



# Project Title: Set Up AWS Backup Plan for EC2 and RDS

## 1. Objectives

The primary objective of this project is to deploy and secure a sample database application on AWS using:

- EC2 instance (compute)
  - Amazon RDS (database)
  - AWS Backup for backup and recovery
- The goal is to implement a reliable backup and restore strategy, demonstrate data availability, and ensure data integrity.

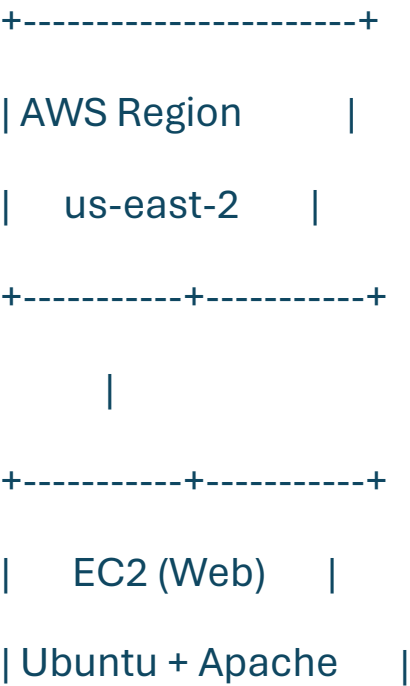
## 2. Introduction

Cloud-based deployments are now the standard for modern applications, providing scalability, security, and cost efficiency. In this project, we built a simple database-driven application using AWS infrastructure services. We configured backups, tested data recovery, and demonstrated the entire workflow of provisioning, securing, and backing up cloud resources.

## 3. Technology Stack

Component	Technology / Service
Compute	Amazon EC2 (Ubuntu)
Database	Amazon RDS (MySQL 8.0)
Backup & Restore	AWS Backup
Web Server	Apache2
Programming / CLI	Linux shell, MySQL client
OS	Ubuntu 22.04 LTS (on EC2)
Region	us-east-2 (Ohio)

4. System Structure Diagram

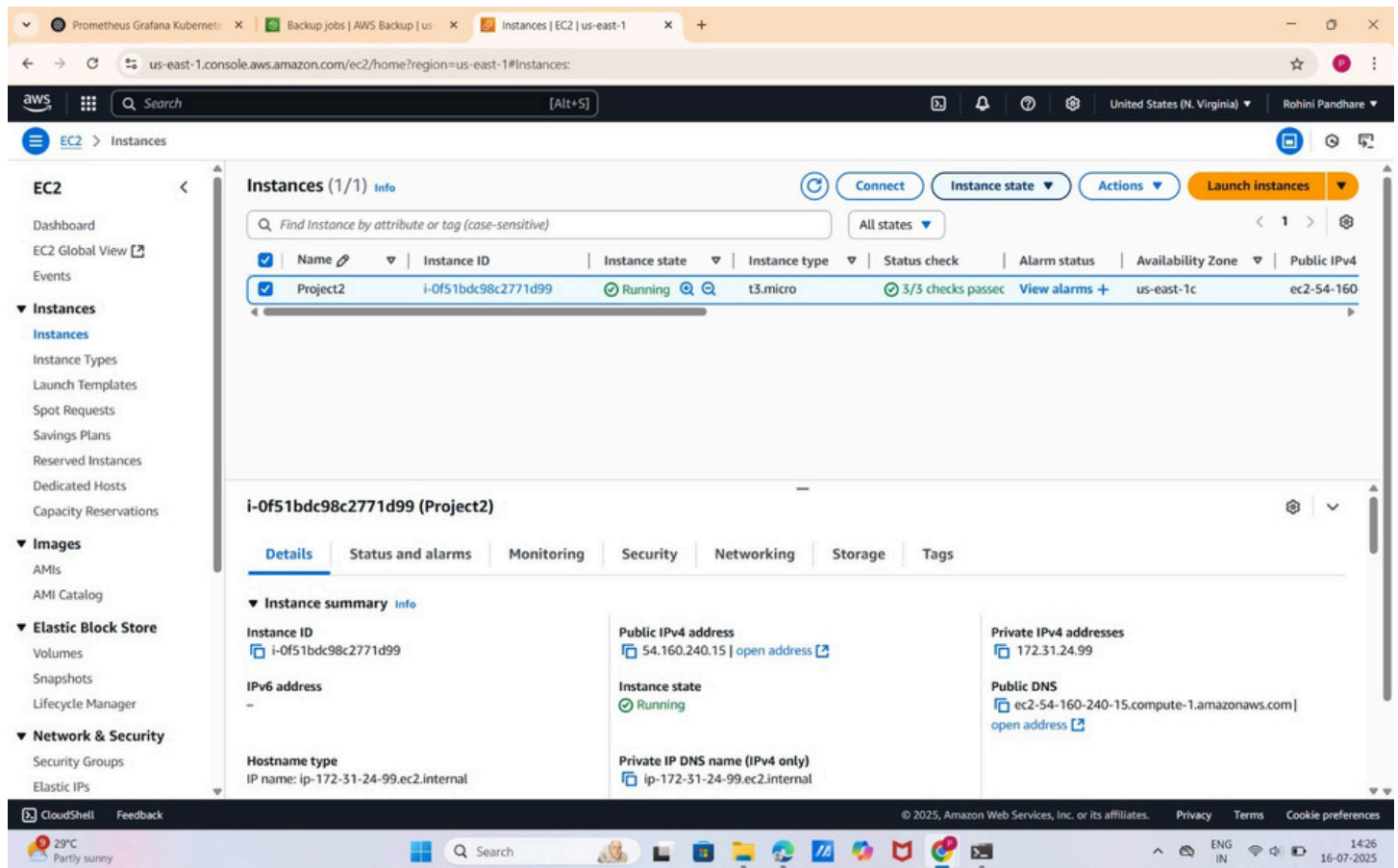


+-----+-----+		
+-----+-----+		
Amazon RDS		
MySQL DB		
+-----+-----+		
+-----+-----+		
AWS Backup		
Vaults & Jobs		
+-----+		

5. Implementation Steps

Step 1: Launch EC2 instance

- Created a t2.micro EC2 instance in us-east-2a



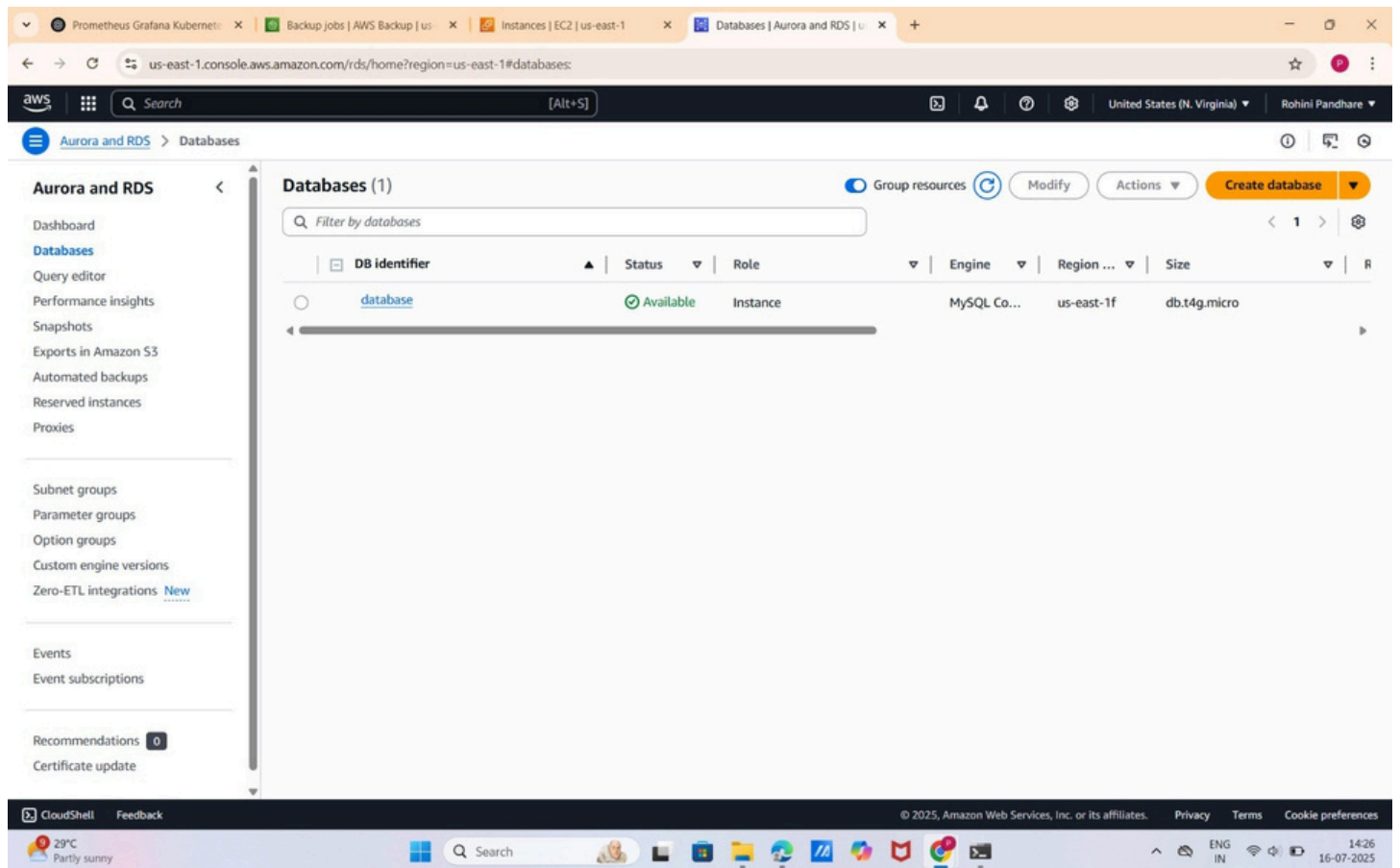
- Configured security groups to allow SSH (port 22) and HTTP (port 80)

## Step 2: Set up Apache web server

```
sudo apt updatesudo apt install apache2 -y
```

## Step 3: Create Amazon RDS instance

- Launched MySQL database instance (db.t4g.micro) named backup-project-db



- Connected to it from EC2 via MySQL client
- 

#### Step 4: Create and populate database

```
CREATE DATABASE testdb;USE testdb;CREATE TABLE sample_table ( id INT AUTO_INCREMENT  
PRIMARY KEY, name VARCHAR(50));INSERT INTO sample_table (name) VALUES ('Backup Test  
1'), ('Backup Test 2');SELECT * FROM sample_table;
```

```
C:\Program Files\WindowsAp  + ~
Swap usage: 0% IPv4 address for ens5: 172.31.24.99

Expanded Security Maintenance for Applications is not enabled.

0 updates can be applied immediately.

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status

*** System restart required ***
Last login: Wed Jul 16 07:52:49 2025 from 157.32.130.242
ubuntu@ip-172-31-24-99:~$ mysql -h database.c8lukq2wi9p9.us-east-1.rds.amazonaws.com -u admin -p
Enter password:
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 25
Server version: 8.0.41 Source distribution

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affiliates. Other names may be trademarks of their respective
owners.

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

mysql> CREATE DATABASE testdb;
le VALUES (1, 'AWS Backup Test');
Query OK, 1 row affected (0.00 sec)

mysql> USE testdb;
Database changed
mysql> CREATE TABLE sample (id INT PRIMARY KEY, name VARCHAR(50));
Query OK, 0 rows affected (0.03 sec)

mysql> INSERT INTO sample VALUES (1, 'AWS Backup Test');
Query OK, 1 row affected (0.01 sec)

mysql> show tables;
+-----+
| Tables_in_testdb |
+-----+
| sample           |
+-----+
1 row in set (0.01 sec)
```

## Step 5: Configure AWS Backup

- Created backup vaults

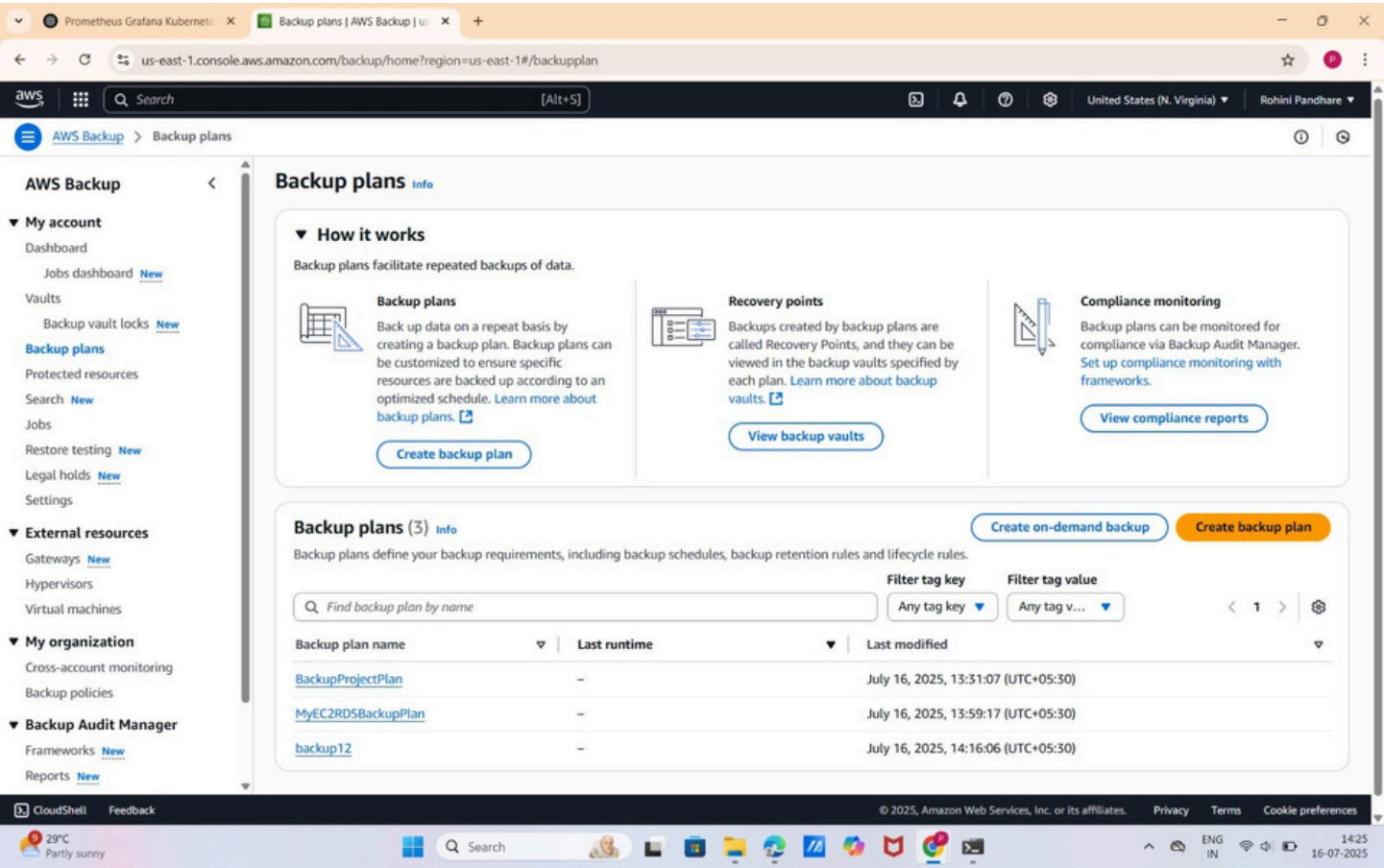
The screenshot shows the AWS Backup console interface. On the left is a navigation sidebar with sections: 'My account' (Dashboard, Jobs dashboard, Vaults, Backup vault locks, Backup plans, Protected resources, Search, Jobs, Restore testing, Legal holds, Settings), 'External resources' (Gateways, Hypervisors, Virtual machines), 'My organization' (Cross-account monitoring, Backup policies), and 'Backup Audit Manager' (Frameworks, Reports). The main area is titled 'Vaults' and includes a 'Create new vault' button. Below this, there's a section 'How vaults work' explaining backup vaults and logically air-gapped vaults, each with a 'Create' button. A tabbed interface shows 'Vaults created by this account' (active), 'Vaults shared through RAM', and 'Vaults accessible through Multi-party approval'. The 'Vaults created by this account' section shows a recovery point count of 2 and a table of vaults:

Vault name	Vault type	Vault lock status	Recovery points	KMS encryption key ID
<a href="#">Default</a>	Backup	-	1	<a href="#">d91a41d1-398f-4145-80b1-7e25b4f970ae</a>
<a href="#">MyBackupVault</a>	Backup	-	1	<a href="#">d91a41d1-398f-4145-80b1-7e25b4f970ae</a>

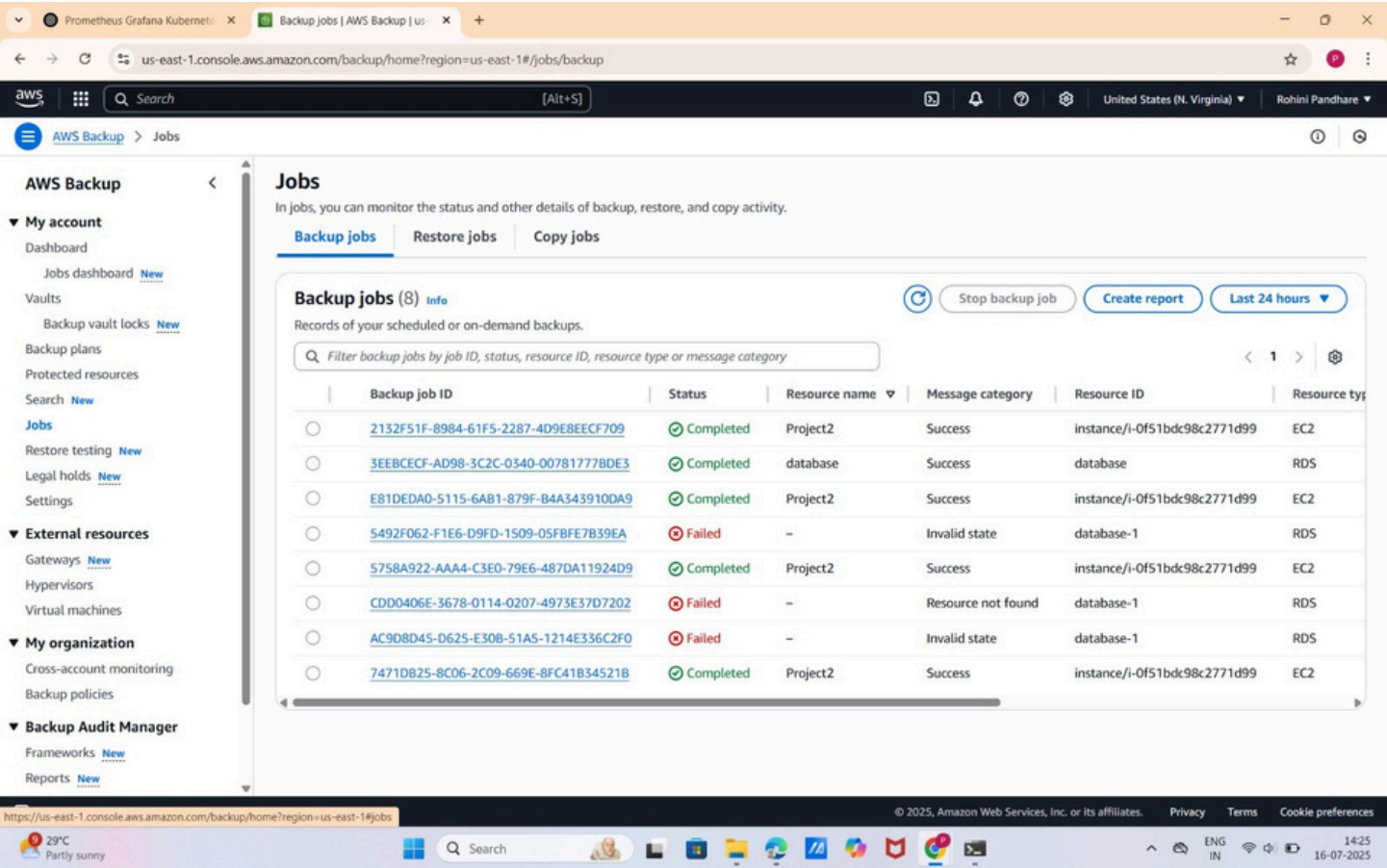
The bottom of the screen shows the Windows taskbar with the date 16-07-2025 and time 14:04.



- Defined backup plans targeting EC2 and RDS

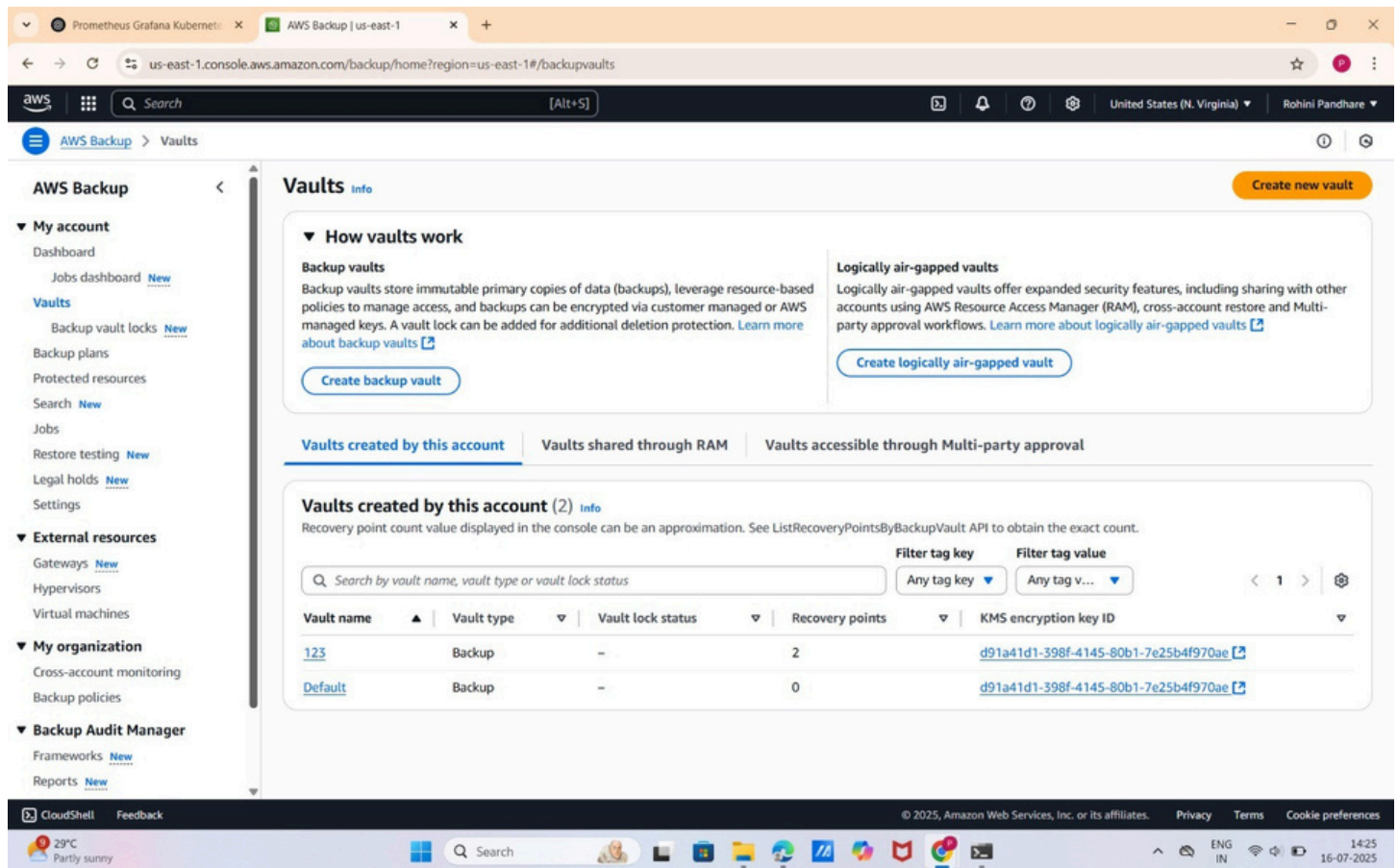


- Ran backup jobs successfully (as seen in AWS Backup console)



## Step 6: Verify backups

## Verified recovery points created in backup vaults



The screenshot displays the AWS Backup console interface. On the left, a navigation sidebar includes sections for 'My account', 'External resources', 'My organization', and 'Backup Audit Manager'. The main content area is titled 'Vaults' and features a 'Create new vault' button. Below this, there's a section 'How vaults work' explaining backup vaults and logically air-gapped vaults, each with a 'Create' button. A tabbed interface shows 'Vaults created by this account' (selected), 'Vaults shared through RAM', and 'Vaults accessible through Multi-party approval'. The 'Vaults created by this account' tab displays a table with two vaults: '123' and 'Default'. Both are of type 'Backup' and have a 'Vault lock status' of '-'. The '123' vault has 2 recovery points, while the 'Default' vault has 0. The table also lists the 'KMS encryption key ID' for each vault. The bottom of the screen shows a Windows taskbar with various application icons and a system clock indicating 14:25 on 16-07-2025.

Vault name	Vault type	Vault lock status	Recovery points	KMS encryption key ID
<a href="#">123</a>	Backup	-	2	<a href="#">d91a41d1-398f-4145-80b1-7e25b4f970ae</a>
<a href="#">Default</a>	Backup	-	0	<a href="#">d91a41d1-398f-4145-80b1-7e25b4f970ae</a>

Tested restore functionality

## 6. Results

- EC2 instance (i-052b662c771a8382d) is running and reachable (3.148.208.56)
- RDS instance backup-project-db is live, running MySQL 8.0, and contains test data
- AWS Backup vaults hold recovery points for both EC2 and RDS resources
- Backup jobs completed successfully with status Success

## 7. Conclusion

This project successfully demonstrates deploying a database application on AWS, connecting it securely to an EC2 instance, and implementing automated backup strategies using AWS Backup. The workflow ensures data resilience, supports disaster recovery, and showcases practical cloud infrastructure management.

**Name- Rohini Pandhare**

**<https://github.com/rohinipandhare12/-AWS-Backup-Plan>**

**Cloud & DevOps Intern Cravita Technologies**



