KUALA LUMPUR INNER CITY TRANSPORT SYSTEM (KLICTS)

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ABSTRACT

Kuala Lumpur Inner City Transport System (KLICTS) is a new approach for public transport services that provide especially for people that want to plan journey at Kuala Lumpur inner city. This system involves public transport system worker and people want to use public transport services. They can use this system for manage their time and also to get important information for their journey such as ticket prices, schedule time and time estimate that will help them so that can more understand.

This system created because of several problems and the main problem is the public transport services did not provide schedule or important information for public. So, that's a reason for develop this system. Some public bus company provides schedule, but it is static schedule and sometime they not update the schedule. KLICTS developed by following System Development Life Cycle (SDLC) because it is as a model for developing a system based on a traditional problem-solving process with sequential steps and options for revisiting steps when problems appear. So, KLICTS created for help people that want plan their journey only in Kuala Lumpur inner city area so that easy and more clearly when want using public transport services.

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CHAPTER 1

INTRODUCTION

1.1 Introduction

Bus, LRT and Monorail services play a major role in the provision of public transport especially in Kuala Lumpur area. These services can take many forms, varying in distance covered and types of vehicle used, and can operate with fixed or flexible schedules. Services may be operated by public or private companies, and be provided using several of sizes.

Kuala Lumpur Inner City Transport System (KLICTS) is a systematic system to help people who used public transport service at Kuala Lumpur. This system is a new approach to make people easily get information such as public transport schedule, travel time and more. This reason to develop this system because of the several problems that are people should wait for using public transport service without have any information about the schedule. This system defiantly generate when people select their destinations and all about information will appear at this system. So, they can use this system to save their time and also can get clearly information about public transport services.

Bus, LRT and Monorail stop or stations is a facility where people want to use public transport services for go to any destination that they want. So, the company that provides public transport services should think how to help people that want to use these services so that they easy to understand and get any important information about schedule, ticket price and time for reach to their destinations.

Public can use this system with select their destination, then it will appear schedule for types of transport selected, travel guides and ticket prices for that destination. So, public can easy get public transport services information without go to the company and they also know about current ticket price. Furthermore, public bus services company can manage this system with efficiently such as update any changes about trip schedule, add some new destination, delete some destination and create new form for any future information. KLICTS using simple tools, the selection of these tools is compatible and matches with the requirement of the public bus services company.

1.2 Problem Statement

After some short research at public transport services in Kuala Lumpur, it shows several problems that can make public difficult to using public bus and also some problem from company that give bad impact to public.

Do not have services that provide bus schedule for public. So, public have to wait for long time because they do not know about bus trip information such as trip time and travelled destination.

Another problem that exists from public transport service at Kuala Lumpur is people do not know estimated time for their destination when want to plan a journey.

Public also have a problem to know about current price ticket or any updates. This may cause misunderstanding for public because they do not have any source to refer.

1.3 Objective

The objective of this project is:

i. To help people that using public transport services at Kuala Lumpur saving time when planning their trip.
ii. To develop web based system prototype that can manage information about public transport services with more clearly.
iii. To computerized all of information and trip schedule to people that using public transport services with automatically.

1.4 Scope

The project scopes that have been identified are:

i. Environment:

   a. This system use online application concept.
   b. This system can be used for public transport services.

ii. Data used in this system:

   a. Trip schedule such as time and destination.
   b. Type of price such as for adults, children and student.

iii. The user of this system:

   a. People at Kuala Lumpur that using public transport services for find their information about bus trip and price.

b. Public transport service worker that want to manage this system with adding some destination or bus stop and update the trip schedule.

1.5 Organization of the Project

This thesis consists of six (6) chapters. Chapter 1 discusses on the introduction of the system. The purpose of this chapter is to briefly explain about the overview system that is developed. It consists of the problem statement, objective and scope.

Chapter 2 is Literature review. It is explained about the project and techniques that are used from previous projects.

Chapter 3 is the methodology used in the system. This chapter is discussed about the techniques and related software that is used for the project development which is Systems Development Life Cycle (SDLC).

Chapter 4 is the implementation of the system. It explains about the implementation of the system.

Chapter 5 is the result and discussion. This chapter explains briefly about the results and data analysis that obtained from the application. The contents included in this chapter are result analysis, project constraints and also recommendations.

Lastly, Chapter 6, the conclusion concludes and come out with a summary about the developed project.

CHAPTER 2

LITERATURE REVIEW

2.0 INTRODUCTION

This chapter is about the literature reviews that have been reviewed based on the research topic. Literature is a report of a compilation and review means is in written forms on the research topic which write by those people with authority in the field. This chapter is important to discuss about available project and related project with the project want to develop. One important section of the formal report is the literature review [2].
Literature review also can help to find some material for develop a project. The literature review helps situate one's project or research in the broader framework of knowledge in a particular field [2].
In this study, some information about interactive system, technique used, approach or method and existing system that related with interactive system will be finding out based on various resources such as book, newspaper article, website or magazine.

2.1 OVERVIEW OF THE INTERACTIVE SYSTEM

Interactive system can be defined as the class of systems whose operations involve a significant degree of user interaction. It accepts input from the user and provides information as output to the user. Interactive systems share the common aim of aiding the user in carrying out tasks from finding a product to editing a document by eliciting

preferences from the user, inferring a preference model, and using the model to decide when and how to take action [3].

With using interactive system, user will more clearly about information or requirement that they want to find. For example people want to shop at shopping complex that they have never reached. They should find some resources so that their can clearly understand each place and position in the shopping complex. So, interactive map should be provided by the management of the shopping center company for make user understands about their location and know all position in the shopping center.

2.1.1 Benefit of Interactive System

Interactive system is a best source for people wants more understand to finding solution from their confusion. User can choose where they want to go and interactive system will help them more clearly with visual map and detail about the location. Using interactive system, the user will be able to set the route or path to the desired location [11].

User feels more confident to go to the location they are looking for after using interactive system. It is because interactive system will show with more detail about the location such as building lay out, roads and more to increase understanding for user. Much success has been achieved by developing interactive techniques to extract building and road models [12].

Interactive system also can use in much presentation such as map for university, video and more. So, any company that provides interactive system can make it more suitable for user and clearly for start their finding. Interactive systems can become widespread in a variety of ways and contexts [4].

2.2 OVERVIEW OF MANUAL/ STATIC SYSTEM

2.2.1 Public Bus Services Static Schedule

Nowadays, public bus company prefer to use static information like static time table for people want to know about bus schedule such as time, bus number, trip, ticket price and time estimation. This method often causes problems because it's difficult to make any changes such as add some data, delete and updating data. The conventional method which is traditionally done manually for solving timetabling problem is often inaccurate [5]. People that use public bus services want an exact schedule as their reference so that not have any mistake when go to their destination. So, public bus company should provide schedule that easy to understand, comprehensive and much clear. In this old function, bus timetables create only one kind of layout. On the other hand, user need bus timetables of various layouts in accordance with their use. Therefore, bus timetables of various layouts are wanted create by this function [13].

SKYBUS

Bus Schedule for KL Sentral < -- > LCCT							
KL Sentral --> LCCT				LCCT --> KL Sentral			
Departures	Arrivals	Departures	Arrivals	Departures	Arrivals	Departures	Arrivals
3.00am	4.15am	12.00pm	1.15pm	7.00am	8.15am	6.15pm	7.30pm
3.30am	4.45am	12.30pm	1.45pm	8.00am	9.15am	6.45pm	8.00pm
4.00am	5.15am	1.00pm	2.15pm	9.15am	10.30am	7.15pm	8.30pm
4.30am	5.45am	1.30pm	2.45pm	10.15am	11.30am	7.45pm	9.00pm
5.00am	6.15am	2.00pm	3.15pm	10.45pm	12.00pm	8.15pm	9.30pm
5.30am	6.45am	2.30pm	3.45pm	11.15am	12.30pm	8.45pm	10.00pm
6.00am	7.15am	3.00pm	4.15pm	11.45am	1.00pm	9.15pm	10.30pm
6.30am	7.45am	3.30pm	4.45pm	12.15pm	1.30pm	9.45pm	11.00pm
7.00am	8.15am	4.00pm	5.15pm	12.45pm	2.00pm	10.15pm	11.30pm
7.30am	8.45am	4.30pm	5.45pm	1.15pm	2.30pm	10.45pm	12.00am
8.00am	9.15am	5.00pm	6.15pm	1.45pm	3.00pm	11.15pm	12.30am
8.30am	9.45am	5.30pm	6.45pm	2.15pm	3.30pm	11.45pm	1.00am
9.00am	10.15am	6.00pm	7.15pm	2.45pm	4.00pm	12.15am	1.30am
9.30am	10.45am	6.30pm	7.45pm	3.15pm	4.30pm	12.45am	2.00am
10.00am	11.15am	7.00pm	8.15pm	3.45pm	5.00pm	1.15am	2.30am
10.30am	11.45am	8.00pm	9.15pm	4.15pm	5.30pm	1.45am	3.00am
11.00am	12.15pm	9.00pm	10.15pm	4.45pm	6.00pm	2.15am	3.30am
11.30am	12.45pm	10.00pm	11.15pm	5.15pm	6.30pm	2.45am	4.00am
				5.45pm	7.00pm	3.15am	4.30am

Figure 2.1: Static Bus Schedule

2.2.2 Static Map

Static map is a method use for make people easily to understand about any location that they want to go. Many company use static map such as public bus company, shopping center, train, universities and more. It is because they want people more clearly about their movement and position when go to anywhere. But static map should be improved to the interactive system so that people more understand and they also feel more confident to make the map as reference. So, static map should be combined with some generated-computer such as interactive system. The combination of a printed map and computer-generated graphics at a map-based AR approach enables our tool to create an interactive learning environment where a user efficiently visualizes information about geographic surfaces [14].

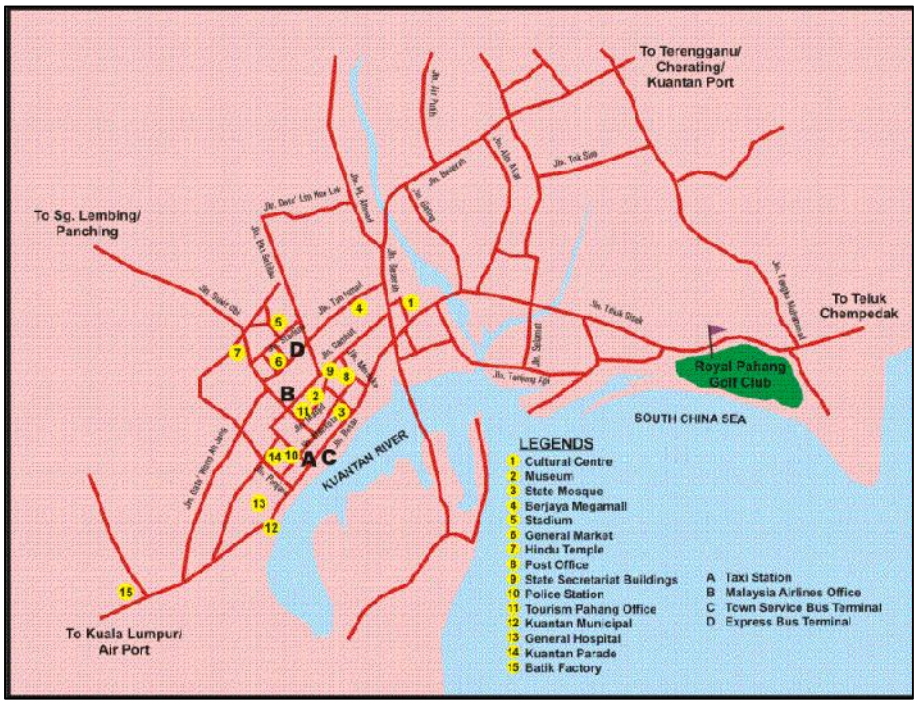

Figure 2.2: Static Map for Kuantan Area

2.3 OVERVIEW OF AVAILABLE INTERACTIVE SYSTEM

2.3.1 Train Interactive System

Interactive systems have developed by some company like train or LRT company. Using this system, passengers can imagine their journey such as journey duration, rail route, how many stations will reach. This system is also supported by efficient train schedule. So, interactive systems make the passengers feel comfortable to using train services and satisfied because they much clearly about their travel condition. The interactive operation in virtual environment, which is the special feature incorporated in this study, shows distinguished advantages because it makes easier understand of physical phenomenon by giving realistic simulation environment [15]

Figure 2.3: Train Interactive System Interface Schedule

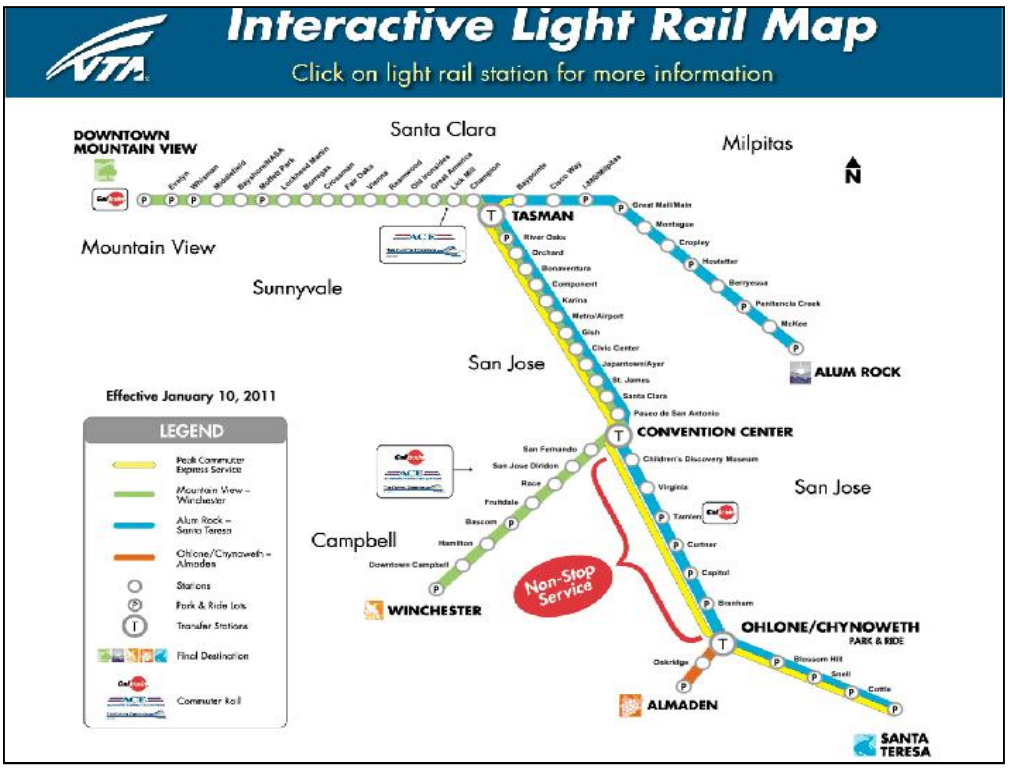

Figure 2.4: Train Interactive System

2.3.2 Map Interactive System

Interactive system for produce city, state or countries maps is a good way because it can give much benefit for people especially foreign tourists. Interactive map also can give good understanding for people want to know about any city, state or countries with more detail about city planning, industries, communication design and more. In recent years, it becomes crucial to simulate a virtual city or model and visualize an existing city in many fields such as urban planning, urban engineering, communication design and game industries [6].

Furthermore, interactive map display real element such as correct distances, the exact position of the building, condition of each road and more. So that we can

automatically generate realistic, detailed and varied road map of a city suitable for use in real-time rendering [6].

Figure 2.5: Interactive Map

2.4 OVERVIEW OF KUALA LUMPUR INNER CITY TRANSPORT SYSTEM (KLICTS)

KLICTS is a systematic system to help people who used public transport service at Kuala Lumpur. This system is a new approach to make people easily get information such as schedule, travel time, date, ticket price and estimate time for more understanding.
People that want use public transport services to any location only for Kuala Lumpur inner city area can use this system with enter their journey planning such destination that including starting and ending location, time, type of passengers such as adult, student and child. When the entire requirement selected, KLICTS will provide some schedule for user. The data in a schedule will contain information like schedule, trip time, time estimation and ticket prices.

Another user for KLICTS is staff at public bus company. They should to understand flow of this system because they will be responsible to manage this system such as adding new location, remove unnecessary location, change schedules or destination code, and manage members that register with this system.

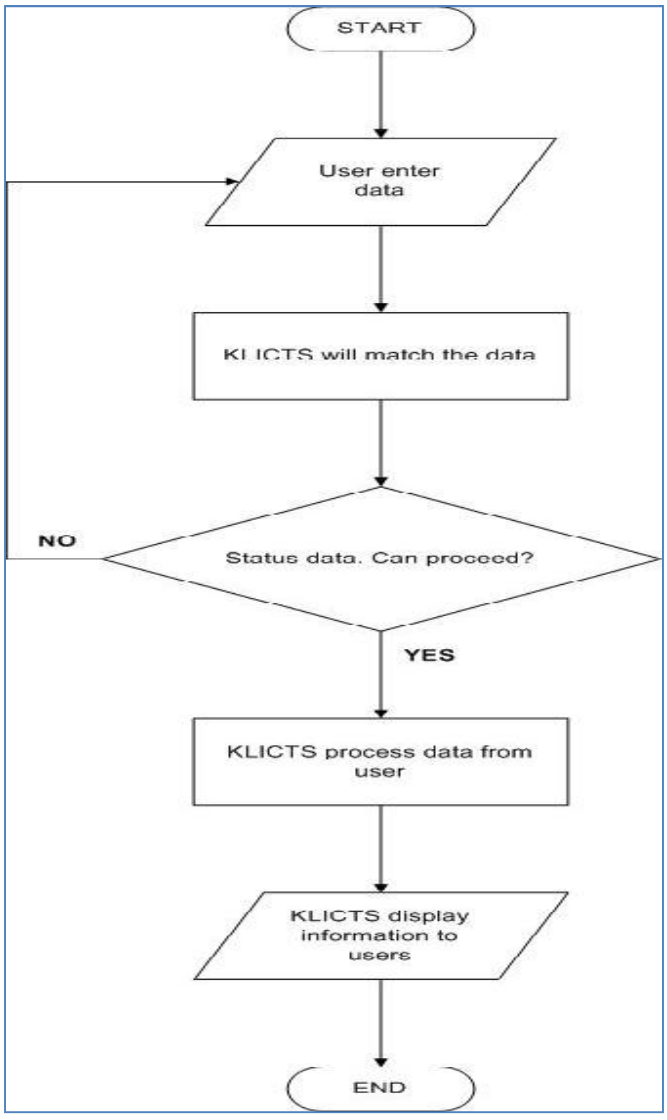

Figure 2.6: KLICTS Flow Chart

2.5 PROJECT METHOD

Software Development Life Cycle (SDLC) methodology is used for this system to planning and manage the development process. Beside that SDLC also used to maintain and replace information system. SDLC model is a software process model used to represent the different stages in software development in the SDLC.

The principle or phases in SDLC as shown in figure 2.7 represent the different stages in software development. The SDLC phases include planning, analysis, system and software design, implementation and maintenance. To follow Software Development Life Cycle (SDLC) model, one phases should to complete for do a next phases.

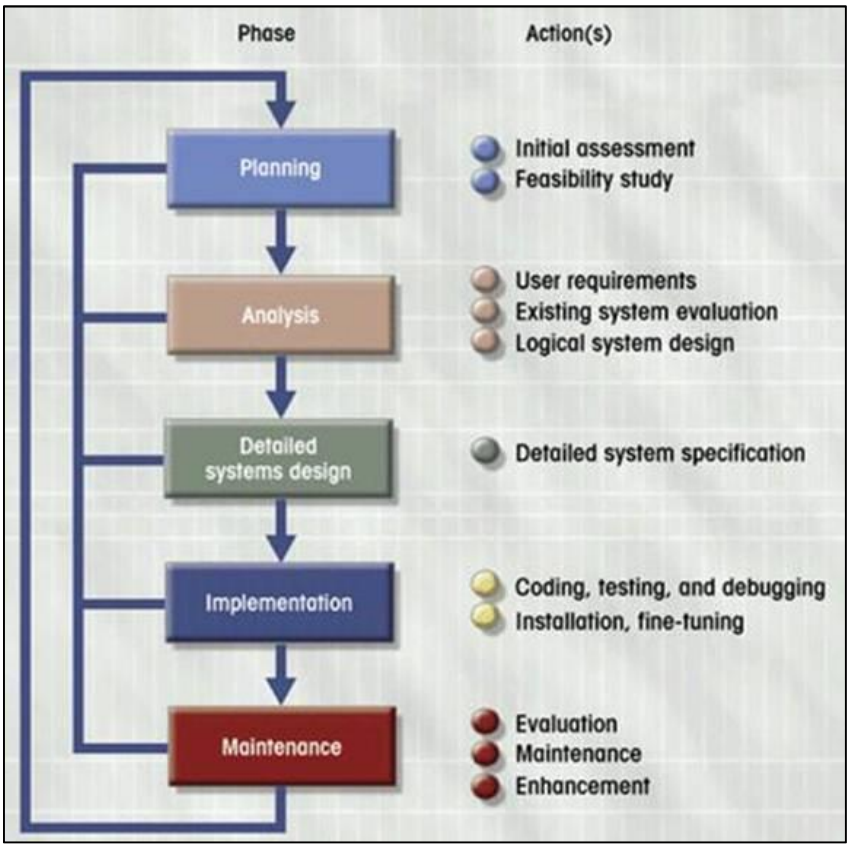

Figure 2.7: SDLC Methodology

CHAPTER 3

METHODOLOGY

3.0 Introduction

Methodology is chapter that explain how the result were achieved supported with explanation of how the data was collected and which method the data was generated. It also explains about methodological problems and their solutions or effects.

Methodology is the theory of methods in recognizing and reforming the world. System methodology as one of the basic methods that research computer science, is a general science methodology. This paper aims to discuss the fundamental principles of system methodology, at the same time, emphasizes on the thinking mode and method in computational subject. [7]

Methodology has some methods and research design such as Waterfall Method, System Development Life Cycle (SDLC), Software Development Process, Spiral Method, Rapid Application Development (RAD) and Iterative and Incremental Development Method.

3.1 System Development Life Cycle (SDLC)

This chapter will covered about flow process for the Kuala Lumpur Inner City Transport System (KLICTS) according System Development Life Cycle (SDLC) methodology. SDLC are used in this chapter because it is a traditional methodology used to develop, maintain, and replace information systems. SDLC as a model for developing a system based on a traditional problem-solving process with sequential steps and options for revisiting steps when problems appear. [8]

So, SDLC is a right method for explain with clearly about the process or phases that can be applied in KLICTS. This system will describes with more detail about the system flow process in KLCTS from the starting of planning phases until the system maintenance phases. SDLC has been use in this chapter for the flow process to develop this system with more efficient allow the sequence. This method consists of five (5) stages or phases below:

i) Planning
ii) Analysis
iii) Design
iv) Implementation
v) Maintenance

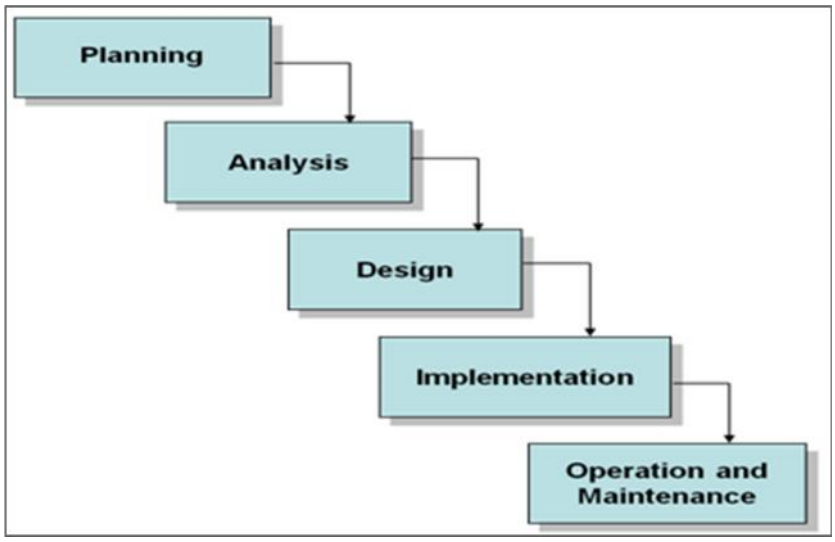

Figure 3.1 Phases in SDLC [7]

3.2 The Justification Choosing System Development Life Cycle (SDLC)

SDLC model is a sequence software development model in which development is seen as following the step through the phases planning, requirements analysis, design, implementation and maintenance. This model development is easy to understand and developer also can see what should be done in order to develop a system. Every phase of the sequence is defining detail about all of the system progress from the starting and ending of the system. Then a schedule can be set with deadlines for each phase so developer can easily monitor their work. Although sometimes criticized for its rigidity, a traditional SDLC provided and continues to provide benefits for many organizations. [23]

There are some benefits using SDLC method:

i. The explicit guidelines allow the use of less-experienced staff for system development, as all steps are clearly mentioned. [23]
ii. Breaks the problem-solving process into manageable steps. [24]
iii. Identifies and defines everything which needs to be done, and how it should be done. [24]

iv. Identifies the resources needed in each step. [24]

v. Identifies who will do each activity and when they will do it. [24]

vi. Provides a basis for project planning. [24]

3.3 The Steps of System Development Life Cycle (SDLC)

SDLC will consider that the output of each stage becomes the input of next stage. SDLC stages can be characterized and divided up in different ways, including the following:

3.3.1 Planning

Planning is the first phase that required a KLICTS total information system that should to identified, analyzed, prioritized, and arranged. In this phase, the process that should to complete are the title for this system and then, defining the objective of developing the system after investigates the problem that have detect and found by the current system. Investigation are done when already understand the flow of the system. After that, the idea for the system developing will be discuss. A project plan is composed of tasks, dependencies, resources, schedules and budgets. [19]

For this phase, the planning stage starts from defining the scope until the end of development for KLICTS. The Gantt Chart is the important thing that show and determine about schedule or plan the activity that will be involve in the project development. The planning part has been made as a guide along the system development to make sure it can be finished at the time given. The first is to use the Gantt chart, that is, to specify the completion times for all operations. [9] The entire project planning is fully doing in Gantt Chart using Microsoft Office Project 2007.

There is two steps take in this planning phase:

i. Define project scope and doing facts finding.

   For these steps, the discussion with supervisor has made that focus about the project scopes, objectives, and modules covered in KLICTS. When all of that has done, start to ding solution to define all problems about this system.

ii. Understand major role of this system.

   Study about interactive system and analysis the information such as data used, user, environment, schedule and method uses by KLICTS through article and existing article.

3.3.2 Requirement Analysis

Some research has completed for this stage to fulfill the system requirements by study the current system and also determine user requirement for KLICTS. System Analysis defines the problem, identifies its cause, offers alternate and specific the solution, and identifies the information requirement. [8] The activity will engage the study about structure of the system and also determine about software and hardware requirement used to develop a system.

For KLICTS, this is part begins with analysis about the objective and scope of this system. It also defines about users function in this system such as customer and administrator. So, this part is important phase that will be effecting the system development.

3.3.2.1 Use Case Diagram

Figure 3.2 and 3.3 show the interactions between use case and actor for this system. Use case represents system functionality and actors represent the people or system that provides from the system.

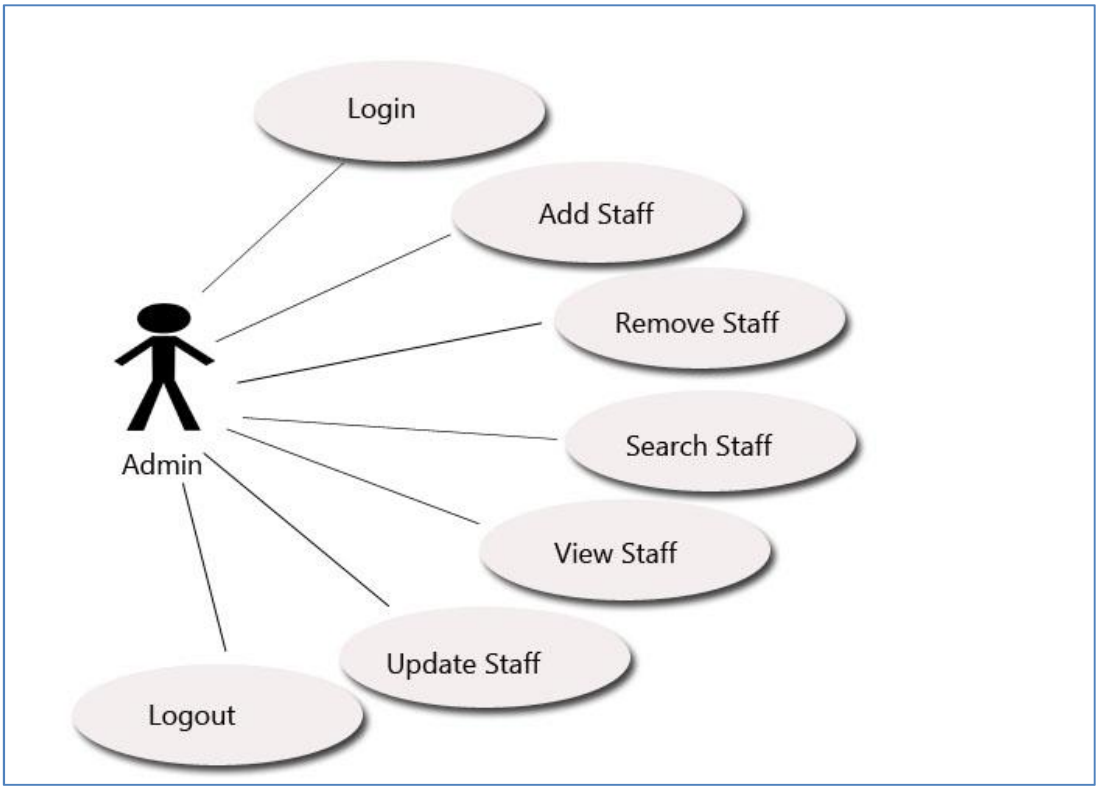

Figure 3.2: Use Case Diagram for KLICTS Administrator

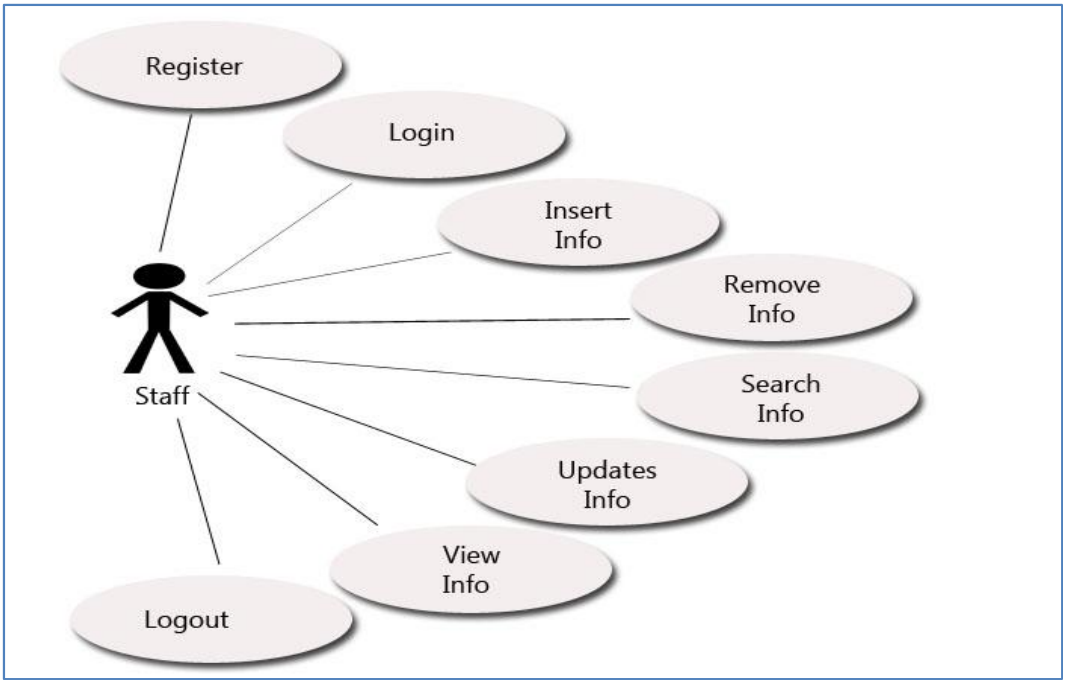

Figure 3.3: Use Case Diagram for KLICTS Staff

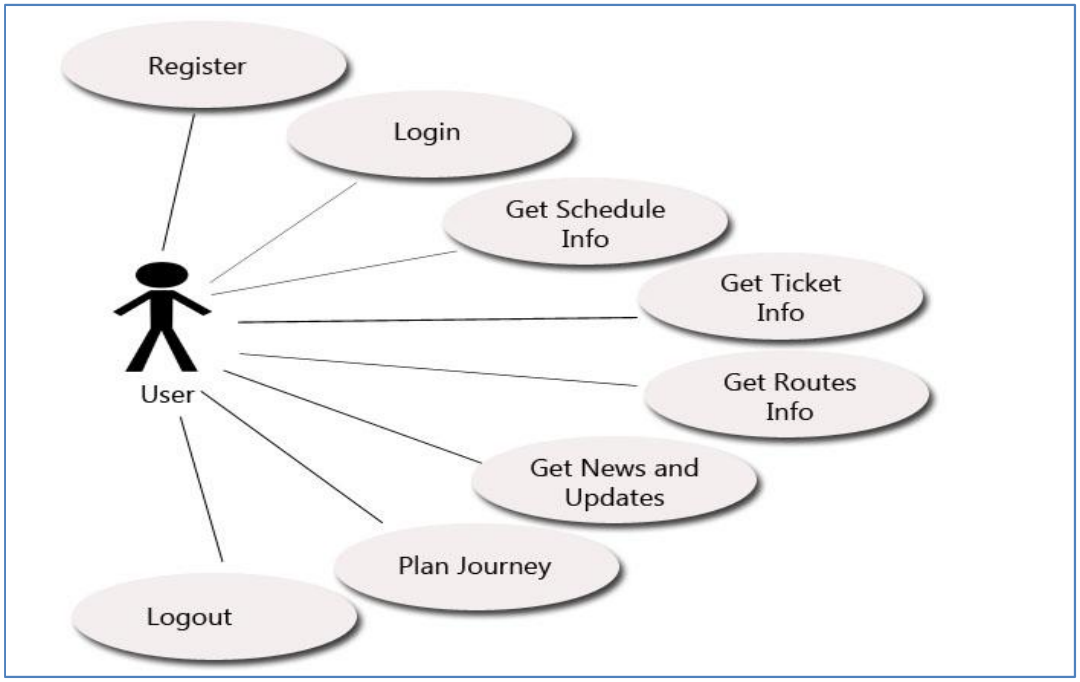

Figure 3.3: Use Case Diagram for KLICTS User