CSCI 5410

Serverless Data Processing

Lab Activity -1

Banner ID: B00985061

# Aim:

The purpose of the app is to make it more of a Social Network where people can post what they want along with pictures and use fake profiles. Despite addressing the issue of anonymity, users can only post messages without giving their identities and can only do so once they are logged into the system and given permission to post content.

# Development Process:

User Registration: API Gateway /register HTTP endpoint activate Lambda function. This function receives information from the API Gateway and collects the user and receives information through the API Gateway and sends it to the DynamoDB using the PutCommand from the @aws-sdk/client-dynamodb.

User Login: Another Lambda function deals with user login through /login returning a JWT token. In this function, QueryCommand is used to fetch the data from the DynamoDB User Table for the received email from the user. It authorises or rejects passwords and responds to the client with the correct HTTP status message.

Frontend Implementation:

React is used to build the frontend's views that communicate with these APIs.

Home Page Functionality:

Upon any login, the user is automatically taken to the Home page or Wall, where people can write their thoughts, and view others as well. This section involves three Lambda functions:This section involves three Lambda functions:

Get All Posts: This function reads all posts from the DynamoDB Post Table, when invoked by the /get-all-posts endpoint. As a result, each post has an image_URL that points to an image stored somewhere on an S3 bucket. The bucket's policy and access level ' Anyone can read ' make it possible to display images and pictures directly in the posts using the <img> tag.

Post Image: This function is invoked through /post-image endpoint and has parameters X-Authorization, image content as binary form The program requires an S3 bucket 'post-image' and uses putObject command to store images in S3 bucket.

Post Data: This function occurs after a request is made to the /postdata endpoint; the data of the post containing the URL of the image from the S3 bucket is written into the DynamoDB Post Table.

**Challenges Encountered:**

In this lab activity, I faced several problems right from the development process at each stage possible I could find.

Lambda Function Setup: At first, it was tough to create a Lambda function and execute the actions under the correct IAM role (labrole) that enables users to operate on the S3 bucket and DynamoDB table. To lessen such complications, I had to undertake the following exercise: referring to the documentation.

API Gateway Integration: One more challenge was to design an API Gateway and define the proper setup and connection to the Lambda function. This by itself entailed right planning in order to facilitate correct integration of the systems.

Image Handling: One of the crucial and tedious processes was determining how to properly use Lambda functions/ S3 to load images, and then retrieve those images in order for them to be displayed on the frontend. This research proved that identifying a suitable PESTEL analysis and applying it appropriately was challenging, given the range of possibilities.

Navigating AWS Documentation: As much as this serverless application was challenging to implement, it came with a myriad of errors Being a dense documentation system for AWS, errors eventually called for a consultation of their elaborate documented guides. The abundance of the information was the primary issue since it was challenging to determine what advice could be helpful in the approaching days and months efficiently.

Output Screenshots:

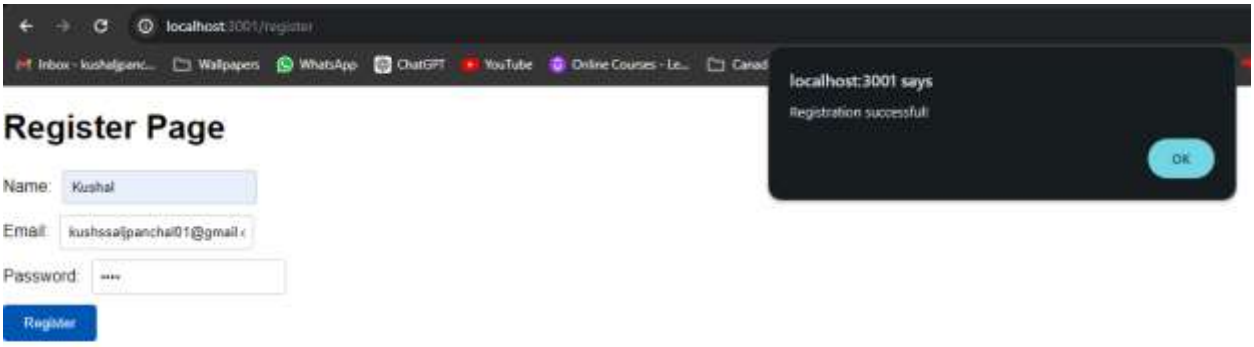


*Figure 1 : Register*

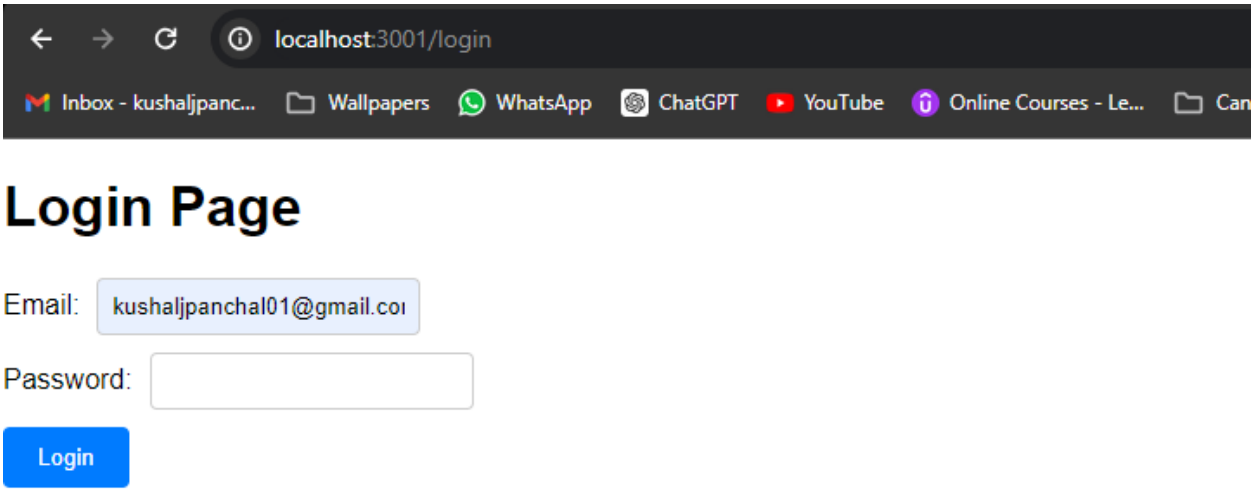


*Figure 2 : Login Succesfull*

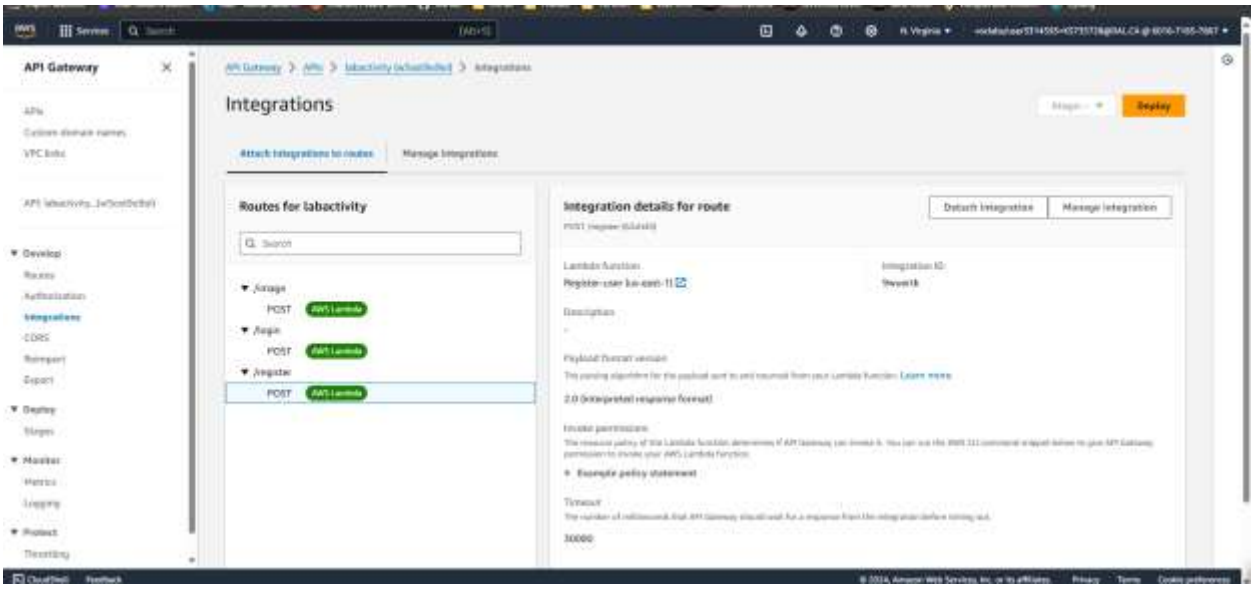


*Figure 3 : API GAteway*

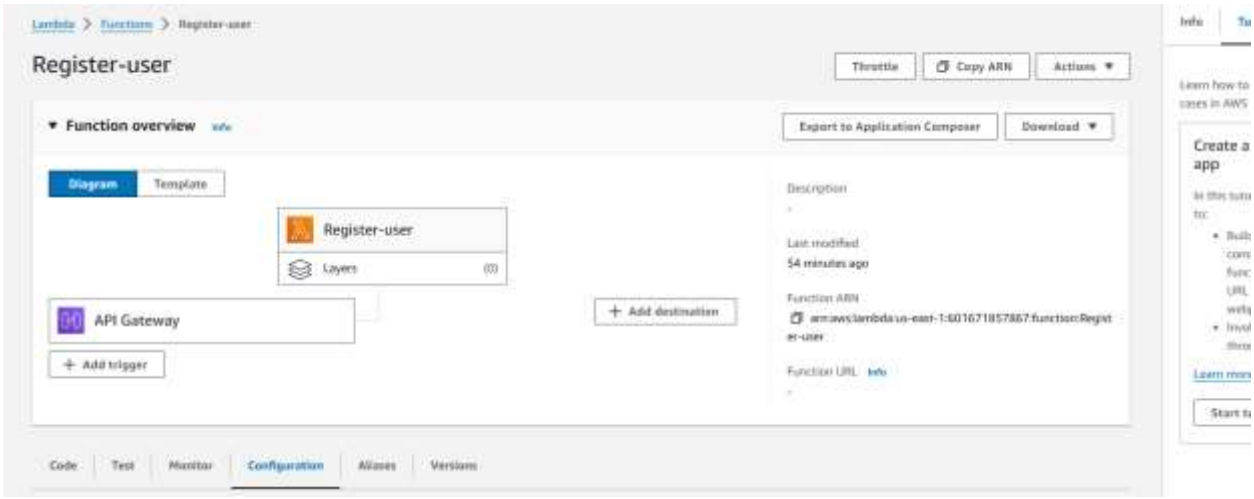


*Figure 4 : Lambda Function 1*

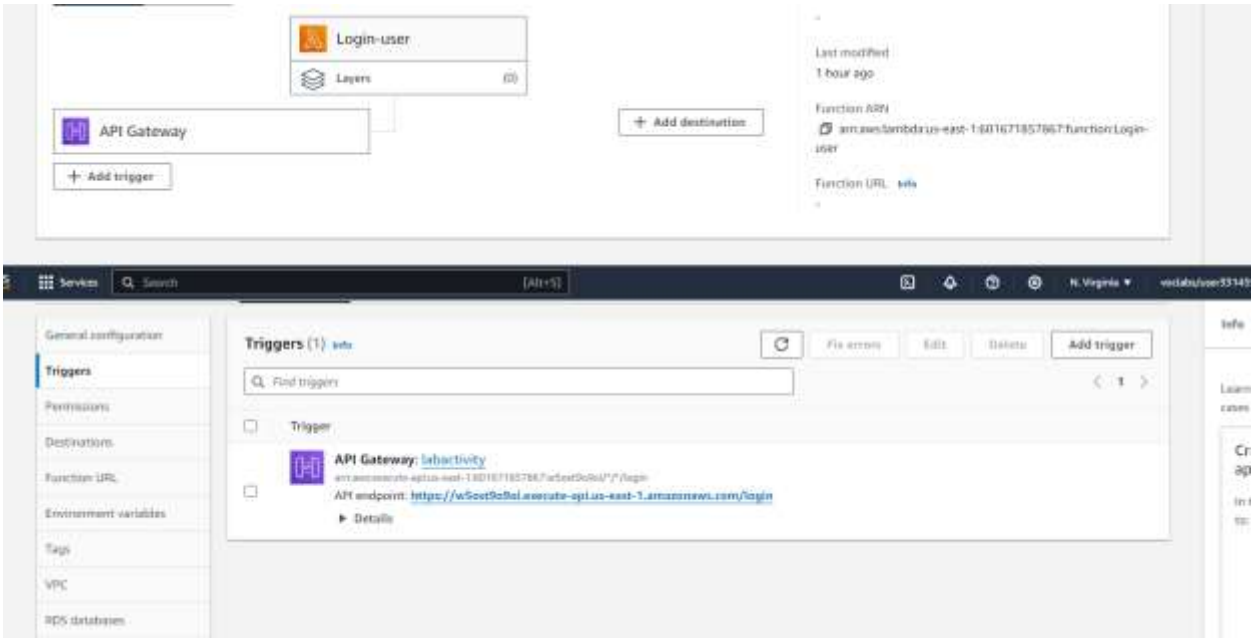


*Figure 5 : Lambda Function 2*

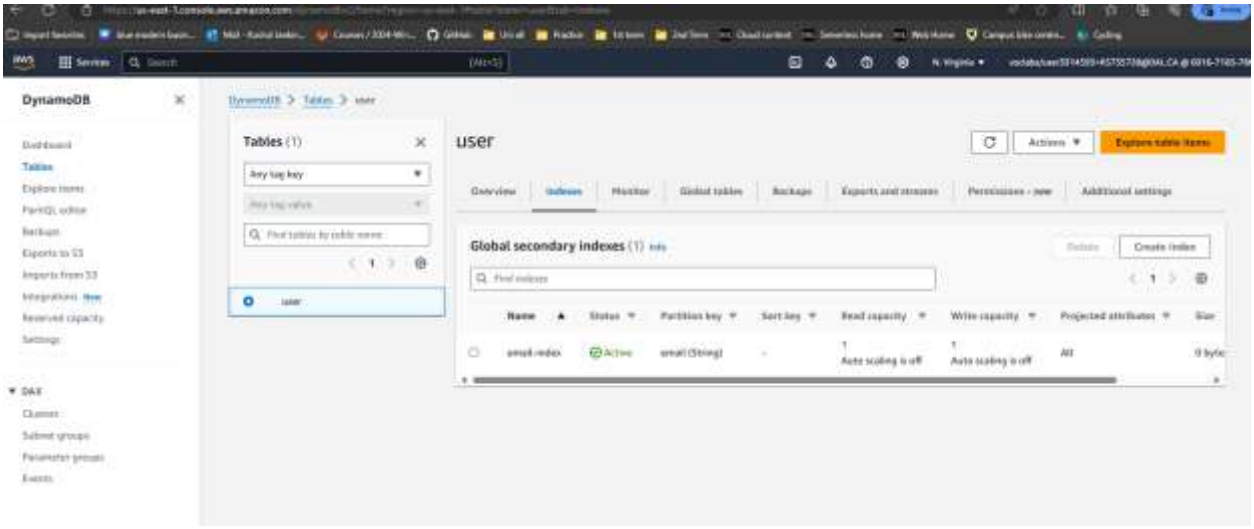


*Figure 6 : Dynamo DB*

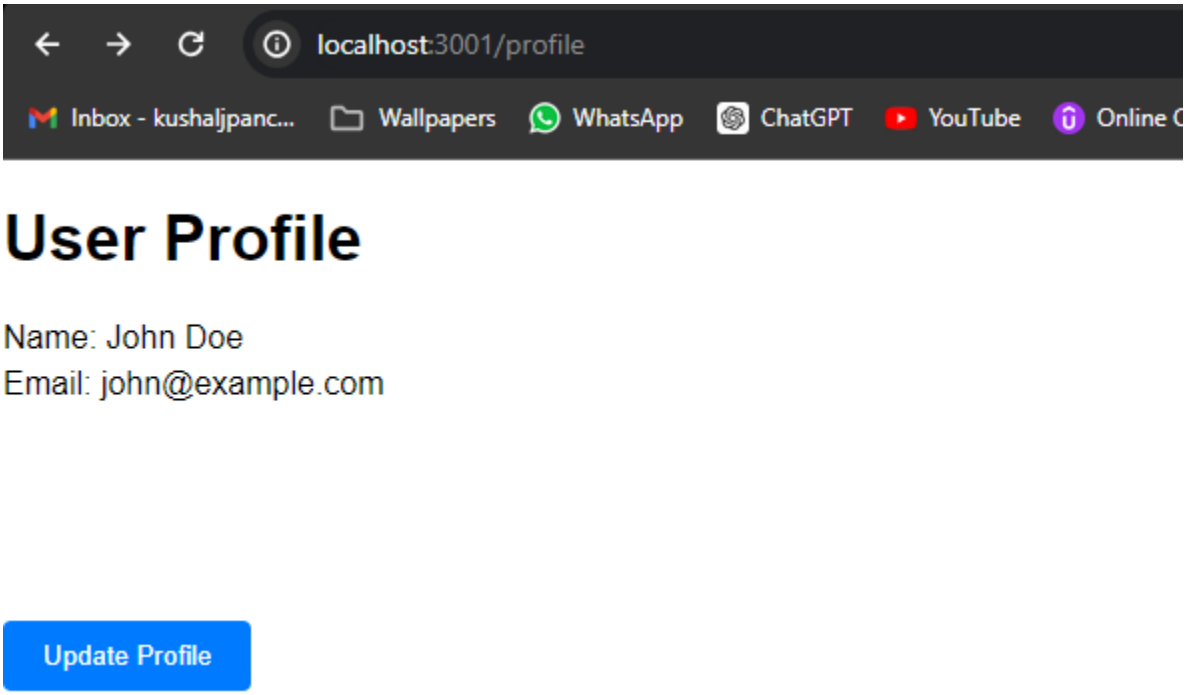


*Figure 7 : Image*

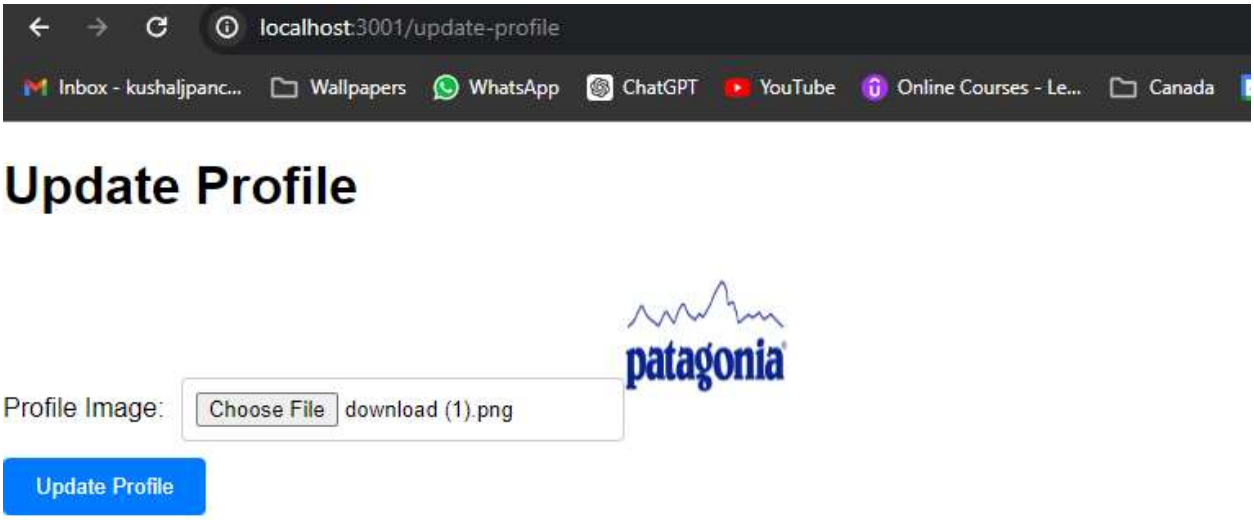


*Figure 8 : Image uploaded*