



FIT5225 Cloud computing and security

Assignment 2: A Serverless Image Storage System with Tagging

Clayton - Group3

07 JUNE 2023

GROUP MEMBERS

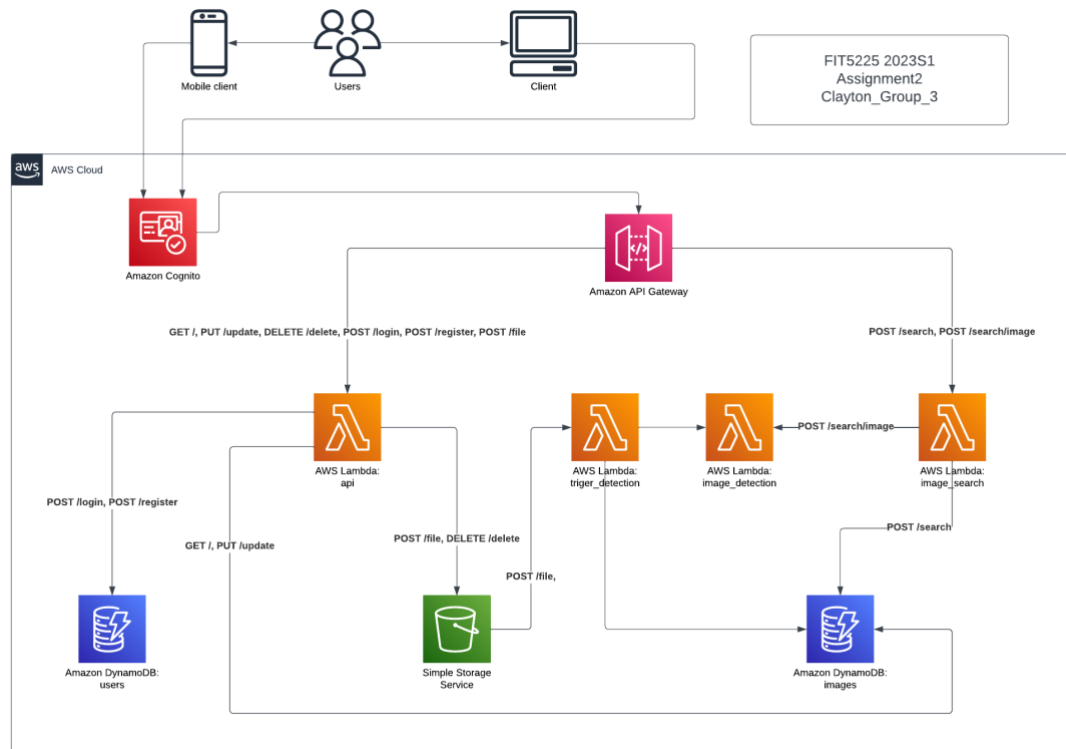
32137346 Han Yu Lin

32360770 Ng Ka Ho

33316007 Ping He

32977271 Shiki Wen

SYSTEM ARCHITECTURE



The system is composed of several key components - Lambda, AWS Cognito, Amazon DynamoDB, API Gateway, and S3 - that collaboratively work to deliver the desired functionality. By harnessing the power of these components, the system facilitates user authentication, efficient request routing, secure image storage, and proficient data management. This strategic integration ultimately culminates in a seamless and dependable user experience.

COGNITO

Cognito is an authentication service that provides user isolation and enhances security. Users can sign in with Google or register an account and then sign in. After successful authentication, tokens are obtained from Cognito and users can get into the system.

API GATEWAY

API Gateway acts as the primary entry point for handling requests, routing them to the appropriate services like S3 and Lambda based on their intended functionality. This enables smooth processing of requests.

S3

Amazon S3 (Simple Storage Service) stores the uploaded images securely. Access permissions are configured to only allow the user who uploaded the image to access and retrieve it.

DYNAMODB

DynamoDB stores image data, including image ID, image link, associated tags, and userID, which tracks the uploader's information.

LAMBDA

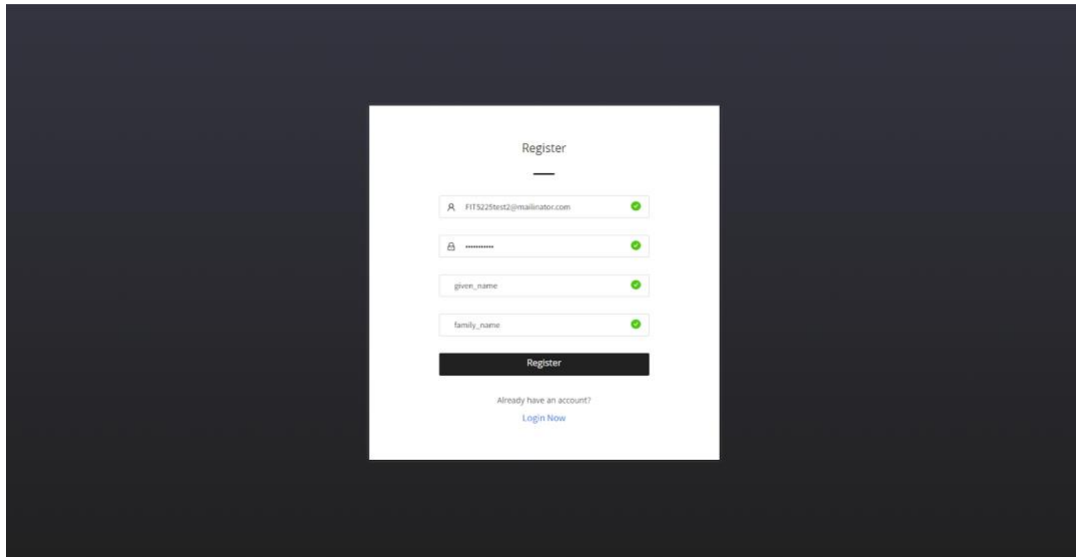
Multiple Lambda functions are used in the image uploading system. Some Lambda functions are designed for reusability, minimising code duplication. For example, the image_detection Lambda is utilised for image upload and searching images by tag or by image.

ROLE OF TEAM MEMBERS

Task	Mainly assigned member(s)
Cognito set up and authentication	Ping He
Google federated login	Ping He
Image upload	Shiki Wen
Search Query with Tags	Han Yu Lin
Search Query with Image	Han Yu Lin
Manual addition/removal of tags	Shiki Wen
Delete an image	Shiki Wen
Website	Ng Ka Ho, Ping He
UI UX Design	Ng Ka Ho
API Integration in Website	Ng Ka Ho
Serverless setup	Ng Ka Ho, Ping He
Object detection	Shiki Wen
Whole System finalization	Ng Ka Ho

USER GUIDE FOR TESTING

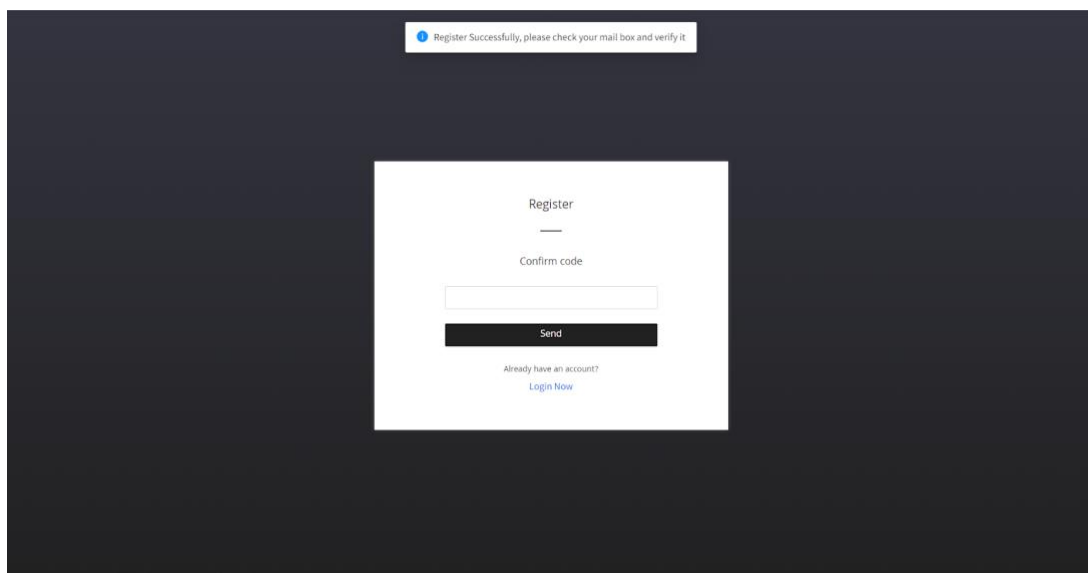
REGISTER/LOGIN PAGE



The screenshot shows a 'Register' form on a dark background. The form is white and contains the following elements: a title 'Register' with a horizontal line underneath; an email input field with the value 'f1t522test2@mailinator.com' and a green checkmark to its right; a password input field with masked characters and a green checkmark to its right; a 'given_name' input field with a green checkmark to its right; a 'family_name' input field with a green checkmark to its right; a black 'Register' button; a link 'Already have an account? Login Now' in blue text.

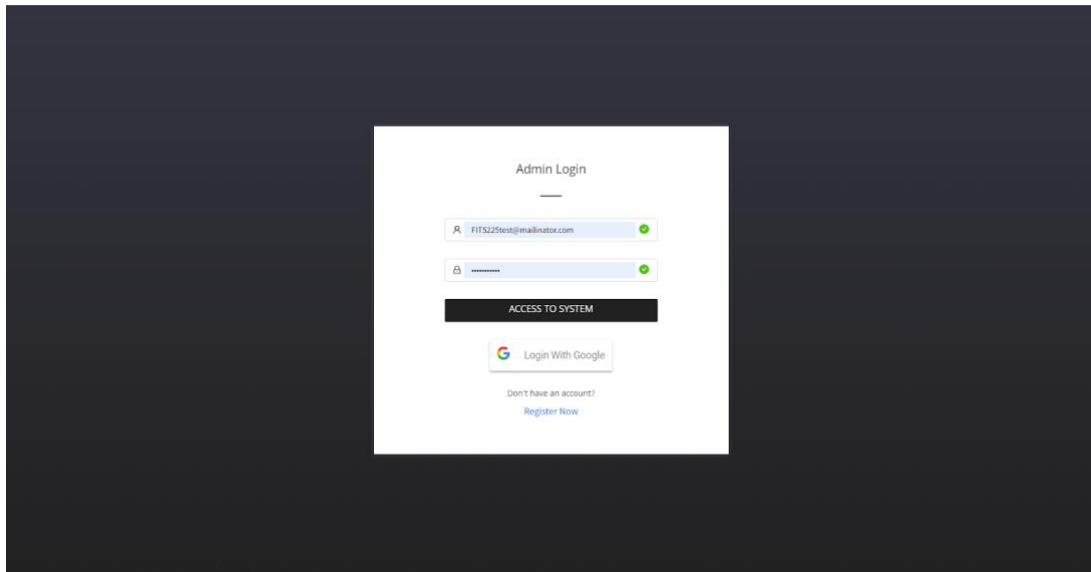
Prior to accessing our system, please login with your credentials. If you are a new user, you have the option to register a new account or login using your Google account. The password requirements are as follows:

- Minimum length of 8 characters.
- Must include at least one number.
- Must include at least one uppercase letter.
- Must include at least one lowercase letter.



The screenshot shows the same 'Register' form, but now it is in a verification state. At the top, a white notification box with a blue icon contains the text 'Register Successfully, please check your mail box and verify it'. The form itself has the title 'Register' and a horizontal line. Below the title is the text 'Confirm code'. There is an empty input field for the code, followed by a black 'Send' button. At the bottom, the link 'Already have an account? Login Now' is present in blue text.

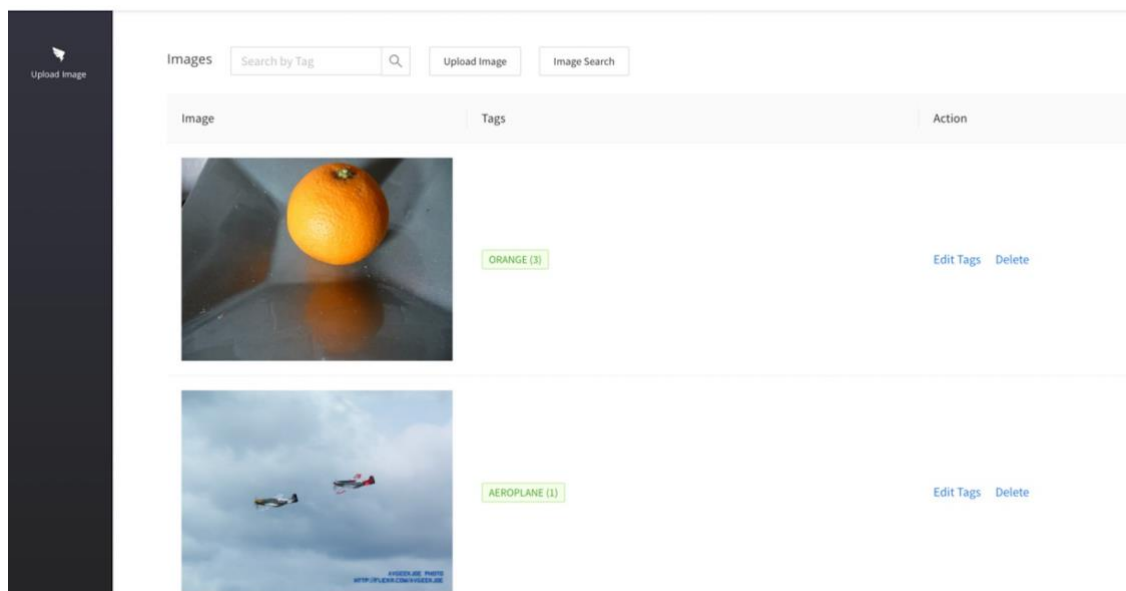
Upon registration, a verification email will be sent to your email address. Enter the code to finalize the registration.



After registration, login with your new account to access the system's features. To sign out, click on the profile at the upper right and select Logout.

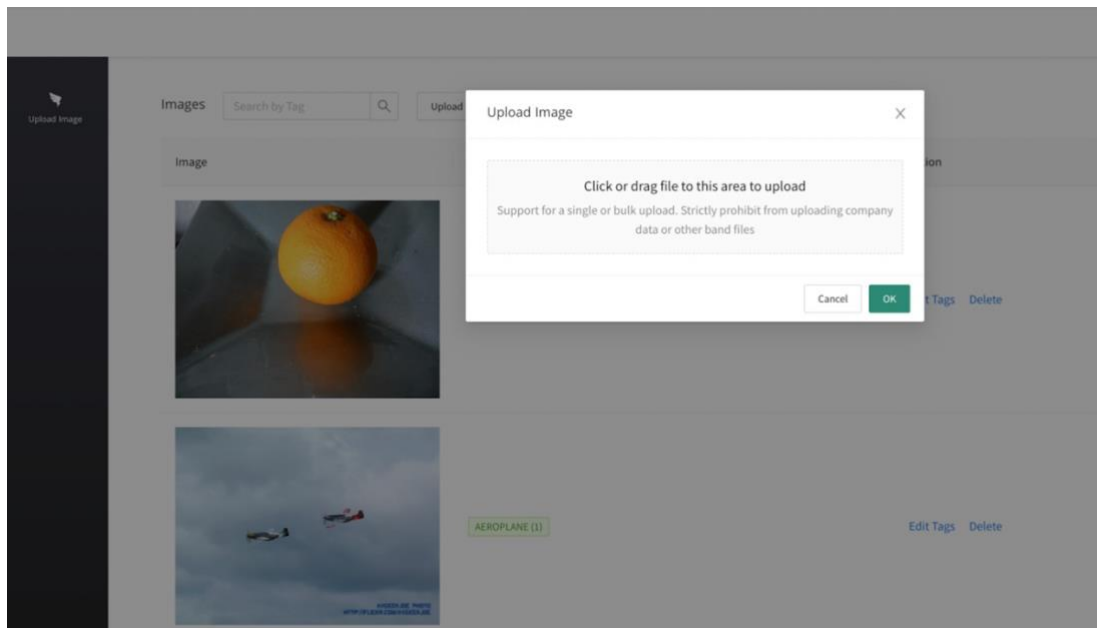
Note that without logging in, you cannot access the homepage or use any system functions.

HOME PAGE



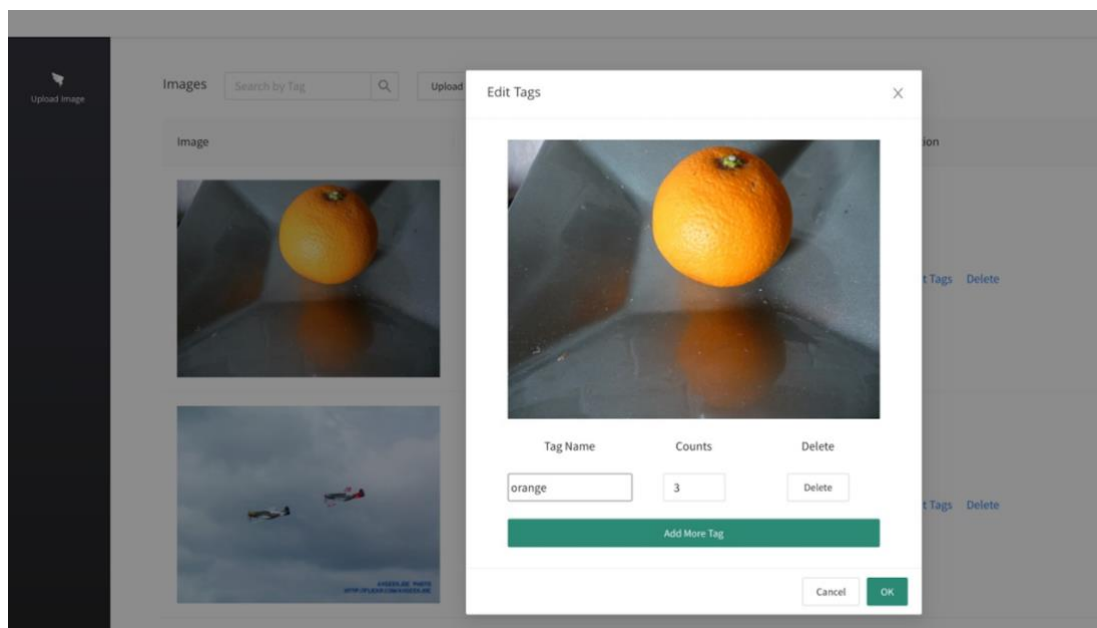
Once logged in, you will be directed to the home page. This page displays all the images you have uploaded along with their corresponding tags.

UPLOAD FUNCTION





To upload an image, simply click on the designated button. It's important to note that the system only supports the upload of one image at a time.

EDIT FUNCTION




If you wish to modify the tag description of an image, click on the respective tag. This will allow you to edit the tag and count according to your preference.

DELETE FUNCTION


Image	Tags	Action
	CUP (3) PERSON (1) BOOK (4)	Edit Tags Delete
	PERSON (4) BALL (2)	Edit Tags Delete

When you decide to remove an image from the system, simply click on the delete link. This action will prompt the deletion process.

SEARCH BY TAG FUNCTION

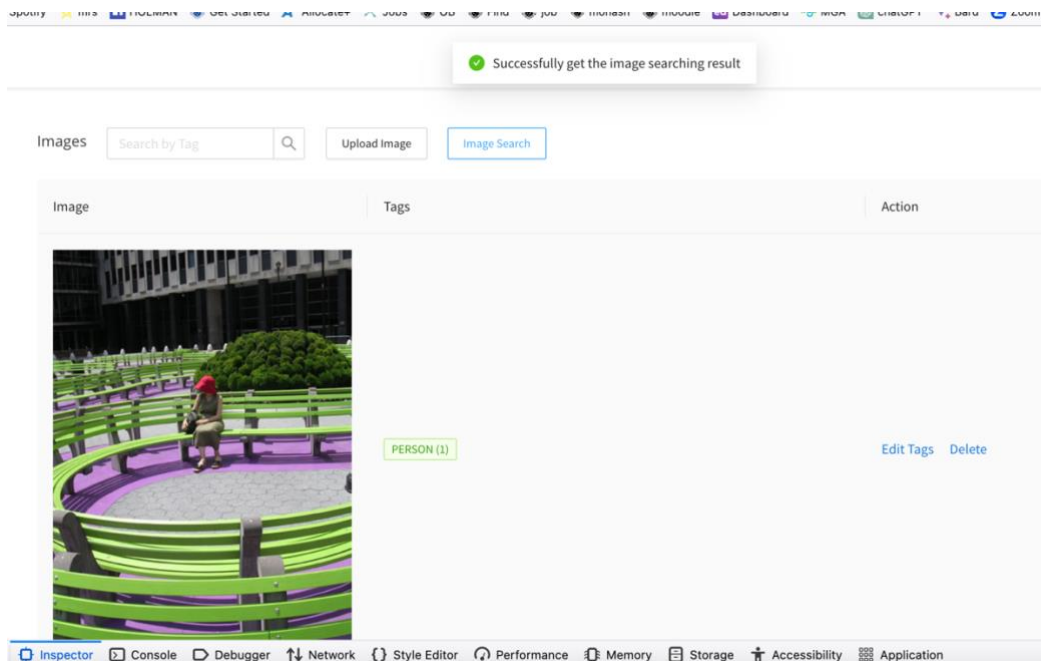

Upload Image

Images

Image	Tags	Action
	ORANGE (3)	Edit Tags Delete

To search for images with similar tags, enter a specific tag followed by a count in the format "tag:count" in the search field. The system will retrieve and display all relevant images.

SEARCH BY IMAGE FUNCTION



For a more advanced search capability, you can upload an image to find similar images within the system. This feature utilises image recognition technology to provide accurate results.

GIT PLATFORM

GitLab is used for collaborative development and synchronisation. There are various folders and branches to tackle issues at different stages. In brief, the primary backend development occurs within the "api" folder, while the main frontend development takes place in the "website" folder.

Please take a look at the root folder of this project at the following link:

<https://git.infotech.monash.edu/fit5225-group3-assignment3>. The entire teaching team has already been invited to the project as reporters.

REFERENCE

For your reference, the following is a demonstration of our project:

- <https://fit5225assignment3.jcdinteractiveads.com/>