

ABSTRACT

Various types of food map application was developed till today. The used is to help in searching for food place easily. This application, named Kuantan Food Map will help user to find for food place in Kuantan. It works by navigating user to the food place chosen. There are few functions providing by Kuantan Food Map in order to filter user's searching area. In order to develop this application, food places; stalls, restaurants and food courts data in Kuantan are recorded. Data are including the locations, menus as well as the atmosphere of the place. The data are recorded based on observation method. The output will display map with navigation function to guide user to the chosen food place. This application will reduce user's time in searching for food place to go for in Kuantan.

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CHAPTER 1

INTRODUCTION

1.0 Introduction

This chapter briefs on the introduction of food map mobile application, the problem statement, aim, objectives and scope of the system.

1.1 Introduction on The System

Food maps application system is developed to help the users in seeking information of restaurants. This application will provide information such as the popular local restaurants and stalls as well as the recommendations from previous users. This project could help to gain better understanding of food locations for people who go for travelling in Kuantan. Geographical Information System (GIS) is used in order to aid the completion of this project. Using GIS, the food locations are visualized on digital maps.

Due to the evolution of technology, the use of cellphones has been revolved to the smartphones. The development of mobile application has been demanding since the introduction of smartphones. Various applications are developed in almost every field such as tourism, education, entertainment etc. This includes food map applications.

There are lots of food map applications available in the market. Those applications are developed with slightly different and unique features from one another and named

with a distinct name. These food map applications provide information such as restaurants: neighborhood, type of cuisine and price. Some applications also provide function to search for specific types of food.

The mobile application food map is needed to provide guidance for travelers in searching for restaurants or food stalls. Being in unfamiliar places causes some problems to search for a good place to eat. Tourists are most excited to try variety of local food while travelling. This mobile application may be helpful in providing user with information of restaurants and stalls that served best cuisine.

As for this project, the food maps of Kuantan, the information on the maps will provide user with the options of food courts, restaurants, as well as stall in the area of Kuantan. Navigation tool on how to access their preferred places from the current location is also provided.

1.2 Problem Statement

Food maps application is another form of data visualization. As the information is displayed in the form of digital map, the must have components other than the data of food location itself are the location and navigation. Location is referred to the current location of the user who use this application and the location of the chosen food place. Here, the navigation to guide user to access the location of food place from the current location. The nearest route is the priority.

Generally, most of existing applications do not provide navigation. The display maps only show the location of the food place without navigating user to get there. There are also some applications that provide user with almost complete information for example the 'Malaysia Most Wanted Foodie' app. However, the application is hard to use as the interface and features is not common to user view. Other than that, there is an existing application that only provides location of the exclusive restaurants. This may not be preferable to some e users who might not afford to go to those exclusive restaurants.

The examples of food application that available in Malaysia are, 'Hungry Go Where MY', 'TABLEAPP' and 'MMW Foodie'.

1.3 Aim

The aim of this project is to develop food map mobile application of Kuantan using concept of Geographical Information System (GIS).

1.4 Objective

The objectives of the project are:

- (a) To develop a database for restaurants and food stalls around Kuantan.
- (b) To integrate the database with spatial features.
- (c) To create navigation tool that can guide the user to go to their preferred restaurants or stalls.

1.5 Scope

The scope of this project is limited to:

- (a) Mobile application user, specifically an android user.
- (b) The developed application will only provide information of restaurants and food stalls in Kuantan.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

This chapter describes and reviews three examples of the existing application as well as problems and limitations of the applications as reviewed by users.

2.2 Existing System and Problems

2.2.1 HungryGoWhere

HungryGoWhere is a food and restaurant review application, founded by Dennis Goh, Wong Hoong An and Tan Yung Yih in year 2004. At first, this application is available only in Singapore. This food application offers food and culinary guides, along with user-generated reviews of restaurants and dishes served. Users can search for food based on some criteria like price range, cuisine, and location. This application also enables user to make reservations through an easy-to-use online restaurant reservation system. This feature ease user to book for their favourite restaurants for free and instant confirmation reply. In terms of restaurants search, this application offers restaurant guide with review and ratings made by customers. User may find out the popular restaurants, latest reviews and dining deals and promotions. Another feature available in HungryGoWhere is the recipes. Simple recipes are available for user reference.

In August 2013, HungryGoWhere Malaysia has been launched. The HungryGoWhere Malaysia site has a different user interface from HungryGoWhere Singapore. Besides being able to search for restaurants and food based on cuisine, eatery type, and price, users can search for food based on halal listings. In Addition, the Malaysian version of food portal HungryGoWhere boasts its new feature as first-of-its-kind in the Asia Pacific region, and has integrated an artificial intelligence system. Below are the interfaces of HungryGoWhere Malaysia:



Figure 2.1



Figure 2.2

There are some negative reviews made by user regarding this application. User stated that HungryGoWhere has mistakenly marked non-halal restaurant as halal. The HungryGoWhere might need to verify the information of halal and non-halal status clearly. This matter is very crucial as users of HungryGoWhere are including the Muslims as well. Another complaints are the failure of this application to link to Google maps, thus user might having difficulty to get direction to the preferred restaurants and most restaurants shown are exclusive restaurants. Users are expecting more street foods rather than expensive one. Below are some of users reviews:

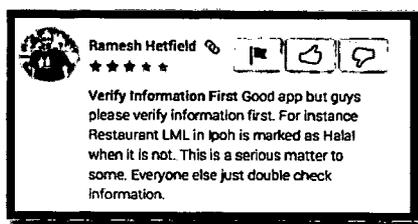


Figure 2.3

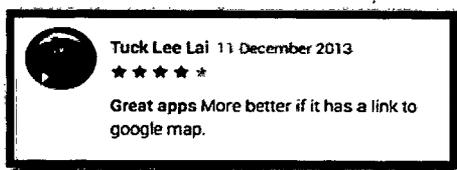


Figure 2.4



Figure 2.5

2.2.2 Table App

Table App provides free online restaurant reservation service for diners and guest-management solution for restaurateurs quickly and easily, 24/7 with instant confirmation online. This apps help user to browse restaurants based on location, date, and party size. Reservations are free and can be made within a minute. Diners can easily head to the website and reserve a seat at user's favourite restaurants in Kuala Lumpur. In addition, user may get discounts too, to make it easier for them to find desirable, yet affordable dining experience. There are also reviews posted by previous users, which may inspire upon finding an ideal dining location. The interfaces are:



Figure 2.6

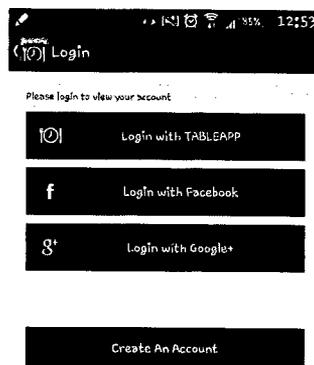


Figure 2.7

However, user complaint that Table App is not helpful for the Muslims. Perhaps, no status provided regarding the halal and non-halal foods and restaurants. As this matter is very crucial to the Muslims, Table App may not be the best food application as such information is not provided.

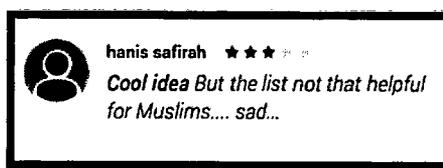


Figure 2.8

2.2.3 Malaysia Most Wanted Foodie (MMW Foodie)

The Malaysia Most Wanted Foodie is an application to look for delicious food and fantastic restaurants & eateries around Malaysia. This is a great app for food lovers to hunt and to share. Restaurant review and social app for food, is available to discover good restaurants. Users are also able to share their gastronomic adventure with their friends. The MMW Foodie helps user to search for a specific restaurant or dish. The findings can be browsed by cuisine or location, where the user is able to view map, in order to ease their

findings. The results will display top 10 lists of restaurants or places that follow the food criteria which suits user's personal taste. There are also some pictures available which portrays the delicious-looking foods. Besides, sharing reviews on the favorite restaurants and dishes are also permitted. User may find the latest food promotions as well as a reward for using MMW Foodie app. Below is the interface:

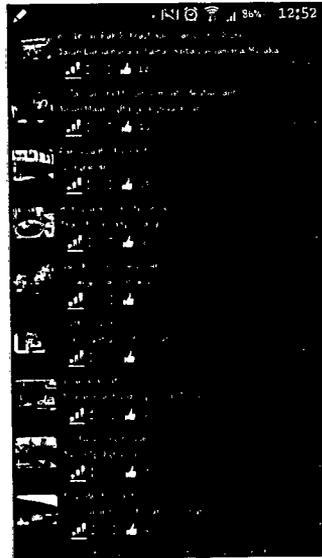


Figure 2.9

The only negative review made is that incompatibility of this application with android version 2.2. However, users are always updated to the new version, so this flaw may not be a huge problem of MMW Foodie application.

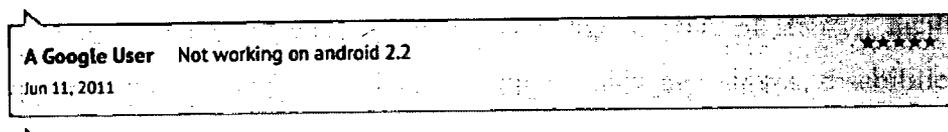


Figure 2.10

2.3 Techniques Used in Developing Mobile Application

Design a good interface will increase conversion rates of the product and number of user visit the website. Interface as communication medium between user and application, so designing interface is most important phase of any application in order

to avoid user frustration when use the system. Designer is responsible to simplify the action on the interface in order to user capable to use the product with the minimum effort. Evaluation and testing is one process to calculate product usability. Evolution is a process to evaluate the usability of a product. Meanwhile, heuristic evolution or expert review is the top evolution methods to finding user interface problem using designing principles. There are three heuristics evolution, which are Shneiderman's Eight Golden Rules as guidelines to design a good interface.

2.3.1 Shneiderman's Eight Golden Rules

According from the book *Designing the User Interface* by Ben Shneiderman , the proposed collection of principles that are derived heuristically from experience and can be apply in most interactive systems after being properly refined, extended, and interpreted. These rules as a guide to have a well design in user interface such as style, font, content, dialog message and etc.

2.3.1.1 Strive for consistency.

Consistent sequences of actions should be required in similar situations; identical terminology should be used in prompts, menus, and help screens; and consistent color, layout, capitalization, fonts, and so on should be employed throughout. Exceptions, such as required confirmation of the delete command or no echoing of passwords, should be comprehensible and limited in number.

2.3.1.2 Cater to universal usability.

Recognize the needs of diverse users and design for plasticity, facilitating transformation of content. Novice to expert differences, age ranges, disabilities, and technological diversity each enrich the spectrum of requirements that guides design. Adding features for novices, such as explanations, and features for experts, such as shortcuts and faster pacing, can enrich the interface design and improve perceived system quality.

2.3.1.3 Offer informative feedback.

For every user action; there should be system feedback. For frequent and minor actions, the response can be modest, whereas for infrequent and major actions, the

response should be more substantial. Visual presentation of the objects of interest provides a convenient environment for showing changes explicitly.

2.3.1.4 Design dialogs to yield closure.

Sequences of actions should be organized into groups with a beginning, middle, and end. Informative feedback at the completion of a group of actions gives operators the satisfaction of accomplishment, a sense of relief, a signal to drop contingency plans from their minds, and an indicator to prepare for the next group of actions. For example, e-commerce web sites move users from selecting products to the checkout, ending with a clear confirmation page that completes the transaction.

2.3.1.5 Prevent errors.

As much as possible, design the system such that users cannot make serious errors; for example, gray out menu items that are not appropriate and do not allow alphabetic characters in numeric entry fields. If a user makes an error, the interface should detect the error and offer simple, constructive, and specific instructions for recovery. For example, users should not have to retype an entire name-address form if they enter an invalid zip code, but rather should be guided to repair only the faulty part. Erroneous actions should leave the system state unchanged, or the interface should give instructions about restoring the state.

2.3.1.6 Permit easy reversal of actions.

As much as possible, actions should be reversible. This feature relieves anxiety, since the user knows that errors can be undone, and encourages exploration of unfamiliar options. The units of reversibility may be a single action, a data-entry task, or a complete group of actions, such as entry of a name-address block.

2.3.1.7 Support internal locus of control.

Experienced users strongly desire the sense that they are in charge of the interface and that the interface responds to their actions. They don't want surprises or changes in familiar behavior, and they are annoyed by tedious data-entry sequences, difficulty in obtaining necessary information, and inability to produce their desired result.

2.3.1.8 Reduce short-term memory load.

Humans' limited capacity for information processing in short-term memory (the rule of thumb is that we can remember "seven plus or minus two chunks" of information) requires that designers avoid interfaces in which users must remember information from one screen and then use that information on another screen. It means that cell phones should not require re-entry of phone numbers, web-site locations should remain visible, multiple-page displays should be consolidated, and sufficient training time should be allotted for complex sequences of actions.

These underlying principles must be interpreted, refined, and extended for each environment. They have their limitations, but they provide a good starting point for mobile, desktop, and web designers. The principles presented in the ensuing sections focus on increasing users' productivity by providing simplified data-entry procedures, comprehensible displays, and rapid informative feedback to increase feelings of competence, mastery, and control over the system.

Mobile application can be built in using HTML5, CSS3 and JavaScript. However, there are three ways on how these codes are implemented. There are native, web-based or hybrid approach.

(a) Native Solution

In order to build a native app, it is compulsory to use APIs specific to the device's operating system. It also generally means that working with a language and SDK specific to the platform. The examples are as follows:

Platform	Language
Windows Phone	XAML, C# or Visual Basic
iOS	Cocoa Touch and Objective-C

Table 2.1

(b) Web Solution

A web app is an application that written using HTML, CSS and JavaScript which is sent from a web server over the Internet and be rendered in the web browser on the device. Basically,

web solutions share similar runtime environment: the browser. The additional advantages of web-based mobile are familiarization of many developers with HTML, CSS and JavaScript. Thus, the ability to deploy new features or bugs fixes are time saving.

(c) Hybrid Solution

Hybrid apps are referring to apps that are built using both native code and web technologies. The HTML, CSS and JavaScript for an application may live on a web server or be embedded in native app itself.

In the next step, a developer should defining characteristics of a mobile application that will be built. These can be define in terms of the following:

- (a) Lightweight and responsive.
- (b) Designed to suit each device's capabilities and constraints.
- (c) Include a rich, platform-agnostic user interface.
- (d) Build with forward thinking practices.

CHAPTER 3

METHODOLOGY

3.1 Introduction

This chapter presents the proposed framework for Kuantan Food Map. This includes phases in completing the project, which involve the system development life cycle, data requirement, system design (storyboard), the implementation, testing, deployment as well as the system maintenance.

3.2 Application (Kuantan Food Map) Development Phase

The development of this application is implementing the waterfall model of system development life cycle (SDLC). SDLC is a form of framework defining needed tasks performed at each step of an application development. The tasks are broken down into few stages, which consist of detailed plan that describes how to develop and maintain the application. It is necessary to ensure the quality of the application developed. Since the system development life cycle breaks down the whole process of development into stages, thus, it is easier to carry out and complete the application development by executing each part of the stages in details and keeps the development process organized.

In waterfall model, there are six stages, which are requirement analysis, system design, implementation, testing, deployment and maintenance. Each stage needs to be completed before next stage begins. The waterfall model is easy to manage due to rigidity of the model. By means, each phase has its specific deliverables and review process. Next figure shows the stages in waterfall model system development life cycle.

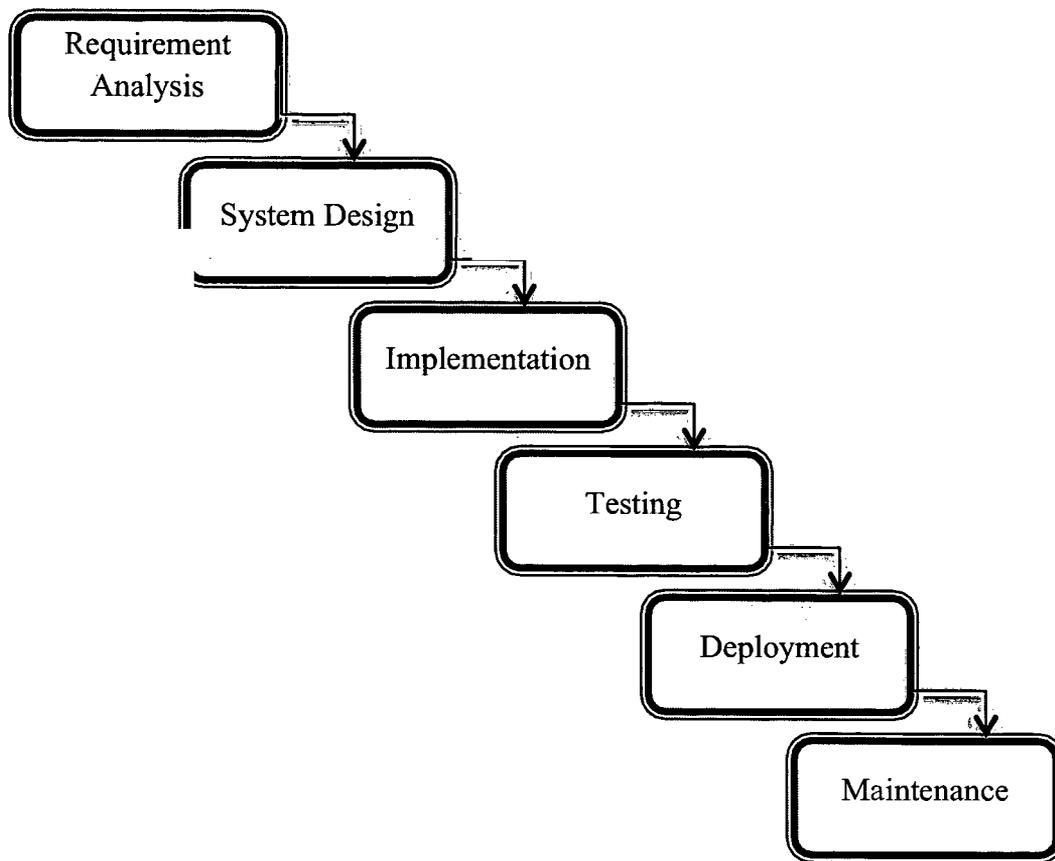


Figure 3.1

3.2.1 Analysis

This is an early stage of system development life cycle. In this stage/phase, the following aspects are identified/gathered in order to initiate the application development:

(a) Data (restaurants, stalls and food courts)

Kuantan Food Map is an application that guides user to search for their preferred food courts, restaurants or stalls. These data includes names, locations (latitude and longitude, which will aids to navigate user in finding the place), types of cuisines, reviews and signature dishes (if any).

In order to collect these data, few methods are applied. There are:

i) Observation

Observation is a fundamental and highly important method in data gathering. It is a way of gathering data by watching or noting natural setting. Through observation, data can be collected regardless anywhere and anytime as long as the targeted object is exists. Observation data is reliable as the data is gained without relying on people's willingness or ability to provide information.

This method of data collection is applied for gathering data of restaurants, stalls and food courts in Kuantan. Data of names, locations and types of cuisines are gathered via observation. This is done by jotting down the restaurants' details while having a walk around Kuantan. The restaurants' details include the restaurant's name, menu served, as well as the popular dishes. Some restaurants especially which located in a mall having the menus display outside of the restaurants. It is consider as a way of promoting and advertising. On the other side, this situation eases the process of data collection. This way of data collecting is much more convenient and time saving.

ii) Participant Observation

Participant observation refers to a form of data collection in which the developer/researcher takes on a role in the social situation under observation. By means, having immerses under situation, in order to gather the desired data.

In addition, participant observation aids data collection to add reviews. Reviews are feedback that can be in critics or compliments upon the restaurant, stalls or food courts made by customers. Experienced the situation, enable data collection (reviews) more convincing. There is limitation upon applying this method in terms of time and cost. However, the data gained is reliable. Reviews are necessary as it helps customer to decide the best place to have meals.

iii) Secondary Data – via Internet

Secondary data basically are existing data generated for a problem other than the one at hand. Secondary data consists of existed information have been collected for another purpose. The advantages of using secondary data are that it can be obtained quickly at lower costs than primary data. This enables data to be

collected at wider geographic range in shorter time. Secondary data is classified in several forms.

For this application development, the type of secondary data used is from Internet. Information regarding restaurants, stalls or food courts can be obtained faster in the Internet.

(b) Hardware and Software

i) Hardware

Below are the hardware needed for this application development:

Hardware	Specification
Computer	MacBook Pro 15"
Smartphone	Android platform

Table 3.1

ii) Software

Throughout the development process, the listed below are software required:

Software	Specification
Eclipse with android SDK	To develop an android application
MySQL	Database platform
Adobe Dreamweaver CS6	Code building platform
Adobe Photoshop CS6	Design platform
Adobe Illustration CS6	Design platform

Table 3.2

3.2.2 Design

Based on requirement analysis (data, hardware and software) and the detailed analysis of the application, the application interface must be designed. This is a phase of system design, which includes interface design and database design. This is an important phase in the application development. In the design phase, the SDLC process continues as the logical design of the application produced during the analysis turned into a physical design. This is where the input, output, databases and forms are drawn up in details. In this phase, the programming language is decided. Interface and procedures of using this application are also decided in this phase.

After successfully passing the requirement analysis phase, where all the necessary data, hardware and software required are collected and identified, the next stage is the design of Kuantan Food Map application. In this stage, the design is further classified into the following terms:

(a) Storyboard Design

Storyboarding is an early stage before interface design begins. It is a process of sketching to illustrate the sequence of the system responses to end-user actions in narrative format, which includes a series of drawings, sketches, or pictures and sometimes words in order to add descriptions.

Basically, storyboarding is more meaningful than flowcharts and other technical diagrams in order to convey user experience. Moreover, the storyboard does not require any programming skills, as it is only an early stage of application development and only involves sketching and illustrating of system flow.

For Kuantan Food Map application, the storyboard designs are as follows:

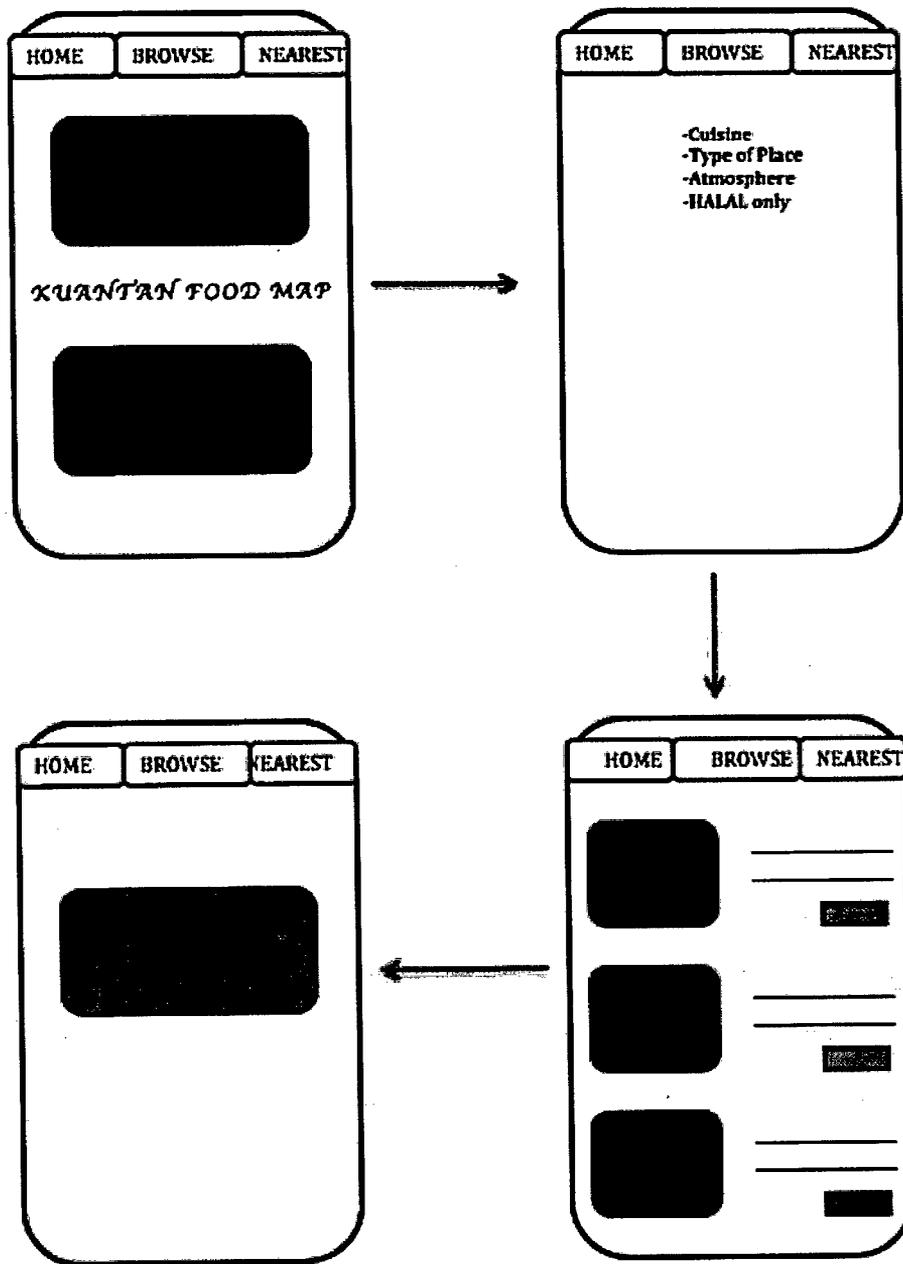


Figure 3.2