DATABASE AUTOMATION

PROG8850

ASSIGNMENT 2

Database Automation and Scripting

SUBMITTED BY,

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Automating Database Schema Changes and CI/CD Pipeline Implementation with AWS RDS

1. Creating the AWS RDS MySQL Database

Login to AWS Management Console:

- Open your browser and go to AWS Management Console.
- Log in with your AWS credentials.

Create an RDS MySQL Database:

- In the AWS console, navigate to **RDS** (search for it in the search bar).
- Click on **Create database**.

Configure the Database:

- **Engine options**: Select **MySQL**.
- **Version**: Choose the MySQL version you want to use.
- **Templates**: Select **Free tier**
- **Settings**:
  - Set **DB instance identifier**
  - Set **Master username**
  - Set **Master password**

Choose Database Instance Class:

- Choose the instance type based on your needs. You can select the free-tier instance for testing.

Set Database Connectivity:

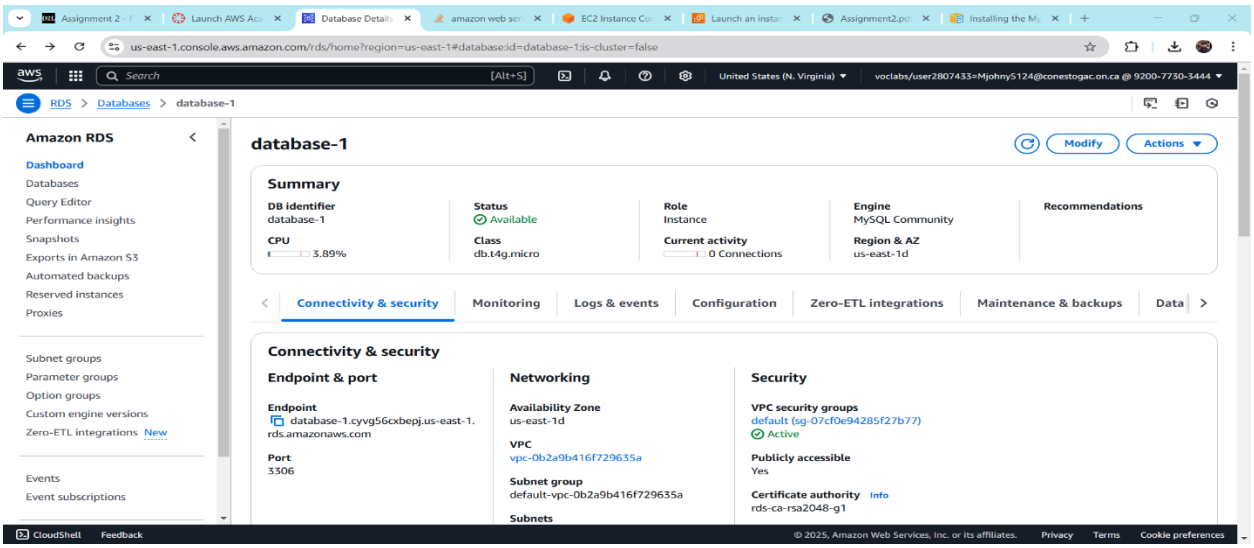
- Choose the **VPC** (Virtual Private Cloud).
- Ensure that **Public accessibility** is set to **Yes** if you need external access (e.g., for connection from GitHub Actions).
- In **VPC security group**, create a new security group to allow inbound traffic on port 3306 (MySQL default port).

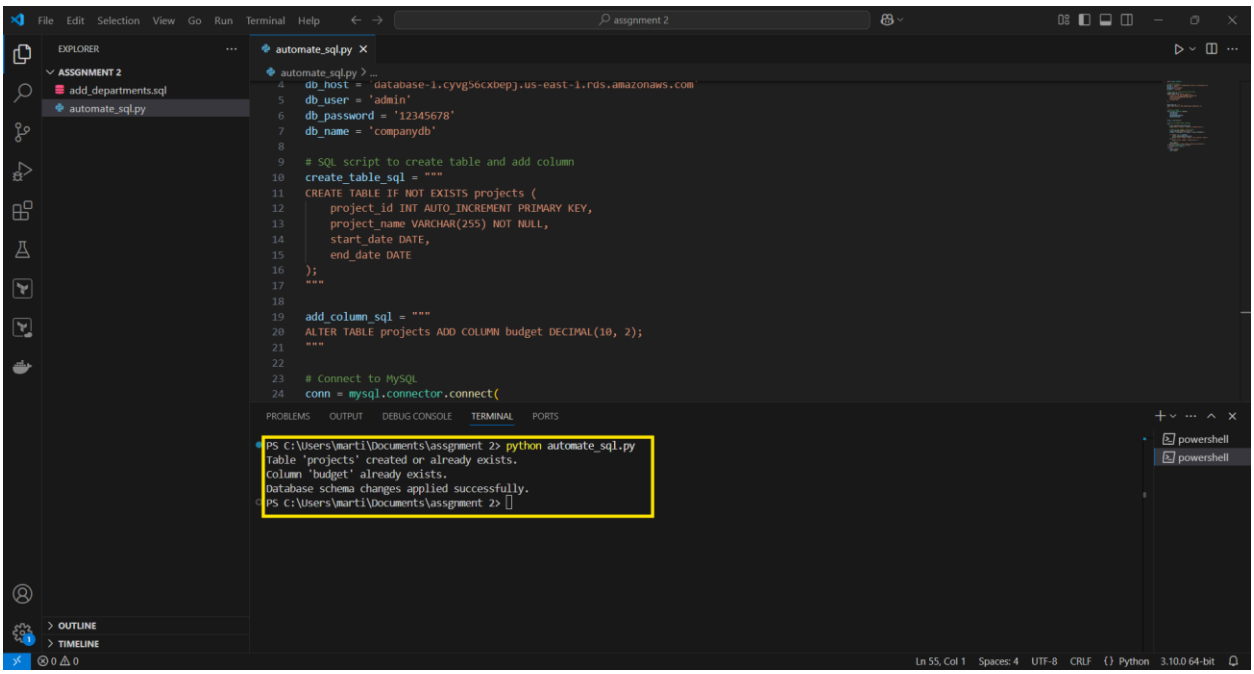
Create the Database Instance:

- After reviewing your configuration, click **Create database**. AWS will take a few minutes to provision the RDS MySQL instance.

Create the Database companydb:

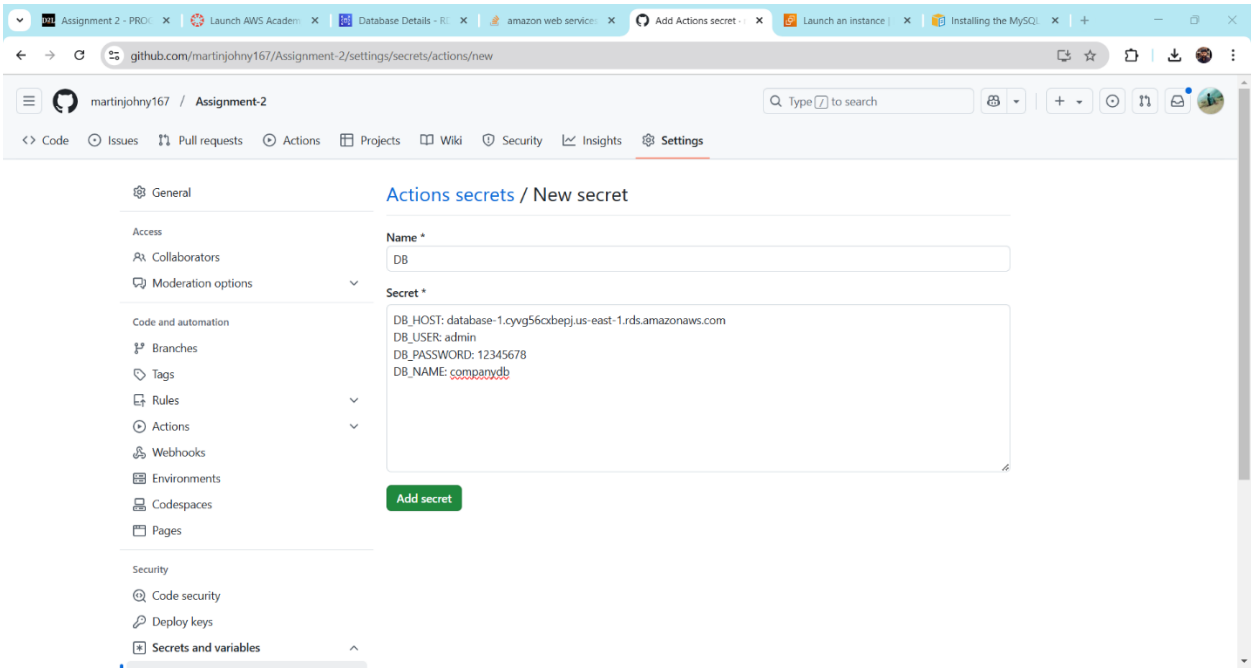
- Once your RDS instance is available, connect to it using MySQL Workbench or a similar client.
- Run the following SQL command to create the companydb database.





2. Setting Up GitHub Actions

1. **Create a New GitHub Repository**:
    - Log in to GitHub and create a new repository for your project.
2. **Add Secrets for Database Connection**:
    - Go to the **Settings** of your GitHub repository.
    - In the left sidebar, click **Secrets and variables** > **Actions**.
    - Add the following secrets:
        - DB_HOST: The endpoint of your AWS RDS MySQL instance
        - DB_USER: The admin username for MySQL
        - DB_PASSWORD: The password for your MySQL instance
        - DB_NAME: The name of the database



3. **Add the GitHub Actions Workflow File**:
    - In your repository, create the directory .github/workflows/ if it doesn't already exist.
    - Add the necessary YAML file for your CI/CD pipeline.

3. Testing the Workflow and Results

Push Changes to GitHub:

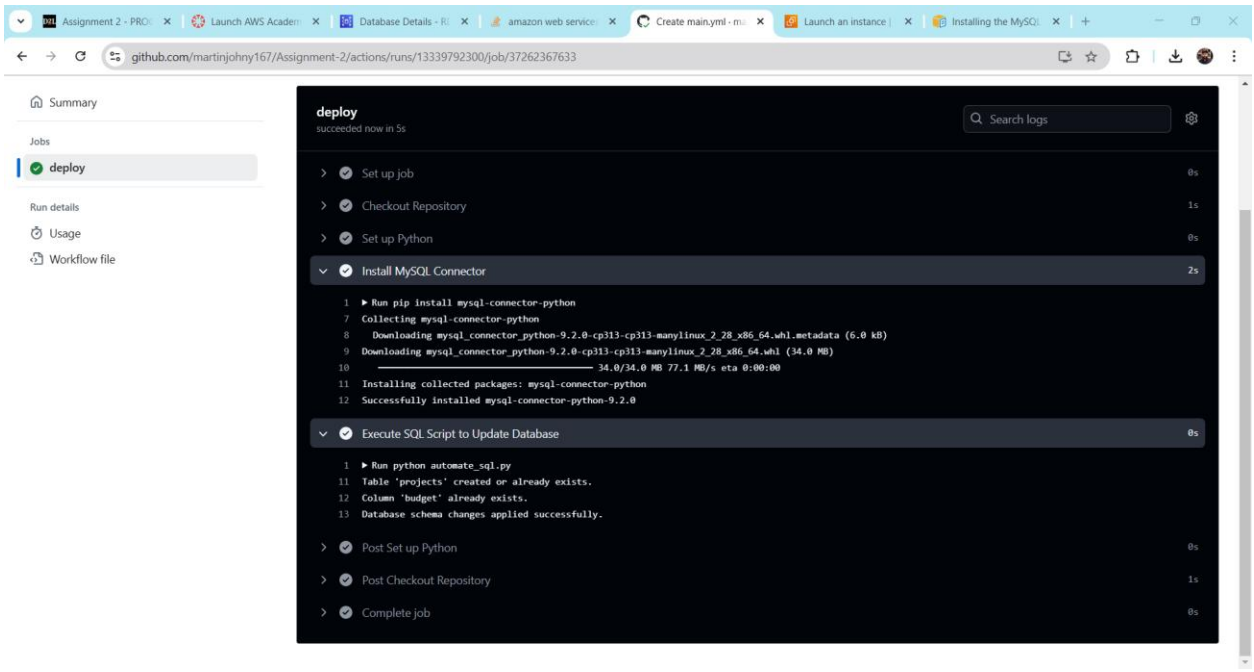
- Push the SQL script (e.g., add_departments.sql) to the GitHub repository. This will trigger the GitHub Actions workflow.

Monitor the Workflow:

- Go to the **Actions** tab in your GitHub repository.
- You should see the workflow listed under **Workflow runs**. Click on the latest run to see the details.

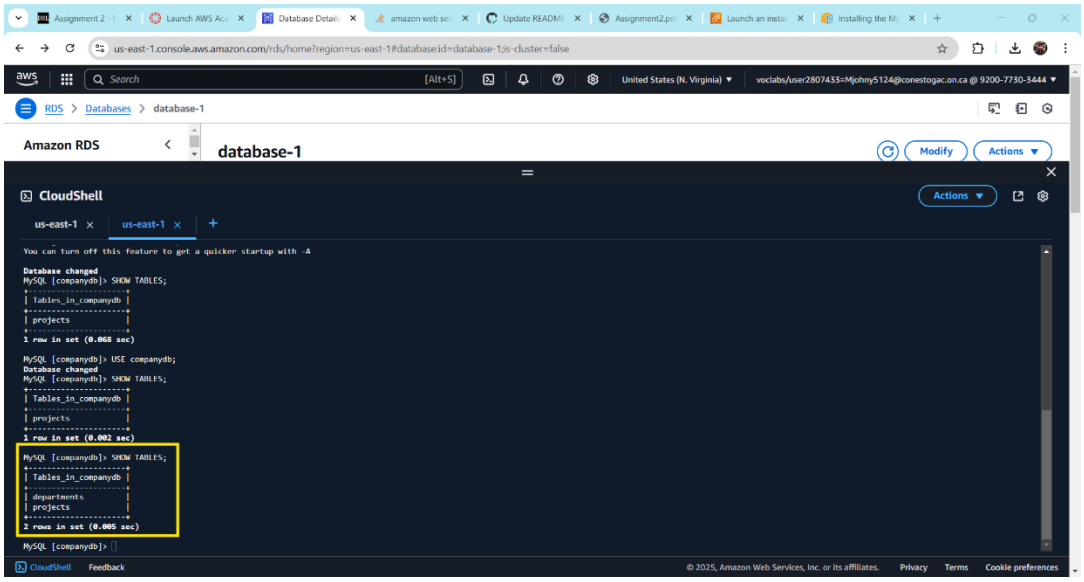
Verify Workflow Success:

- The logs should show the execution of the Python script and indicate that the SQL script was executed successfully.



Verify the Changes in AWS RDS MySQL:

- Log into your RDS MySQL instance.
- Run SQL queries to verify that the changes (e.g., table creation) have been applied successfully.


us-east-1.console.aws.amazon.com/rds/home?region=us-east-1#database:id=database-1;is-cluster=false
Search
[Alt+S]
United States (N. Virginia)
RDS > Databases > database-1
Amazon RDS
database-1
Modify
Actions
CloudShell
Actions
us-east-1
us-east-1
You can turn off this feature to get a quicker startup with -A
Database changed
MySQL [companydb]> SHOW TABLES;
| Tables_in_companydb |
| projects |
1 row in set (0.068 sec)
MySQL [companydb]> USE companydb;
Database changed
MySQL [companydb]> SHOW TABLES;
| Tables_in_companydb |
| projects |
1 row in set (0.002 sec)
MySQL [companydb]> SHOW TABLES;
| Tables_in_companydb |
| departments |
| projects |
2 rows in set (0.005 sec)
MySQL [companydb]>
CloudShell
Feedback
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