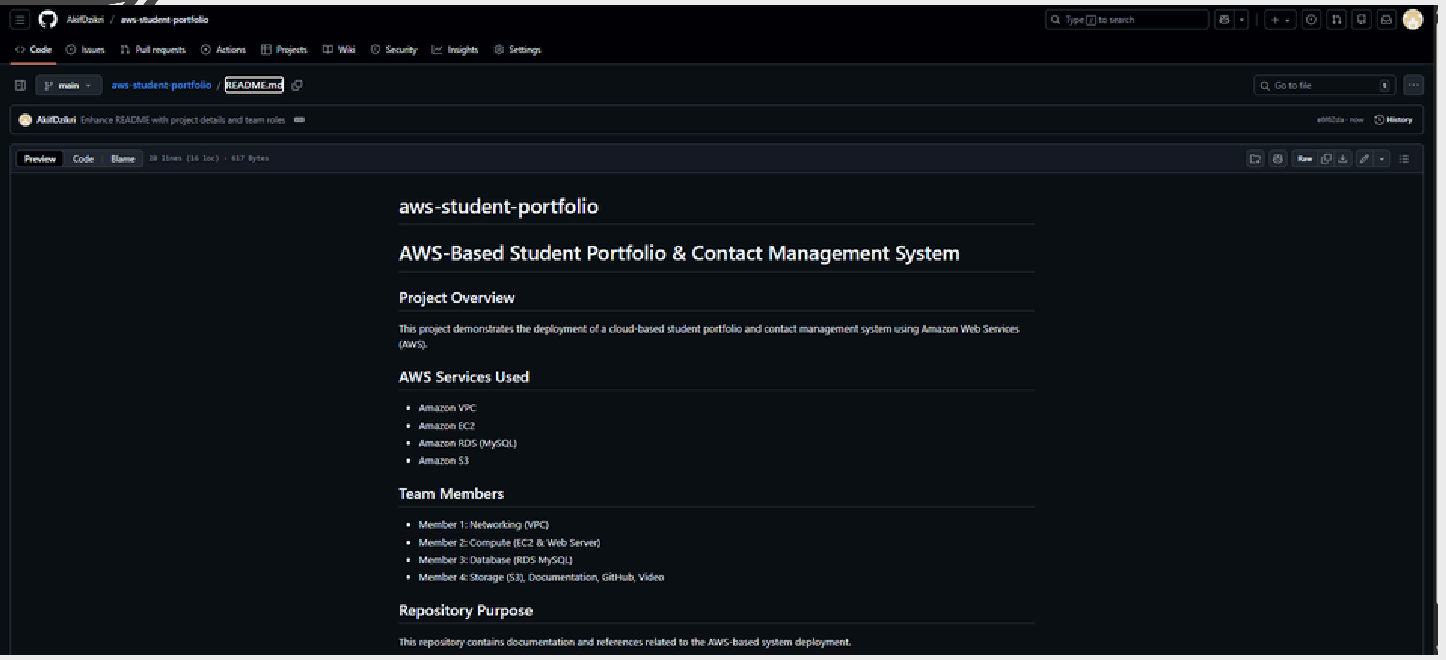
External access summary Info

Updated daily

External access findings help you identify bucket permissions that allow public access or access from other AWS accounts.

- the system displays existing buckets in the AWS account.
- a new S3 bucket named student-portfolio-assets-akif was created.
- confirms that the S3 bucket was successfully created.

GITHUB REPO



AkifDzikri / aws-student-portfolio

main · aws-student-portfolio / README.md

AkifDzikri Enhance README with project details and team roles

20 lines (16 loc) · 617 Bytes

aws-student-portfolio

AWS-Based Student Portfolio & Contact Management System

Project Overview

This project demonstrates the deployment of a cloud-based student portfolio and contact management system using Amazon Web Services (AWS).

AWS Services Used

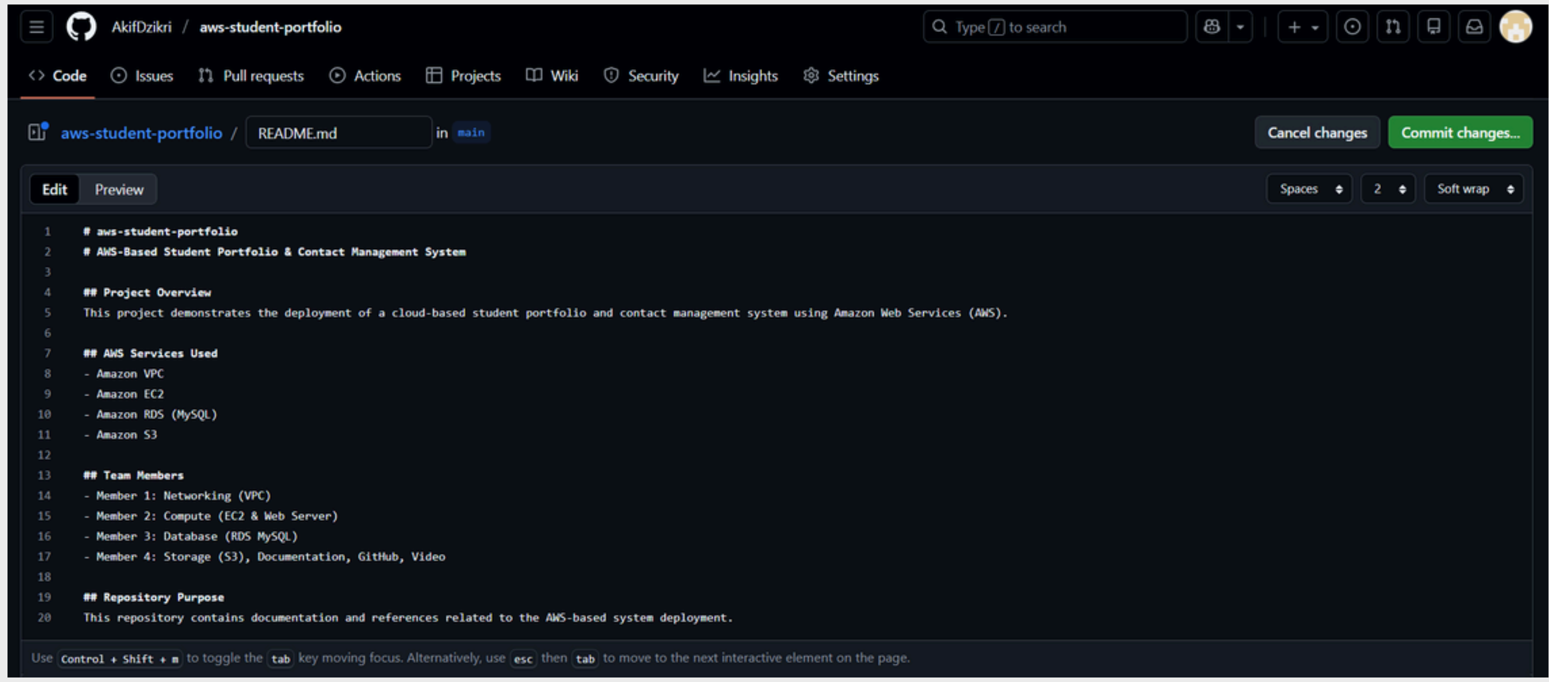
- Amazon VPC
- Amazon EC2
- Amazon RDS (MySQL)
- Amazon S3

Team Members

- Member 1: Networking (VPC)
- Member 2: Compute (EC2 & Web Server)
- Member 3: Database (RDS MySQL)
- Member 4: Storage (S3), Documentation, GitHub, Video

Repository Purpose

This repository contains documentation and references related to the AWS-based system deployment.



AkifDzikri / aws-student-portfolio

aws-student-portfolio / README.md in main

```
# aws-student-portfolio
# AWS-Based Student Portfolio & Contact Management System

## Project Overview
This project demonstrates the deployment of a cloud-based student portfolio and contact management system using Amazon Web Services (AWS).

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This repository contains documentation and references related to the AWS-based system deployment.
```
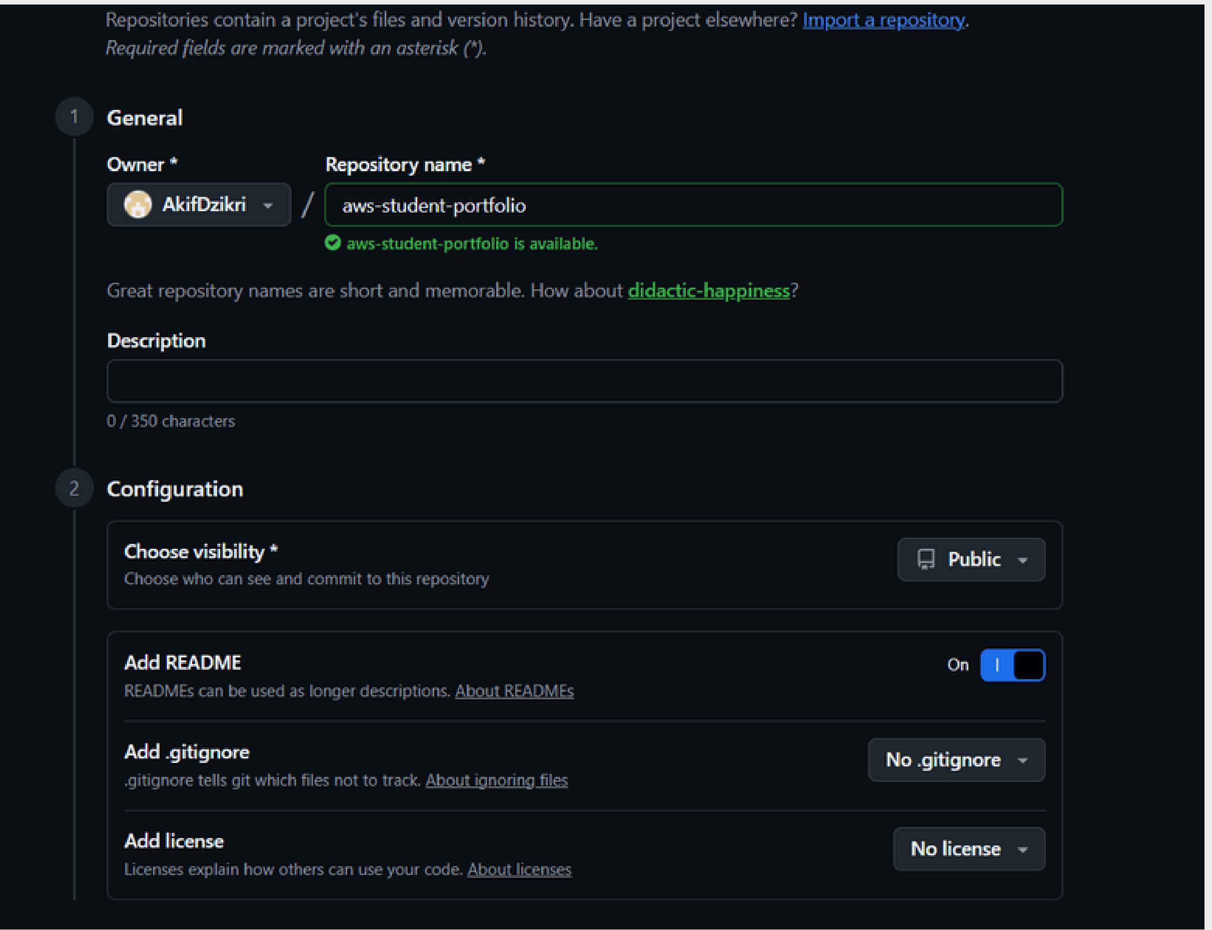

Use Control + Shift + m to toggle the tab key moving focus. Alternatively, use esc then tab to move to the next interactive element on the page.



Repositories contain a project's files and version history. Have a project elsewhere? Import a repository.
Required fields are marked with an asterisk (*).

1 General

Owner * AkifDzikri / Repository name * aws-student-portfolio

aws-student-portfolio is available.

Great repository names are short and memorable. How about didactic-happiness?

Description

0 / 350 characters

2 Configuration

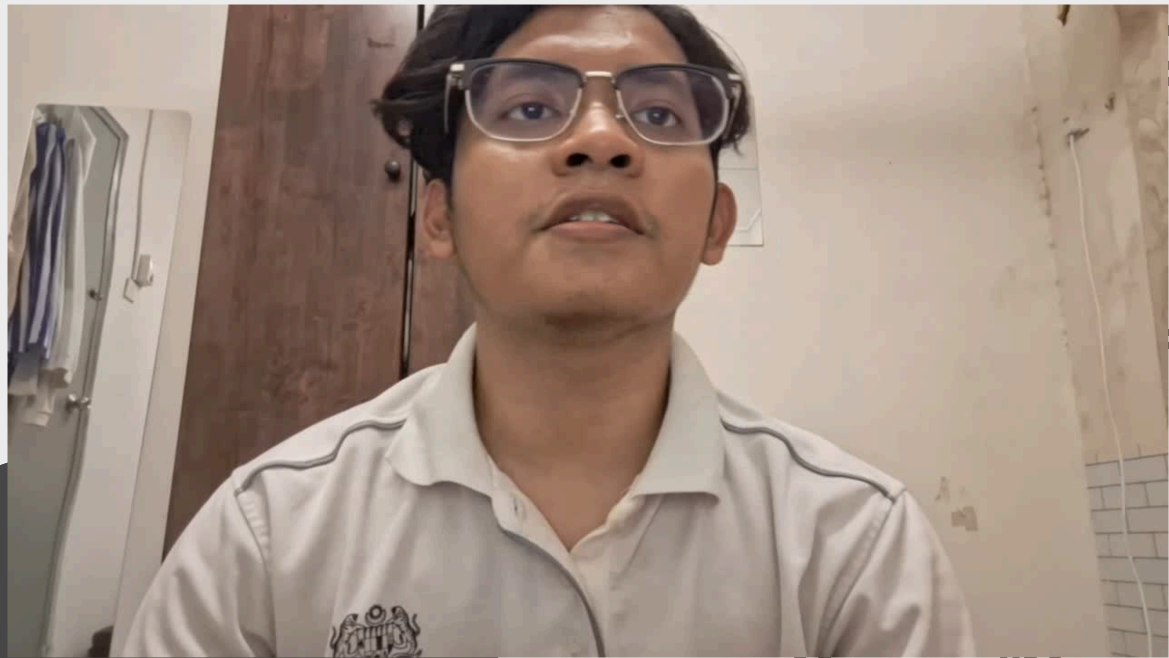
Choose visibility * — Choose who can see and commit to this repository: Public

Add README — READMEs can be used as longer descriptions. About READMEs: On

Add .gitignore — .gitignore tells git which files not to track. About ignoring files: No .gitignore

Add license — Licenses explain how others can use your code. About licenses: No license

- GitHub repository README file, contains the project title, overview, AWS services used, and team roles.
- creation of the GitHub repository with public access and README enabled, allowing easy access and proper documentation.
- process of editing the README.md file to document project details, AWS services, and team member responsibilities.



TEAM CONTRIBUTION

Member	**Role**
Sharifah Arleena Barakbah Binti Syed Aswad	Networking (VPC, Subnet, IGW)
Nor Amira Ilyana Binti Abdullah	EC2 & Web Server
Aina Shafiqah Binti Mohd Hasan	RDS Database
Muhammad Akif Dzikri BinMD Fikri	S3, Documentation, GitHub

CONCLUSION

This project successfully demonstrates the use of AWS cloud services to deploy a secure and scalable web application.
Each AWS component plays an important role in ensuring system performance and reliability

Project Links

- 📂 GitHub Repository:
- https://github.com/AkifDzikri/aws-student-portfolio.git

THANK YOU