HALAL Food Spotting and Navigation Helper in China for Tourist

by

Ku Eet Ying

Dissertation submitted in partial fulfillment of

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CERTIFICATION OF APPROVAL

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A project dissertation submitted to the
Information Technology Programme
Universiti Teknologi PETRONAS
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Approved by,

_____

(Ms. Goh Kim Nee)

UNIVERSITI TEKNOLOGI PETRONAS
TRONOH, PERAK

SEPT 2012

CERTIFICATION OF ORIGINALITY

This is to certify that I am responsible for the work submitted in this project, that the original work is my own except as specified in the reference and acknowledgements, and that the original work contained herein has not been undertaken or done by unspecified sources or persons.

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(KU EET YING)

ABSTRACT

HALAL Food Spotting and Navigation Helper in China for tourist is a website service that can be used with the availability of World Wide Web (WWW) through a handheld mobile devices connected to a mobile network or any wireless network. It focuses on helping especially Muslim tourists from Malaysia to navigate around China without the help from any other external sources except for their very own smart phone. This is to allow the users to access to Google Maps in anytime, anywhere. Tourists guiding through mobile application contains both informing the tourists about spots to search for HALAL foods located near their whereabouts as well as searching for places and determine the HALAL foods available at one place. It is no other than an expert system for Muslim tourists searching for HALAL foods, where the Integrated development Environments (IDE) used is the Microsoft Visual Studio Express is a free version IDE that is developed by Microsoft, while the web development tool that is used is the Visual Web developer Express. All in all, the system helps people to plan their own travelling and get intimate service on independent travel.

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ABBREVIATIONS AND NOMENCLATURES

WTTC	World Travel & Tourism
GDP	Gross Domestic Product
iOS	iPhone Operating System
UTP	Universiti Teknologi PETRONAS
SDK	Software Development Kits
SDLC	Software Development Life Cycle
FYP1	Final Year Project 1
FYP2	Final Year Project 2
IIS	Internet Information Service
GUI	Graphical User Interface
QTS	Quality Tourism Services

CHAPTER 1

INTRODUCTION

1.0 BACKGROUND OF STUDY

According to the report of World Travel & Tourism (WTTC), although the economical recession in 2009, the quality of related workers in tourism spread over the industry in more than 235 million, 9.4% of the world's Gross Domestic Product (GDP).

This phenomena is happening the same in Malaysia, Malaysian are travelling to see the world all the time. With the growing of the Domestic GDP, citizen of Malaysia earned more to consume and the consumption include travelling. There is no doubt that whenever tourists go to a certain country, locals speak of their own native language which tourists barely understand. It is difficult for the tourists to decide on which best foods are in town, what more for Muslim tourists who would want to search for Halal foods that are available in a foreign country.

The main aim of the project is to assist non-Chinese speaking tourists to find for Halal food when travelling to the country like China. The system would provide the tourists with the nearby restaurants that serve Halal foods as well as the route to get there. The system nevertheless would assist in reducing efforts in searching and shorten the time to organize a trip.

With the rapid development in the technology nowadays, it is now widely used in multinational service system and defense orientation purposes as well as in tourism industry in Malaysia. Youngsters are vastly engaging themselves in the virtual world through the internet. Moreover, a smart phone nowadays is easily available at a

reasonable price. Moreover, World Wide Web is easily connected with data plan, broadband services as well as the wireless networks.

For any of the available smart phone out there, it is all equipped with at least a map system, but the most vastly used map nowadays is the Google Map. This subject location map of the display technology has gradually matured throughout the years. However, all these maps that resided on the phones are mostly offline and need constant update to be accurate. With World Wide Web, it is much easier to get the most accurate location and maps extracted from the satellites. Thus, to develop the service application on a website is the most appropriate platform.

For this project, I have chosen mobile website as the platform, the reason for choosing mobile website is because it has been the one of those that freely available framework created for the mobile devices. For developing the system, I have chosen the framework of asp.net which is marketed by Microsoft which allowed the programmers to build dynamic websites, web applications as well as web services. The characteristic of open source make it available to any developers who wish to try their luck in the field of web application and services. The software packages are also widely available on the internet; examples are Microsoft Visual Studio and Microsoft Visual Web developer Express.

1.1 PROBLEM STATEMENT

1.1.1 Problem Identification

1.1.1.1 Difficulty in finding HALAL foods

Tourists from Malaysia, especially Muslim, facing difficulty in finding restaurants that serve Halal foods when go for travelling focusing in China of cities like Taiwan and Hong Kong. There is not enough information provided by the signboards available on each restaurants, which sometimes would not show whether they are selling HALAL foods or not.

1.1.1.2 Communication barrier

There is no doubt that when a person from one country who speaks different local language would have difficulties in communicating with others that speak other native languages. Sometimes, it is almost impossible to communicate with China native as they are not conversable in English. Thus, making finding for HALAL food even more challenging.

1.1.1. 3 Time consuming

It would be wasting time to go around asking for the restaurants that one person wants to go to even though the name is known. Moreover, due to the communication problems that tourists might face, it might be impossible to ask for the correct direction from the locals.

1.1.1.4 Reluctantly follow the Tourist guide

For someone who wish to visit China, but is having difficulty in learning Chinese, many of them opt to go with the tourist's guide, which in turns would disappoint them as tourists' guide packages limit the freedom one could have. There would be time limit and constraints in visiting places, and what more of not being able to choose the food that one yearned for.

1.1.2 Significance of the Project

The importance of the project is that it could help the users to identify the required restaurants that serve HALAL foods and en-route the users to the required place visually and descriptively.

Not only that, it could also make a big impact in the tourists industries where this system could be implemented in vast area of the city around the world and assist tourists in any languages.

Moreover, it is undoubtedly able to help the reduce time in searching as well as help those people who wish to travel without the tourist guide could do so freely.

1.2 OBJECTIVES

- To determine whether tourists would be rather be independent (with the help of the system) or to be with a tour guide.
- To achieved the reduction of time to search for the desired food when travelling.
- To combined the usage of geo locations and spatial data.
- To cross implement the Google mapping on a website.

1.3 SCOPE OF STUDY

The scope is to develop a system through the standards ASP.NET framework in collaboration with Google Map API. The program will be able to locate available nearby restaurants that serve HALAL foods. This will allow the tourists, especially Muslim who has difficulty in finding HALAL food to be able to find HALAL food anywhere anytime.

Deliberation of individual will include the time constraint given to complete the project which is a total of 28 weeks, budget and the capacity ability as a student. Identification of organizational (UTP), technology and resources issues also will be part of personal deliberations.

1.4 FEASIBILITY OF THE PROJECT

1.4.1 Scope

The scope of study for this project is achievable as it is within the scope of the field that I am currently study, which is programming. There is slight different in every platform of programming but I believe that the basis is the same.

The scope of the project which involved the ASP.NET framework and the Google Map API is somehow researchable and learnable. Even though to work with Google Map is a new challenge to me, as I have not learned about it, but it is always new thing to learn now and then, I believe it will not be difficult for me.

1.4.2 Time

The time frame of the whole project is distributed into 2 phases, FYP1 and FYP, which is about 8 months time period. Although the time frame is slightly packed but there is still plenty of time to do the project. Time distribution of the whole project is, for FYP1, works of documentation and researches on the topics would have needed to be completed at the end of the term. For FYP2, the whole programming stage would start and the focus of the project would be on developing the system.

CHAPTER 2

LITERATURE REVIEW

2.0 LITERATURE REVIEW

The world is experiencing a rapid development of web application building, especially in the use of browser-based internet services; it could be from a handheld mobile device connected to a mobile network or other wireless network. The research work of the mobile navigation system is growing along with the development of computer network, Assisted GPS positioning technology and Google Map API etc.

It is noted that in recent years, more and more information is available for tourist on the internet. However, it is also well acknowledged that to obtain the precise and accurate information is becoming difficult.

Here listed a common use of technology in the field of mobile application in the area of navigation.

I. Google Maps API

The most commonly used technology in the field of the mobile navigation is the Google Map. Aleksandra Pejic, Szilvester Pletl, Bojan Pejic(n.d.) pointed out that Google Map API is a technology provided by Google based on AJAX.(p.317)

A more precise explanation, Google Maps is a web-based mapping service provided by Google which provides a slick, highly responsive visual interface built using AJAX technologies. The Google Maps is well-known with the abilities of allowing users to embed Google Maps in their own web pages.

Application Programming Interface (API) is the software interface different components of the system agreement, in recent years an increasingly large scale of software will often need to divide complex systems into smaller components, making the programming interface design to be so importance.

Google Maps is most commonly becoming very popular in embedded market in various websites. Google Maps API is based on a very simple suite of classes within a JavaScript container directly within a XHTML page, and these classes were loaded from Google each time we opened a Google Maps web page. All of the functionalities of Google Maps is based on this embedded JavaScript object built in a web page, and this component provide the interface to the Google Maps service and generate the map on users screen by loading the necessary image components and tiling them onto the display. The interface of the API is hiding some powerful classes, objects, and interfaces that enabled to manipulate the Google Map. Combining this interface with the data that we wanted to display, it was possible to support interactive elements on the web page without loading the page or redisplaying the portions of the map, which means the entire process is handled by JavaScript and Google Maps application.

According to He Li, Lai Zhijian (2010), they points out that to use Google Maps, a first time customer would need to register for a Google Maps API secret key through a Google user account. (p.87).

II. Global Positioning System (GPS)

In a research paper written by Liao, Chuang, Jeng and Chen (2011), it was precisely mentioned that GPS must be in the case of in the direct line of sight to receive satellite signals. (p.182) In that case, if the device with GPS is to be in a room, highlands or in urban areas, the accuracy of the GPS's would be affected. As Liao et al. (2011) pointed out that the GPS, was originated for the U.S. Department of Defense for military timing, positioning and navigation purposes of the development, is now open for civilian use, the combination of satellites and communications technology in the development of private market is booming, in addition to providing precise positioning, but also provide

precise time, height and speed, this shows the GPS in the future is full of business potential. (p.183)

Based on research result from Li, Kan, Liu and An(2010), Google Earth images, through processing the GE images and getting pixel value of transformation of Mercator projection and Gauss projection and the resample method of image pixel are studied. (IEEE, p.282)

Their works of research circulating around Google Earth Maps where they use the aerial images to acquire accurate and reliable geospatial information. The idea was to use the Google Earth images to determine the areas and the scales of a place. Their works were get done through analyzing GE images organizing method and Mercator projection principle and then calculate the pixel value of arbitrary geographical position under a resolution from mass GE images.

According to Ludimar Guenda, Lu ́s Br ́as, Marco Oliveira, Nuno Borges Carvalho(n.d.). "Outdoor location/navigation systems are a useful support for our daily life. The majority of these systems are based on Global Navigation Satellite Systems (GNSS), which include for example, Global Positioning System (GPS) and Galileo. For indoor location systems several technologies have been presented, each of them with different characteristics. Like this, the choice of the location technology is related with several important factors such as: precision, latency, power consumption, mobile nodes and infrastructure cost. Outdoor and indoor location systems provide a huge area of application, although, the integration of both systems provide even higher levels of availability, and a huge open market for applications. One of the crucial development areas of this systems integration is the development of a robust management application, compliant with actual nowadays systems and technologies."

From the paper, it is understood that a management application for indoor and outdoor location system is to be developed. The application is being compatible with a wide range of devices with Android OS. The application is modifiable accordingly suiting the preferences of the user, such as boundaries alerts and overlapping maps.

III. Related Services in the areas of Food Locating

Foodspotting

According to Donato Barbagallo, Cinzia Cappiello, Chiara Francalanci, Marcio Fossa (2011), he mentioned that Foodspotting is a social network similar to Foursquare. Its peculiarity is given by the level of detail that is reached by user ratings. (p.15) It is undoubtedly that Foodspotting comments and reviews are not at place level but go to the product level, so users can find a place that makes the best dish that they desire rather than having the highest rating for general service and general quality of dishes. It has comments pages that allows the interaction of all the users of the application and can be easily integrated with all major social networks, such as Twitter, Facebook, and Foursquare.

Yelp

Yelp is becoming more and more popular outside of the country, especially in western countries. From a journal written by Shengyu Li (2010), mentioned that Yelp is a popular site with phone application for many people to use because it provides reviews from real people. (p.12)

Similar to the Google Maps, Yelp provides the ability to search by restaurant address, shows the distance from the current location to the restaurant, and displays ratings and reviews about the restaurant. It also provides restaurants' business hours (with the current status as open or closed. When compare to Google Maps, Yelp contains much more information about restaurants, including menus, descriptions of food items, and their related ratings and comments from users. In fact, many users use and trust the system that Yelp has become a restaurant community place where people come to discuss and critique the food and service. All in all, Google Maps is more useful for general points of interest while Yelp is primarily focused on restaurant reviews.

FourSquare

The information get from the journal by Henriette Cramer, Mattias Rost, Lars Erik Holmquist (2010), they found out from an analysis of of 20 in-depth interviews with

foursquare users and 47 survey responses, where they gained insight into emerging social practices surrounding location-sharing. A shift from privacy issues and data deluge, to more per formative considerations in sharing one's location was observed. The whole journal was discussing about the performance aspects enabled by check-ins to public venues, and show emergent, but sometimes conflicting norms (not) to check-in. (p.57)

An example of how a user uses the application is, when users of foursquare want to share their location, they "check-in" to a "venue" using the foursquare mobile website or a native mobile app. As a venue have a name, address and associated geographical location and sometimes user-supplied tips and tags, it allow users to choose from a list of venues nearby, search for a venue, or even create a new venue.

Where

This is a location-based application that will works with Yelp as well as Starbucks and it is available free to be downloaded. It allows you to find your favorite coffee wherever you go.

Urbanspoon

As quoted from Amanda MacArthur.(n.d)., if you ever had problems deciding where to eat each time it time for meals, then maybe it is time to adopt a food searching application that shows the nearby restaurants. Urbanspoon on the iPhone is part of magic 8 balls, part slot machine. You shake your phone and it finds a good nearby restaurant for you. Keep shaking it until it comes back with something you want to try. Urbanspoon actually decide for you with only one shake of the phone.

IV. Intelligent Mobile Tourism Service System

Nowadays, many people who love travelling would rather be independent than to be relying on a tour guide to lead them around. Map is the one thing that usually needed more than the others. Without a map, it is impossible for a person to stroll around in a city without direction.

In the market, there are a lot of new applications related to helping people to navigate around that are compatible with existing smart phones. As Jinn-Shing Cheng, Hung-Wei Hsiang, Wer-Chih Wu (2010) presented in their works on the design of intelligent mobile tourism service system, where they combined the use of android mobile platform and wireless network to design a mobile travelling system with real- time functionality. (p.813) More precisely, they use the GPS on mobile devices in combination with multimedia technology to bind the wireless network in order to construct an integrated transportable travelling system that would benefit a lot of people. Secondly, the integration of Google Maps and related API are used to provide navigation services on the map as well as the street view for virtual travelling.

Jinn-Shing Cheng et al. (2010) mentioned in their works, there are several notable functionalities that is provided by the system, few of them are, Information assembling and travel route arrangement, where user would be able to use their mobile devices to pre-plan their travels or surf to choose the place he like to arrange the travel route. (p.814) The second one is, location search, the system provides 3 kind of location search function. One, "Partner search" which provides the location of user's friend. Two, "Collaborator meet" let user to make friends with the same interest. Three, "Finding child" provides parents use the location search to find their child. Not only that, the system also provide another function, which called, Tourist Information: The system would show the nearby stores, hotels, restaurants and other information in allowing users to attain the most enjoyable trip.[8]

V. QR-Maps: an Efficient Tool for Indoor User Location Based on QR-Codes and Google Maps

As Enrique Costa-Montenegro et al. (2011) designed the QR Maps, to locate indoor user location; it is a tool that employs QR-Codes containing a short text which indicates locations shown within a custom Google Map. (p.928).

The four basic elements in the system are, QR- Codes, Smartphone, Location Server and Maps server. QR-Codes is a small label that people used to place on a wall containing the name of a map and a number indicating the location inside the map. While, Smartphone is an essential device in where it is capable o decoding QR-codes, with a connection to the internet. Next, location server is a java server containing all the map location in XML. Location server serves as the informants where the smart phone would request information from the server, such as the URL associated with a specific map and location. Lastly, the map server, a map server contain all the custom map using the Google Map API, the smart phone would request all the maps with their corresponding tiles from this server.

The QR-Maps itself can locate indoor user location without the need for supporting wireless technology. This simple tool employs QR-Codes to obtain the current position of the user. With the help of location and map servers, the tool would display a custom map for the position using the Google Maps API. Not only that, the application can also help to locate the point of interest, and lead users of how to reach them.

VI. A Mobile Tourist Guide for Trip Planning

In another creative innovation of Khawlah A. Al- Rayes et al. (2011), they introduced a novel android based mobile phone application (GoTour) to guide the tourist in their trip.(para.1) For the first released it is only designed for Istanbul city and works on the smart phones with Android operating system. What the application does is stores information about spots as well as consulates and city services in the mobile database. GoTour works with GPS, Google Maps and Twitter APIs all together. The main function of the application is to allow the users to make a trip plan. It takes into account of tourist's preferences such as location of the tourists, spot categories, maximum distance as well as current time and weather.

CHAPTER 3

METHODOLOGY

3.0 METHODOLOGY

3.0.1 Research Methodology

I. Introduction

This chapter outlines the assumptions underpinning this Project, as well as to cover the research strategy and the empirical techniques applied. In this chapter also defines the scope and limitations of the project of research design.

There are few objectives that I am going to look into for this particular project. Listed below are some of the objectives:

i. The need of Muslim Tourists towards the service.
ii. Familiarity of the concept of using Google Maps on mobile handled devices.
iii. Current or future plan of implementing the concept travelling with the help of a phone to the Users.
iv. Interest of users in having the application/service.

II. Research Methods

The research study decided is to adopt mail surveys which are the distribution of questionnaires, email surveys as well as personal interviews. The targeted subjects for the fieldwork would be those that possess handheld devices with internet connection, as

well as those who like to travel to China. The appointed date for the fieldwork would be from June 2012 till Dec 2012.

III. Research Sample

The targeted audience would be the citizens of Malaysia in a large context. Basic demographic profile of the targeted subjects would be those who possess handheld devices with internet connection. Not to forget those who use handheld devices for various purposes, aside from that, the age range would be from teenagers up to old citizens.

The limitation of the method would be on those who do not owned a smart phone equipped with Internet connection. The scaled down and possible targeted subjects would be on the lecturers in UTP who would need help in travelling without a tourist guide when visiting China.

IV. Ethical Considerations

The study required only the basic and general level of questions would be asked, targeted subjects would only need to answer based on their general knowledge, thus, there are no considerable ethical considerations to be concerned of.

V. Questionnaire Distribution and Return

Two methods of distributions were used to engage participants.

i. Created a questionnaire in the Google Document, send through Google Groups, as well as to send personal email in requesting subjects to fill in the questionnaire.
ii. Approached the people personally, do interview of the required information and get them to response towards the system.

3.0.2 Software Development Methodology

The main lifecycle stages of Incremental Development include Planning, Requirements, Analysis and Design, Implementation, Deployment and Testing.

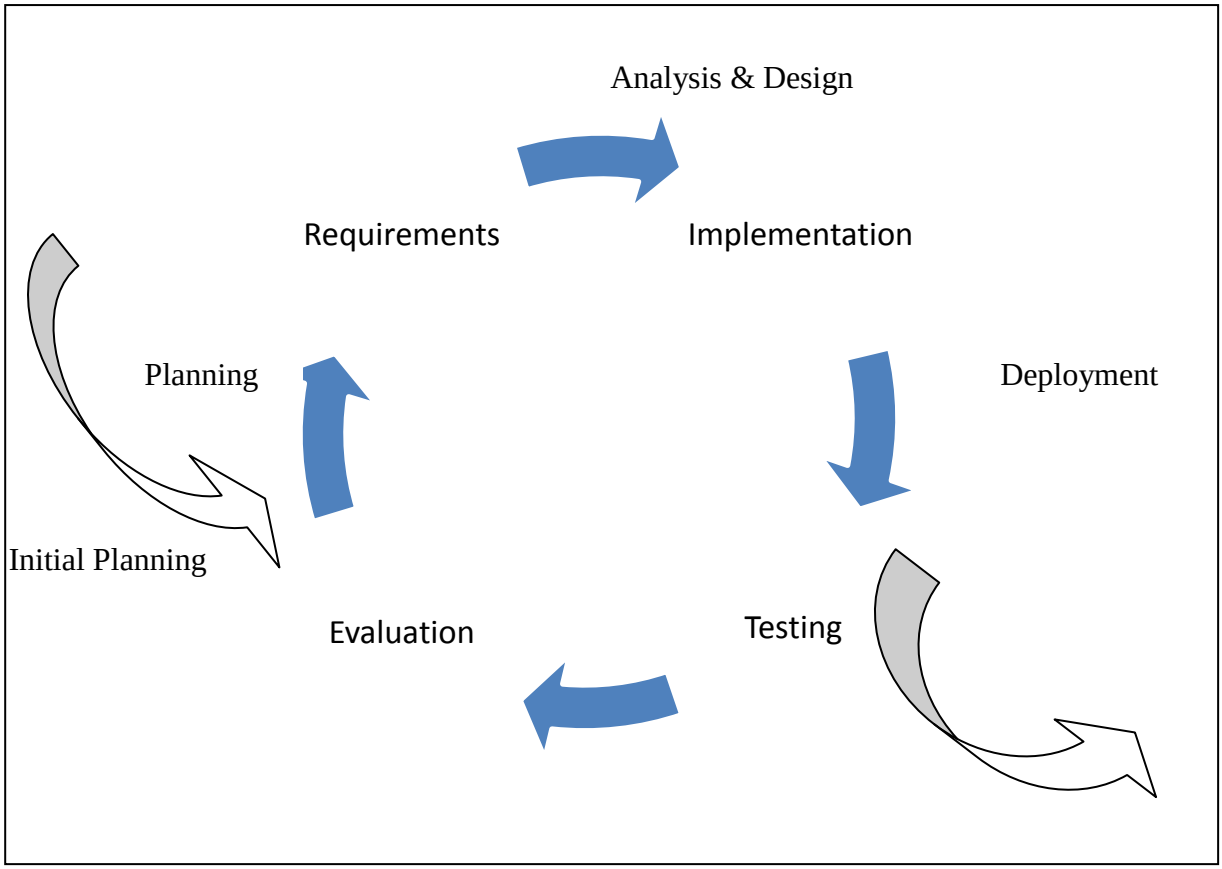


Figure 1: Lifecycle Stages for Incremental Development

Planning phase –focuses on the initialization of the project, involve time and cost estimation, quality definition, changes and risks to be taken to make sure that the project will be completed within the budgeted resources. Works done are discussion with supervisor and research on previous similar projects.

Requirements phase – This phase involves the elements of the system planning and systems analysis phases of the System Development Life Cycle (SDLC). The business needs, project scopes and requirements are discussed and decided within this phase.

Analysis and design phase – An interactive process that the users integrate with the developers and build a working prototype that meets the requirements of the users.

During this phase, users participate strongly in the nontechnical design of the prototype. Screen layouts, process diagrams, pseudo codes and other documentation are among the activities during this phase.

Implementation phase –is the coding part of the development. The requirements of the users are implemented to the prototype and the programming task is carried out within this phase.

Deployment phase – Deployment is the process of delivering the new system into production. In incremental development, this includes setting up the production environment, installing the new system applications and data, publishing the system documentation, training users and initiating production operations.

Testing phase – This phase resembles implementation phase in the SDLC which focuses on the testing of particular part of the system.

Evaluation Phase- This phase is where the partially completed functional parts are reevaluated.

3.1 PROJECT ACTIVITES

i. **Planning for the phases, activities and scopes**
    a. Brainstormings of ideas were carried out, scope down the field and find out the suitable topic for the project.
    b. Researches were done to determine the needs to carry out innovation of the system in specific field.
    c. Discussions were held with lecturers to determine the most suitable and executable project title.
    d. In this activities, a throughout plan for the whole project was designed.
    e. The creations of milestones chart as well as activities chart were presented

ii. Requirement Gathering

a. Surveys were conducted, Survey results and interview results from the potential users of their thoughts on the system.
b. The goals of the project were defined, data were gathered and plans were emulated, not forgetting the plan for monitoring and reviewing of the project.
c. The requirements for the interim report were examined, to pre-analysis all the available resources as well as weaknesses and strengths of the system.

iii. Designing

a. Interface design of the system was determined; HALAL Food Restaurants around the China are being extracted from location server and map server and were being pin-pointed out, located and displayed.
b. Major focus was the writing of coding in accordance to allow the system to recognize the available places with the Halal food restaurants and the way to lead users there. Google API and GPS integration were being worked on.

iv. Implementation and execution

a. Coding part was executed, in incremental development method; execution was needed throughout the development phase because the system was required to be executed each time after finishing a function or a part of the code.
b. Iteration of each functional part was done.
c. The system functionality were finalized at the end of the iterative development, no further functionalities were added.

v. Testing /Monitoring and controlling our project to ensure it follow the project scope

a. Unit testing was conducted throughout the design phase as well as development phase. System was tested along the development to verify that each part of the functionality functioning well.

b. User testing was conducted, system was accessed from a handheld device regardless of the operating system; was given to users to test the system. The system was tested in places around the test area, which is around Ipoh area.
c. Overall testing on the system design, functionality, the validity, integrity as well as availability were conducted as to promise the fully functional system that could satisfy most.

vi. Deliverables

a. Presentation of the project as well as technical report in front of the internal Supervisor as well as the External Examiners during the PRE-EDX towards the end of the semester of FYP II.

3.2 KEY MILESTONE

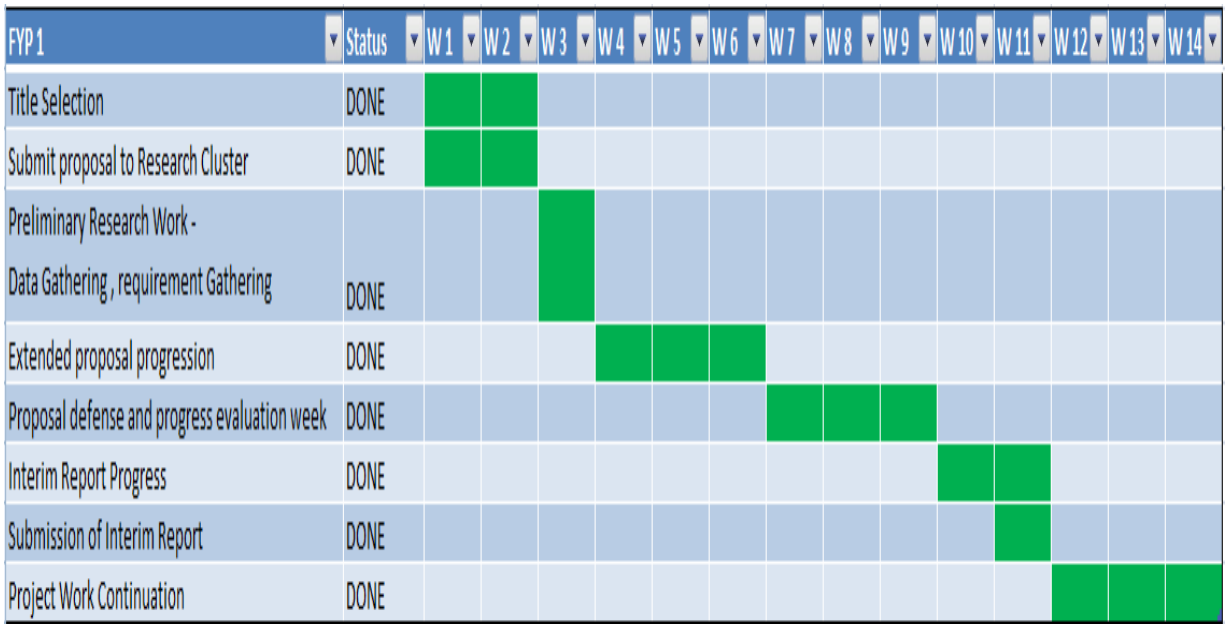
No.	Activities	Time Duration	Start Time	Finish Time
1	**Start**			
i.	List out the possible title of the Final Year Projects	1 week	21 May 2012	25 May 21012
ii.	Title Selection	1 week	28 May 2012	1 June 2012
2.	**Submit Proposal to Research Cluster**	1 Day	6 June 2012	6 June 2012
3	**Prepare Extended Proposal**	1 week	11 June 2012	15 June 2012
i.	Writing proposal	2 weeks	18 June 2012	29 June 2012
4	**VIVA: Proposal Defense and Progress Evaluation**			
i.	Research	2 weeks	2 July 2012	13 July 2012
ii.	Presentation and defense the proposal	1 day	18 July 2012	18 July 2012
5	**Interim Report**			
i.	Research	2 weeks	19 July 2012	3 August2012

Table 1: Milestone for FYP1

No.	Activities	Time Duration	Start Time	Finish Time
1	**Submission of Progress Report**			
i.	Research	4 week	17 Sept 2012	9 Oct 2012
ii.	Submit progress report	1 Day	10 Oct 2012	10 Oct 2012
2.	**Poster Exhibition and Pre-EDX**	1 Day		
i.	Preparation-poster	1 week	1 Nov 2012	5 Nov 2012
ii.	Presentation	1 Day	5 Nov 2012	5 Nov 2012
3	**Submission of Dissertation**	1 week	5 Nov 2012	10 Nov 2012
i.	Writing Dissertation	2 weeks	5 Nov 2012	15 Nov 2012
4	**VIVA: Presentation**			
i.	Research	2 weeks	16 Nov 2012	30 Nov 2012
5	**Final Dissertation(hard bound)/Technical report Submission**			
i.	Research	1 weeks	14 Dec 2012	18 Dec 2012

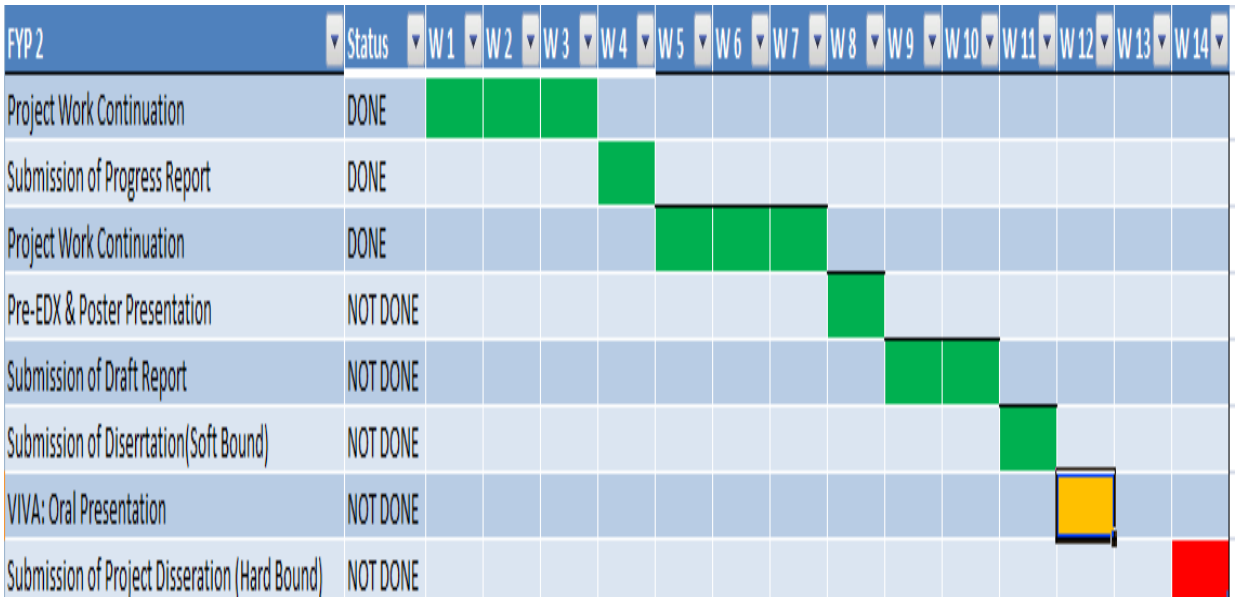
Table 1: Milestone for FYP2

3.4 GANTT CHART



FYP 1	Status	W1	W2	W3	W4	W5	W6	W7	W8	W9	W10	W11	W12	W13	W14
Title Selection	DONE														
Submit proposal to Research Cluster	DONE														
Preliminary Research Work - Data Gathering , requirement Gathering	DONE														
Extended proposal progression	DONE														
Proposal defense and progress evaluation week	DONE														
Interim Report Progress	DONE														
Submission of Interim Report	DONE														
Project Work Continuation	DONE														

Table 3: Gantt chart for FYPI



FYP 2	Status	W1	W2	W3	W4	W5	W6	W7	W8	W9	W10	W11	W12	W13	W14
Project Work Continuation	DONE														
Submission of Progress Report	DONE														
Project Work Continuation	DONE														
Pre-EDX & Poster Presentation	NOT DONE														
Submission of Draft Report	NOT DONE														
Submission of Diserrtation(Soft Bound)	NOT DONE														
VIVA: Oral Presentation	NOT DONE														
Submission of Project Disseration (Hard Bound)	NOT DONE														

Table 4: Gantt chart for FYP2

3.4 METHODS, TOOLS AND TECHNIQUES REQUIRED

This section lists out the technologies and tools that are to be used in the development of the system. The Integrated development Environments (IDE) used is the Microsoft Visual Studio Express which is a free version IDE that is developed by Microsoft, while the web development tool that is used is the Visual Web developer Express; this freeware allows evaluating the web development and editing capabilities.

Whereas for Web services, few of the required platforms are:

- Google Maps API
- Related API

Application framework

ASP.NET is used as the web application framework for the project. ASP.NET is developed by Microsoft which allows users to develop a dynamic websites, web applications and also web services.

ASP.NET basically simplifies the developer's transition from windows application development to web development; this is because ASP.NET offers a control that is similar to the user interface of the Windows. Thus, the web controls, is very much the same as the windows button or label.

CHAPTER 4

RESULT AND DISCUSSIONS

4.0 INTRODUCTION

The various developments of applications in smart phones have become a bigger obsession to all the users. Among the applications that are becoming more and more popular among users are the navigation helper applications, where these applications lead them to find places, people and etc.

Navigation helper service applications allow people to locate places and people in just one click away. It is useful in term of saving time and cost. There are a lot of free applications in various markets where users of different operating systems could download from; where android users can get from Android Aarketplace, whereas Iphone users can get those applications from AppStore. The specific area in the navigation helper is the application that finds food on the go. Some examples of the applications are Yelp, Foodspotting, Urbanspoon, Locavore and LocalEats.

However, all these applications do not specify which foods they are pointing to; it is difficult for Muslim to locate good HALAL foods around the areas. Not only that, it is only available in specific operating systems; whereas for mobile website, it is available on various operating systems.

4.1 REQUIREMENT GATHERING

4.1.1 Other–systems Analysis

i. Non-HALAL Food Finding Systems/applications

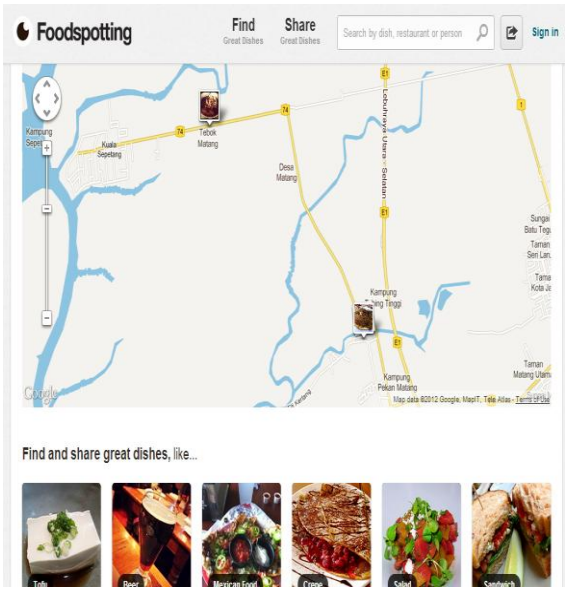
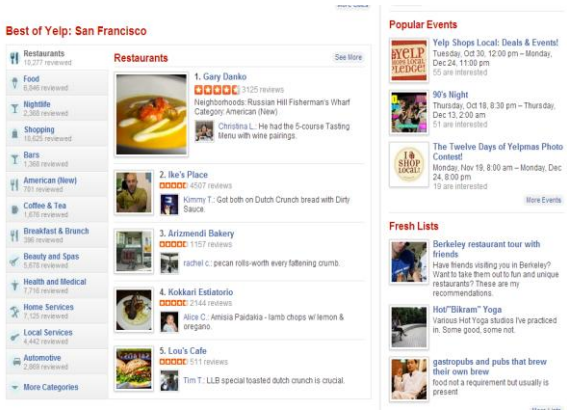
Analyzing other systems to get a better understanding of the GPS-enable application was a task that was required. It was because there is a necessity to accurately identify the weaknesses and strengths of the other systems to allow the development of the desired system.

Based on the study of the website named LocalEats that was based in United States, it was said that the website located the top fifty restaurants in a town or city. According to the user review of the application, the interface was extremely easy to use and it did not have chain restaurants. Whereas, currently still working on a venture capital but already getting a big hit on the internet was the FoodSpotting which is now available on both Android and iOS system operated phones. Foodspotting was more than just locating restaurants but rather it is about sharing specific dishes that users recommend, by taking photos and share it into the application.

Both the systems are getting more and more reactions and discussions from the World Wide Web users, they are about finding good foods and to allow easier navigation to get to the foods. Yet, it does not specify whether those restaurants and foods that it is leading the users to are HALAL or not.

Based on the analysis get from Marko Vitas (2012), which he did research on few of the applications such as FoodSpotting, Trip Advisor and FourSquare, he found out that the requirement that is essential in all the android applications is the UI thread responsiveness that gives user the feel of smoothness when using the application (p.14). Other than that, the research also shows that the special interest of investigation was put into image caching mechanisms. The other function that is put emphasize on is the effort of providing the users with the possibility to interact with other users by uploading contents of foods and places, rating and commenting other user's choices.

Below **Table 5:Non-HALAL: comparison among exisiting websites and applications** shows the existing websites and application for the non-HALAL category:

Websites/Applications	Comparison	
	Existing	**HALAL Food Navigation Helper(To-Be-System)**
 **Figure 2: FoodSpotting.com, source: http://www.foodspotting.com/find/in/Matang-Perak-Malaysia**	- ALMOST perfect: A lack of food category that allows Muslims users to optimize the usage of the website. - *** Mostly only non-Muslin users.**	- Allows categorization of HALAL and non-HALAL restaurants and foods to reach a wider users. - Provide a precise search on foods based on location and keywords.
 **Figure 3: Yelp, source: http://www.yelp.com**	- Provide a lot of categories, not only foods ex: Healthcare, coffee, beauty etc; not specified.	

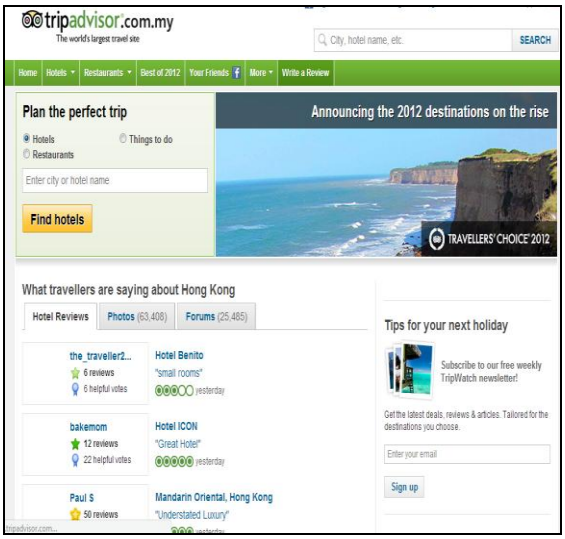
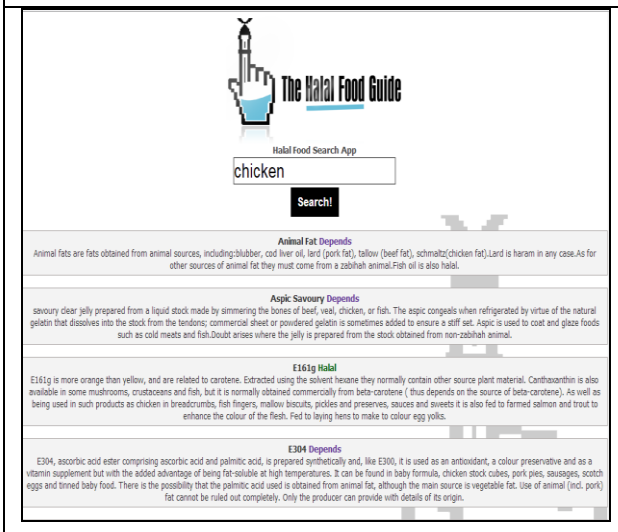
 **Figure 4: TripAdvisor, Source: http://www.tripadvisor.com.my/**	- Compilation of hotels, restaurants and things to do. - Difficult for the Muslims to accurately locate the HALAL restaurants.	

Table 5: Non-HALAL: comparison among exisiting websites and applications

***As per observation on the traffic, user visited on the website.**

Below **Table 6: HALAL: comparison among exisiting websites and applications** shows the existing websites and application for the HALAL category:

ii. HALAL Food Finding Systems/Applications

Websites/Applications	Comparison	
	Existing	**HALAL Food Navigation Helper(To-Be-System)**
 **Figure 5: Zabihah.com, source: http://www.zabihah.com/**	- The Design of the website is **non-user friendly**. - Too many advertisements notice. - Too many words on the main page, difficult for users to achieve the main purpose.	- **User-friendly** - Precise and straight to the point. - Less words and only tabs that direct to the searching of foods are seen on the webpage. - **Precise search, no outdated data, and accurate location shown:** The database; restaurants are added manually by the owner of the restaurants as well as by the administrators.
 **Figure 6: Halal Food Guide, source: http://www.halalfoodapp.com/index.html?q=chicken&search=Search%21**	- Not precise search: The search resulted in non-related keywords.	

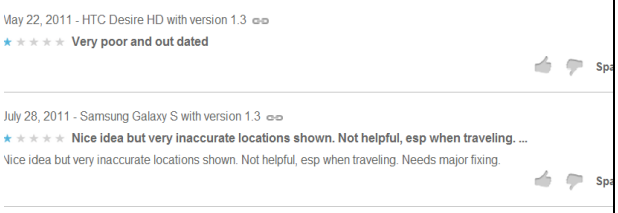
  **Figure 7: Masjid and Halal Finder, Source: https://play.google.com/store/apps/details?id=com.faeez.muslimplaces.main&hl=en**	- Outdated information - Inaccurate location shown(due to the automatic update based on the Google map existing addresses on the application)	

Table 6: HALAL: comparison among exisiting websites and applications

4.1.2 Interview

Interview session had been carried out with one of the UTP lecturer in **Table 7: Interview Session 1**, who indicated that she would like to visit to China once in a while for a vacation. The main purpose of the interview session was to allow the author to get a better understanding on what was the necessity for a Muslim tourist from Malaysia to be able to visit China that has different conversable languages. The interview session allowed the author to identify major problems encountered by Muslim Tourists on the Go while using the Food navigation helper applications.

Some of others interview sessions are recorded in **Table 8, Table 9, Table 10 and Table 11** respectively. Individually, they are from different study background and varying gender and age. However, most of the respondents are in the Youth age group which is around 20-30.

Date:24 July 2012	**Interviewer:** Ku Eet Ying
Interviewee: Dr. Dayang, UTP Lecturer	**Age Group:** >30
Purpose of Interview: - To understand the problems arises when going to China. - To identify whether finding HALAL will be one of the difficult task when on a vacation to China - Understand the user requirements.	
Summary of the Interview: - It is difficult to talk to the local since the conversable languages are different. - Do not know where to eat; all shop signboards are in Chinese. - HALAL foods are essential to be found.	

Table 7: Interview Session 1

Date:20 November 2012	**Interviewer:** Ku Eet Ying
Interviewee: Aisyah Naemah	**Age Group:** 20-30
Purpose of Interview: - Get to know whether respondent have encountered any similar website: www.zabihah.com - Possible arising problems travelling in China. - Spoken languages.	
Summary of the Interview: - Never came across similar websites that helps people to find HALAL foods. - Never come across the website named: www.zabihah.com - The website shown is not user friendly, difficult to focus and read. - Not Mandarin literate; difficult to locate HALAL sign.	

Table 8: Interview Session 2

Date:20 November 2012	**Interviewer:** Ku Eet Ying
Interviewee: Nur Nadiah bt Mazlan	**Age Group:** 20-30
Purpose of Interview: - To understand the problems arises when going to China. - To identify whether finding HALAL will be one of the difficult task when on a vacation to China - Understand the user requirements.	
Summary of the Interview: - "I do not speak Mandarin." - That the website or mobile website should have located the users location and direct them to the destination. - Prefer to be independent while on a vacation as there will be more freedom.	

Table 9: Interview Session 3

Date:21 November 2012	**Interviewer:** Ku Eet Ying
Interviewee: Muhammad Shafiq Syahat	**Age Group:** 20-30
Purpose of Interview: - Get user requirements. - Get to know whether it is cost saving and money saving with the help of the to-be system.	
Summary of the Interview: - Location detection and routing to the destination are needed. - User-friendly interface is needed; free of ads and sponsors links. - Existence of such system helps in saving money and cost as we do not need to hire a tour guide to bring us around.	

Table 10: Interview Session 4

Date:24 November 2012	**Interviewer:** Ku Eet Ying
Interviewee: Mohammad Amirul	**Age Group:** 20-30
Purpose of Interview: - To understand the problems arises when going to China. - To identify whether finding HALAL will be one of the difficult task when on a vacation to China - Understand the user requirements.	
Summary of the Interview: - "I usually go on a vacation alone or with family only, without a tour guide." - "Sometimes it is difficult to find authentic HALAL foods or restaurants." - "I wish to try to use the system that you have just mentioned."	

Table 11: Interview Session 5

4.1.3 Surveys

Surveys are done to find out the acceptance of implementing a new food Navigation Helper Application in the website platform, which was named "HALAL Food Spotting and Navigation Helper in China for Tourist." The responses from the surveys will be kept private and confidential, and will be solely used for the purpose of the Final Year Project.

Halal Food Spotting and Navigation Helper in China for Tourist

1. Do you own a smart phone?
   - Yes
   - No

2. Age group *
   - 18-30
   - 31-40
   - 41-50
   - 51 and above

3. Sex: *
   - Male
   - Female

4. Individual Income: *
   - Not working
   - <1500
   - 1500-3000
   - 3001-5000
   - >5000

5. Do you wish/like to travel to China one day?

- Yes
- No
- Others

6. Do you speak Mandarin/Cantonese or any native language (China)?

- Yes
- No
- Others

7. Religion: *

- Islam
- Non-Muslim

8. If there is an application on your mobile phone that help you to locate HALAL food when you are travelling, would you buy it?

- Yes
- No

9. I do not need help from an application/system; I wish to navigate myself without electronic help.

- True
- False

10. I would be grateful if such an application/system exists; it would make my life easier and much more happening.

- True
- False

11. I can save much more time in travelling without me having to trying to search for HALAL food.

- True
- False

Table 12: Sample Questionnaire

Summary of Responses from the Questionnaire

A total of 32 respondents has responded to the survey, and among them have varies age group and earning status. Most of the respondents are from the age group of 18-35, which indicated that most of the users-to-be would be the Youth Group. Besides that, the gender that responded varies, indicating that the system to be is favored by all genders.

Another important question that has been answered and is considered important is the question asking whether they would prefer to navigate by themselves with electronics help or with the help of a guide. The major respondents agreed that they prefer to have more freedom during their vacation rather than following the tour guide around. As a conclusion, they picked that they would rather use a system to navigate them around.

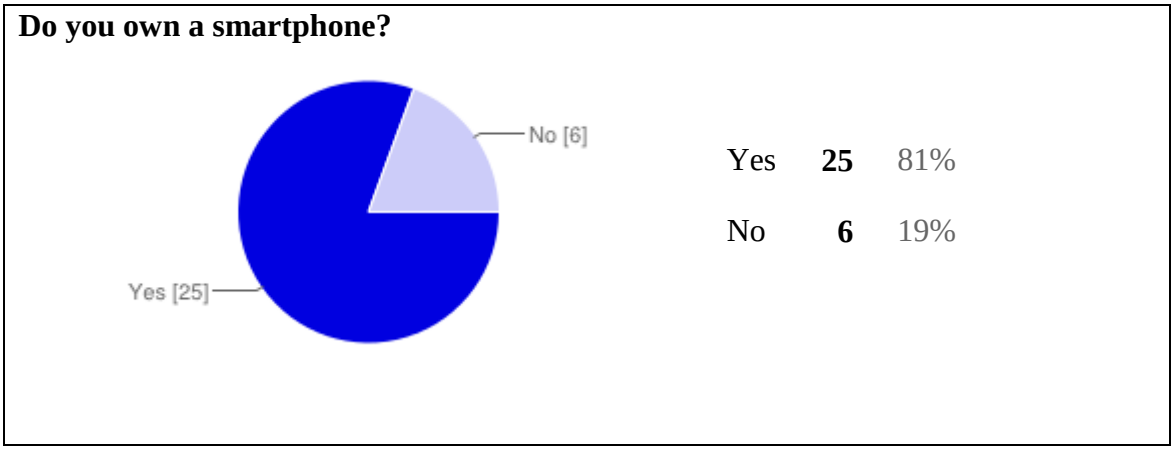


Figure 8: Familiarity with Smartphone

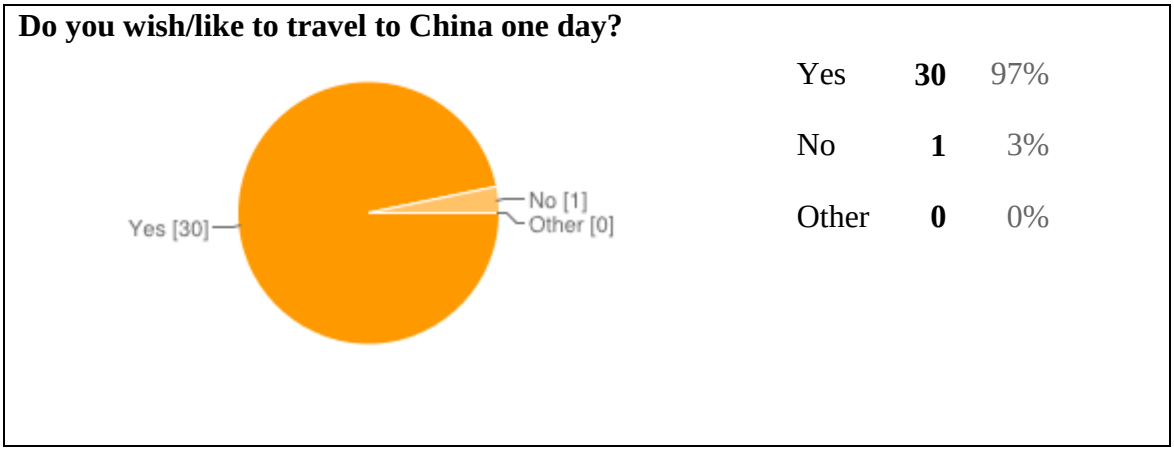
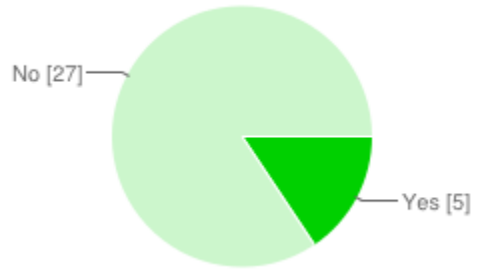


Figure 9: Responses on the wish to travel to China

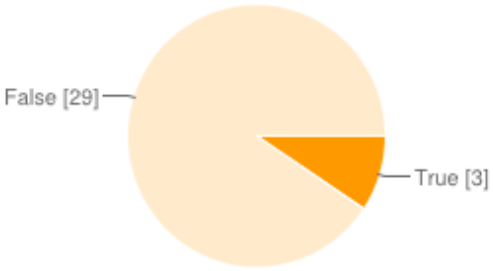
Do you speak Mandarin/ Any native languages (China)?



Yes	**5**	16%
No	**27**	**84%**

Figure 10: Amount of Malaysian who speak Mandarin

I do not need help from an application/system; I wish to navigate myself without electronic help.



True	**3**	9%
False	**29**	91%

Figure 11: To be Independence or not?

4.2 SYSTEM MODELING

Functional Model-Use Case Diagram

Use case diagram is used to describe the main elements and processes that reside in a system. Use case diagram would capture all the functional components of the system. **Figure 12** illustrates the Halal Food Spotting and Navigation Helper in China for Tourist use case diagram.

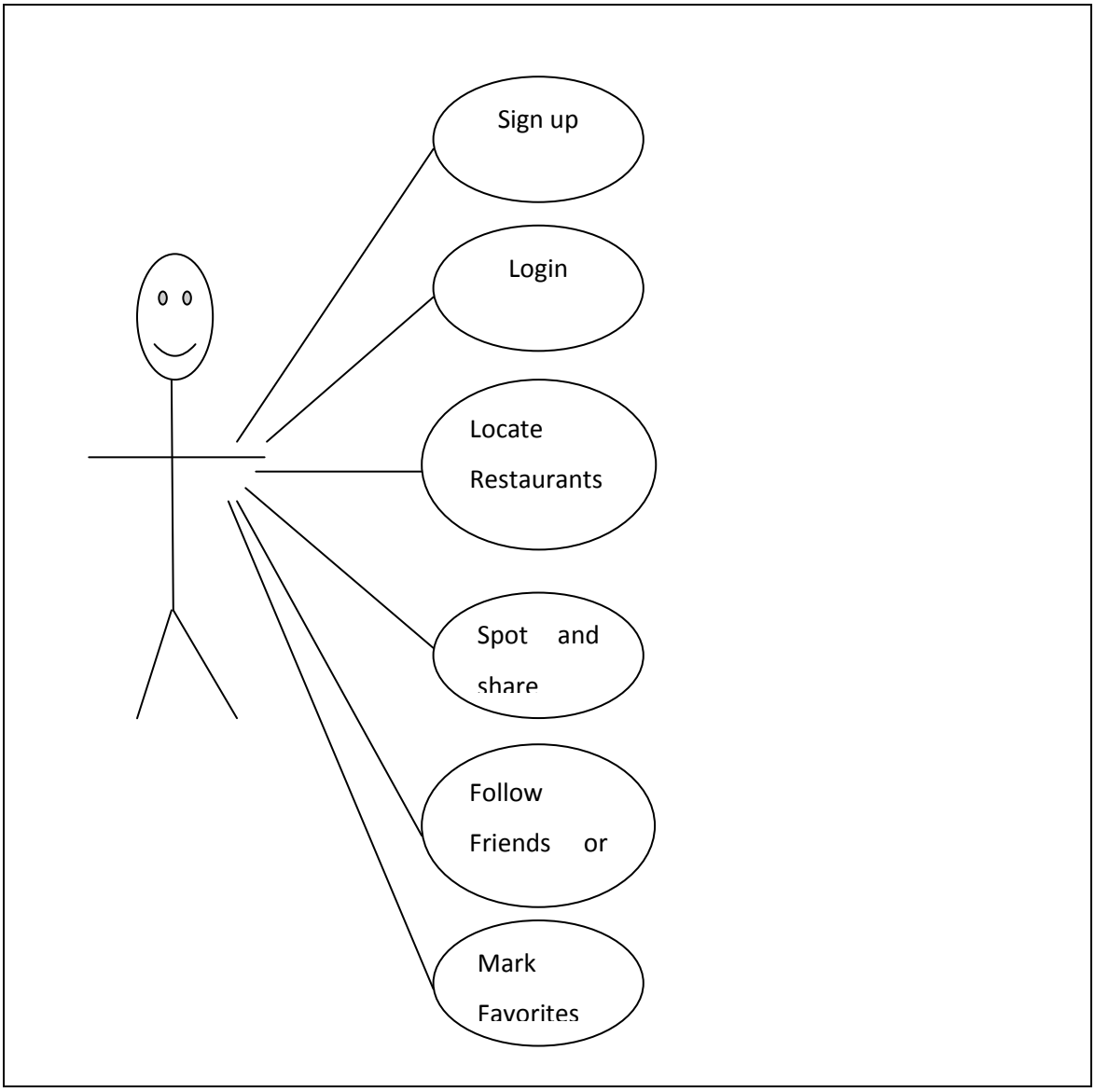


Figure 12: Use Case Diagram

4.3 CONCEPTUAL MODEL

The conceptual model of a system is described by its system architecture. An architecture represent the system where it is organized in the way that supports reasoning about the structure of the system which comprises of the system components. **Figure 13 and Figure 14** show the system architecture of the system as well as the Google mashup.

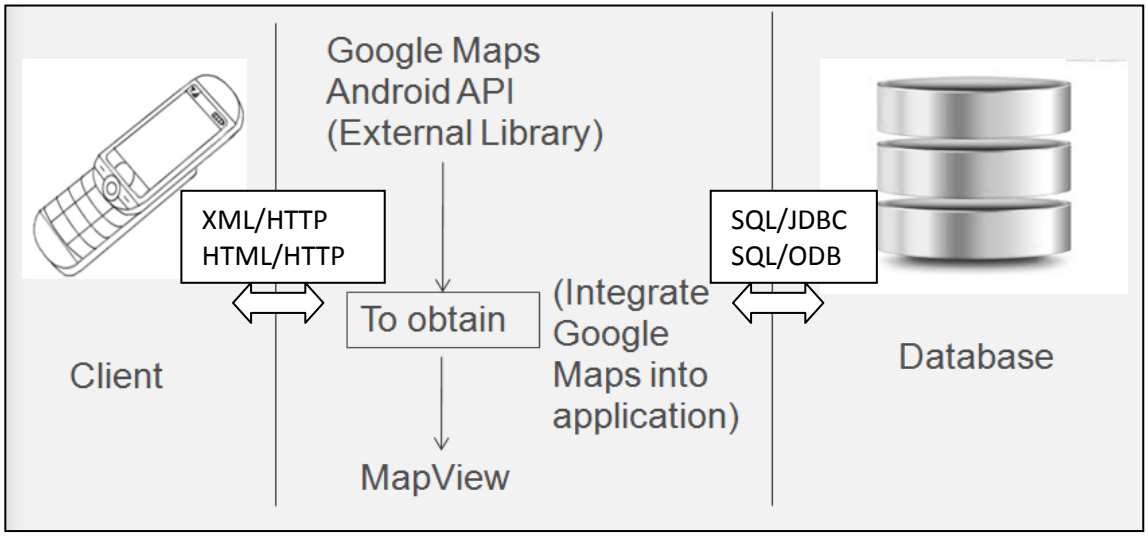


Figure 13: System Architecture

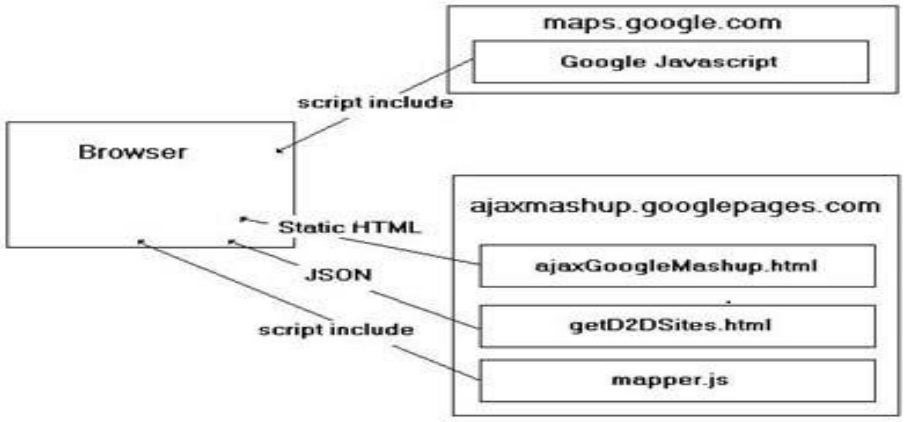


Figure 14: The architecture of the system, source:

http://www.oracle.com/technetwork/articles/entarch/google-mashups2-091840.html

It was decided that the usage of Google Maps API and related API are going to be utilized to build the system.

The smart phone takes the role of the client, when the user initiated the web application to find the nearby places across the categories of restaurants and foods. Google Places API will be initiated. Whereas Google Places Autocomplete API would be initiated when users try to enter the specific address or places they want to go. Nonetheless, Google Places APIs are backed by the same database used by Google Maps which features over 50 millions businesses and point of interests.

Behind of all the interfaces of the web application, Google Maps Javascript API is used to embed Google Maps into web pages and Mobile devices. Google Latitude API allows programs to integrate with the Google Latitude, enabling users to update and read their current location, this apply to the system where the system is designed to allow users to locate their whereabouts before leading them to the destination.

4.4 SYSTEM OVERVIEW

In fullfilling the purpose of the system, the To-Be system will be developed to handle the disadvantages of the current As-Is system. It is expected to be able to give the users the most specific usage of locating HALAL food restaurants around China, comparing to the existing as-is system such as Foodspotting and LocalEats which providing more general food introduction towards users.

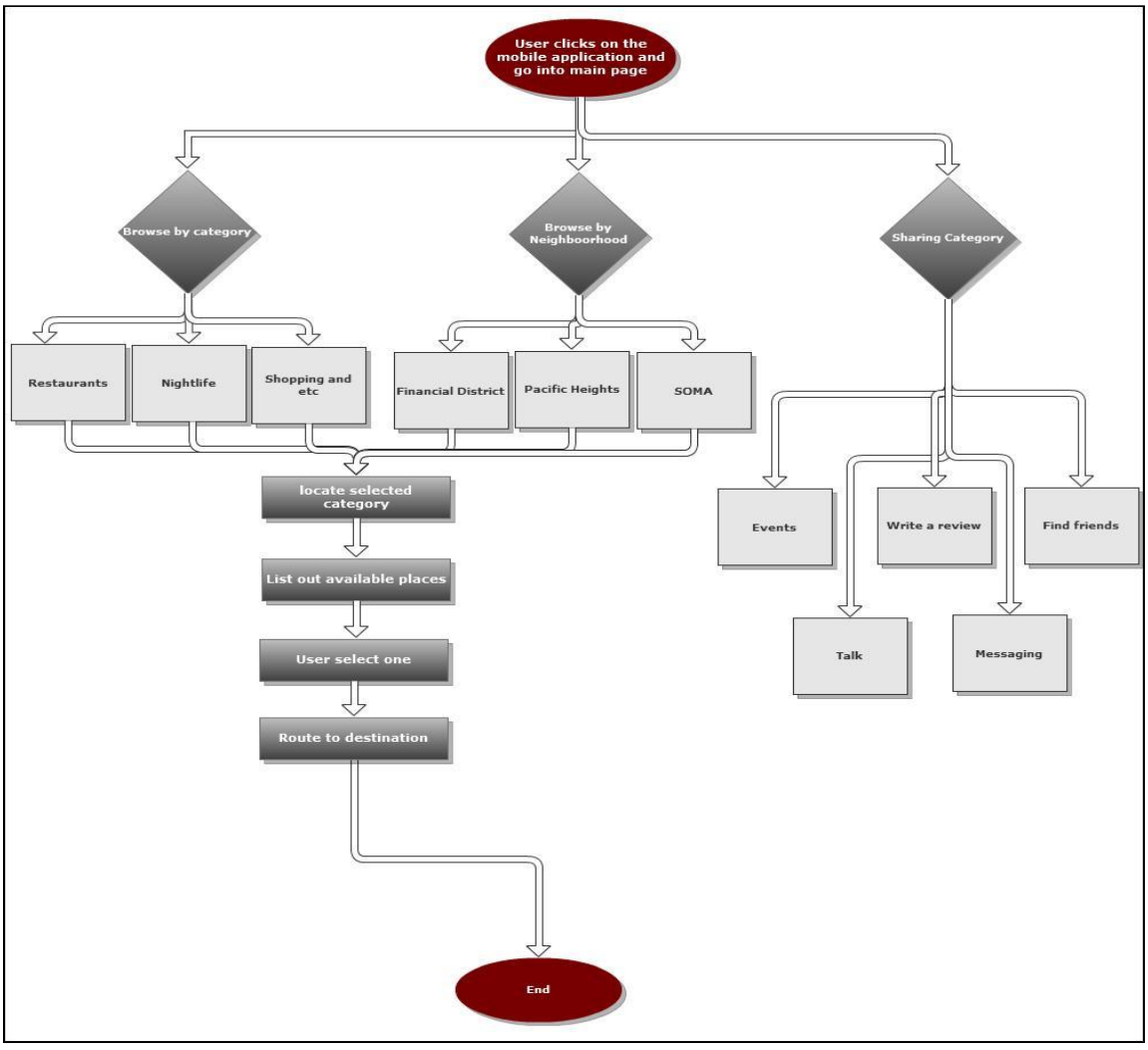


Figure 15: As-Is System

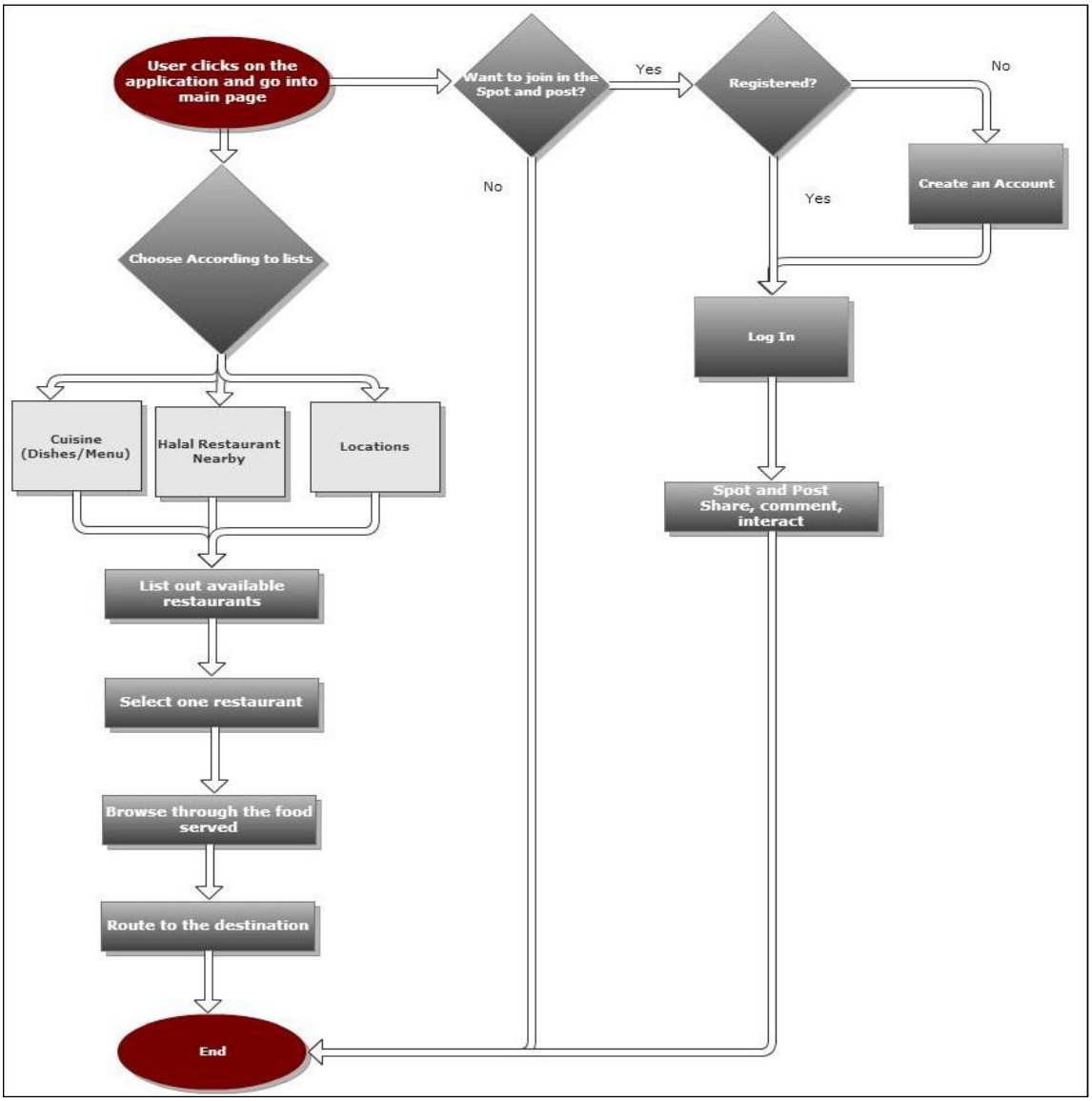


Figure 16: To-Be System

4.5 SYSTEM DATABASE

Any particular functioning system would need to have a database that is able to store the information of the functional items. This is to allow the users to be able to make full use out of the system.

As for this HALAL Food Navigation Helper service, I am using the Microsoft SQL Server that resides on the standalone machine as the backbone of the system. There are several databases in this system. Listed below in **Figure 17, 18 and 19** are few of the databases that I have created for now.

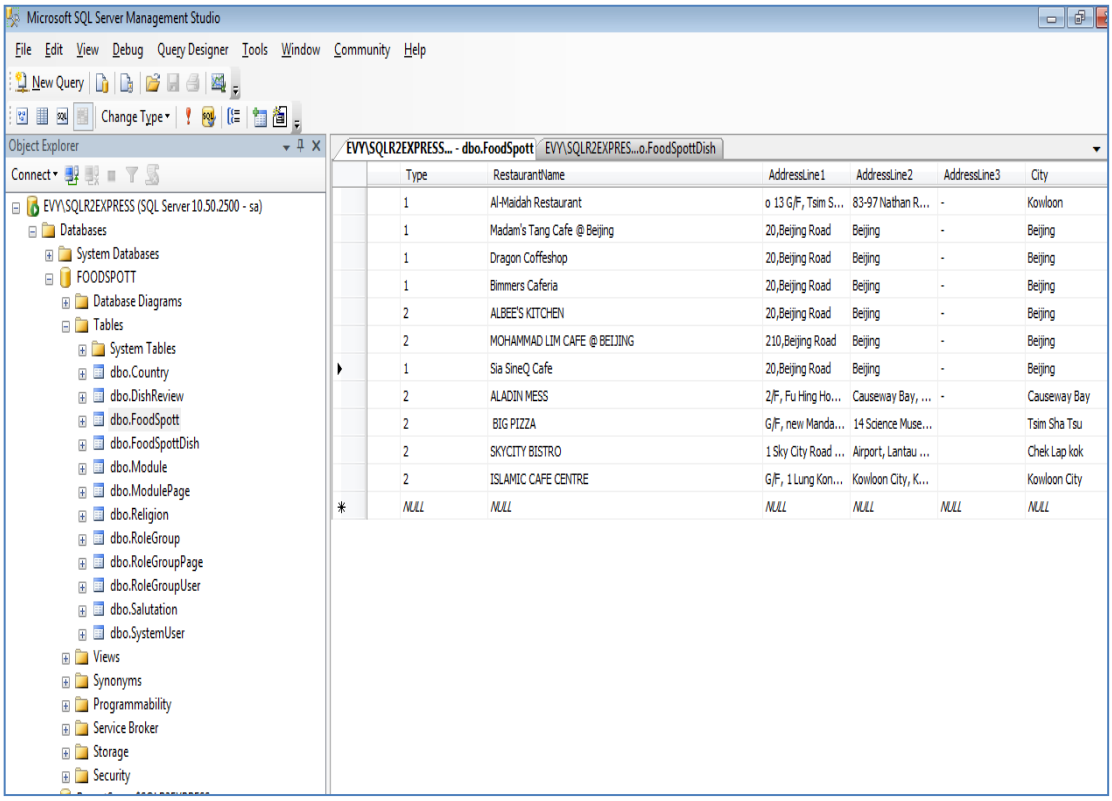


Figure 17: China Testing Places for dining

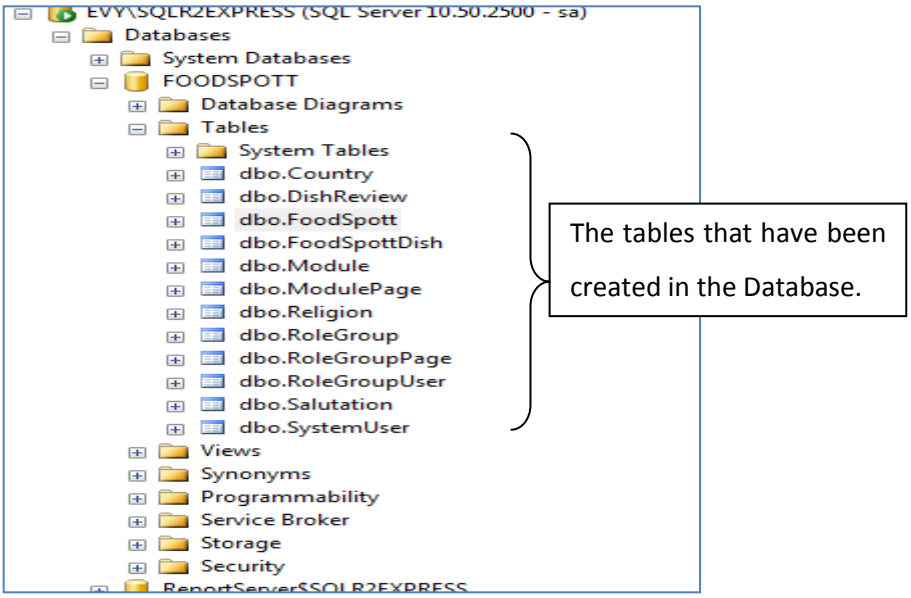


Figure 18: Tables in Database

Figure 18 illustrates the available tables in the database, the tables that were created are essential to the successfulness of the whole system, it is important that the database is fully functional in order for the system to successfully run. While **Figure 19** shows one example of the table structure.

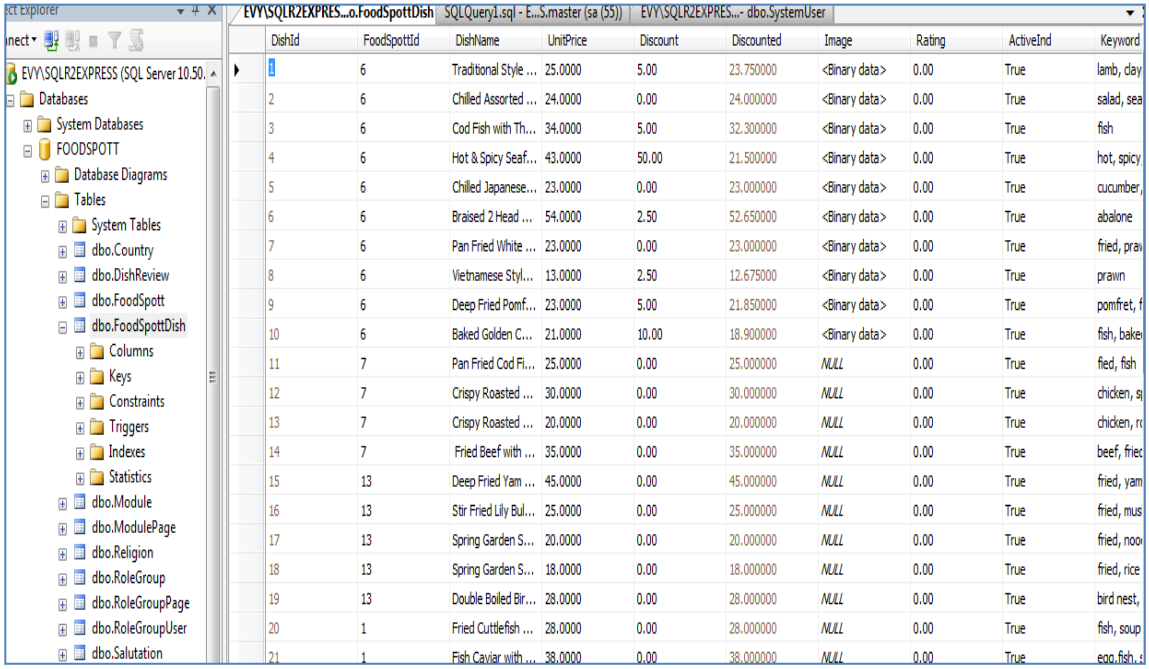


Figure 19: Sample of Available dishes across restaurants Table

4.6 PROTOTYPE

For the current time, I was able to complete with the prototype of the first page of the HALAL Food Navigation Helper as shown in **Figure 20**. The rest of the pages include How it works page, Find Great Dishes Page, Help Page and Account Page.

Detailed explanation of the Pages:

HALAL Food Navigation Helper is still in the testing stage where the prototype is still not fully functional but the main function of it is able to navigate properly as for now.

Main Page: The main page is the default page as shown in the **Figure 20**. It provides with the function of searching the location of the HALAL food available by typing in the search bar (Location, restaurants).

How it Works page: This page explains what to be done to fully utilize the service to help the Muslims tourists to navigate around China in order to find their desired food.

Find Great Dishes Page: Great dishes can also be categorized as the all time favorite dishes that are being introduced by the Halal food lovers that love the system as well.

Help Page: Allow users to get help from the technical team (me) if there is any problem arises.

Account Page: Account page is for Halal food lovers that would like to join us as a member and become part of the big community of the Halal food lovers.

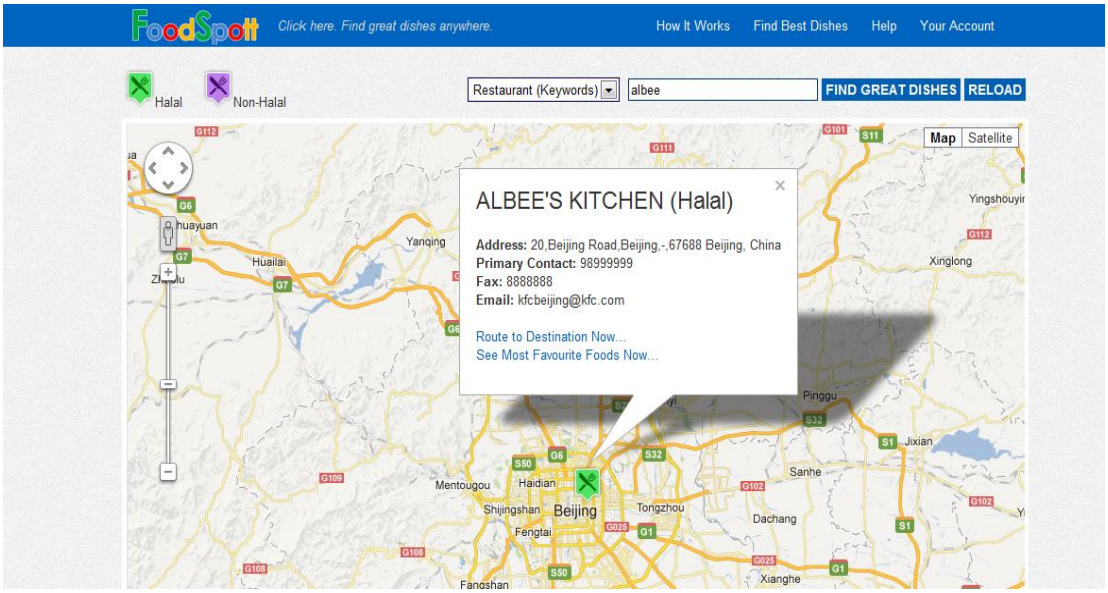


Figure 20: Main Page

Figure 20 shows the main page allowing the search of available halal restaurants/foods in the database. “Find Great Dishes” is clicked after keywords for the selected search is entered.

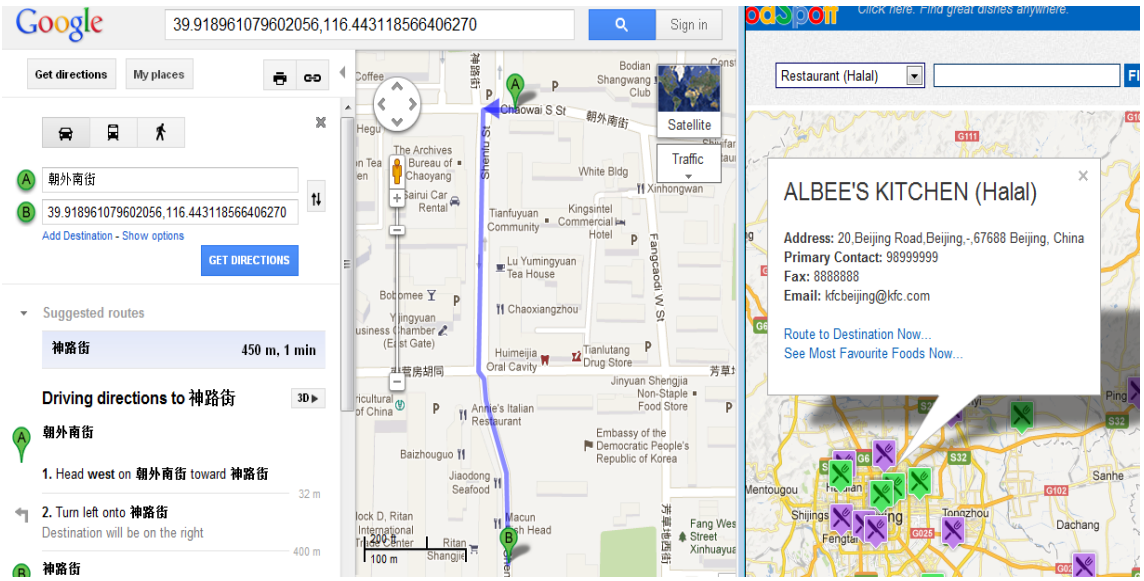


Figure 21: Routed from the Current Location to Destination

Figure 21 is the page resulted from being routed from the action clicked by users in the main page, button:”Route to destination Now”. Here, by using the smart phone to access, the locations of the users will be detected and the route to the destination will be shown on the Google Map.

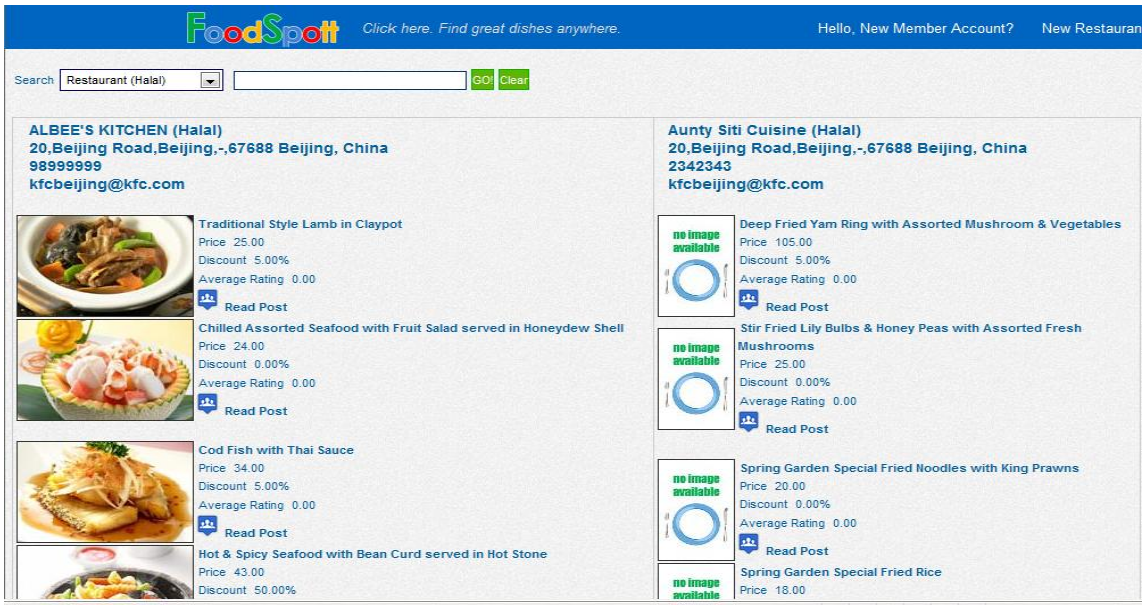


Figure 22: Browse through the Restaurants and Menus

Figure 22 shows the page after the tab"Find Best Dishes" is pressed, listed above are the available restaurants that are being managed by the management team or by the restaurant owner itself.

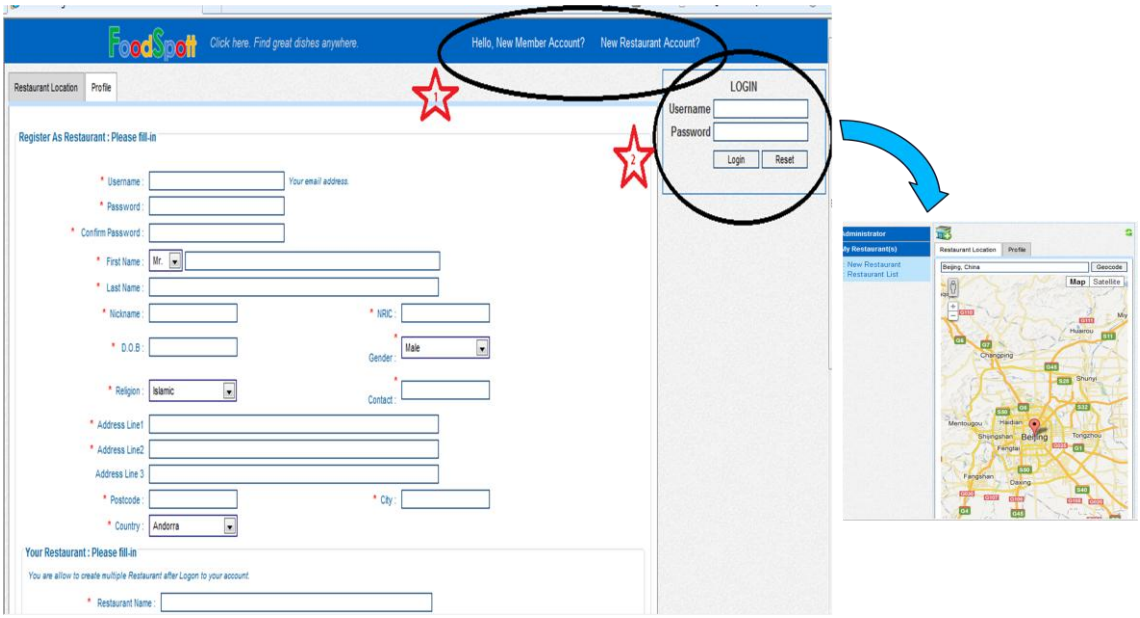


Figure 23: Login/New Accounts for both Normal user and Restaurant Owner

Figure 23 shows the sign up page for both Restaurants users; enabling them to manage their own restaurants as well as members that wish to participate in the interaction of the community.

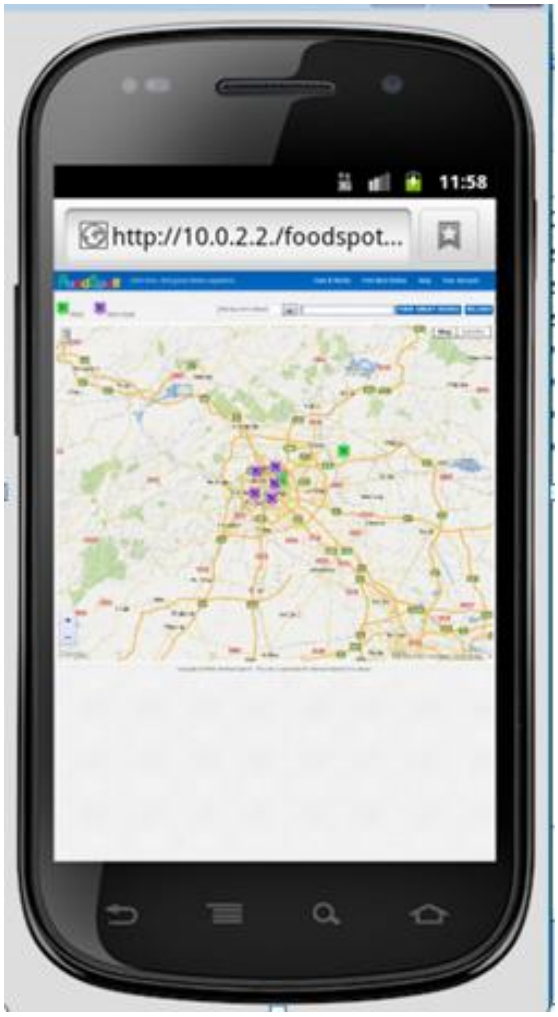


Figure 24: Sample page Accessed through Android Emulator

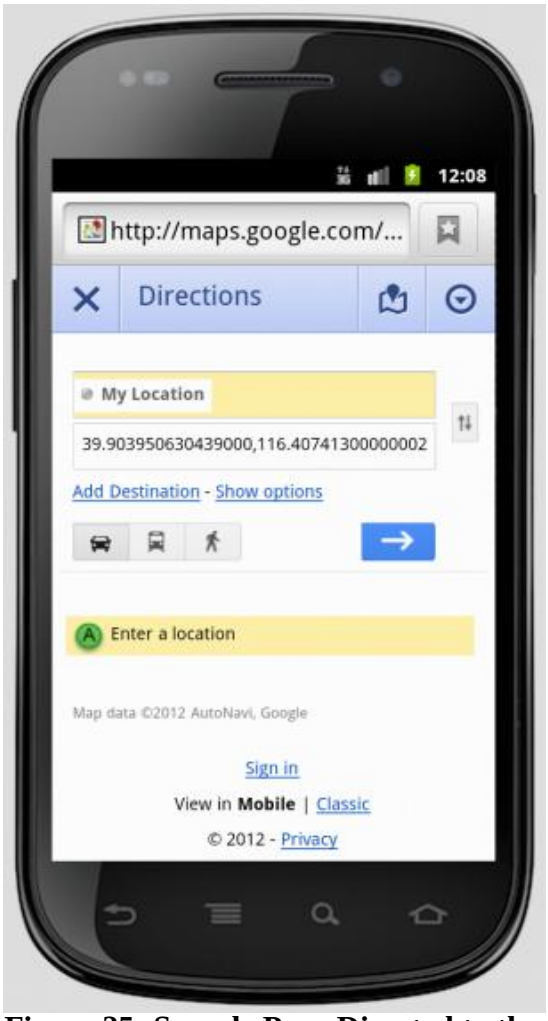


Figure 25: Sample Page Directed to the Location and Direction page

Both Figure 24 and 25 illustrated the website pages accessed through the phone. There is a minor difference when accessed through the phone as the Google Map will detect the mobile and loaded the mobile version of Google Map.

In an overall performance, the phone provide an easier way of destination routing for the users as phone is much more portable than the computer or laptop.

4.7 CERTIFIED LIST OF HALAL RESTAURANTS FOR TESTING PURPOSES

Figure 26 and 27 show the testing database that I have inserted for the testing purposes of the system. The samples of the snipped figures are to prove that the restaurant's name and their credibility are certified and proven authentic. In below figures, there is a disclaimer by Hong Kong Tourism Board that the quality and HALAL standard of the restaurants are being certified by the Quality Tourism Services (QTS).

Food Outlets/ Restaurants/ Airline Kitchens/ Others that have obtained the Halal Logo and Certification from Incorporated Trustees of the Islamic Community Fund of Hong Kong

Food Outlets/ Restaurants with Halal Logo and Certification				
No	Name	Address	Tel	Cuisine
1	Al-Maidah Restaurant	No 13 G/F, Tsim Sha Tsui Mansion, 83-97 Nathan Road, TST, Kowloon.	2367 7228	Middle Eastern
2	Aladin Mess	2/F, Fu Hing House, 60 Russell Street, Causeway Bay, Hong Kong	2808 0250 2808 0971	Indian
3	Big Pizza	Shop 61, G/F, New Mandarin Plaza, 14 Science Museum Road TST Kowloon	2369 6200	Italian
4	Big Pizza	Shop No 5, G/F, Lan Kwai Fong, Central, Hong Kong Island	2537 7444	Italian
5	Big Pizza	Shop No 5, G/F, Wanchai Central Bldg, 89 Lockhard Road, Wanchai, Hong Kong Island	2153 3363	Italian
6	Blitar Café	Shop 201, 2/F, Causeway Bay Centre, 19-23 Sugar Street, Causeway Bay, Hong Kong	3188 0727	Indonesian
7	Casanova Pizzeria	Shop F, G/F, EIB Tower, 4-6 Morrison Hill Road, Wan Chai, Hong Kong Island	2575 3303	Italian
8	Ebeneezer's Kebab & Pizzeria	G/F, 6 Lan Kwai Fong, Central, Hong Kong Island	2114 0555	Indian, Italian, Middle Eastern
9	Ebeneezer's Kebab & Pizzeria	G/F, 24 Hollywood Road, Central, Hong Kong Island	2973 0081	Indian, Italian, Middle Eastern
10	Ebeneezer's Kebab & Pizzeria	G04, Wan Chai Central Building, 89 Lockhart Road, Wan Chai, Hong Kong Island	2529 3738	Indian, Italian, Middle Eastern
11	Ebeneezer's Kebab & Pizzeria	G/F, 52 Lockhart Road, Wan Chai, Hong Kong Island	2157 0009	Indian, Italian, Middle Eastern
12	Ebeneezer's Kebab & Pizzeria	Shop No. 1C, G/F, Astoria Building, 24-38 Ashley Road, Tsim Sha Tsui, Kowloon	2114 0999	Indian, Italian, Middle Eastern
13	Ebeneezer's Kebab & Pizzeria	Shop No. 2, 3&5, G/F, Multifield Plaza, 3-7A Prat Avenue, Tsim Sha Tsui, Kowloon	3580 1355	Indian, Italian, Middle Eastern
14	Ebeneezer's Kebab & Pizzeria	Shop No. 11&12, G/F, Hong Kong Gold Coast, 1 Castle Peak Road, Tuen Mun, New Territories	2441 4006	Indian, Italian, Middle Eastern
15	Ebeneezer's Kebab & Pizzeria	Shop no. 9A, G/F, Ngong Ping Themed Village, Ngong Ping, Lantau Island, Hong Kong	2259 3988	Indian, Italian, Middle Eastern
16	Ebeneezer's Kebab & Pizzeria	Shop No. G03A, Discovery Bay Plaza, Discovery Bay, Lantau Island	2987 0036	Indian, Italian, Middle Eastern
17	Ebeneezer's Kebab & Pizzeria	Hong Kong University, Room 1A13A and 1A13B, Fong Shu Chuen Amenities Centre, 1/F Swire Building, Pokfulam, Hong Kong Island	2915 5168	Indian, Italian, Middle Eastern
18	Ebeneezer's Kebab & Pizzeria	Unit 13, G/F, Hall 10, Asia World Expo, HKIA, Lantau Island (open on exhibition days only)	3968 0103	Indian, Italian, Middle Eastern
19	Himalaya Restaurant	Unit A, 1/F, 22-30 Tai Wong East, Wan Chai, Hong Kong Island	2527 5899	Indian & Nepali
20	Hong Kong Disneyland Resort - Tahitian Terrace in Adventureland	Hong Kong Disneyland, Lantau Island, Hong Kong	183 0830	South Asian specialties including Indian vegetarian meals

Figure 26: the portion of Document taken from Hong Kong Tourism Board

Notes

1. Quality Tourism Services (QTS) Scheme accredited restaurants must pass stringent annual assessments showing they meet high standards of product quality and service. For more information, please visit: DiscoverHongKong.com/qts

QUALITY TOURISM SERVICES

2. Hong Kong Tourism Board disclaims any liability for the quality or fitness for the purpose of third party products or services; or for any errors or omissions.
3. Information is correct as of 31 October 2012 but is subject to change without prior notice.

Figure 27: Disclaimer by Hong Kong Tourism Board

4.8 SYSTEM SERVER

The service system uses Internet Information Service (IIS) Server as IIS is basically an extension of the modules create by Microsoft for the use of Microsoft Windows. Thus it is also freely available in the internet. More precisely, the system used the IIS Express, which is a lightweight version of IIS that is available as a standalone freeware server and may be installed on Windows XP and subsequent Versions of Windows.

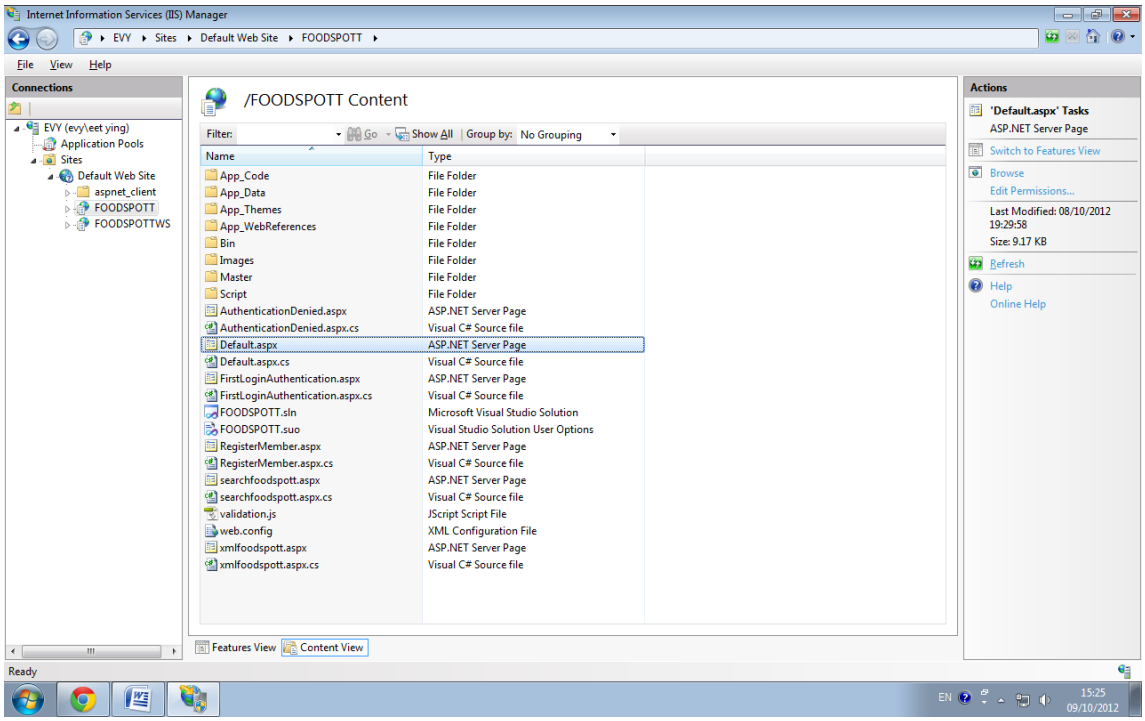


Figure 28: Internet Information Service (IIS) Manager

Figure 28 shows Internet Information Service (IIS) Manager is the Graphical User Interface (GUI) that is used to administrate IIS. This manager can be used to configure the application pools, configure the websites and much more.

CHAPTER 5

CONCLUSION AND RECOMMENDATION

5.0 CONCLUSION

HALAL Food Spotting and Navigation Helper in China for Tourists is a system that is going to make an impact out in the society, especially to those who have longed yearning for freedom and independent during travel time. With the use of Google Maps API, a mobile navigation system realizing map query is born. The system would apply to almost every available smart phone which can access to the internet.

This system is directed to Muslim travelers that needed helps when on the road in China, the benefits that the systems is going to provide to the society are undeniable. It truly helps to break down the languages barrier as the system provides restaurants name in English, not only that, the menus for restaurants also being displayed in English. Secondly, it helps in time saving as Muslim tourists do not need to spend time to find a place to dine in manually. Thirdly, it also assists in giving tourists with more freedom as with the help of the system alone, there is almost no need to hire a tourist guide to prepare them a schedule and navigate them around; which needed them to follow a tight schedule. Lastly, it total benefits allow users to encounter good, delicious HALAL Foods all round China.

All in all, the Halal food and Navigation Helper in China for Tourist will help the users in realizing an enjoyable travelling experience.

5.1 RECOMMENDATION

Research and Reading

For the betterment of the project, there is a necessity to continue on the research and reading on the related topic especially in developing the system.

Google Maps API and related techniques are to be studied more in depth in order to successfully implement the whole functional components in a complete system. There is a need to continuously update all the functionalities as in to cater the needs of the users. This is because there is plenty of other competition in the market nowadays. Each and every one of them is constantly updating their application to be the top usage in the mobile application world.

Get Distributed, Get Fame and get the "LIKE"

First of all, to achieve all the things mentioned above, there is a need for the system to get to the people. One of the ways to get distributed is through the social network such as Facebook which is the popular among all the others. Facebook is the medium to get to youngsters, as we all know, Facebook has becoming the most browse search engine in every day hits.

Getting the "LIKE" as many as it can in Facebook pages mean that the system is getting attention all around the world. Gradually, the level of known for a particular will become a trend in the internet and thus it will become the most talked about and posted around the world. Indirectly, bringing fame to the system as in the level of popularity among the internet users itself.

There are many others ways in getting the system distributed as well as to get famous. One existing example is the game that is held by FoodSpotting Company where the players in the game are required to locate foods and places using the FoodSpotting application; making the application known to the public in only one television show.

Future plan of the Website

I. to expand to other country/ies

Plan for the future is essential for an application or a system to be successful. It is undoubtedly that the usage of the application during the preliminary release would be limited in China only.

However, for the future plan, there is a thought of extending the areas to the other country other than China. Locating Halal food all around the world, especially in the countries where most citizens speaks native languages instead of universal language-English. Examples are countries like Japan, Korea, Russia, Germany etc.

II. Venturing into Mobile website, Android Application, iPhone Application etc.

There is a need for a system to venture into wider market share if it were to succeed in the pool of available options. Websites are getting blooming in the internet world nowadays, but there is a limitation the original website which cannot be easily accessed from a small mobile screen. There are demands for mobile website which is much more simply and provide a quick loading. According to Jeremy Williams (2012), he mentioned that "In the five short years since 2007, smartphones have become a ubiquitous fixture in American culture. Since it's not 2007 anymore, you can no longer ignore the fact that more people have smartphones than feature phones (basically any phone that isn't an iPhone, BlackBerry, Windows Mobile or Android) and they're using those smartphones to browse the internet."

All in all, it is fair to say that the mobile traffic is exploding and people do prefer handheld devices rather than a static computer. It is undoubtedly proven that the mobile users visiting websites are gradually surpassing the number of computers users on the internet.

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APPENDIX 1

SAMPLE CODE

Partial Code of Default.aspx page: Google Mapping

```
div id="search-header">
<div class="field overlay smaller-autocomplete">
<%--<label for="destination" style="padding-left: 5px; ">Enter a destination, address,
or event</label>--%><table
style="width:100%;">
<tr>
<td align="left" class="style1" valign="middle">
<img alt="Halal Food Spot" src="Images/halal.png" style="width: 32px; height: 37px"
/><asp:Label
ID="Label1" runat="server" Text="Halal"></asp:Label></td>
<td class="style2">
<img alt="Non-Halal Food Spot" src="Images/non-halal.png"
style="width: 32px; height: 37px" /><asp:Label ID="Label2" runat="server"
Text="Non-Halal"></asp:Label></td>
<td align="right">
<asp:DropDownList ID="ddlOption" runat="server"  style="margin-right:5px;"
CssClass="gSearchListBox" >
<asp:ListItem Value="RestaurantHalal">Restaurant (Halal)</asp:ListItem>
<asp:ListItem Value="RestaurantName">Restaurant (Keywords)</asp:ListItem>
<asp:ListItem Value="Address">Location</asp:ListItem>
<asp:ListItem Value="Keyword">Keywords (Dish/Menu)</asp:ListItem>
</asp:DropDownList>
<asp:TextBox ID="txtKeyword" runat="server" CssClass="SearchTextBox" MaxLength="50"
Width="195px"></asp:TextBox>
<input id="Button1" class="pw-btn-small" type="button"
value="Find Great Dishes" onclick="FoodSpottSearch();" /> <input
id="btnRefresh" class="pw-btn-small" type="button"
value="Reload" onclick="window.location.reload();" /></td>
</tr>
<tr>
<td align="left" valign="middle" colspan="3">
</td>
</tr>
</table>
</div>
<div id="assets-container" class="search-hub-info">
<div id="yMapContainer" style="width: 100%; height: 100%; position: relative;
background-color: rgb(229, 227, 223); overflow: hidden; " >
</div>
</div><div  class="CopyRight" align="center">

Copyright @ fOOd sPoTTinG Search . This site is optimised for Internet Explorer 8 or
above.
</div></div>
```

Partial Code of searchfoodspott.aspx page: Databound information

```
<td colspan="2" align="left" valign="top">

<asp:DataList ID="dtRestaurant" runat="server" CellPadding="2"
DataKeyField="FoodSpottId" Font-Bold="False"
Font-Italic="False" Font-Names="Arial" Font-Overline="False"
Font-Size="Smaller" Font-Strikeout="False" Font-Underline="False"
ForeColor="#333333"  RepeatColumns="2"
RepeatDirection="Horizontal" DataSourceID="odsRestaurant"
onitemdatabound="dtRestaurant_ItemDataBound">
<FooterStyle  />
<AlternatingItemStyle  />
<ItemStyle BorderColor="#CCCCCC" BorderWidth="1px" VerticalAlign="Top"  />
<SelectedItemStyle BackColor="#E2DED6" Font-Bold="True" ForeColor="#333333" />
<HeaderStyle />
<FooterTemplate>
<asp:Label Visible='<%# bool.Parse((dtRestaurant.Items.Count==0).ToString()) %>'
runat="server" ID="lblNoRecord" Text="No data found..."></asp:Label></FooterTemplate>
<ItemTemplate>
<table width="100%">
<tr>
<td  valign="top">
 </td>
<td align="left" valign="top">
<asp:Label ID="NameLabel" CssClass="gNBTitleLabel" runat="server"
Text='<%# Eval("strRestaurantName") %>' />
<br />
<asp:Label ID="AddressLabel" runat="server" CssClass="gNBTitleLabel"
Text='<%# Eval("Address") %>' />
<br />
<asp:Label ID="ContactLabel" runat="server" CssClass="gNBTitleLabel"
Text='<%# Eval("ContactOffice1") %>' />
<br />
<asp:Label ID="EmailLabel" runat="server" CssClass="gNBTitleLabel"
Text='<%# Eval("Email") %>' />
<br />
<asp:HiddenField ID="hffId" runat="server" Value='<%# Eval("FoodSpottId") %>' />
</td>
<td align="right" valign="top">
<a href="myPost.aspx?fId=<%# Eval("FoodSpottId") %>">
<img alt="Login to Post comment(s)..." src="Images/comment.png" border="0" /></a></td>
</tr>
<tr>
<td colspan="2" valign="top">
 </td>
<td valign="top">
 </td>
</tr>
```

```
</table>
<asp:DataList ID="dtDish" runat="server" RepeatColumns="2"
RepeatDirection="Horizontal" RepeatLayout="Flow">
<ItemStyle VerticalAlign="Top" />
<FooterTemplate>
<asp:Label ID="lblNoRecord" runat="server" Text="No dish/menu available..."
Visible="False"></asp:Label>
</FooterTemplate>
<ItemTemplate>
<table width="100%">
<tr>
<td valign="middle" class="style46">
<asp:Image ID="imgItem" runat="server" BorderStyle="Solid" BorderWidth="1"
ImageUrl='<%# "Restaurant/RetrieveImage.aspx?dId="+Eval("DishId") %>' />
</td>
<td align="left" valign="top">
<asp:Label ID="FoodLabel" runat="server" CssClass="gNBLabel"
Text='<%# Eval("DishName") %>' />
<br />
<asp:Label ID="lblPrice" runat="server" CssClass="gLabel">Price</asp:Label>
<asp:Label ID="PriceLabel" runat="server" CssClass="gLabel"
Text='<%# Eval("UnitPrice", "{0:N2}") %>' />
<br />
<asp:Label ID="lblDiscount" runat="server" CssClass="gLabel">Discount</asp:Label>
<asp:Label ID="DiscountLabel" runat="server" CssClass="gLabel"
Text='<%# Eval("strDiscount", "{0:N2}") %>' />
<br />
<asp:Label ID="lblAvgRate" runat="server" CssClass="gLabel">Average Rating</asp:Label>
<asp:Label ID="AvgLabel" runat="server" CssClass="gLabel"
Text='<%# Eval("Rating", "{0:N2}") %>' />
<%--<a ID="i1" href="#"
onclick='javascript:window.open(&#039;DishReview.aspx?bkId=<%# Eval("DishId") %>&#039;,
&#039;null&#039;, &#039;location=no, status=no, resizable=yes, scrollbars=yes,
toolbar=no, width=650px, height=800px&#039;);'>
</a>--%><br />
</td>
</tr>
</table>
</ItemTemplate>
</asp:DataList>
<br />
</ItemTemplate>
</asp:DataList>
<asp:ObjectDataSource ID="odsFoods" runat="server" TypeName="WSFSP.FoodSpott"
SelectMethod="ListAllActivedFoodSpott">
</asp:ObjectDataSource>
<asp:ObjectDataSource ID="odsRestaurant" runat="server"
SelectMethod="ListAllActivedFoodSpott" TypeName="WSFSP.FoodSpott"></asp:ObjectDataSource>
</td>
```