Serverless Web Application Deployment with AWS Lambda, API Gateway, and DynamoDB

Project Overview:

This project demonstrates the deployment of a web application using AWS Lambda, API Gateway, and DynamoDB in a serverless architecture. The application provides a simple contact form where users can submit their details (such as name, email, phone number, and message), and the data is stored in an Amazon DynamoDB table.

The project integrates various AWS services to handle the front-end (contact form), back-end processing (Lambda), and data storage (DynamoDB). The API Gateway enables communication between the front-end and the serverless Lambda function, which processes the data and returns a success message to the user.

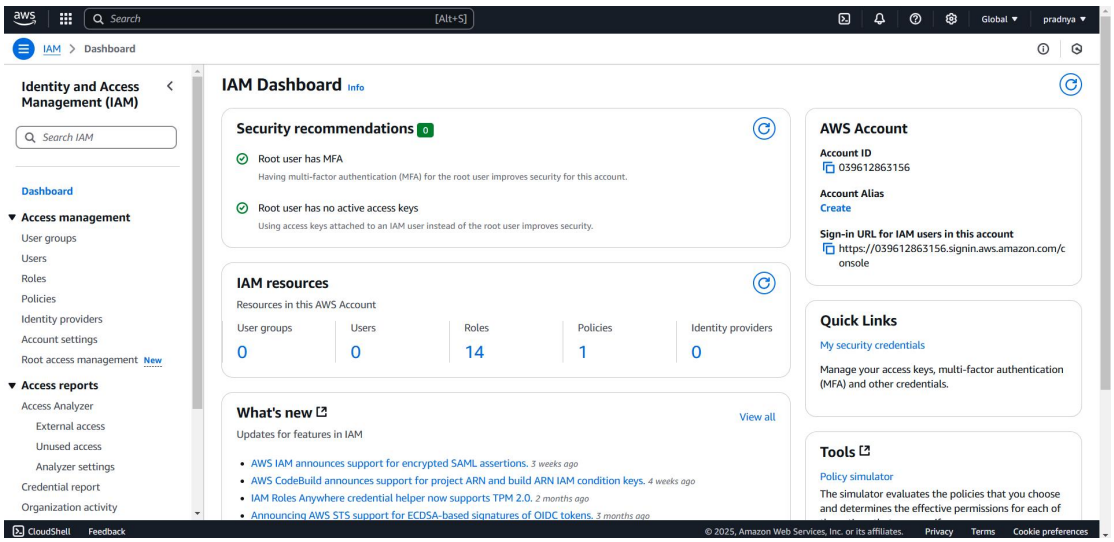
Key Components:

- **AWS Lambda:** Handles the logic for the GET (display form) and POST (submit data) requests.
- **Amazon API Gateway:** Serves as the intermediary to expose Lambda functions via HTTP.
- **Amazon DynamoDB:** Stores the user-submitted data from the contact form.

Step 1: Create an IAM Role with Required Permissions

1.Go to IAM in AWS Console:

1. Navigate to the IAM service in the AWS console.



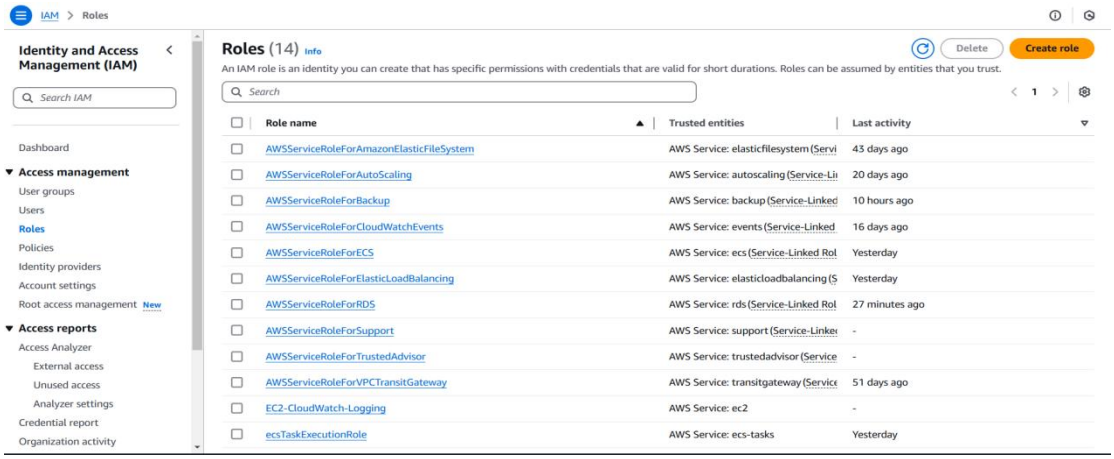
2. Create a New Role:

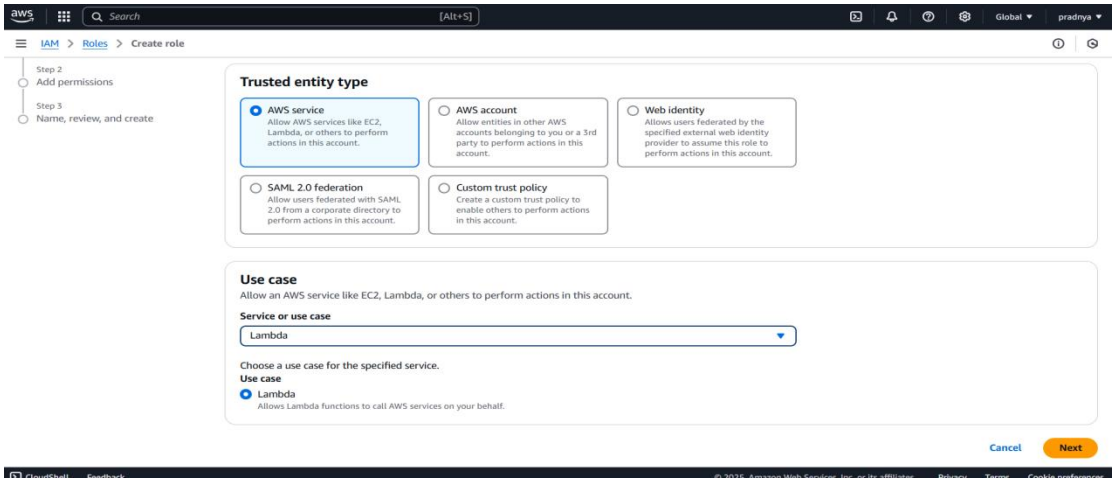
1. Click on Roles in the sidebar and then Create Role.

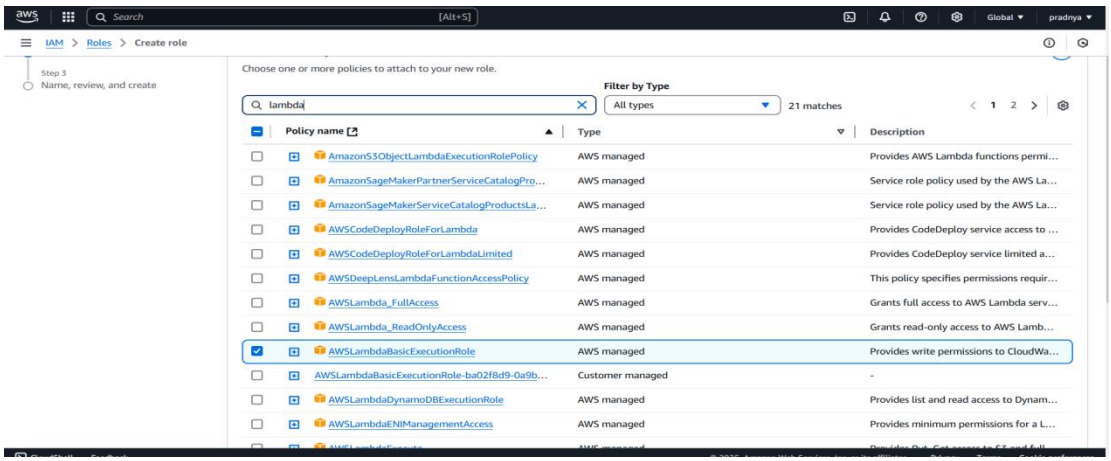
2. Select AWS service as the trusted entity, and choose Lambda for the use case.
3. Attach the following policies:

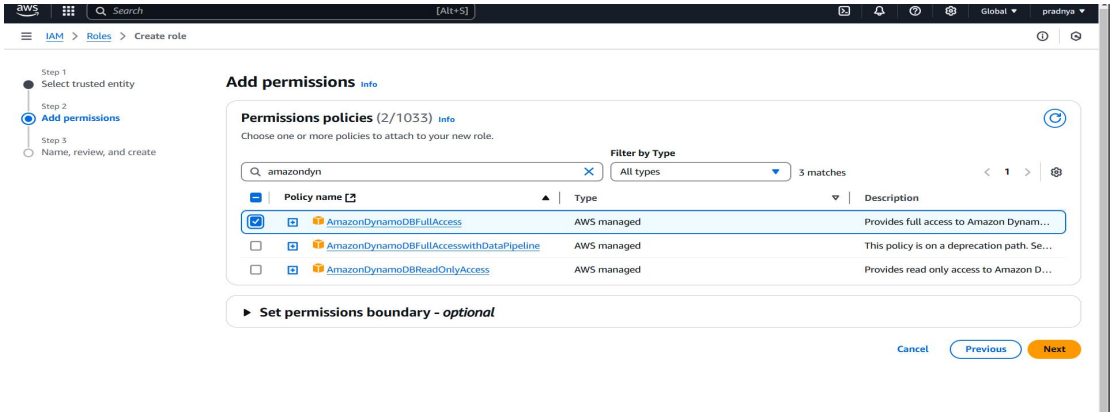
    1. AWSLambdaBasicExecutionRole
    2. AmazonDynamoDBFullAccess

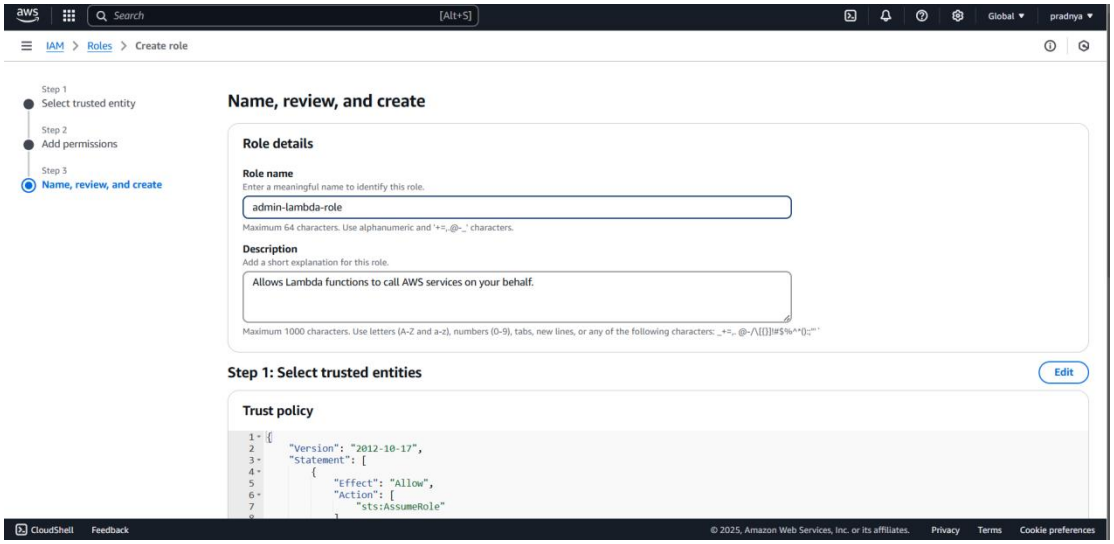
4. Name the role admin-lambda-role and create it.







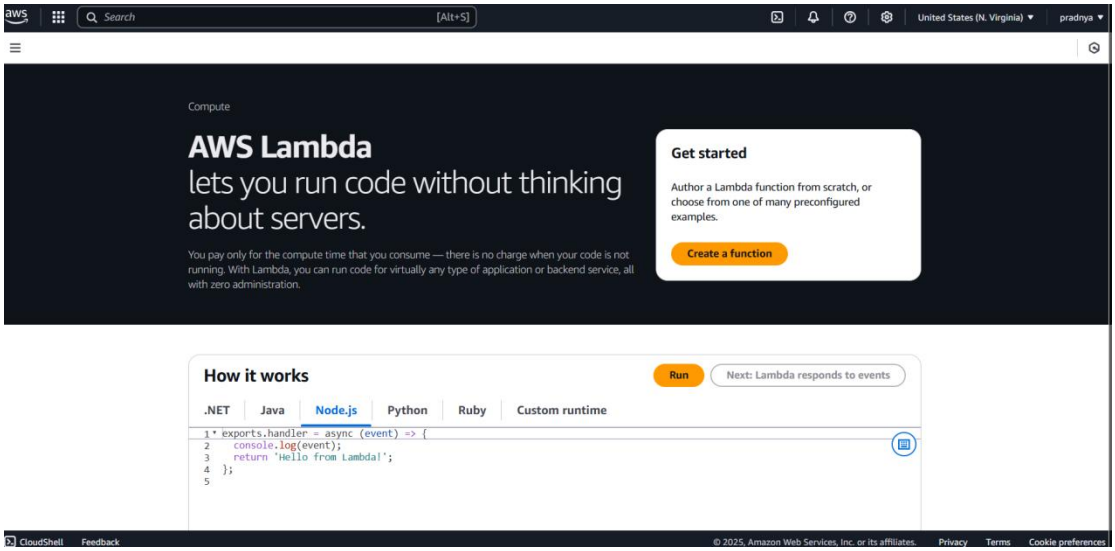




Step 2: Create Lambda Function

1.Go to Lambda in AWS Console:

1. Navigate to AWS Lambda in the AWS console.

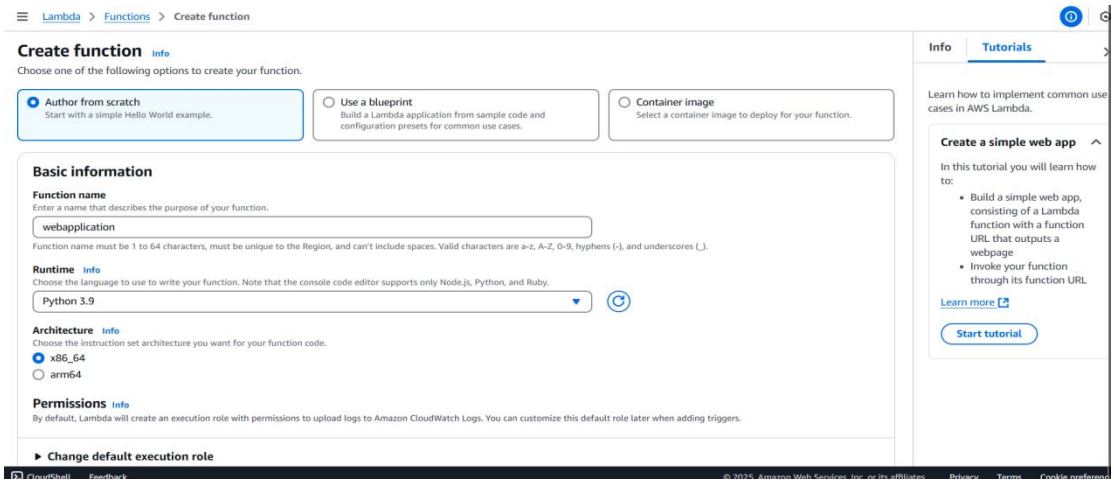


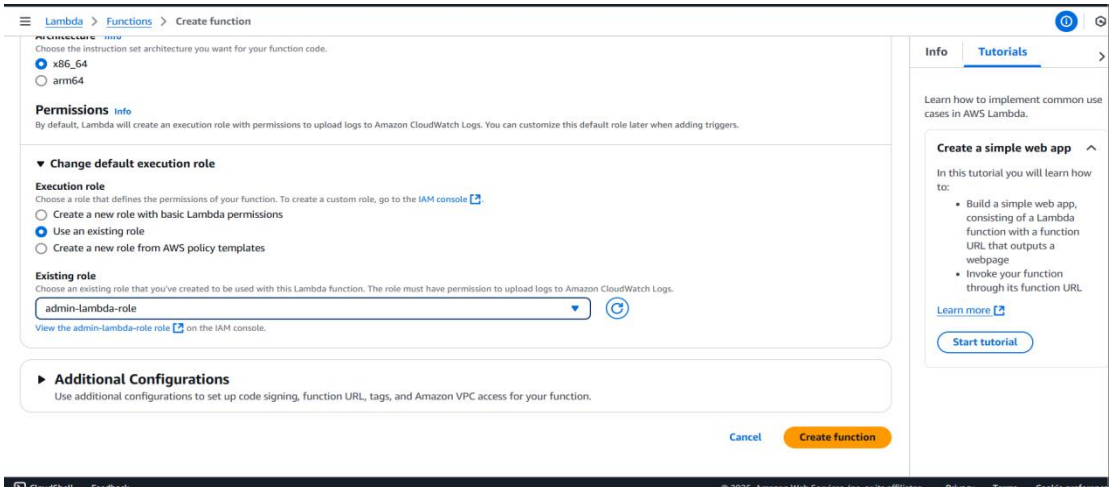
2.Create a Lambda Function:

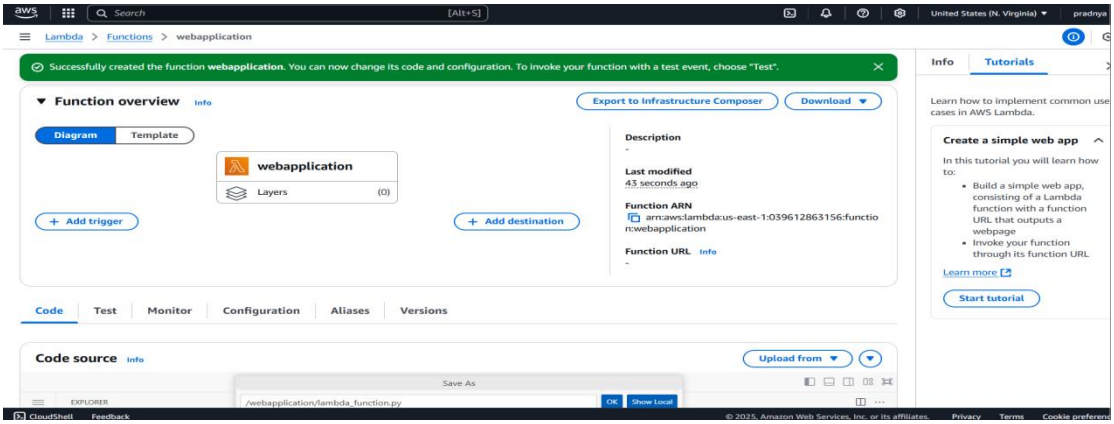
1. Click Create function.
2. Select Author from scratch.
3. Enter the function name as webapplication.
4. Choose Python 3.9 as the runtime.
5. Under Permissions, select the previously created role admin-lambda-role.

3.Write Lambda Function Code:

The code is in my git now







Step 3: Prepare Lambda Code and HTML Files

1.Prepare files:

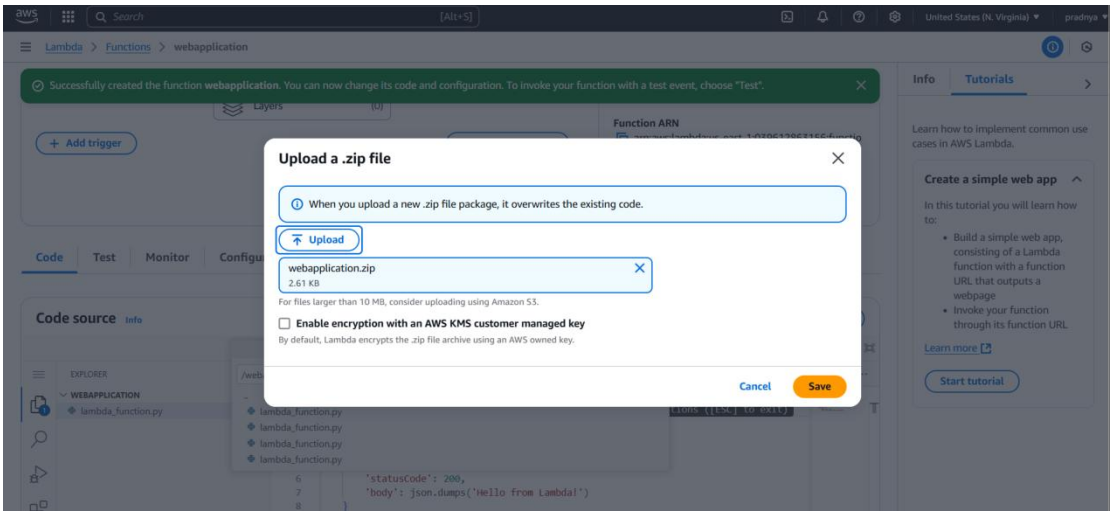
1.lambda_function.py (Lambda function code)

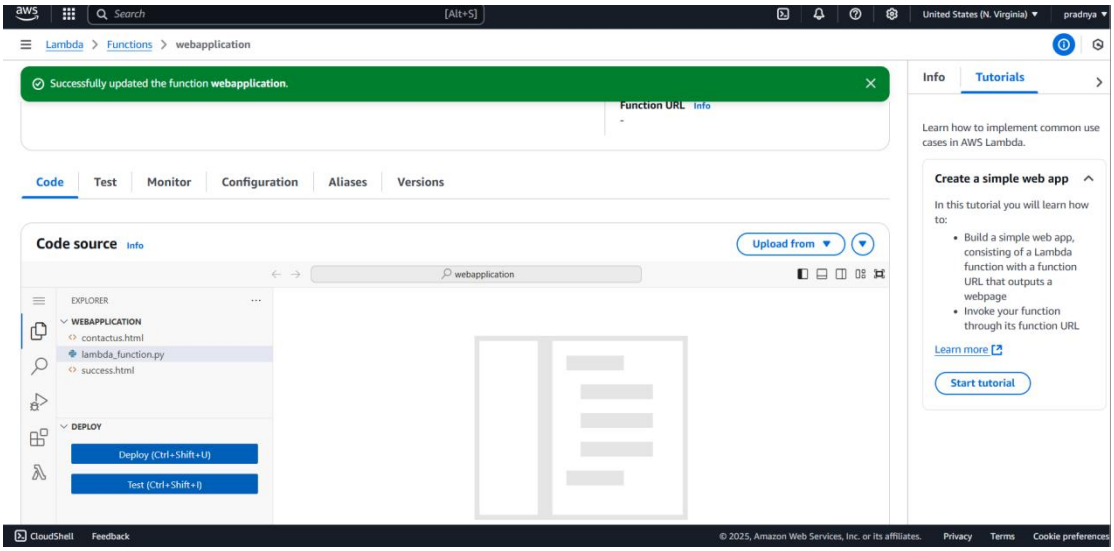
2.contactus.html (HTML file for the contact form)

3.success.html (HTML file for the success message)

2.Create a ZIP File:

1. Package these three files into a single ZIP file.





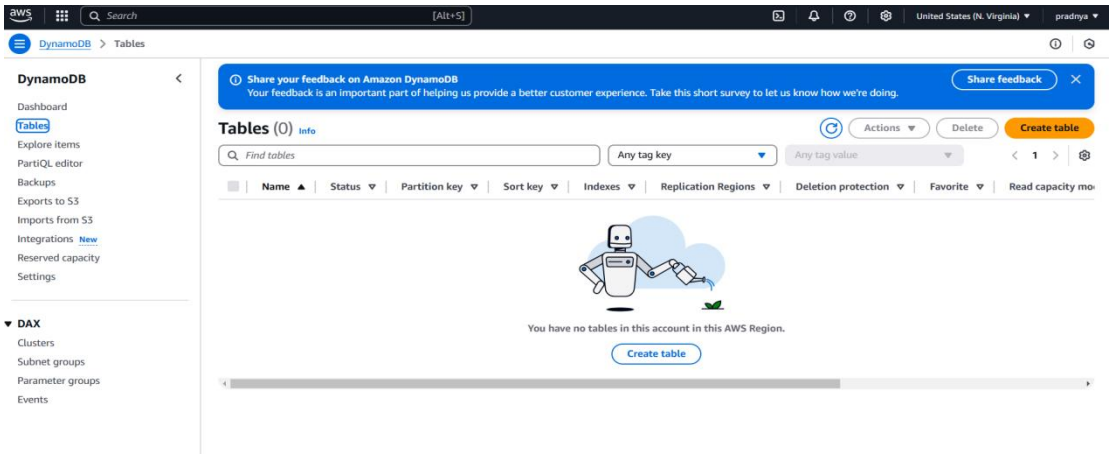
Step 4: Upload Lambda Code

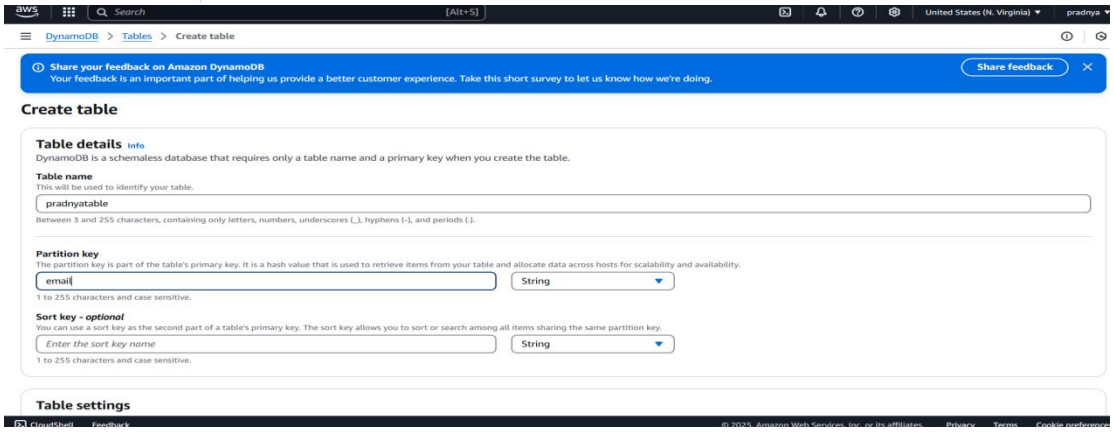
1. In the AWS Lambda Console, select Lambda function (e.g., webapplication).
2. Scroll down to the Function code section.
3. In the Code source area, select Upload from .zip.
4. Click Upload and choose the lambda_package.zip file you created earlier.

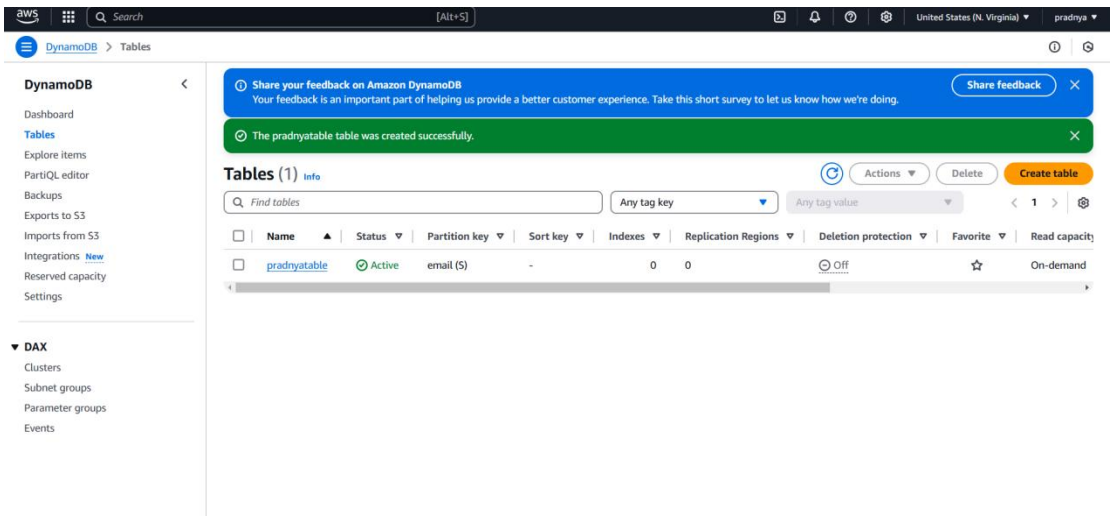
5. Click Save.

Step 5: Create DynamoDB Table

1. Go to the DynamoDB service in the AWS Console.
2. Click on Create table and configure it as follows:
    1. Table name: pradnyatable
    2. Primary Key: id (String)
3. Click Create to create the table.

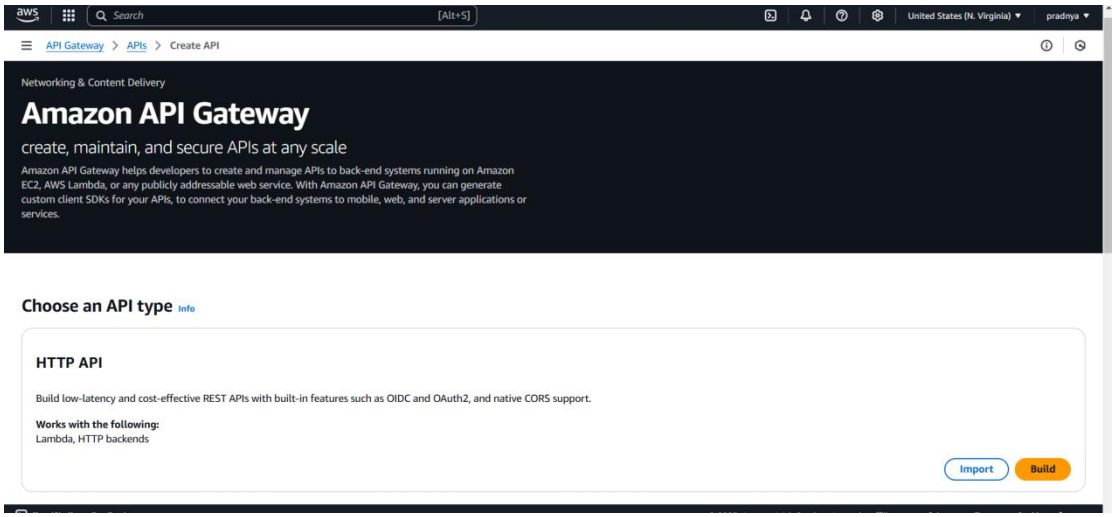


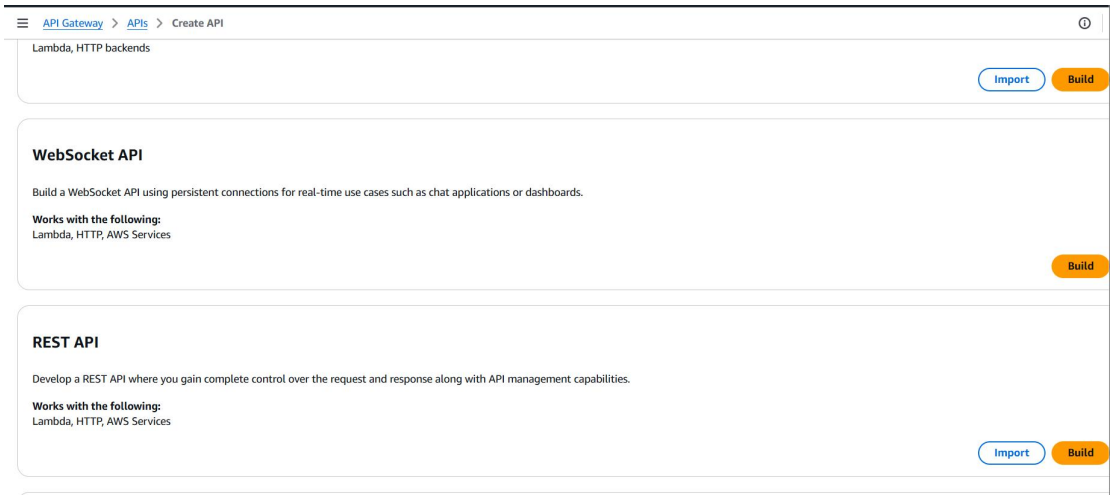


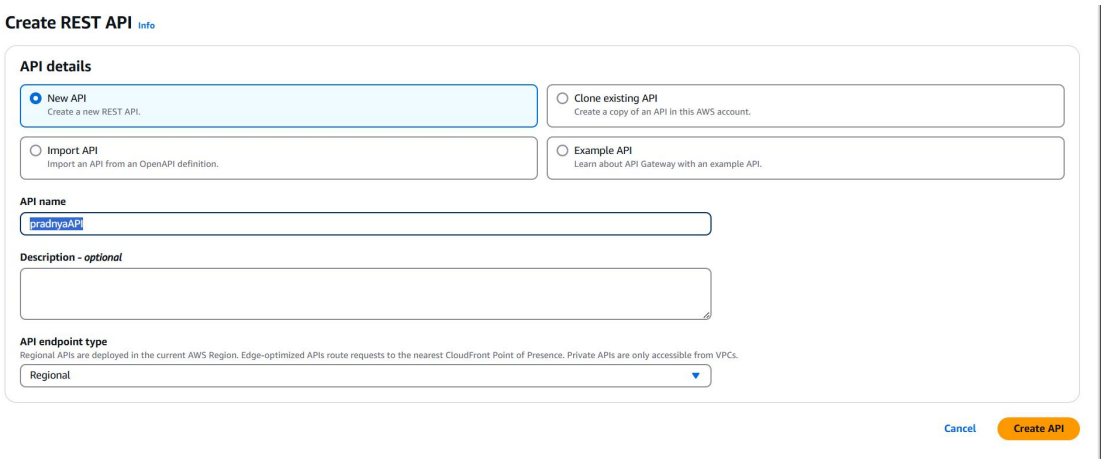


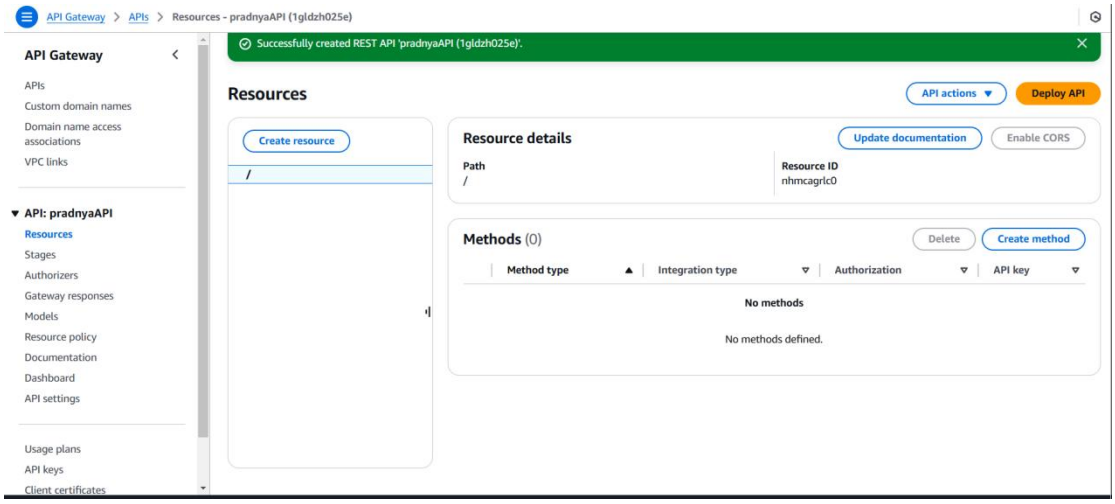
Step 6: Configure API Gateway

1. Go to the API Gateway service in the AWS Console.
2. Click on Create API and choose REST API.
3. Name the API as pradnyaAPI.

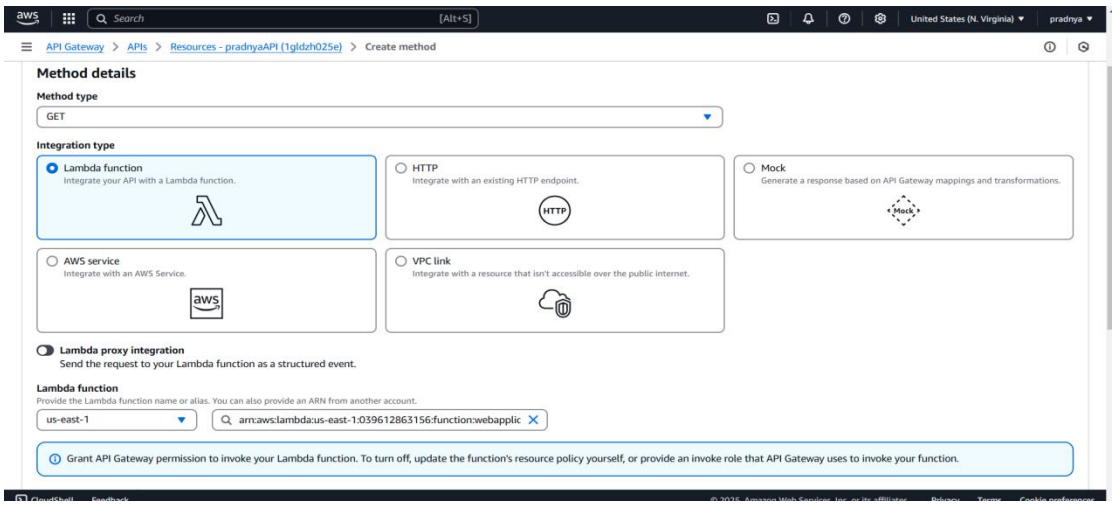


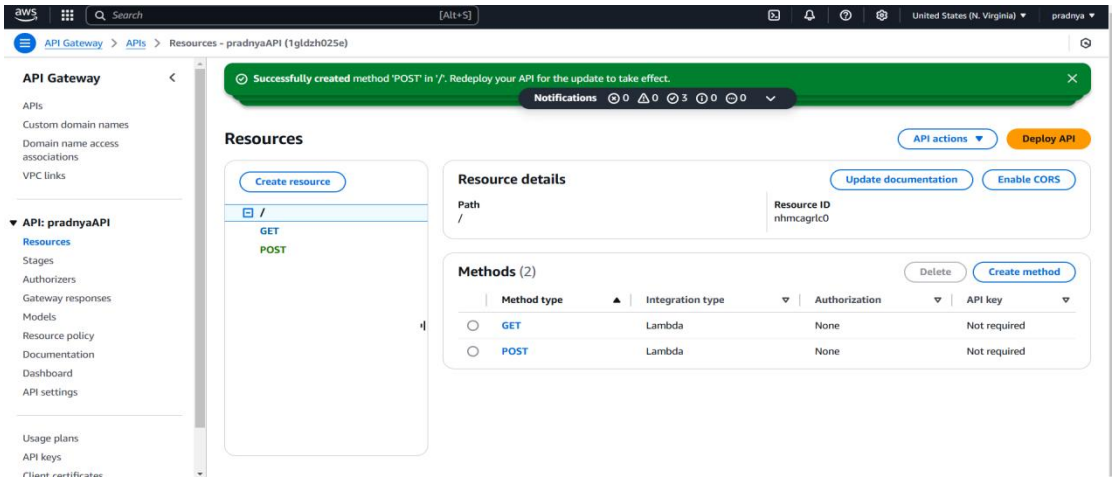


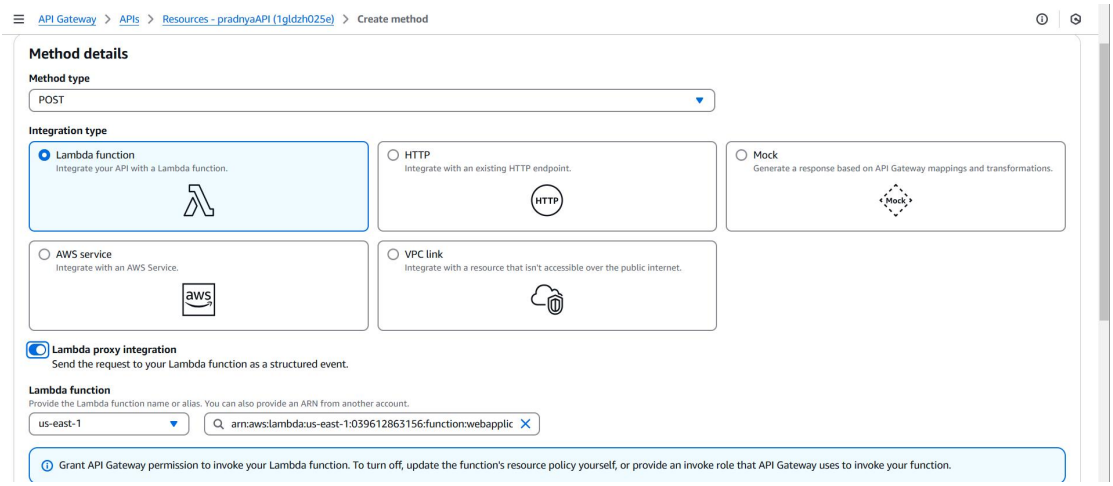




4. Create the following methods:
    1. **GET Method:**
        1. Select Lambda Function as the integration type.
        2. Enable Lambda Proxy Integration.
        3. Choose the webapplication Lambda function.
    2. **POST Method:**
        1. Repeat the above steps for the POST method.

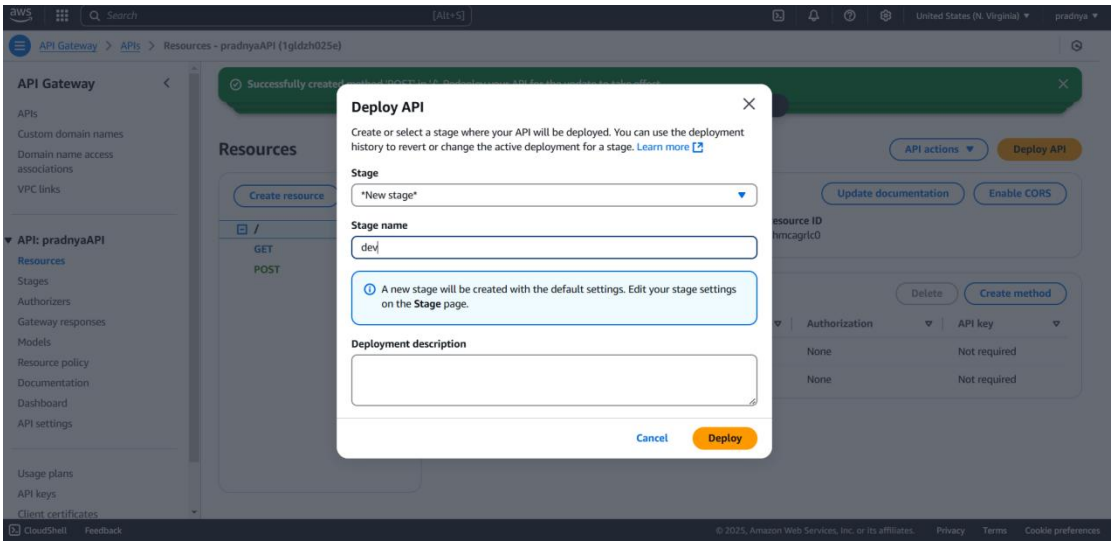






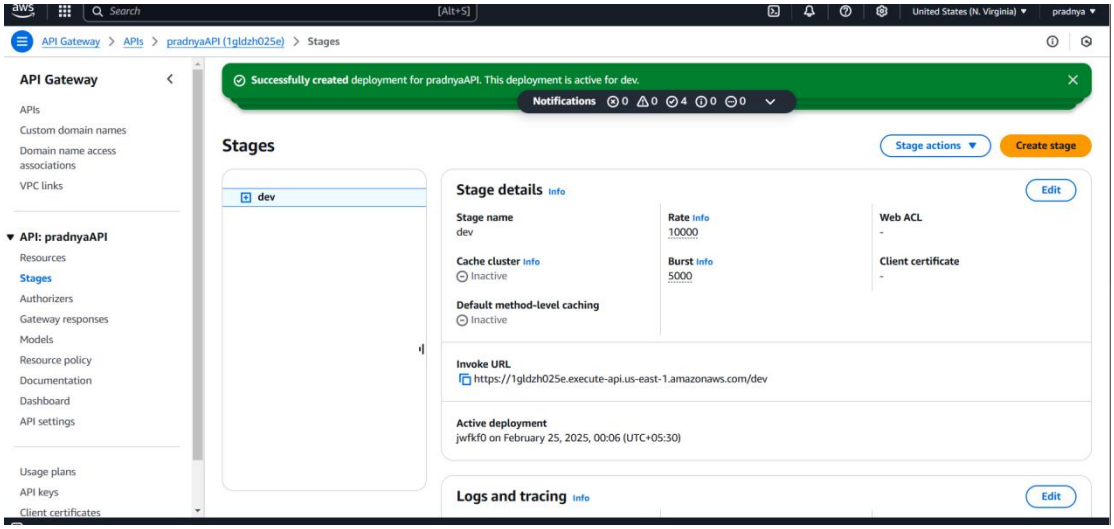
5. Deploy the API:

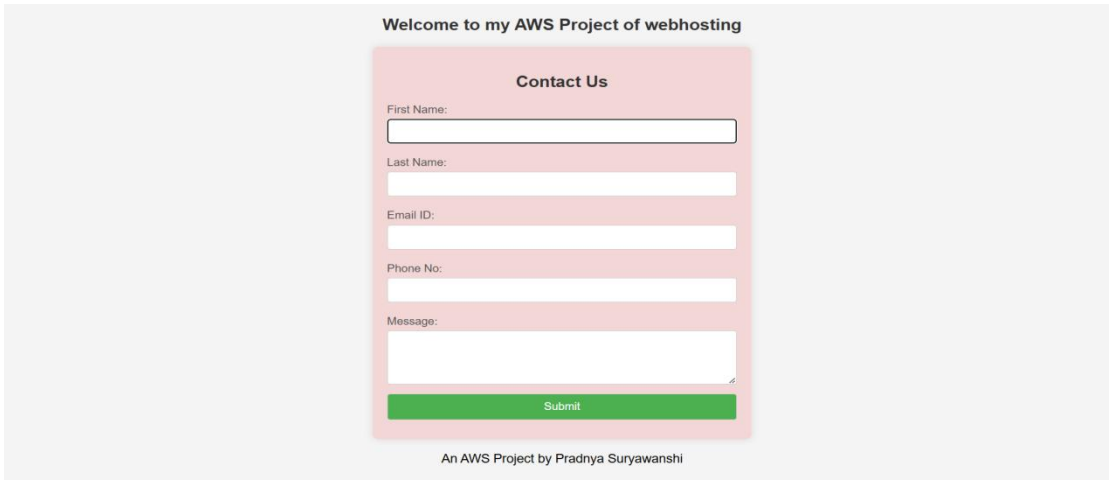
    1. Click on Deploy API.
    2. Create a new stage called dev and deploy the API.

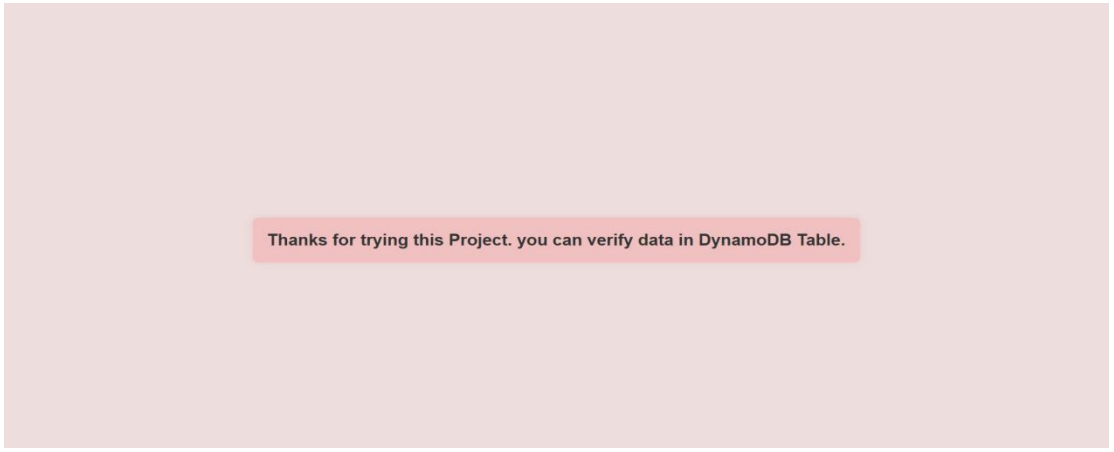


Step 7: Test the Application

1. After deploying the API, I will get an Invoke URL
2. Open this URL in a browser to test the contact form
3. Fill in the form and submit it.
4. I should see a success message and the data will be stored in DynamoDB.

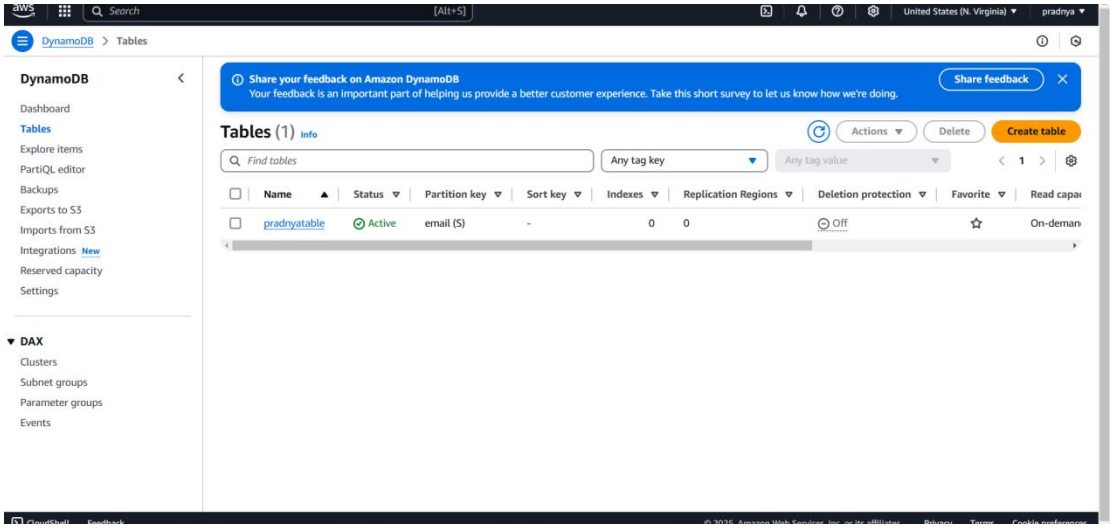


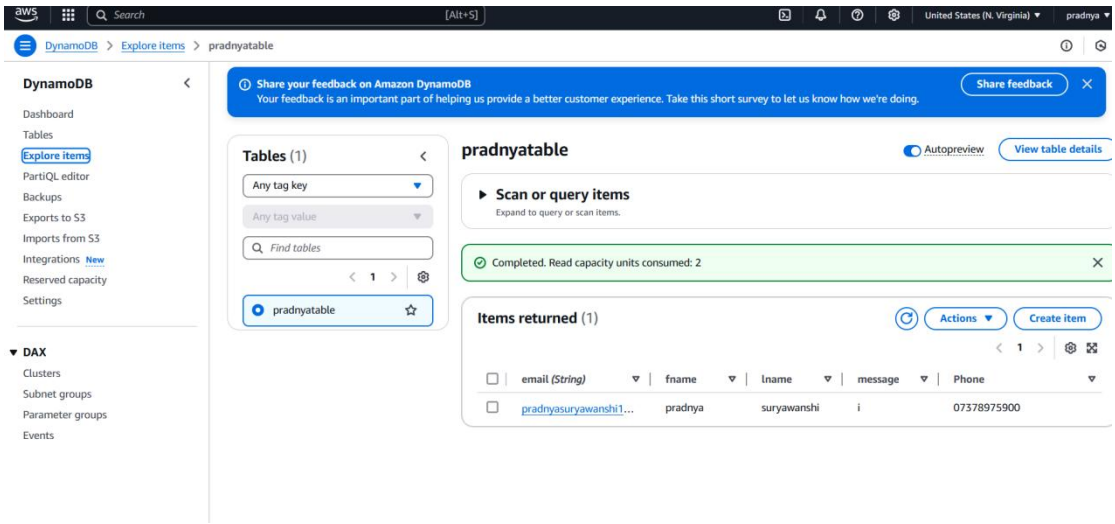




Step 8: Verify Data in DynamoDB

1. Go to the DynamoDB Console.
2. Select your table (pradnyatable).
3. Click on Explore items to view the stored data





Conclusion

This completes the setup and deployment of AWS Serverless application. I can now view the contact form, submit it, and verify the data stored in DynamoDB via the AWS Console.