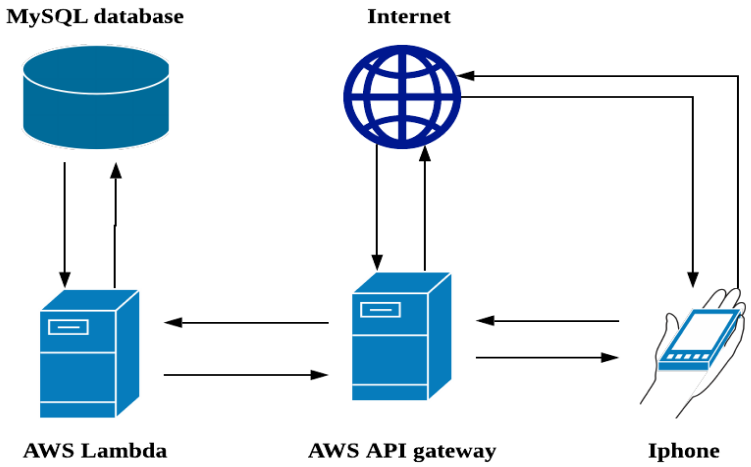
# Maintenance Document

This section primary focuses on the maintenance of Smartstatis on both the application backend and the Smartstatis project. This includes the information for

1. *System architecture*
2. *Smartstatis Xcode project*

In the following sections, the document will explain how each component communicates with the others in the system architecture and how each component communicates with the others within one node in the system architecture.

## Section 1 - System architecture




The diagram above demonstrates the system architecture of Smartstatis.

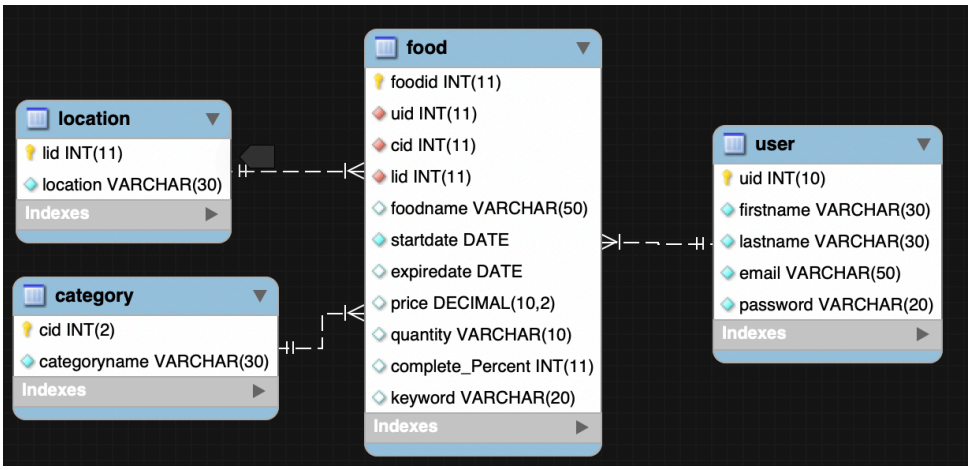
In terms of presentation logic, the node named iphone is the physical device utilized by the users. This node primary performs the presentation logic with very least application logic and the node directly communicates the APIs (Imgur API and Youtube API) from both the Internet and the AWS API Gateways via HTTPS requests.

With regard to data access, the APIs (Youtube API, Baidu OCR API, AWS API Gateway and Imgur API) mainly provides the interface for data access so that the users can then retrieve the data from the data storage via these interfaces.

Finally, AWS Lambda perform both application logic and data access logic so that i can retrieve the data from the MySQL and return to the users via APIs.

In the following pages, this document will explain the further information for each node in the system architecture.

## 1-1 MySQL (AWS RDS)




### 1-1-1 Location table

The Location table is to store all the location for the user's food storage such as fridge, freezer and pantry.

| Column | Description | Type |
|---|---|---|
| lid | Location ID (Primary key) | INT(11) |
| location | Location Name | VARCHAR(30) |

### 1-1-2 Category table

The Category table is to store all the food category such as meat and vegetable.

| Column | Description | Type |
|---|---|---|
| cid | Category ID (Primary key) | INT(2) |
| categoryname | Category name | VARCHAR(30) |

### 1-1-3 User table

The User table is to store all the information for the users such as email and password.

| Column | Description | Type |
|---|---|---|
| uid | User ID (Primary key) | INT(10) |
| firstname | The user's first name | VARCHAR(30) |
| lastname | The user's last name | VARCHAR(30) |
| Email | The user's email | VARCHAR(50) |
| Password | The user's password | VARCHAR(20) |

### 1-1-4 Food table

The food table is to store not only the information for the users' food but also the foreign keys connected with the other tables.

| Column | Description | Type |
|---|---|---|
| foodid | Food ID (Primary key) | INT(11) |
| uid | User ID (Foreign key) | INT(10) |
| cid | Category ID (Primary key) | INT(2) |
| lid | Location ID (Primary key) | INT(11) |
| foodname | Food name | VARCHAR(50) |
| startdate | The date when food is bought | DATE |
| expiredate | The date when food is expired | DATE |
| price | The price of food | DECIMAL(10,2) |
| quantity | The quantity of food in shopping list | VARCHAR(10) |
| complete_percent | The percentage of how much food is consumed | INT(11) |
| keyword | The keyword for OCR | VARCHAR(20) |

## 1-2 AWS Lambda function / AWS API Gateway

In this section, all of the scripts running on the AWS Lambda are documented. There are four types of scripts for different types of data retrieval. The manual for all the scripts is given by the following link. This section also includes the documents about hot AWS API is deployed based on the selected AWS Lambda script.

For more details on how each script is installed and works with AWS API Gateway and the Smartstatis Xcode project, please refer to the following link.
https://github.com/ta9-genx-leader/SmartStatis/tree/master/AWS Lambda

## 1-3 Internet

### 1-3-1 YouTube API

As one of the features for Smartstatis is to help the users to gain ideas on how to deal with the food that is almost expired, we have introduced a function that the users can search for the corresponding recipes for their food. In order to realize this function, we have integrated with Youtube API so that the corresponding videos from Youtube can be then navigated when the users search for the recipes with their preferred ingredients. In order to utilize the service properly, the developers must register an Youtube API key and embed the key into the Xcode project.

For more details on how to register Youtube API key and how to integrate Youtube API with the Smartstatis Xcode project, please refer to the following link.
https://developers.google.com/youtube/v3/quickstart/ios?ver=swift

**1-3-2 Imgur API**

As one of the features for Smartstatis is to help the users to record their purchased food by simply scanning the receipts using the iphone camera, we have registered an image hosting API where we can then manage the images for the receipts taken by the users and converting the images to an URL so that it can then be consumed by Baidu OCR API. In order to utilize the service properly, the developers must register a client ID and embed the client ID into the Xcode project.

For more detail on how to register Imgur API and how Imgur API can be integrated with Smartstatis Xcode project. Please refer to the following link.
https://apidocs.imgur.com/?version=latest

**1-3-3 Baidu OCR API**

As one of the features for Smartstatis is to record the user's food by simply scanning the receipts using iphone camera, we have registered Baidu OCR API service which assists Smartstatis to read the plain string from the images taken by the users. After Baidu OCR API return the result of text recognition from the image, we can then perform further analysis to filter the data by one of the AWS Lambda functions. In order to utilize the service, the developers must register API ID, API Key and SECRETE KEY for Baidu API.

For more details on how to setup Baidu OCR API, please refer to the following link.
https://ai.baidu.com/docs - /OCR-Python-SDK/top

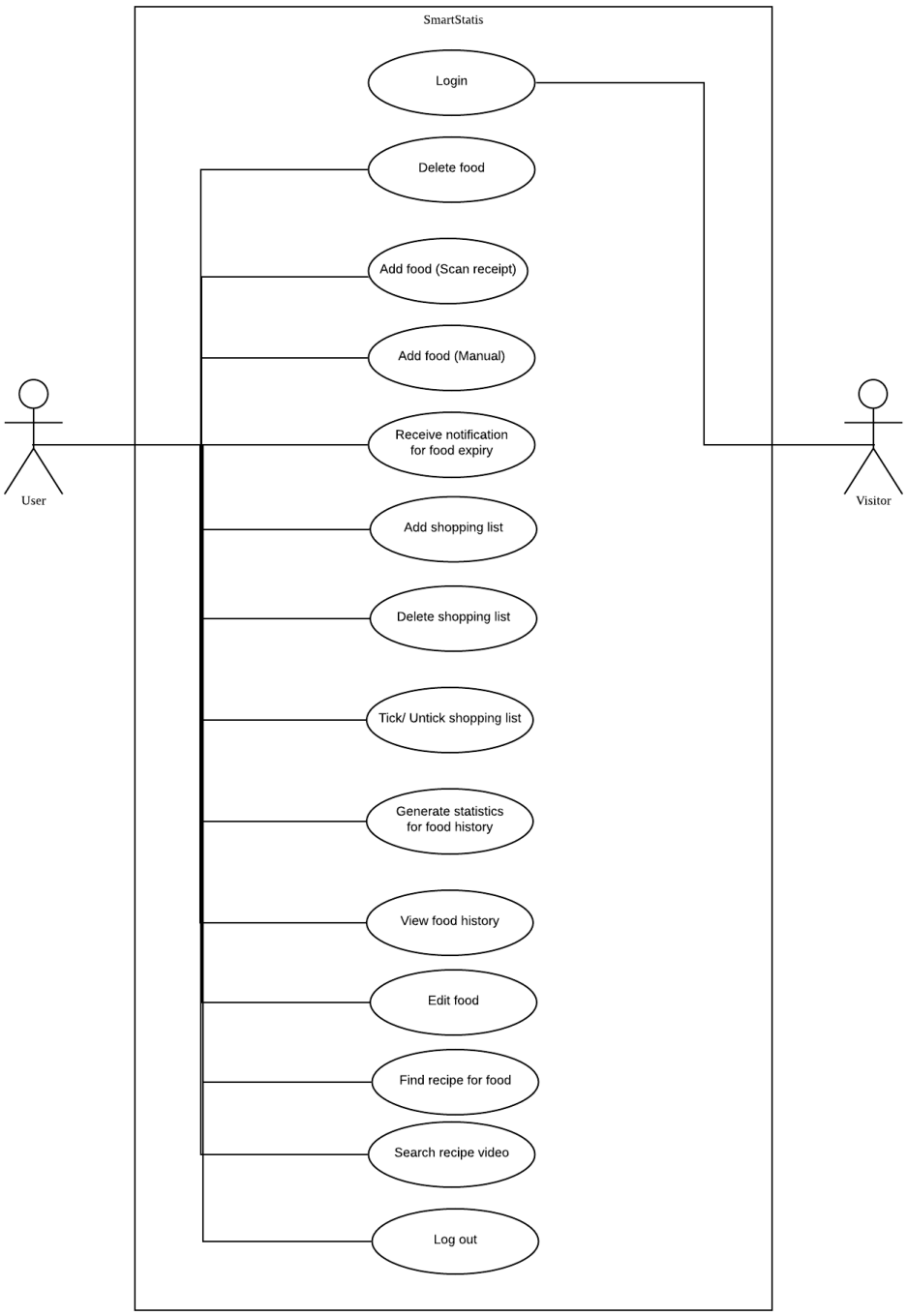
In addition, for more detail on how the AWS Lambda function works with Baidu OCR, please refer to the following link.
https://github.com/ta9-genx-leader/SmartStatis/tree/master/AWS Lambda/OCR

# Section 2 - Smartstatis Xcode Project

This section includes the documentation for the Smartstatis Xcode project. This documentation includes:

1. Use case diagram
2. Pod documentation
3. Sequence diagram
4. Code documentation

## 2-1 Use case diagram



**2-1-1 Actor**

**Visitor:**

The visitors are the users who does not log in Smartstatis yet. They can do

1. Generate their Smartstatis ID and use the ID to log in.

**User:**

The users are the users who already login Smartstatis. They can do

1. Add food by scanning receipts
2. Add food by manually typing
3. Edit food
4. Delete food from current storage.
5. Receive notification for food expiry
6. Add a plan to the shopping list
7. Delete a plan from the shopping list
8. Tick/Untick a plan from the shopping list
9. Generate Statistics for food history
10. View food history
11. Find recipes for food
12. Search recipe by ingredient
13. Log out

**2-2 Pod documentation**

As some of the features for Smartstatis require the functions from the third-party organization such as Youtube, we have added two dependencies that are connected with the libraries published by those third-party organizations.

**2-2-1 Charts**

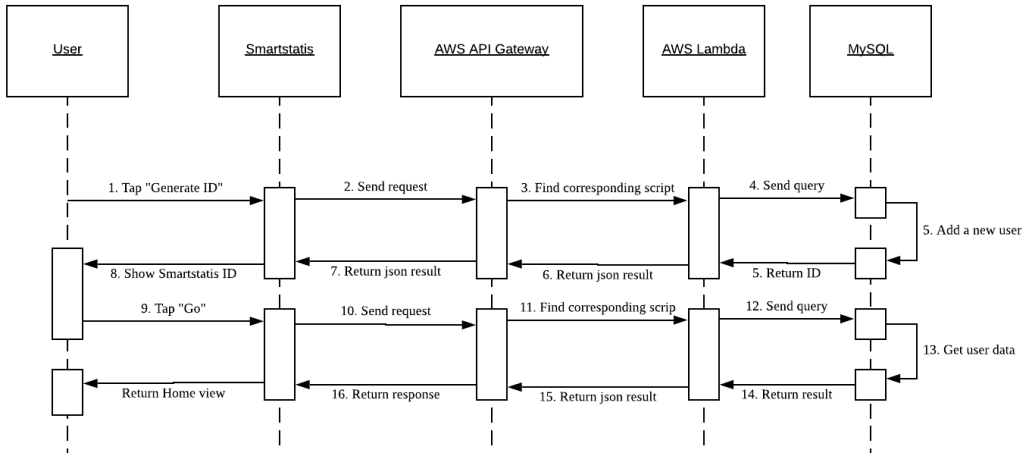
The Charts library is the library providing excellent functions to conduct any types of charts for data analysis. As one of features for Smartstatis is to generate statistics for the users, we have added this library into the Smartstatis Xcode project.
For more details about Charts library, please refer to the following link.
https://github.com/danielgindi/Charts

**2-2-2 YoutubePlayer-in-WKWebView**

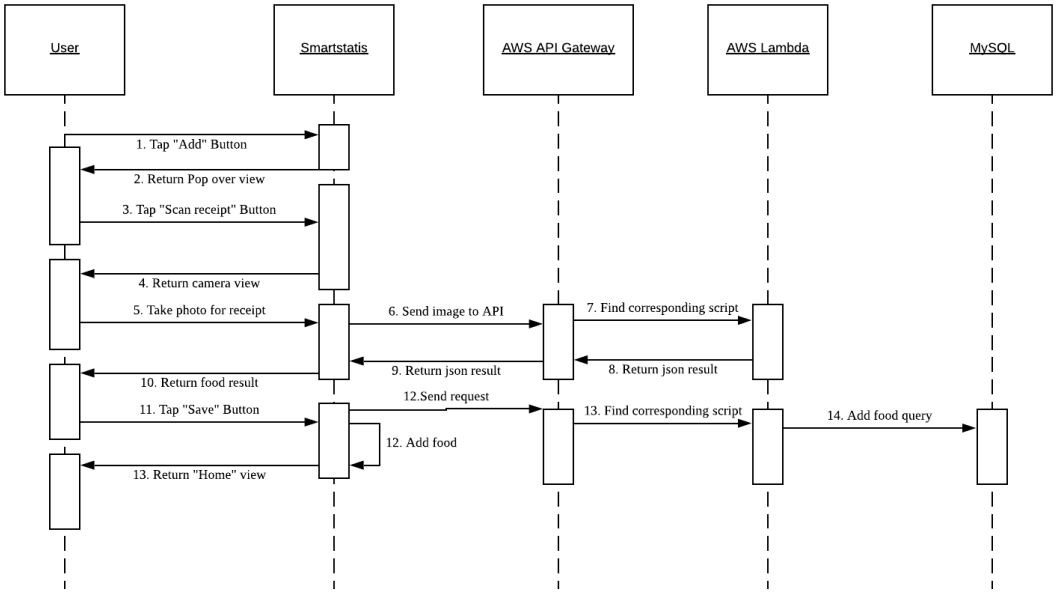
The Youtube library is the library providing better function on WKWebView on Xcode so that the delay of retrieving video can then reduce. Moreover, it also provides the functions that the users can navigate to Youtube application from the embedded video of an application. As we have introduced the features that the users can search for corresponding videos for the recipes by giving the keyword, we have added this library into Smartstatis Xcode project.
For more details about YoutubePlayer library, please refer to the following link.
https://cocoapods.org/pods/Swift-YouTube-Player

## 2-3 Sequence diagram

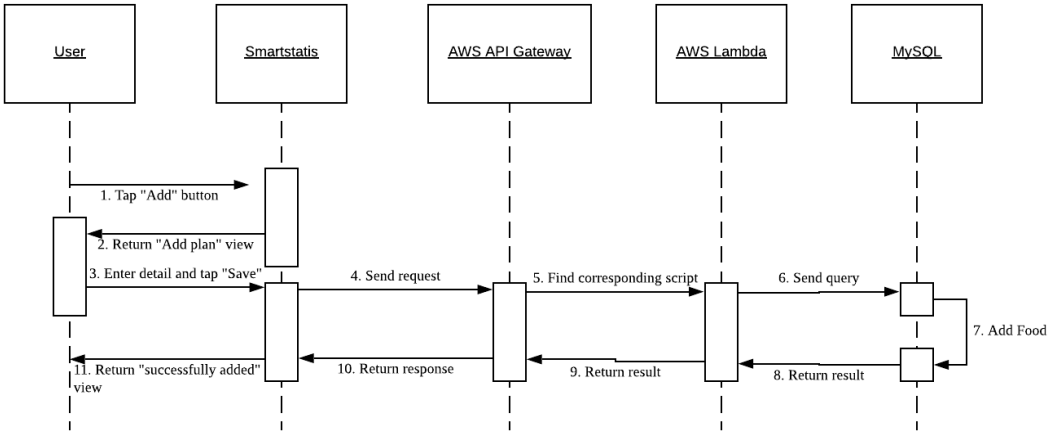
## 2-3-1 The user logins



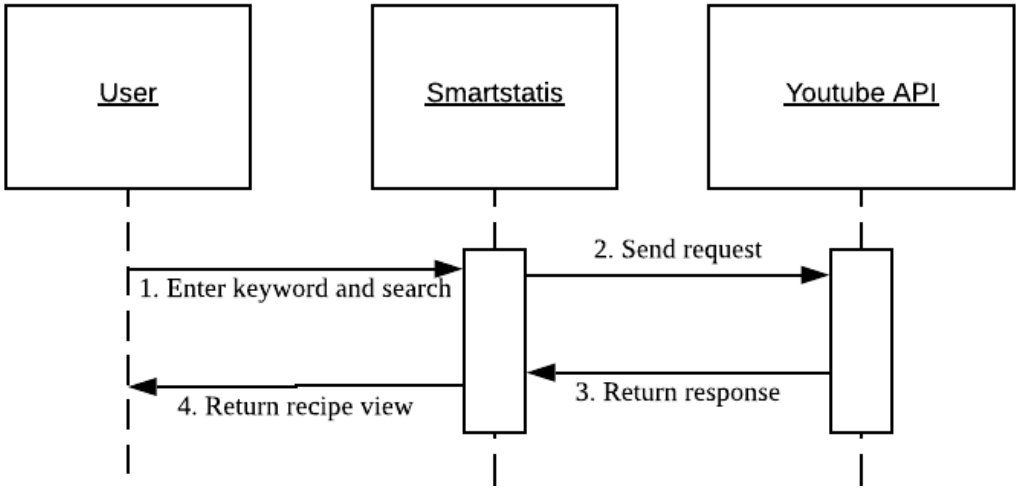

## 2-3-2 The user adds food by scanning receipts



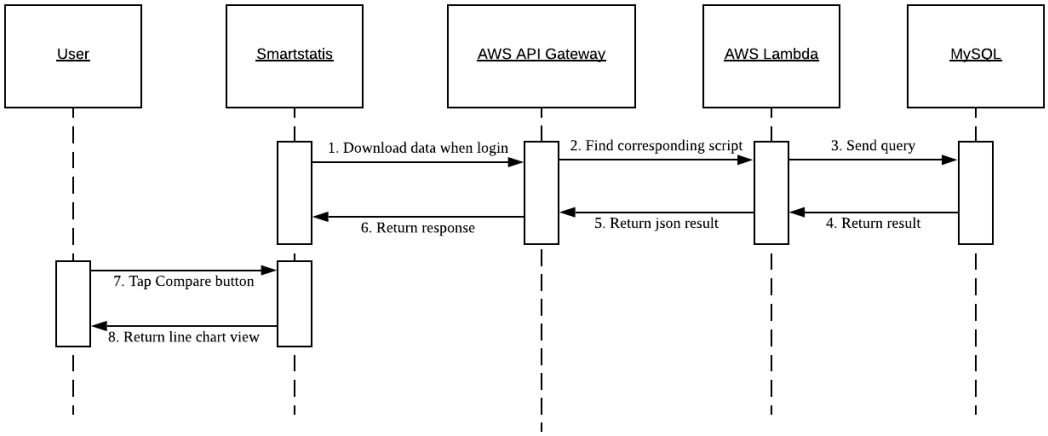

## 2-3-3 The user adds a shopping plan



### 2-3-4 The user searches for recipe




### 2-3-5 The user generates line chart for food waste statistic




### 2-4 Code documentation

Please refer to the following link for code documentation.

https://github.com/ta9-genx-leader/SmartStatis/tree/master/Final/SmartStatis/SmartStatis