

1UTeM INTERACTIVE MAP

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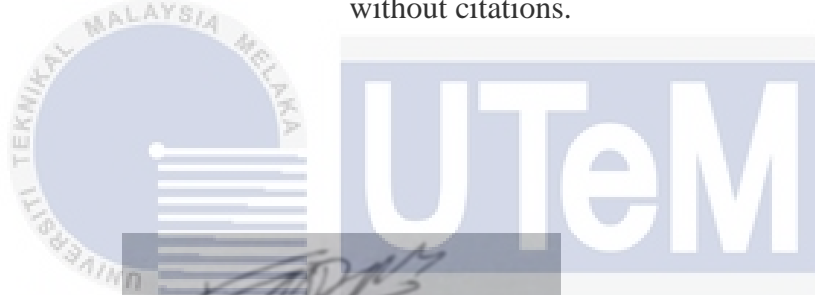
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DEDICATION

Thank to Allah S.W.T for the moment that I complete final year project within the time. Thank you to my beloved family with a great support and motivation that they give. At the same time, their guidance and encouragement are vital to outcome the result of the project.

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ABSTRACT

This web-based system is to improve the existing map that lone exists as static image with lack of information to the guider. This could lead misguidance to the location because of lack of information. Usually, the problem occurs when the first time visitor that need to send their child who are going to continue their study in Universiti Teknikal Malaysia Melaka (UTeM). As for the official UTeM website, it currently just showing the static map and less information for the visitor get. The main objective of the project is to enhance and update the current maps into an interactive map. In the same time, it will assist the visitor that also categorized as Viewer, in this project to be guided with an accurate information to each building. By using Rapid Application Development (RAD) as the methodology for this project development which is one of the Software Development Life Cycles (SDLC), a prototype is developed and tested before releasing it. With various test cases, many results can be analyzed for effectiveness. System ought to implicit as it can allow the viewer to use for heading to their destination and it likewise can save time from getting lost. With the assistance of an interactive map, the viewer will be able to discover enough information for a particular location.

ABSTRAK

Sistem yang berasaskan laman web ini adalah untuk meningkatkan peta sedia ada yang wujud sebagai imej static dengan kekurangan maklumat kepada pengguna. Ini akan menyebabkan pengguna akan tersalah penggunaan kerana kekurangan maklumat mengenainya. Biasanya, masalah ini akan berlaku apabila pelawat bagi yang pertama kali datang untuk menghantar anak mereka yang akan meneruskan pembelajaran mereka di Universiti Teknikal Malaysia Melaka (UTeM). Bagi laman sesawang UTeM yang rasmi, ia hanya menunjukkan peta yang statik dan maklumat yang tidak jelas untuk pelawat menggunakannya. Objektif utaman projek ini adalah untuk meningkatkan dan mengemaskini pemetaan ke dalam satu peta yang boleh di interaksi dengan pengguna. Dalam masa yang sama, ia akan membantu pelawat untuk berpandukannya dengan satu maklumat tepat kepada setiap bangunan. Dengan menggunakan methodologi *Rapid Application Development* (RAD) sebagai kaedah untuk membangunkan projek ini, sebuah prototaip yang dibangun dan di uji sebelum memasarkannya. Dengan mengadakan kes ujian, banyak hasil dapat dianalisa untuk keberkesanan sistem tersebut. Dengan menggunakan peta yang interaktif, pengguna boleh menemui maklumat yang cukup untuk menuju ke lokasi yang di inginkan.

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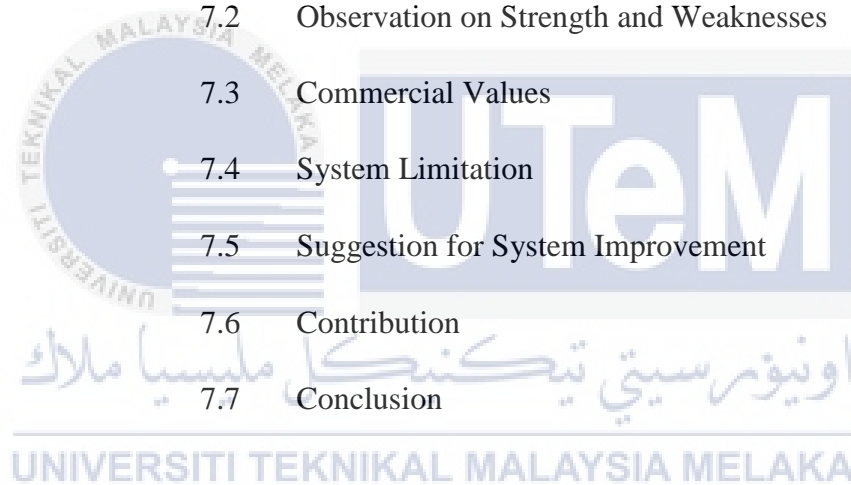
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CHAPTER I

INTRODUCTION



1.1 Introduction

Universiti Teknikal Malaysia Melaka (UTeM) are well known among others University and industry. The student's compulsory to deliver final year project before they graduated. In the Faculty of Information and Communication Technology, students must finish and submit their thesis according to their enrolled courses.

This project is to improve the existing map that already exists as static image with lack of information to the guider. This could lead misguidance to the area because of absences of data. To improve the maps, it will be interface the client to lead them by having additional data of the area. The information of building includes the main office information such as for faculty, management building and student center. Interactive map is known as an interface for a map that interact the user with a good information to be deliver to them. With those interactive map, it can be update incase if there were any new changes.

Map is a platform that can guide human to the selected destination. A map consists of many destinations in the particular country and even in the state itself. Sometimes the map is use to search a destination for a first timer. In this event, outsider who was first time come to UTeM does not known well the location they want to reach out. The outsider can use this platform to assist them to reach their destination with the information of the building and location.

This system is managed by authorized administrators which are among the staff of UTeM. The registered administrators are able to manage the maps by using login information. In this regard, the administrators can view and updated the maps if there are changes in the information of the map. The administrators handle three different maps which are map located at city campus, technology campus and main campus. In other case, administrators can add new building information through the system.

For the use of users, this system can be guided user in easily without any misunderstanding. For admins, it can easily to manage it by helping outsider to know better the location of the UTeM and its campuses. Before the system develops, the existing system was only applying static graphic images and without any information were include inside the map. Also, the map only shows a pin point and only direction of the campus located.

To secure the usage of the maps information, the admins required a password that will be encrypted prior to store into database. Each administrator information secured by the system. Else, the map information can only be updated or added by administrator who is manage the system. As for the user, user only viewed the map through the system and each of the building consists the information that they needed.

1.2 Problem statement

In existing UTeM maps were places into the official UTeM's website. Recently the problem occurred when outsider used the Maps in official website as a references to come to the UTeM. The major problems were the information of the location is less guided to the outsider which misguided issue. The problems consist of:

- i. The outsider such as parents and visitor does not know well the location of the management building. Most problems occurred when the parents first time send their children for new registration. They need to query frequently either with the guard that patrolling the campus or students nearby.
- ii. As for the outsider visitor always misguided through the campus. Most of the reason outsider came for was want to find the management building for important affairs.
- iii. The current maps consist in the system were only a basic and static information of a graphic maps. Without any further information of in the map, visitor, outsider, and parents always lost in the campus. They are keep searching in the same places in the campus.

1.3 Project's objectives

The main objective of the project 1UTeM interactive maps by using maps metric measured for campus in UTeM were consist of:

- i. To enhance and update the current maps into interactive maps.
- ii. To guide the user with an accurate information of the maps.

- iii. To minimize time consuming in searching the specific building in the various campuses.

1.4 Project's scope

To develop and redesign the system, its can make a positive impact to the users to used which give benefits either to the admins nor user such as visitor, outsider and parents. With this system, user can expectedly arrive at destination without misguide to there at appropriate time. Other benefits can include in this system which consists of lot of information to the user to know well about UTeM.

Each user in this system has their responsibilities or roles, which are:

- i. For an admin of the system, they can manage the system by focusing on appropriate and reliable information for the maps. Also, they can be maintained the details of the maps more precisely and accurate.
- ii. For the user of the system, they only can view the maps which consist of information in more details so that they can be guided to their destination without hesitate which can help them from being misguidance.

This system has developed several modules. The system modules were:

- i. Login and registration for admin include recovery password
- ii. Information management which managed building details of all UTeM Campus, and profile which included change of password.
- iii. Interactive map design can generate interactive map with a label positioning for all UTeM Campus.
- iv. Map guide creations were created a full page map with guided latest updated information for each UTeM campus.

1.5 Project significance

This projects' system will be beneficial to the users for allowing them to be guided which consists of accurate information of each building. In the same time, the user can minimize time consuming for searching the specific building in the various campuses. This would assist the user easily and can avoid them from misguided. This project will optimize and update the current map for UTeM official website.

1.6 Expected Results

The expected results for this system supposed to giveback response is where admin can access through the system without any problems. Second expected result should be building information are always up-to-date with accurate information. And this system is expected able to attract the user by having the interactive maps with full information. These expected results could lead a success the system developed, in example 1UTeM Interactive Map.

1.7 Summary

The system focus on the problem that struggles for the user who are first time to come to the UTeM which they may not very familiar with the location of each building. By developing 1UTeM Interactive Map system, it would provide lots of information for each of the building in each campus including the office information for formal affair business. This can assist the user to be more guided to the location they wanted to go. Also, the map always up-to-date to the user as guide for them and it can reduce time to

arrive to the location in appropriate time. In the next chapter, it will explain how the system will work.



CHAPTER II



2.1 Introduction

In this chapter, it will be focus on literature review between facts and finding for this project. The facts that will be explaining either in history, project background or this projects' fact. For finding process, this will include how the project get the idea to be develop. a research need to be done to increase potential ideas to develop the project. It is depending on where the facts and finding need to find and gather. In facts and finding, the source to gather the information is depending either visit the library, surfing through the internet or purchasing reference book.

2.2 Facts and finding

2.2.1 Interactive map element

The effectiveness in map communication are need to refers to the most traditional map and their own design. The major difference that in the map elements are now better in GUIs'. Therefore, the objective in the map elements remain from changes but the design is more likely different from before. It can be designed far more complex and the subsequent can be present more information when someone trying to interact with them. The three key fundamentals need to remember when we are going to design it by refers to the map elements. Firstly, need to find a map and design the map based on elements that will associate to the communication objective rather using a simple default map element. Second, every map element does not need in all of the map.

2.2.2 Interactive map products for world wide web

Interactive map need to change how the user need to read as map-readers that really means by delivering cartographers. Every 16 physical storages are stored on the medium that transfer to multimedia material. In 16 different type that cartographer is used to distribute the cartography's multimedia. In this context, cartography are really means a lot to deliver the interactive map. Within two medium principles' that need to deliver the interactive map, one of it need to choose the very important medium each of the map. To store a physical data, it must need an internet that can give either an advantages nor disadvantages. When map product produce in larger scale and intense to graphical type, the physical storage can be distributed better. With mass produce mapping that related to the Internet, interactive map can be use worldwide.

The power in the interactive map have ability to respond through the input of the reader. The environment can be produce after the interactive map was created for a

multiple interaction between cartographer and the reader. The changes of the both parties can be interacted between the map and the map-reader.

2.2.3 Existing system

The existing map that will be refer to UTeM official website which is the information need to be send for the visitor to use as guiding to their location. The existing map actually using just an images in the website are literally on a static information without any interact to the visitor. Basically, the map only consists a direction to the visitor to came to UTeM but it did not show the information within the building status and information. In the same time, it did not friendly interact to the visitor when use it. If there are information for each building in the campus, the visitor need to download the map that consists an information for the building. Even it has been downloaded, the visitor still did not know which building they search for.

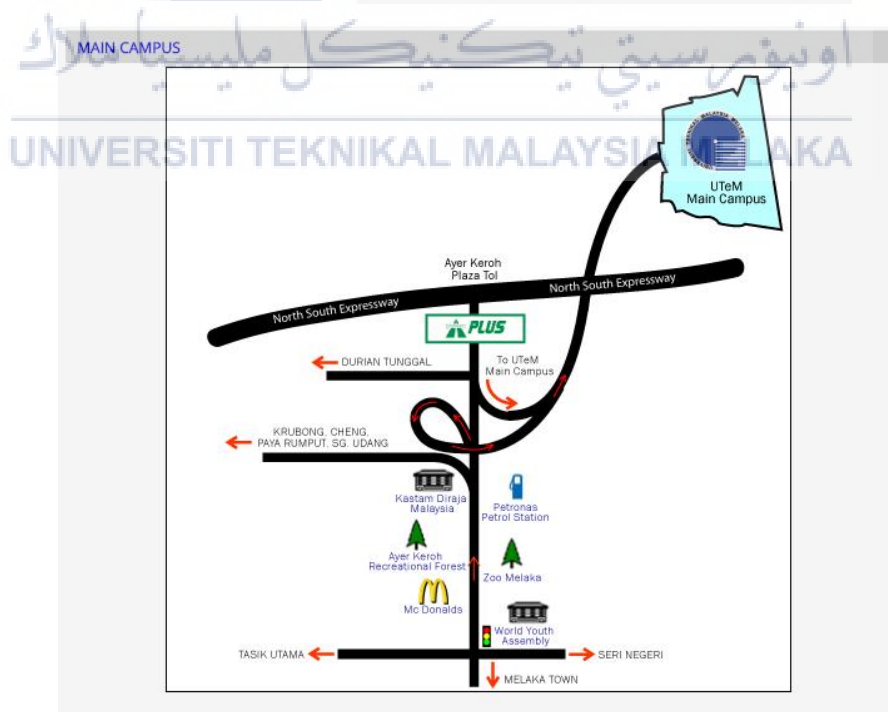


Figure 2.1: Main campus map that exist in the website



Figure 2.2: Industrial campus map that exist in the website.



Figure 2.3: City campus map that exist in the website.

As the figure shown, all of the map only consists static image, location of the campus and did not mention where the buildings located in the campus. The main objective of the map that show to the visitors, they are focusing the visitor need to know where are the campus located. In the same time, they did not consider to interact the visitor with full information for each building instead of UTeMs' prepare a blueprint for the visitor to know where the building located only with pdf type of files.

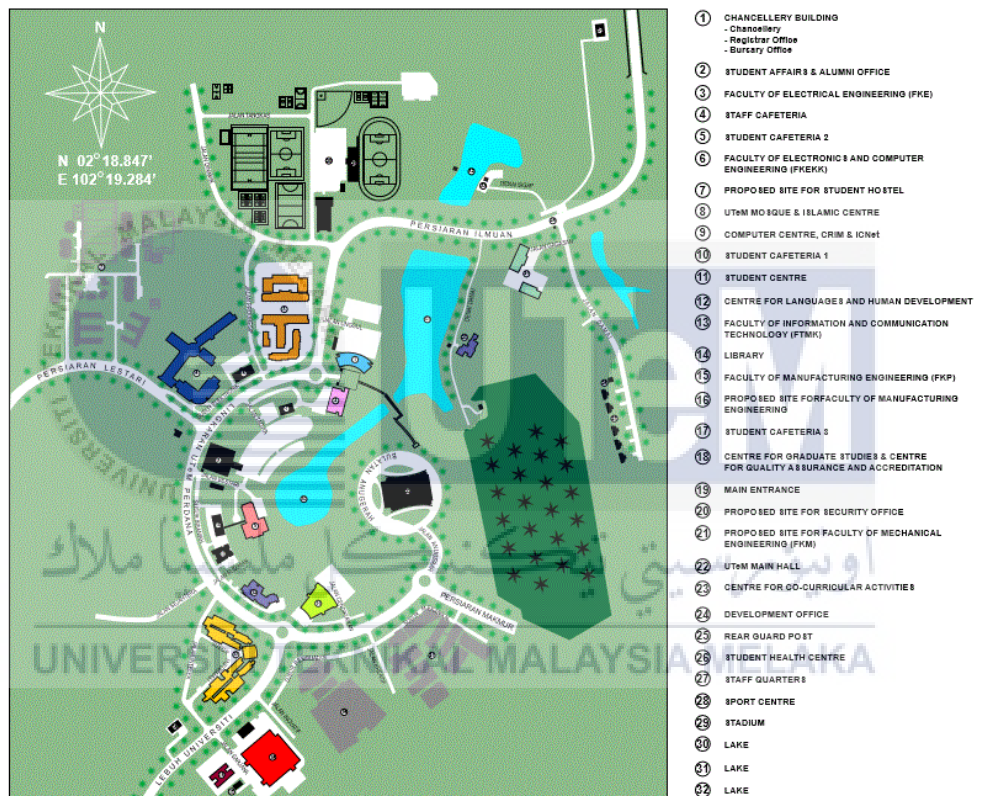


Figure 2.4: Main campus map blueprint that visitor need to downloaded.



Figure 2.5: Industrial campus map blueprint that visitor need to downloaded.



Figure 2.6: City campus map blueprint that visitor need to downloaded.

2.3 Project methodology

In every project need a methodology before developed a program. There are many type of methodology in each program. It is depending how the developer need to develop it by which way. Most of the developers using only basic methodology for a program that less module and requirement by the client. Some of it use complex methodology to get a better result for their program.

As for this project methodology, by using Rapid Application Development (RAD) as the methodology for this development which a based on Software Development Life Cycle (SDLC), producing prototype before released it and conducting a few test. With different test cases, many results can be produced.

Gathering information of the UTeM blueprint maps. Front-end are for the interface of the system that simple for user to understand. For back-end that work the system will always give fast response to the user. During the implementation, it will be a few prototypes before having it evaluate by the examiner. If the prototype is confirmed to be evaluated, it will test it in front of the examiner.

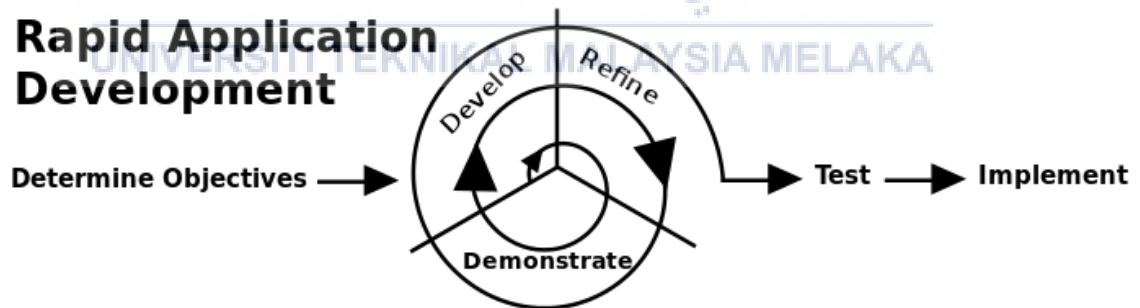


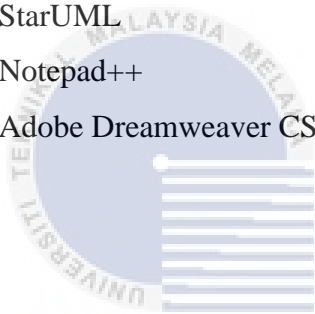
Figure 2.7: Rapid Application Development Cycle.

2.4 Project requirement

In the project requirement, there will be consist of two part which are software and hardware requirement. As for software requirement, it is an application for a system to develop it. For hardware, it is a component or tools before launch the software. Without hardware, a software cannot be launch because it is the main toll to develop a system.

2.4.1 Software requirement

- i. Microsoft Office Word 2016
- ii. Microsoft Visio 2016
- iii. StarUML
- iv. Notepad++
- v. Adobe Dreamweaver CS5



2.4.2 Hardware requirement

- i. Personal computer (Laptop Lenovo G40)
- ii. External HP's keyboard
- iii. Acer's monitor
- iv. HP's mouse
- v. Toshiba external Hard Drive

2.5 Project schedule and milestones

Project milestone is considering for a timeline before the project need to started. Involving every step in Rapid Application Development (RAD). After going through the

project milestone, a planning need to be done that is project schedule. With a project schedule, a project could be done within in time. Below is the diagram of milestone and project schedule or also known as Gantt chart.

2.5.1 Flow Chart System

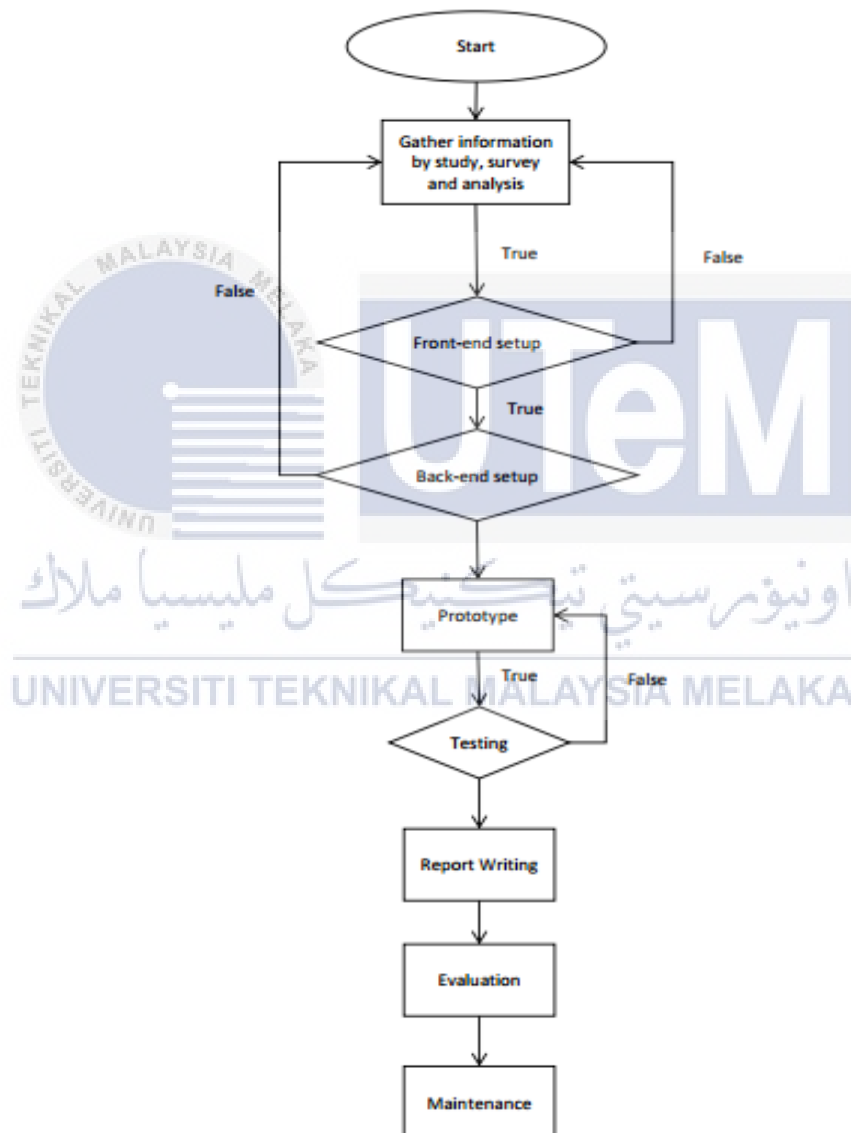


Figure 2.8: The flow chart for this project.

2.5.2 Project Gantt chart

Each of project need a schedule to perform a better time to use for developing the project. In this project, the Gantt chart will be produce by a software to help every developer to manage their time. The software that were use is Microsoft Project Management.

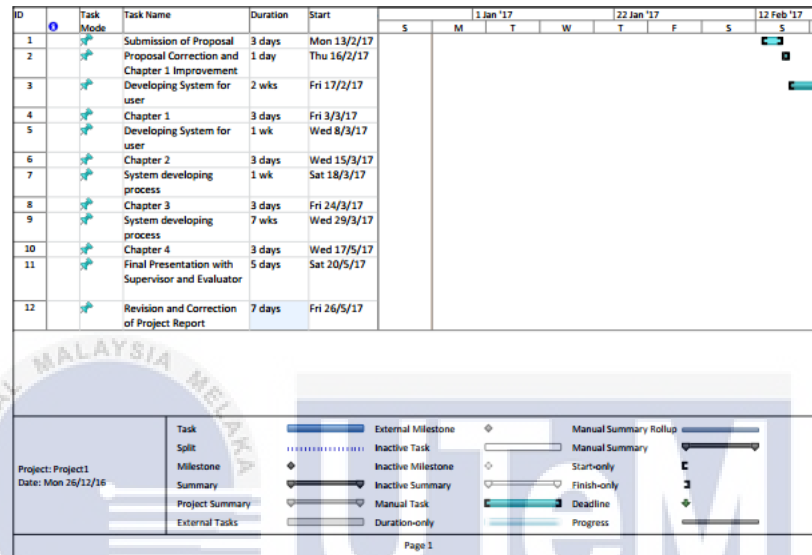


Figure 2.9: Project Gantt chart page 1.

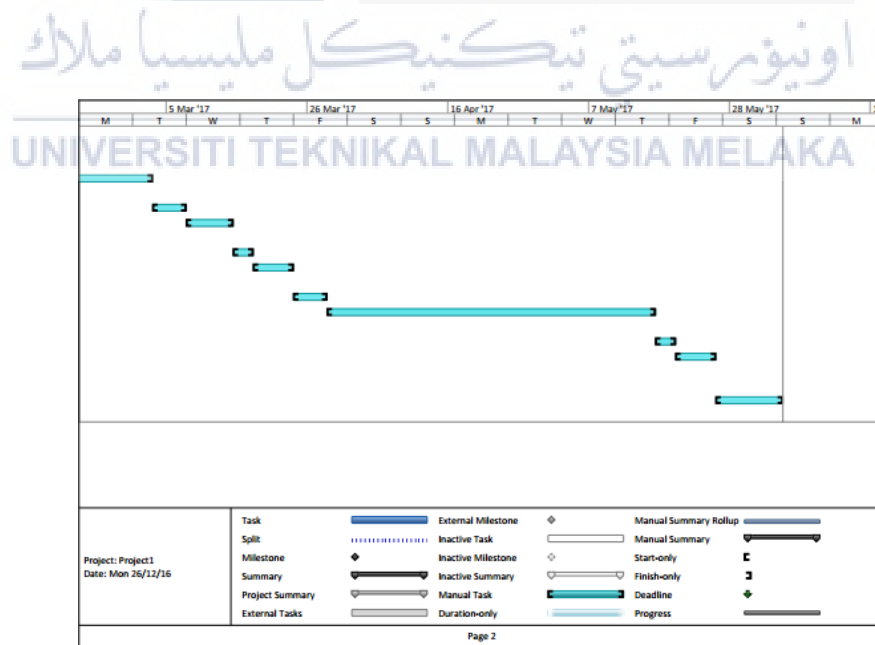


Figure 2.10: Project Gantt chart page 2.

2.6 Project milestone

The project milestone was given to students by the committee in Projek Sarjana Muda. Given milestone starting from first week until week 16. Below is the figure milestone.

Table 2.1: Project milestone

Week \ Activity	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Deliver Proposal																
Proposal presentation 1																
Deliver chapter 1																
Deliver chapter 2 and Progress presentation																
Deliver chapter 3																
Progress Presentation 2																

Project																
Demonstration																
Poster Submission																
Deliver complete PSM1 draft report																
PSM 1 Showcase																
Deliver complete PSM 1 logbooks																

2.7 Summary

This chapter have explained the facts and finding which describing the facts about this system that need to be developed. In the same time, the existing system had explained because it need to refer to the developer optimize it by developing the new system. In this project, Rapid Application Development was used as methodology to develop this system. The next chapter will be describing the system analysis from existing system and proposed system.



CHAPTER III

SYSTEM ANALYSIS

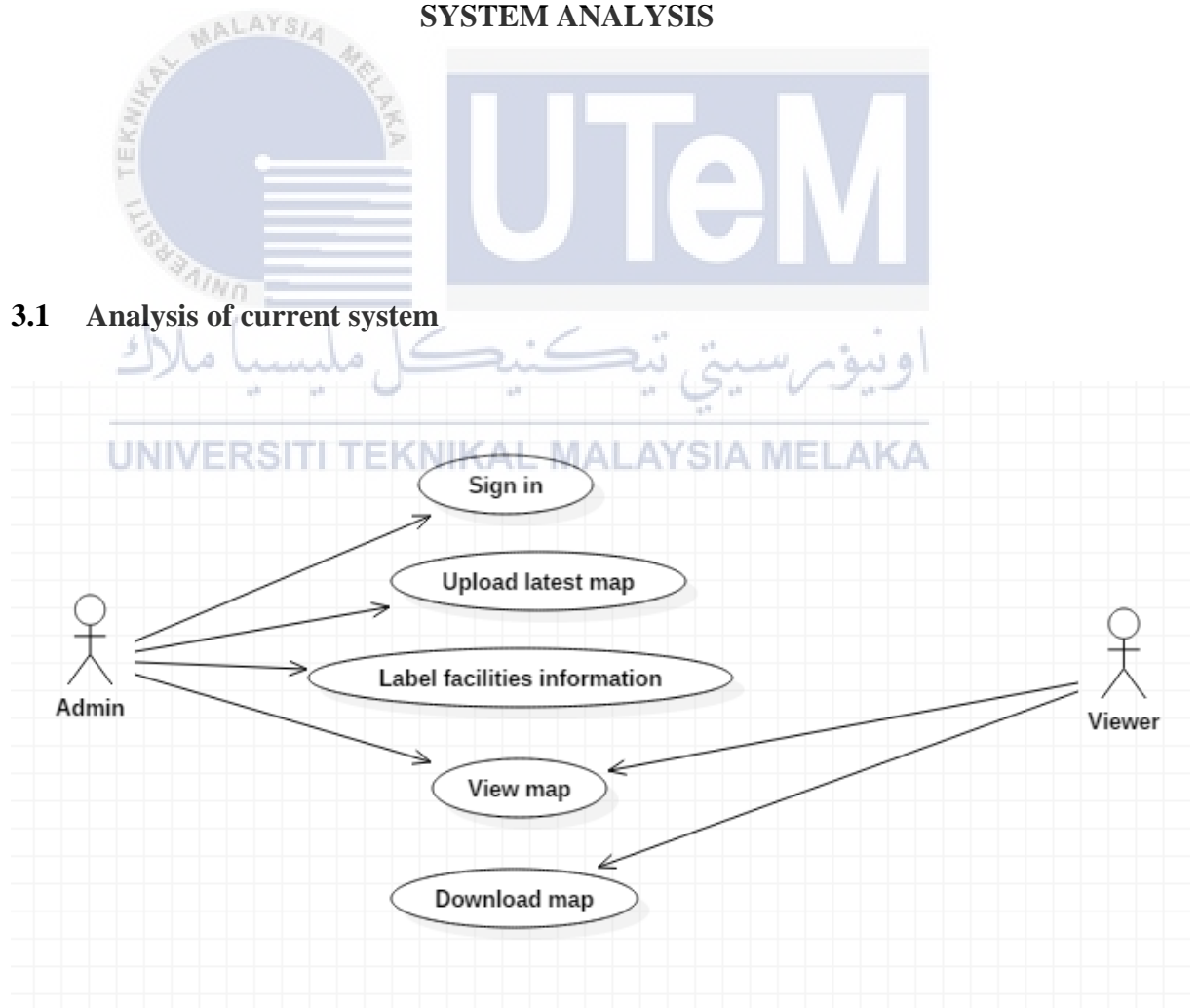


Figure 3.1: Use case UTeM Map current system

Based on figure above, the current function for the system to be operated was to help user to be guided to their intended destination. The current system was basically show a static file which need to be downloaded. This current system actually making user difficult to be guided which is the image of the map too large and the detail of each facility is too small. The current system is focusing only two (2) users which are for the administrator and the viewer. For the administrator, they are focusing on managing the map with information related and the view pages for the viewer. Also, they are gathered the information of the latest location if any necessary for a new building need to be added. As for the viewer, they only need view with the given map in the UTeM portal. Other than that, the viewer can also save and keep those maps either in their gadget or personal computer.

As for conclusion, the current system is less interactive and not really helping the viewer to be guided using the current map and the current system. Times for the viewer to be guide are too long because of the image given are too big and the details of each facilities not too much. As for the marker at the map, it is less helping the viewer to see clearly. The other side of download it still can help the viewer to save and keep in their gadget or personal computer for future guide. However, the sizes of the maps are too large is one of the constraints need to be aware of.

3.2 Analysis of purposed system

Frequently, people want to go to their intended destination but they do not know how to get there. As for the result, people recently use a map that able to assist them to their destination due to in the map, it is including the information about that placed. Interesting in this era, the map is more detail using the marker. In other word, when the user mouse over to the marker, information will be appeared with a different styling.

For a proposed system, the map should be more helping for the viewer to use it. This is including the interactive between the system and the viewer. As for current system, it is a picture of a blueprint of the map which less helping the viewer to view it very clearly. Therefore, a new map need to produce which more interactive to the user.

In the current map system, the information does not have any marker which pinpoint to the map. It is just listing the information and pinpoint it as number. This could lead the viewer to be misguided or confuse with the numbering and the information. Besides that, download function will include in the system which is the viewer can save and keep it in their gadget. It does not require a connection between the internet. As for the function, the file that consist in it not very useful. It is because the image that file save is too large for a device such as a mobile phone to view.

By developing 1UTeM Interactive Map, time taken for the viewer to view will be reduced. To smooth the flow of the map system, it will add an interactive map which has their marker and in the marker have their own information. As for download functioning, it will be keep as for ease the viewer to save it and to be use at any place and any time either using their gadget such as mobile phone or they can save it in their personal computer for studies the map before arrived at the location.

3.3 Functional requirement

This section will be describing the functional requirement in the 1UTeM Interactive Map system. Functional requirement is the statement of services for a system to provide it. It will show on how the system will be through to a particular input and the system interactive performance.

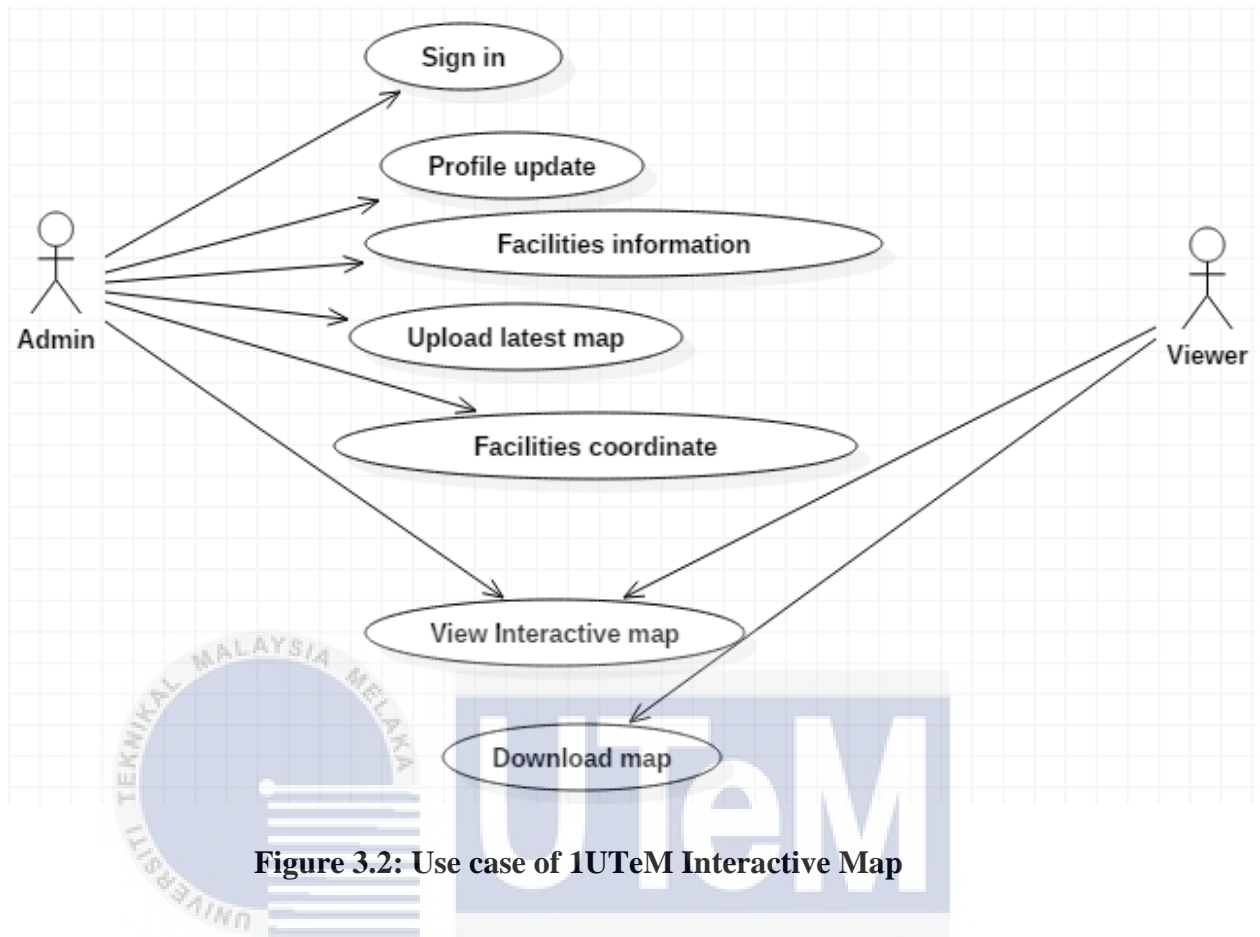


Figure 3.2: Use case of 1UTeM Interactive Map

1. The system allows admin to enter user ID which are Admin ID and password to login into system.
2. After the admin enter the system, admin will be allowing to customize their profile by the mean of update profile.
3. In the system, admin can manage the information of each facility in each campus including the main campus, industrial campus and city campus.
4. In the same time, admin can upload the latest version of the map into the system. So that the viewer can download it to save in the gadget.
5. For interactive map, the admin will coordinate the facility by reference the latest version of the map.
6. The admin can view the result of the information either it well informs or need to be update.
7. As for the viewer, viewer does not need to enter the system by login into it. They only can view the map with an interactive information.

8. In the same time, the viewer can download the latest version of the map so that they can save into their gadget for further guidance.

3.4 Context Diagram

In this section, a context diagram will show the general process of the system. The system has only two users but only one user can login into the system. Below is the diagram.

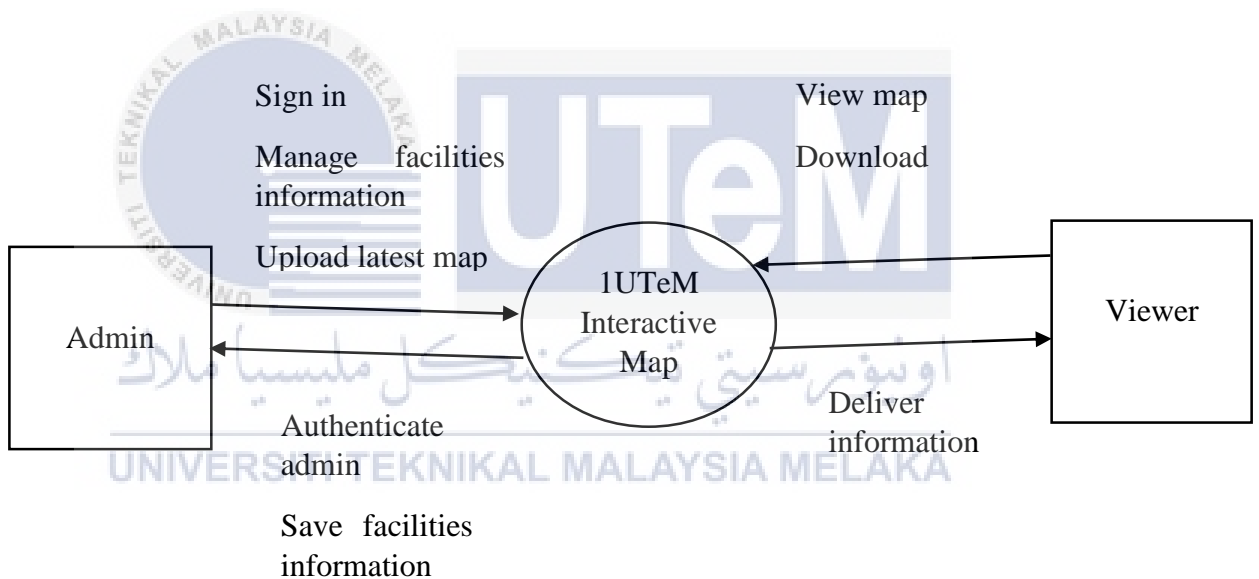


Figure 3.3: Context diagram of 1UTeM Interactive Map

3.5 Data flow diagram (DFD)

Data flow diagram is a process of the system which draft it with a diagram. In the diagram, the process will be including the flow with the data store in the database. In the process also involve the actor that will control the process. the actor is the key to control the process because of the data that to store must getting through the process first.

3.5.1 DFD Level 0

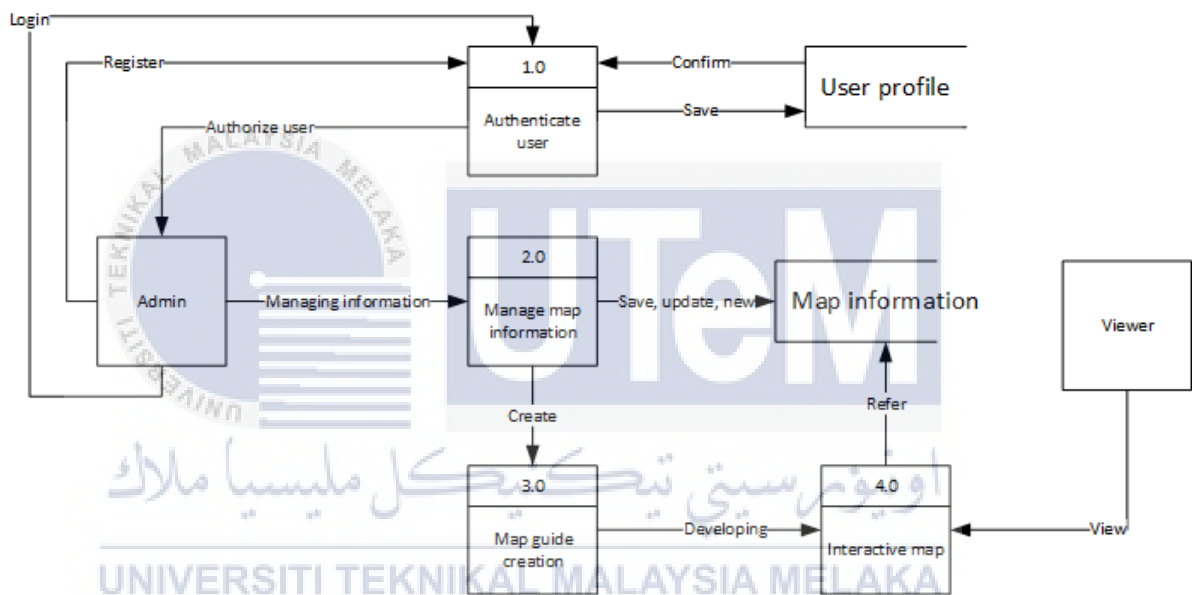


Figure 3.4: Data Flow Diagram (DFD) Level 0 for 1UTeM Interactive Map

3.6 Non-functional requirement

Non-functional requirement is a necessity that determines the criteria that can be utilized to judge the operation of a framework as opposed to particular practices. They incorporate planning limitations, imperatives on the development process and

benchmarks. This section will describe the non-functional requirement for 1UTeM Interactive Map.

i. Data integrity

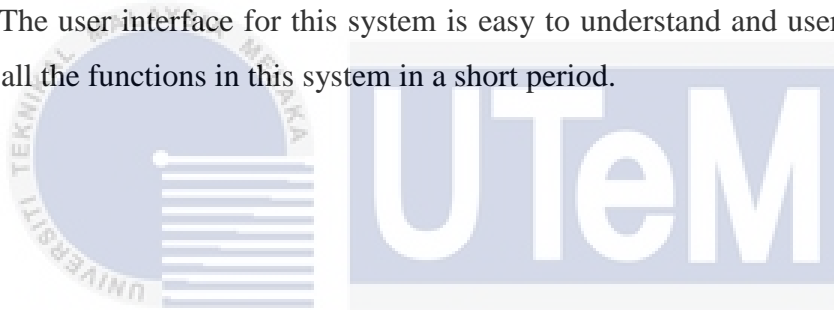
All information in this system are focusing on accuracy and consistency of the information to show to the user.

ii. Response time

Database Update (Response Time: 5seconds – measured from the time of completion of input information on screen to getting acknowledgment).

iii. User friendly interface design

The user interface for this system is easy to understand and user can familiar to use all the functions in this system in a short period.



3.7 Summary

Developing 1UTeM Interactive Map System, hoping this system can be developed and built according to functional and non-functional requirement which mean following all the requirement that has been describe in this chapter. Every requirement is referring to the current system of UTeM map in UTeM system portal. This is to ensure the system will be follow the requirement based on the current system with an additional functionality. The next chapter will be explaining how the system will be design.

CHAPTER IV



4.1 Introduction

System design is the process of defining the architecture, component, modules, interfaces and data for the system by following the specific requirement as mention in chapter before. System design could be used as the application in the system theory to product development.

As for system architecture is the conceptual model that defining the concept of structure or behavior of a system. It known as network structure which is the level that encapsulate the system and the databases and to prevent from be direct access into the databases. It will depict reliably and plan productively complex system. It likewise can give an arrangement from which product can be secured and system built up that will cooperate to actualize the general system.

More aspect need to be consider as for designing the system before developing the interactive interface system. To interact with the viewer, interactive interface will be used in the system. Database-centric architecture or data-centric architecture are modeled that will have devoted as for the design of interactive system. By having data-centric architecture, it will expand adaptability in output product arrangements and contents. The architecture product with following the format, the product can be developing as follow as the standard format which including the information.

4.2 System architecture

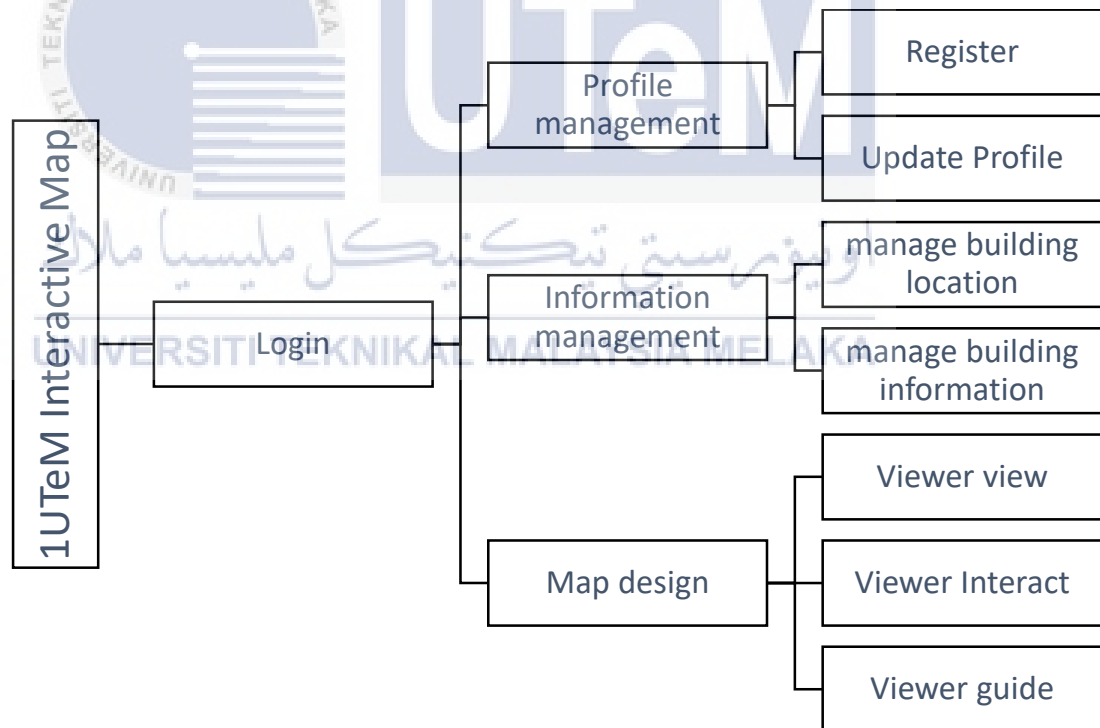


Figure 4.1: 1UTeM Interactive Map navigation diagram.

4.2.1 Sequence diagram

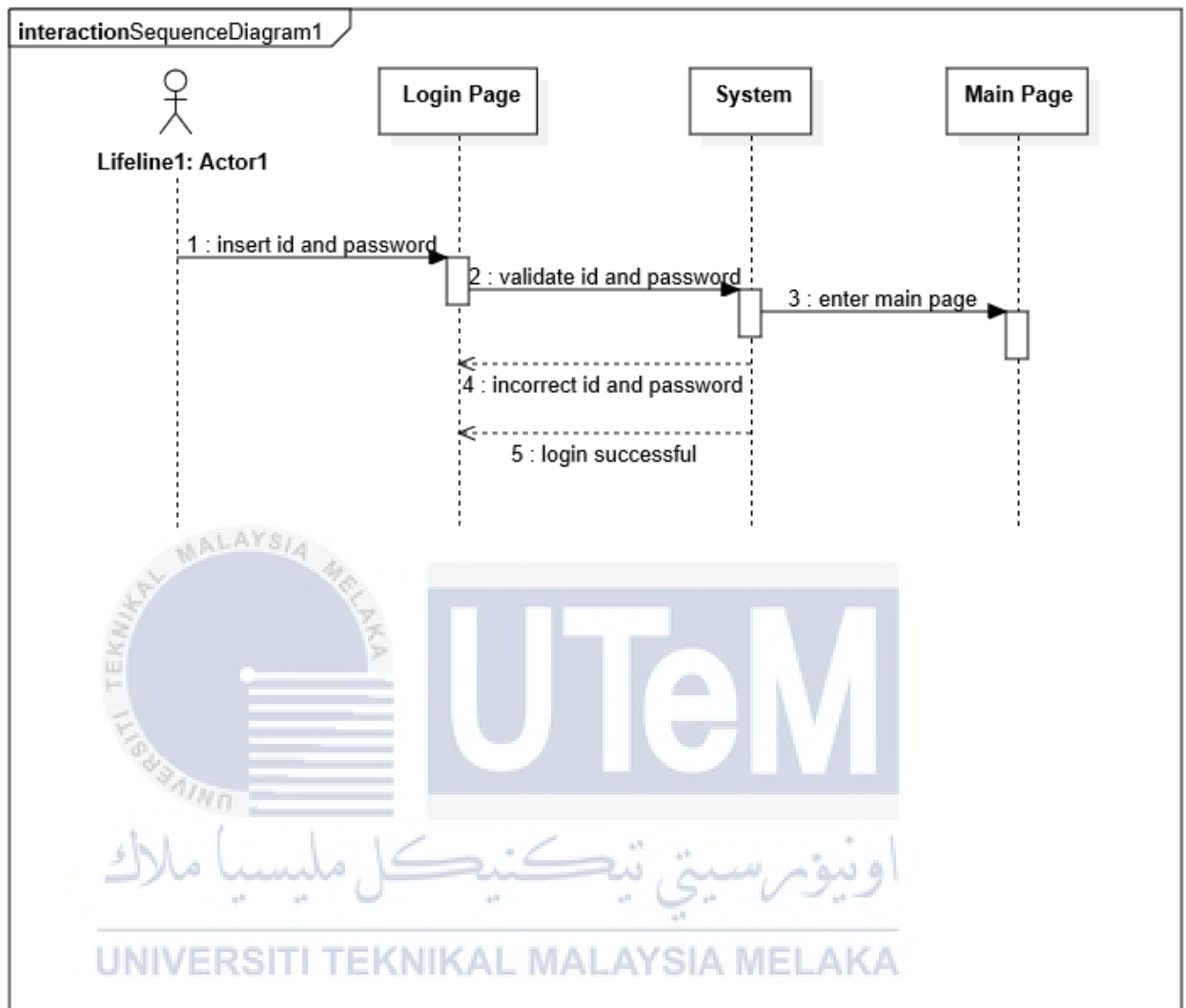


Figure 4.2: Sequence diagram for admin login page.

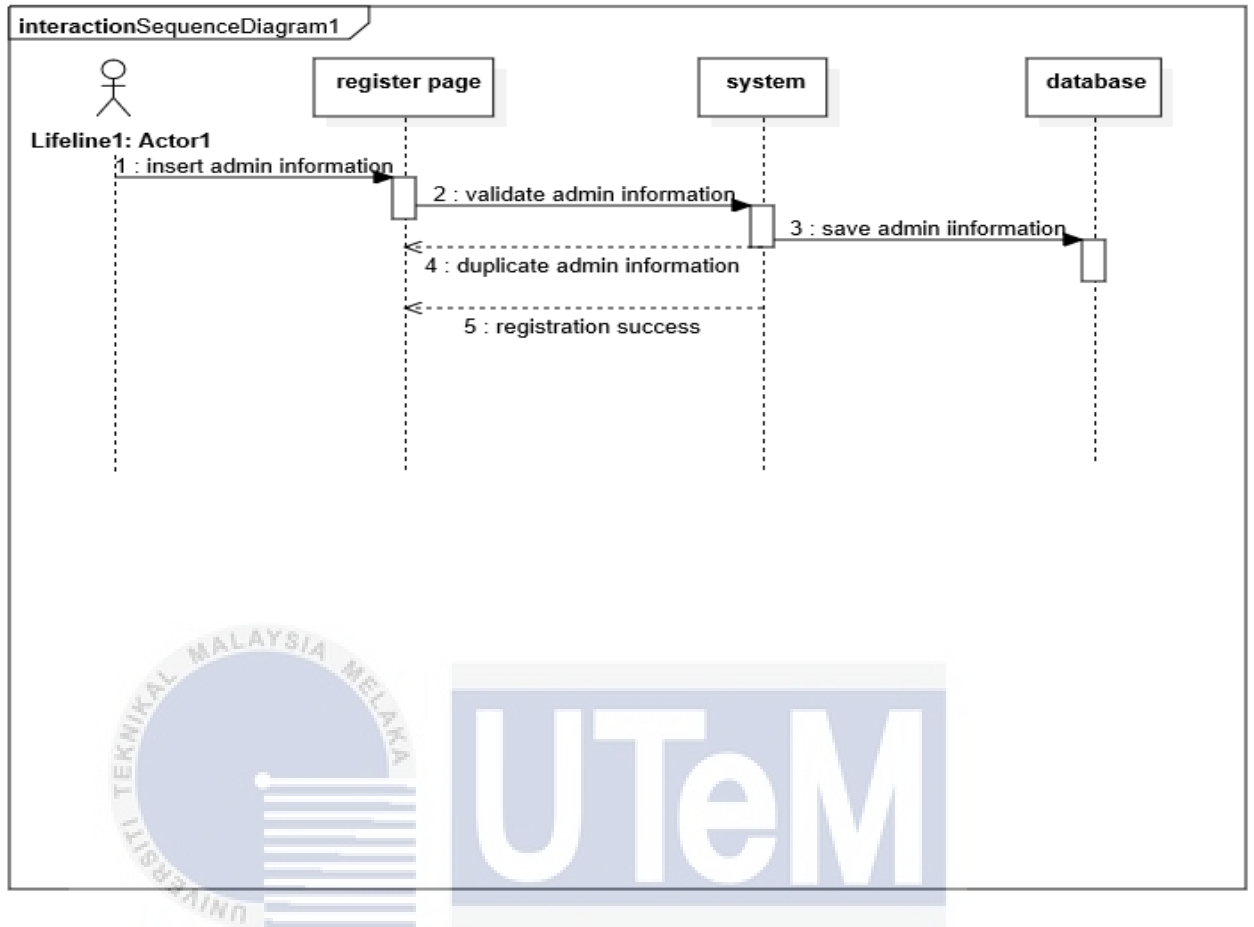


Figure 4.3: Sequence diagram for admin registration.

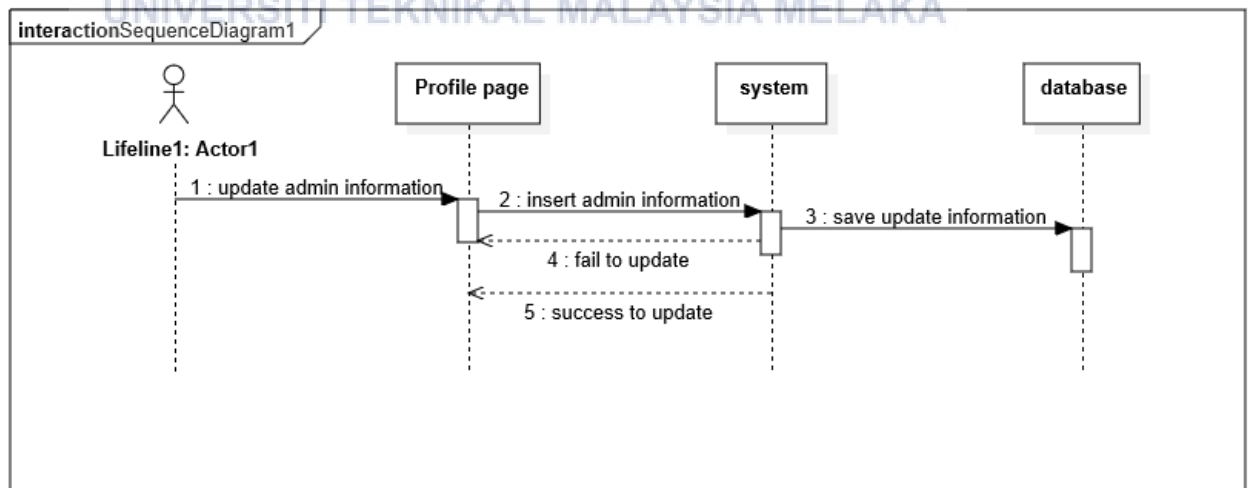


Figure 4.4: Sequence diagram for admin profile.

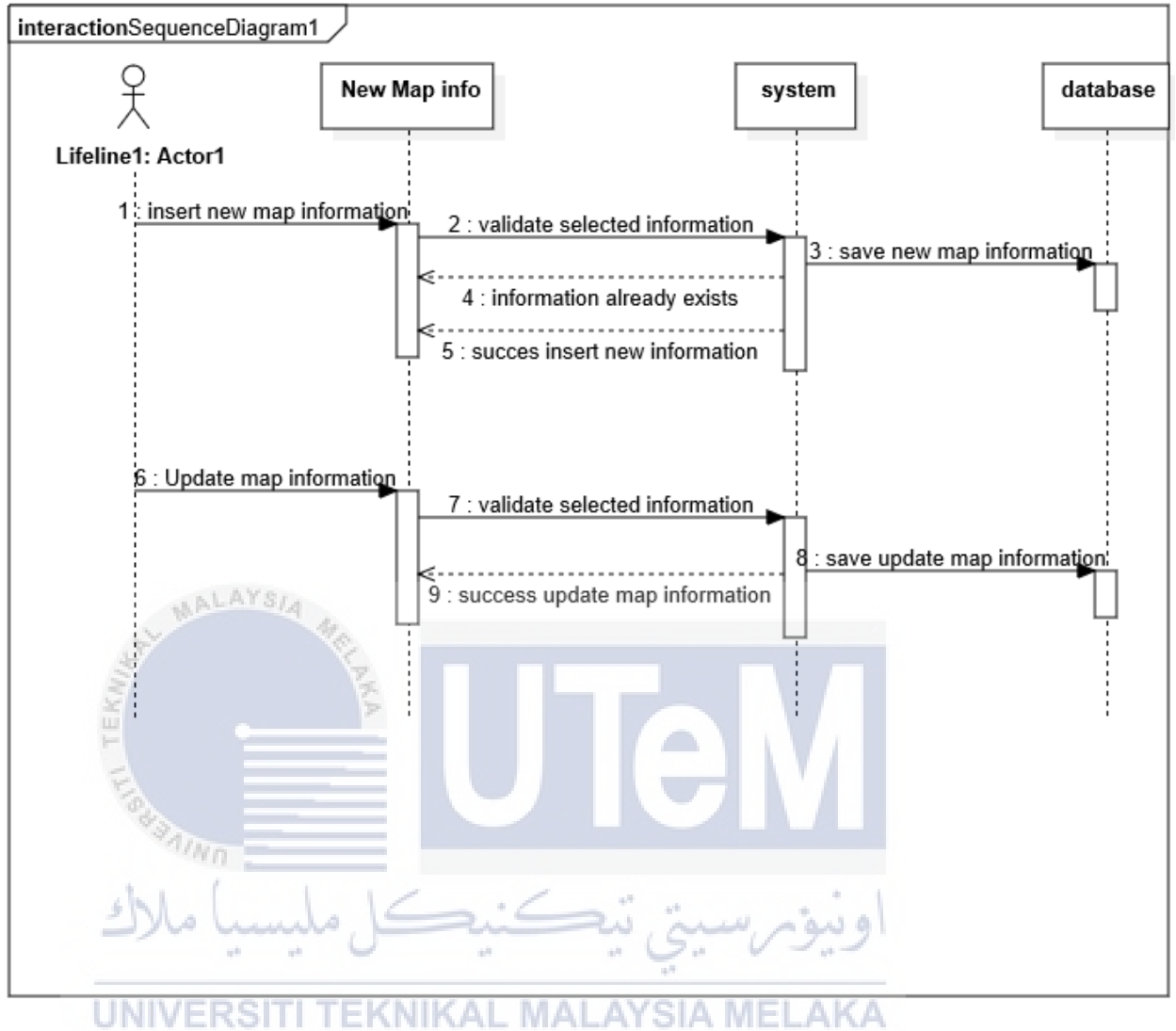


Figure 4.5: Sequence diagram of map's new information and update process for admin.

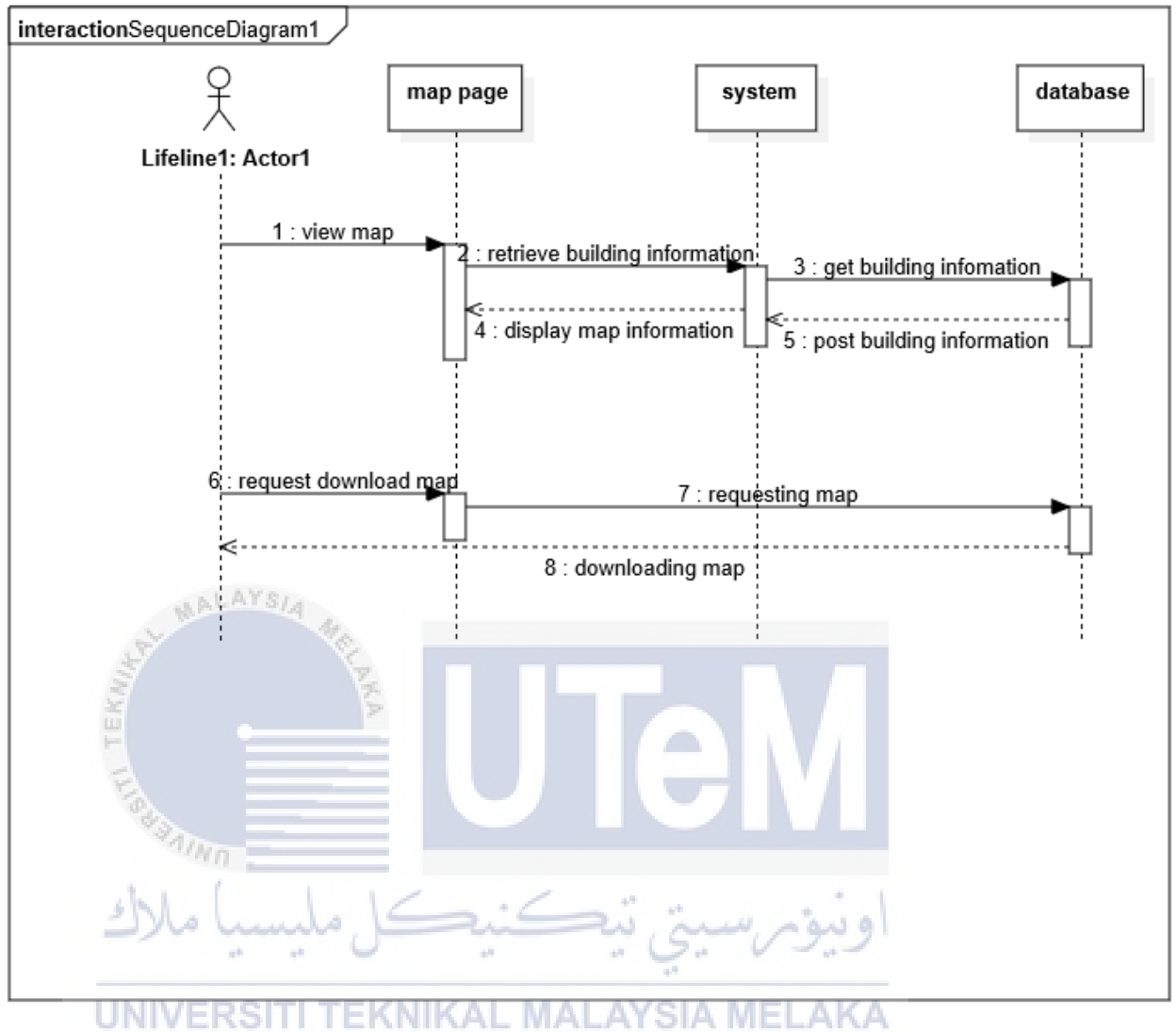
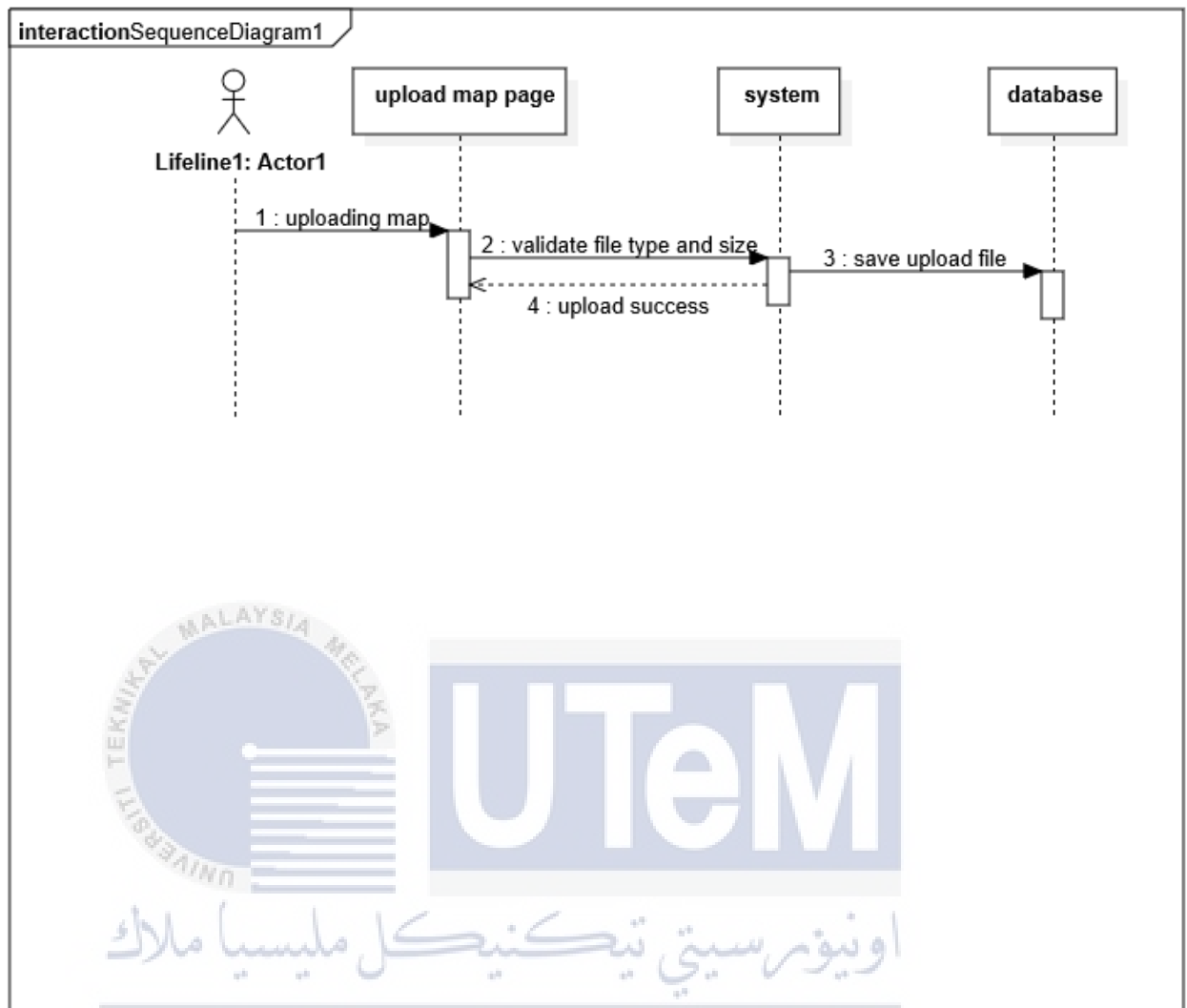


Figure 4.6: Sequence diagram for viewer to view map and download a map.



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Figure 4.7: Sequence diagram for admin to upload map.

4.3 Database design

Database design is representing to detail design which focusing on database is create such as conceptual and logical database design. After designing the database, data dictionary describes the usage of each entity and attributes.

4.3.1 ER Diagram

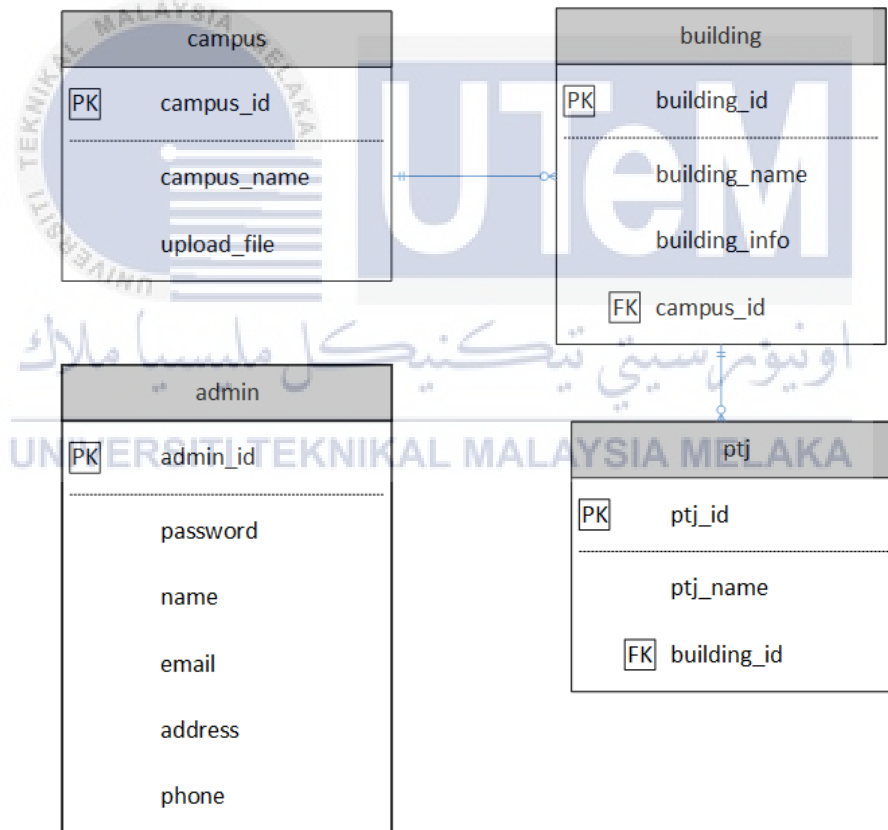


Figure 4.8: ERD for 1UTeM Interactive Map.

4.3.2 Data Dictionary

Table 4.1: Admin table

Attribute Name	Attribute Description	Datatype	Length	Constraint	Reference Table	Format Data	Null/Not Null
admin_id	Staff's id as for admin id	VARCHAR	7	PK		A0012	Not Null
password	Password create by register	VARCHAR	12			XXXXXX XXXXXX	Not Null
name	Staff's name	VARCHAR	30			Ahmad Bin Ali	Not Null
email	Staff's email	VARCHAR	40			ahmad@gmail.com	Not Null
address	Staff's address	VARCHAR	60			70, Jalan Emas 6, Taman Bahagia	Not Null
phone	Staff's phone	INT	11			XXX- XXXXXXXX	Not Null

Table 4.2: Campus Table

Attribute Name	Attribute Description	Datatype	Length	Constraint	Reference Table	Format Data	Null/Not Null
campus_id	Each of campus id	INT	5	PK		C001	Not Null
campus_name	3 name campus	VARCHAR	30			Main Campus	Not Null
upload_file	Map files to be upload	TEXT				mainMap.pdf	Not Null

Table 4.3: Building table.

Attribute Name	Attribute Description	Datatype	Length	Constraint	Reference Table	Format Data	Null/Not Null
building_id	Each of the building id	INT	11	PK		B001	Not Null
building_name	The name of the building	VARCHAR	40			FTMK	Not Null
building_info	Each of the building need info	VARCHAR	500			Visit ftmk website	Not Null
campus_name	3 name campus	VARCHAR	30	FK	campus	Main Campus	Not Null

Table 4.4: Ptj table

Attribute Name	Attribute Description	Datatype	Length	Constraint	Reference Table	Format Data	Null/Not Null
ptj_id	Ptj's id to recognise	INT	11	PK		P001	Not Null
ptj_name	The name of ptj in UTeM	VARCHAR	30			FTMK	Not Null
building_id	Each of the building id	INT	11	PK	building	B001	Not Null

4.4 Module integration and interface design

4.4.1 Interface design

Authentication process for admin

The login interface is contained within a rounded rectangular frame. At the top, it is titled "1UTeM Interactive Map". Below the title are three stacked input fields: the first is labeled "Admin id", the second is labeled "Password here", and the third is a button labeled "Login". Below these fields is a link labeled "Sign up here". A large, semi-transparent watermark of the 1UTeM logo is visible in the background of the interface.

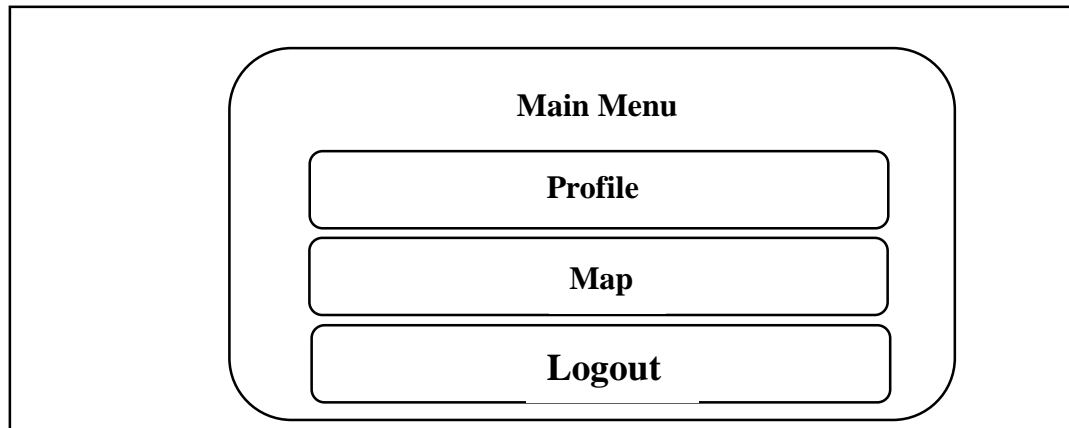
Figure 4.9: Login interface for accessing 1UTeM Interactive map.

Registration process for admin

The registration interface is contained within a rounded rectangular frame. At the top, it is titled "1UTeM Interactive Map". Below the title are seven stacked input fields: "Admin ID", "Password", "Name", "Email", "Phone", and "Address". At the bottom of the form are two buttons: "Register" on the left and "Logi" on the right. A large, semi-transparent watermark of the 1UTeM logo is visible in the background of the interface.

Figure 4.10: Registration interface for admin 1UTeM Interactive map.

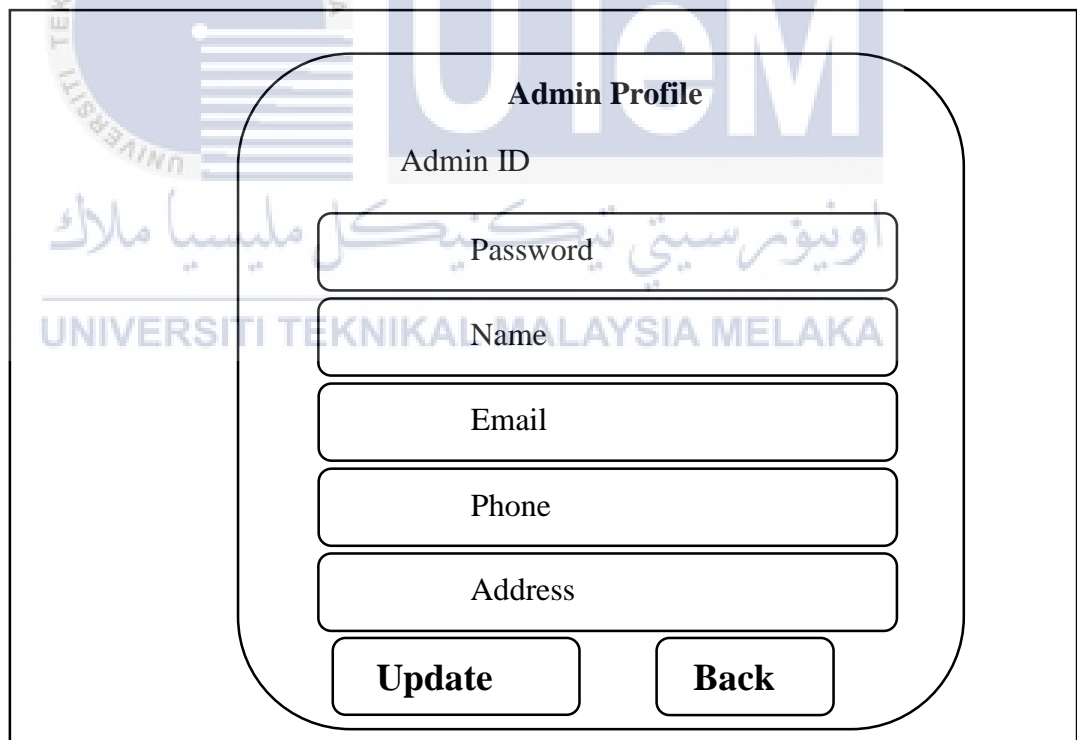
Main Menu for admin



The image shows a 'Main Menu' interface for an admin. It consists of a rounded rectangular container with a black border. Inside, the text 'Main Menu' is centered at the top. Below it are three stacked, rounded rectangular buttons with black borders, labeled 'Profile', 'Map', and 'Logout' from top to bottom.

Figure 4.11: Main Menu interface for 1UTeM Interactive map.

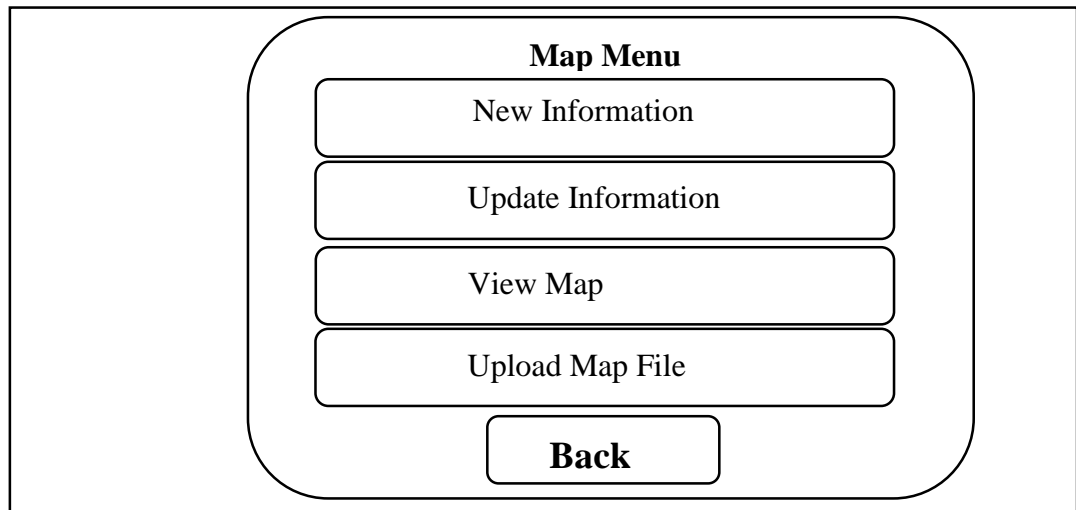
Profile and Update Profile for admin



The image shows a 'Admin Profile' interface for an admin. It features a rounded rectangular container with a black border. At the top, the text 'Admin Profile' is centered. Below it, the text 'Admin ID' is displayed. There are five stacked, rounded rectangular input fields for 'Password', 'Name', 'Email', 'Phone', and 'Address'. At the bottom, there are two rounded rectangular buttons labeled 'Update' and 'Back'.

Figure 4.12: Profile and update profile for admin.

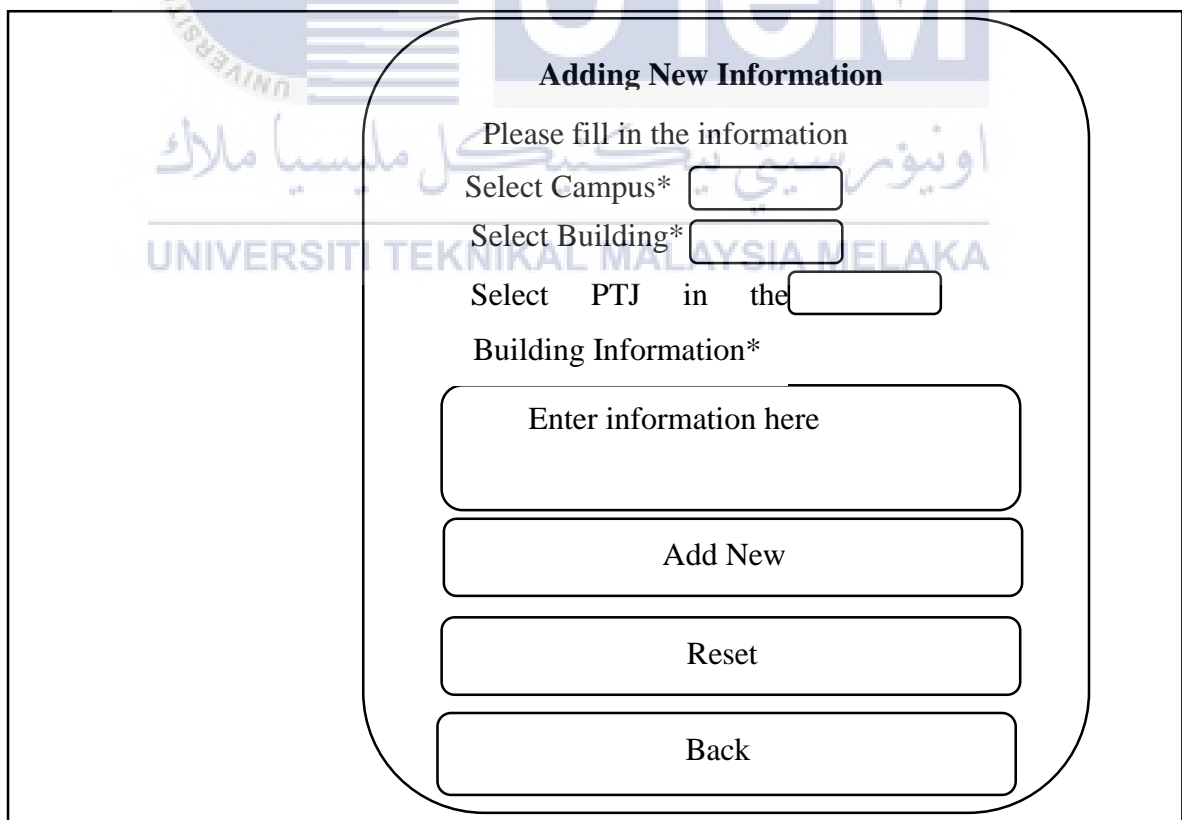
Map Menu for admin



The image shows a 'Map Menu' interface for an administrator. It consists of a rounded rectangular container with a title 'Map Menu' at the top. Below the title are four stacked buttons: 'New Information', 'Update Information', 'View Map', and 'Upload Map File'. At the bottom of the container is a 'Back' button.

Figure 4.13: Map Menu for 1UTeM Interactive map.

Add new information for map



The image shows a form titled 'Adding New Information'. It includes the following elements:

- Title: **Adding New Information**
- Instruction: Please fill in the information
- Form fields:
 - Select Campus*
 - Select Building*
 - Select PTJ in the
- Section: **Building Information***
- Form fields:
 - Enter information here
 - Add New
 - Reset
 - Back

Figure 4.14: Adding new information for 1UTeM Interactive map.

Update information for map

Update Map Information

Please fill in the information

Select Campus*

Select Building*

Select PTJ in the

Building Information*

Enter information here

Update Map

Reset

Back

Figure 4.15: Update map information for 1UTeM Interactive Map.

Upload File for new map

Upload map File

Campus	Document

Which

File to be upload: **Choose File**

Upload File

Back

Figure 4.16: Upload Map for inserting new map 1UTeM Interactive map.

Main Menu for admin

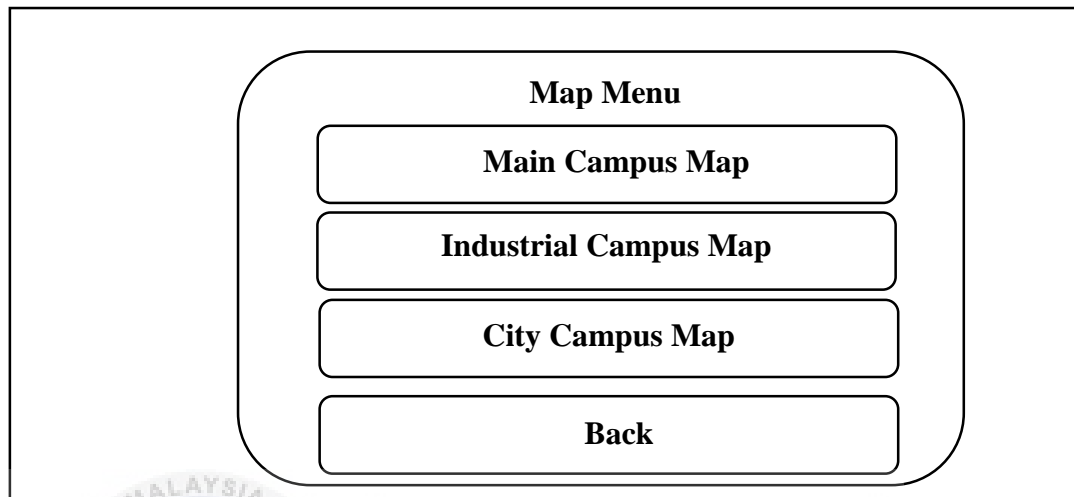


Figure 4.17: Mapping Menu for 1UTeM Interactive map.

Campus Map for viewer and admin

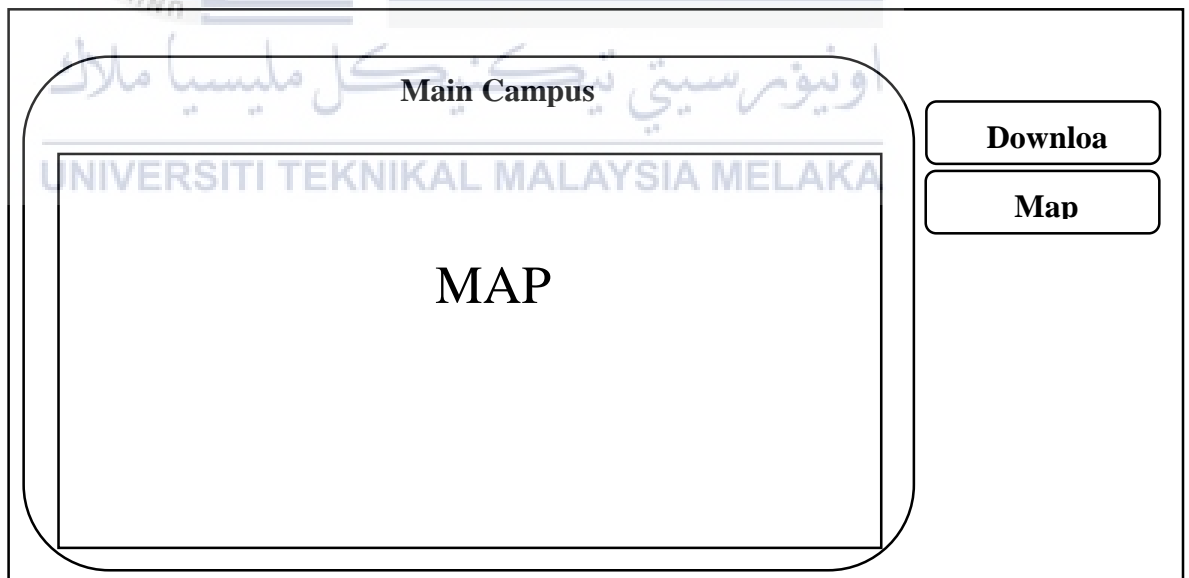


Figure 4.18: Displaying map to viewer and admin in 1UTeM Interactive map.

4.4.2 Navigation diagram

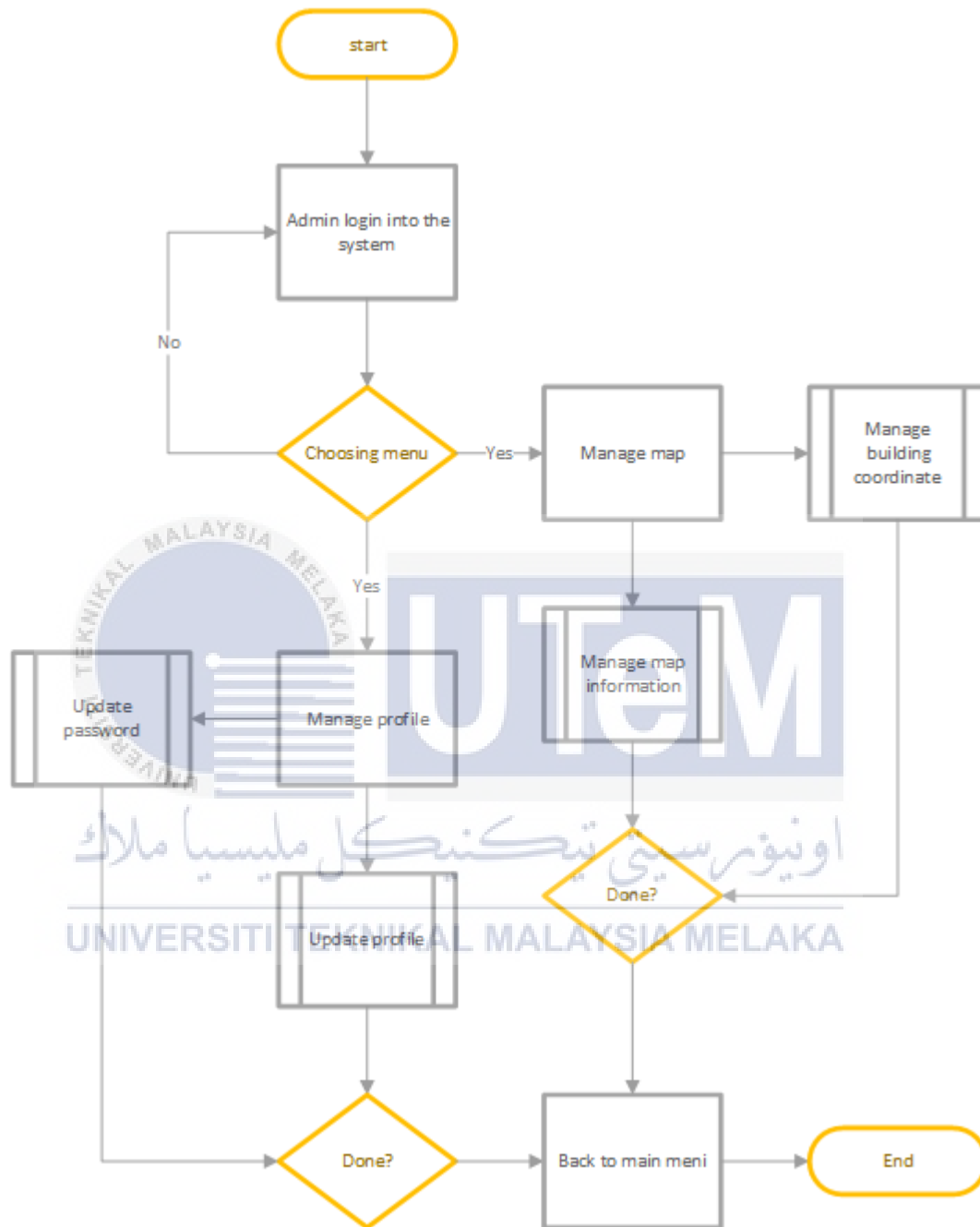


Figure 4.19: Navigation diagram for 1UTeM Interactive Map.

4.5 System design

System design is the process of defining and developing a system that meet the requirement of the client. It defines the architecture, components, modules, interfaces and data for the system to specify the requirements. UML is standard method in analyzing and the object-oriented design. It is widely used for modeling the software system. It also can increase the used in non-design software system. Other than that, StarUML is software that used as tool to design the use case diagram and sequence diagram that are related to UML method.

4.6 Summary

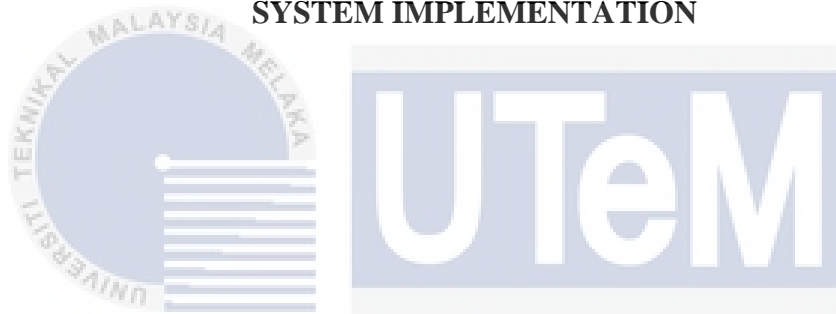
The overview on the system has been designed or known as a system design. There are several diagram which used to give an explanation and perspectives on the overview of the 1UTeM Interactive Map. The overview is mostly to describe the system work by designing it for a further reference.

Moreover, there several diagram that link to each other in this chapter which are system architecture, sequence diagram and class diagram. For system architecture rea basically only touch a general explanation for 1UTeM Interactive Map including the actors and some flows of the system.

The actor who is involve in this system are admin and viewer. The flows of the system show that data need to be entered or selected into the system, then the data will straightly will be save to the database. For database designing part, Entity Relationship Diagram (ERD) and data dictionary will be used for giving information of the relationship between tables that have been creates. Originally, data dictionary is a collection of datatype, content, format and attributes that used to save all of the information. The next Chapter will be explaining how the system will be implement.

CHAPTER V

SYSTEM IMPLEMENTATION



5.1 Introduction

After designing the system, it must be done by implement it as a system. Implementation of a software must need to be done by doing review to the system which are involving the development environment, configuration management and security characteristic of 1UTeM Interactive Map.

5.2 Software Development Environment Setup

The development environment is a set of process and programming tools that used to create the software product. Some of the term also imply the physical environment. In

this development, a web-based system been developing for outsider to interact with the map.

There are four (4) kinds of Software Development Environment setup during this project development which are software, database, computer requirement and a browser. Below are the description of the software development environment setup during the development.

1. Software

A developer need a software to developed the system. This software are the main tools to complete the project. In this project, software that will use are

a. Xampp Server

Xampp server are used to save the file that have been coded in and folder with file in it.

b. Notepad++

Notepad++ will use to create a code to develop a system in this project.

c. Adobe Dreamweaver CS5

As for Adobe Dreamweaver CS5, this software is use specially to draw a container above the map image. This method can make the system to be done much faster.

2. Database

Some on the system might need a database to store data. In this project, the database is use only for developer to store a data in it. The database that will use in this project is by using Database MySQLi with MariaDB platform that is in the phpmyadmin.

3. Computer Requirement

In the development of this system, it will require a personal laptop with specification window 7 and above with a processor Intel® Duo or Compatible, a memory about 1014MB or higher and a hard disk with a capacity between 40GB and 160GB.

4. Browser

In this project, web development must use a browser as a medium interface to the user. For a server, it will use Google Chrome server. The developer and viewer can view this system with same browser which are Google Chrome, Mozilla Firefox and Internet Explorer (IE6 and above).



5.3 Software Configuration Management

The most important part need to be done before the system can works or functioning are System Configuration Management (SCM). SCM is a set of tracking and viewing all the activities of the project when it starts the system until the system end when all the activities were taken out of operation. For 1UTeM Interactive Map system, stand-alone server that also connected to Database Management System (DBMS) which are MySQL database.

5.3.1 Configuration Environment Setup

In this section. Several things need to be configured before developing a system. They also need to have a web browser to use this for compatibility system. After having the browser inside the personal computer, they need to set a code for the connection of the

database and the application for developing it. The system can be access by login into the system.

5.3.2 Version control procedure

A version that control the procedure of the system is intended to help the developer to keep their system is up-to-date while providing with a good estimation of the system. The version automatically will increase one stage to another if the requirement and source code are changed. Description of each version that available for 1UTeM Interactive Map given below.

1. 1UTeM Interactive Map v1.0

First version of the system with a function that user as admin can login into the system. By login into it, he or she can manage their own profile. It's also can view the current information that already exists.

2. 1UTeM Interactive Map v1.1

Second version in the system will be include the admin that can upload the map into the system. In this version, the viewer can view the latest map in the system. In the same time, the viewer also can download for saving it their device.

3. 1UTeM Interactive Map v1.2

The third version for this system, an information of each building can be save in the database. In this version, admin can insert a data for a campus which consists an information of each building. In the same time, the admin also can update the information by providing the update function for updating a new information of each building.

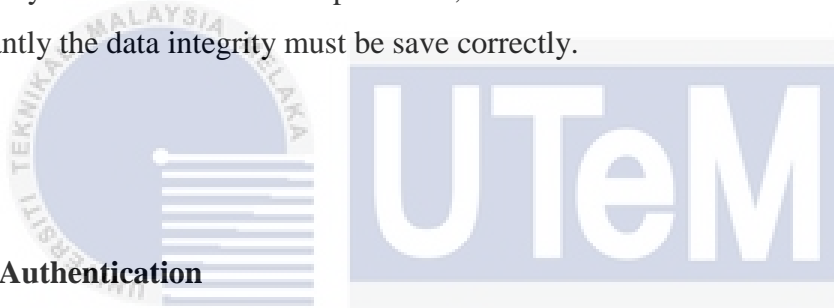
4. 1UTeM Interactive Map v1.3

Forth version will be upgrade the map that can be interact the viewer to view it. Each of the building will be include information that admin already save in the

database. Every time the viewer mouse over each building they will be interacting by information that will feed by database.

5.4 Security characteristic

Each software must have different type of security. As example, the security that have their own characteristic such as authentication when the user login into the system which they need to use their own password, the confidential of the user identity and most importantly the data integrity must be save correctly.



5.4.1 Authentication

In IUTeM Interactive Map system, login module was used as an authentication process to allow admin to log into the system before access the system. Only the admin can authorize who are granted to use this system. The admin is already being specify which admin will handle it.

5.4.2 Authorization

By using login module. It will be able to differentiate the part of the system which viewer can view it. This is including the information of the admin profile, map information and the location of each building that cannot be modified by the viewer.

5.4.3 Confidentiality

In this system, confidentiality is referred to the management of the privacy of the data. All of data will be remained private and confidential and cannot be viewed by unauthorized users. This will be including the information of the building that cannot be modified.

5.4.4 Availability

From a security perspective, the availability of our system only allow specific parts of the system to be accessed by each users which mean not every parts can be accessed without system privileges.

5.4.5 Data integrity

Basically, we are targeting our system will able to guarantee all of the data is protected from any accidental or harmful situations that might drag the system to the loss or unknown modification of data.

5.5 Summary

In this chapter, system implementation must consider each of the environment. The environment should be friendly-used as to developed the system. It is depending on how the environment should be in this implementation. In the configuration management, it explains how the database should manage and configuration setup will explain further. As for versioning control, each of the system will have different version before release it. Each of version consists a module. Each of the module will be upgrade and the version

will be change. In the security characteristic, it explains about data security, authentication in the system, the data confidentiality and the data integrity. In the next chapter, test case will be done for testing the system before release it.



CHAPTER VI

TESTING



6.1 Introduction

System testing is the process of the evaluating the system or its component with the intent to find whether the specified requirement meet those requirements. According to software development life-cycle, system testing is considered as the first level of testing where the entire system will be checked or tested.

6.2 Test Plan

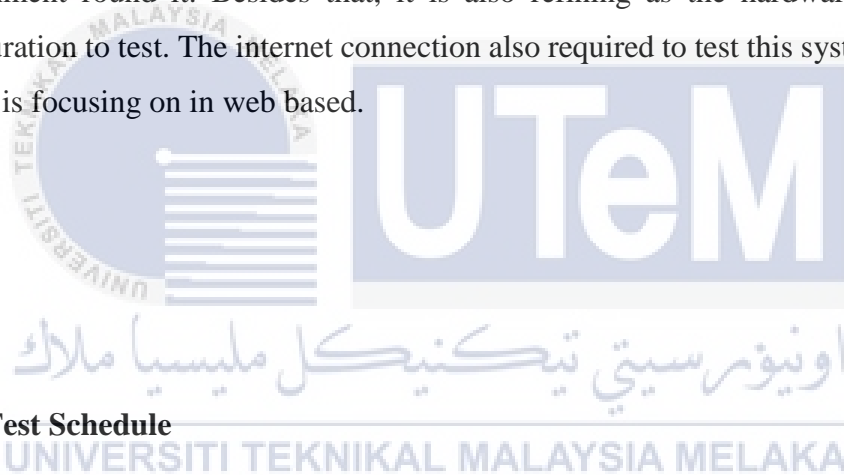
Test plan is planning a testing a system with a plan that need to understanding the concept of the testing. It is typical for each of the detail with a workflow on it.

6.2.1 Test Organization

In this test, developer is tester for this system. The developer more likely suitable to test the overall system. For the end user which is visitor also test the system by only view the output of the project.

6.2.2 Test Environment

In testing, it must be considering the environment around it. This is because it will affect the testing and the tester. Other than that, the platform also need to reconsider the environment round it. Besides that, it is also refining as the hardware and software configuration to test. The internet connection also required to test this system because the system is focusing on in web based.



6.3 Test Schedule

Table 6.1: Test Schedule

Activities	Description	Start	End
Unit Testing	Testing the every unit in the system that meets its requirements	10 / 7 / 2017	15 / 7 / 2017
Integration Testing	Demonstrate the module in the system that work	24 / 7 / 2017	29 / 7 / 2017

	properly, correct and stable		
System Testing	Test the flow of the system	1 / 8 / 2017	7 / 8 / 2017
Acceptance Testing	To ensure system meet end user requirement	8 / 8 / 2017	11 / 8 / 2017

6.4 Testing Strategy

A test method is a method for a test that is definitive procedure that produces attest result. The testing method that we used to test 1UTeM Interactive Map system is black box testing.

Black box testing is also known as functional testing. The main purpose of black box testing is to check whether the software is working as per expected in requirement document and whether it meets the user expectations or not. It is a software testing technique whereby the internal working of the item being tested are not known by a tester. All testing is done as view's point of view and tester is only aware of what is software is supposed to do but how these requests are processing by software is not aware. The testers do not ever check the programming code and do not need any further knowledge of the program other than its specifications.

6.5 Test Design

In test design, the test will describe in each of the testing with a test data. The testing description will explain how the test been done and what expected result should occur during testing the data. Test data will explain from the tester itself.

6.6 Test Description

The test description will include the test identification, test action, expected result and actual result the 1UTeM Interactive map system. From figure below will be explained the test cases.

Table 6.2: Login testing description

Test No	Action	Expected result	Actual Result (OK/NOK)
Test_1Map_100	Login Authentication		
Test_1Map_101	Enter wrong username and password	Display error message "Username does not exist". Admin not authorized to login into system.	OK
Test_1Map_102	Enter username and wrong password	Display error message "Invalid password". Admin not authorized to login into system.	OK

Test_1Map_103	Enter correct username and password	Authentication accepted. System allow admin to enter.	OK
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Table 6.3: Admin registration test description

Test No	Action	Expected result	Actual Result (OK/NOK)
Test_1Map_200	Admin Registration		
Test_1Map_201	Insert admin information with an empty space	Display error message "Please fill the form correctly". Admin information cannot be save to database.	OK
Test_1Map_202	Insert admin information without empty space	Display alert message "Your information has been saved". Admin information save into database.	OK

Table 6.4: Update admin profile test description

Test No	Action	Expected result	Actual Result (OK/NOK)
Test_1Map_300	Update profile		
Test_1Map_301	Update admin information with an empty space	Display error message “Please fill the form correctly”. Admin information cannot be save to database.	OK
Test_1Map_302	Update admin information without empty space	Display alert message “Your information has been saved”. Admin information save into database.	OK

Table 6.5: New map information test description

Test No	Action	Expected result	Actual Result (OK/NOK)
Test_1Map_400	New information for map		
Test_1Map_401	Insert new information including building information with an empty space	Display error message “Please fill the form correctly”. Map information cannot be save to database.	OK
Test_1Map_402	Insert new information including building	Display alert message “Building information has been saved”. Map	OK

	information without empty space	information save into database.	
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Table 6.6: Update map information test description

Test No	Action	Expected result	Actual Result (OK/NOK)
Test_1Map_500	Update information for map		
Test_1Map_501	Update new information including building information with an empty space	Display error message "Please fill the form correctly". Map information cannot be save to database.	OK
Test_1Map_502	Selecting campus and error in uploading building information	Display error message "Building does not exist". Cannot update new building information	OK
Test_1Map_503	Selecting campus and uploading building information	Building name and building information reappear at the selection bar	OK
Test_1Map_504	Update new information including building information without empty space	Display alert message "Building information has been saved". Admin information save into database.	OK

Table 6.7: Upload map test description

Test No	Action	Expected result	Actual Result (OK/NOK)
Test_1Map_600	Upload map		
Test_1Map_601	Not select any campus and upload file	Display error message “Please select any campus”. Upload file is failed due to not selected any campus	OK
Test_1Map_602	Selecting any campus and upload file other format than .pdf, .jpeg, and .png.	Display error message “Failed to upload”. Cannot upload file into database.	OK
Test_1Map_603	Selecting any campus and upload file with format .pdf, .jpeg, or .png.	Alert message “File success to upload”. File save into database.	OK
Test_1Map_604	Select document that need to download	Downloading the file and open the file with successful.	OK

Table 6.8: View main campus map test description

Test No	Action	Expected result	Actual Result (OK/NOK)
Test_1Map_700	View main campus map		

Test_1Map_701	Mouse over to each building	Display building information.	OK
Test_1Map_702	Mouse out from building	Building information still displaying it.	OK

Table 6.9: View city campus map test description

Test No	Action	Expected result	Actual Result (OK/NOK)
Test_1Map_800	View City campus map		
Test_1Map_801	Mouse over to each building	Display building information.	OK
Test_1Map_802	Mouse out from building	Building information still displaying it.	OK

Table 6.10: View Technology campus map test description

Test No	Action	Expected result	Actual Result (OK/NOK)
Test_1Map_900	View Technology campus map		
Test_1Map_901	Mouse over to each building	Display building information.	OK
Test_1Map_902	Mouse out from building	Building information still displaying it.	OK

6.6.1 System Constraints

A constraint describes when a system features or a system content should be used. Constraint can restrict access based on users and user roles, the characteristics of the system to run and the hardware that available on it. In 1UTeM Interactive Map system, the information regarding the building information it can be modified only by the admin. For users, the only view as the map are for public view. This method is to prevent the data from be modified any unauthorized user.

6.7 Test Case Result and Analysis

Each of the test produced particular result. With a contribute by the tester, the result can be identifying by testing case. The tester will produce the actual result to the test cases. Each of the result will give in the table below.

Table 6.11: Test result

Test case identification	Tester identification	Result (OK/FAIL)
Test_1Map_100	OK	OK
Test_1Map_200	OK	OK
Test_1Map_300	OK	OK
Test_1Map_400	OK	OK
Test_1Map_500	OK	OK
Test_1Map_600	OK	OK

Test_1Map_700	OK	OK
Test_1Map_800	OK	OK
Test_1Map_900	OK	OK

6.8 Summary

In conclusion, system testing is the vital part of the software development because it provides users with an attractive environment which more or less resembles the interactive environment. In a simple word, testing is executing a system in order to identify any gaps, errors or missing requirements in contrary to the actual requirements. Therefore, action should be taken to solve the problem to ensure that the system is defect free and meet the user requirements.

CHAPTER VII

CONCLUSION



7.1 Introduction

In this chapter, it discusses the strength and the weaknesses of the system. Other than that, each system has their own limitation. Therefore, it need to have a suggestion to improve the system in future.

7.2 Observation on Strength and Weaknesses

a) Strength

Every system has its own strength. This strength could provide a positive impact to the user. For 1UTeM Interactive Map, there are several advantages that can be list. Below are the details of the advantages in 1UTeM Interactive Map.

1. Updated map

The latest map will keep the system always up-to-date to the latest building in the campus.

2. Easy maintaining information

As for administrator, they can maintain the information of each building easily because of the system did not required complicated structured to maintain it.

3. Easy to view

As for visitor, they can view the map easily without login into the system. This system is focusing the to let the user to only view the page that they have given.

b) Weaknesses

Every system or product have their own weakness. For 1UTeM Interactive Map, they have some weakness that are:

1. The interaction for Android and IOS user

In this system, it will be only focusing only by computer user. It not compatible to the mobile phone user due to lack of skills to develop the application. It takes time to master to master in Android and IOS. Therefore, the interaction between mobile phone cannot be done as for lack of skills.

2. Outdated map

In this case, this system has received outdated map from the building department through the official UTeM website. Without the updated map, the location cannot be fully interacting the user with correct information. Therefore, this system need to be updated with the latest map form the building department.

3. Manual to allocate the location of building

The system requires manual inserting the location in each building in the campus. To create interactive map, it also required to allocate the location in those image manually. The location or area cannot be pointed using any software. Therefore, if there is any software can be used to pointed the area or location, it can reduce time to allocate the location.



7.3 Commercial values

Every system has their own commercial values. The commercial values are between the system and the end user. In UTeM Interactive Map, the commercial values can be adapting to other university or any company need to use as for guidance. In the future event, this web base system can be develop using Android and IOS platform as the current time are more relying on gadget with an advance technology.

7.4 System limitation

Every system has their own limitation. In the limitation system, those features cannot be inside the system as for the main objective that need to be follow. In UTeM

Interactive Map, the limitation that that can be found which are the main objective is focusing inside the campus either in Main campus, City campus or Technologies campus. When inside the campus, the information only focus on the building information which is the building information and PTJ information.

7.5 Suggestion for system improvement

A system that has weakness needs an improvement. The improvements that need to be done in the future is to create a better system. Belo are the improvement that need to be applied in the future system.

1. Mobile friendly

Develop an application for android user and ios user. The application will help the user to access the campus information either within maps or other features in those application.

2. Updated system and maps

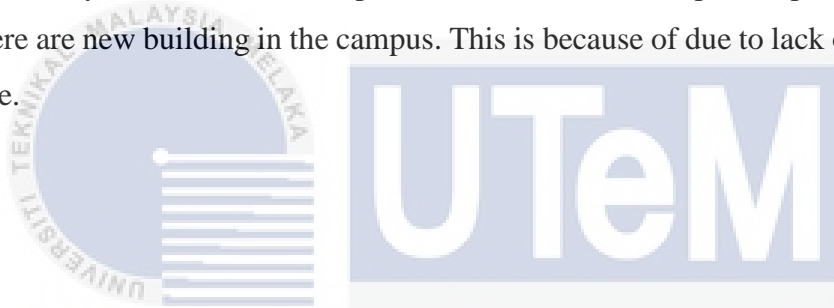
The system should be updated with latest campus map from building department. With the latest maps, the system can be update the current information in the maps by using image mapster platform.

7.6 Contribution

UTeM Interactive Map is focusing on web base to developer for the visitor who is visit to UTeM. The system will provide the visitor a system which will display the information of each building in UTeM. Every information is up-to-date to the latest development in UTeM. This system not required visitor to login into the system. They only view the map that display in the system.

In addition, the administrator only maintaining the information of the building. This allow the administrator to focus only on maintaining the information.

Therefore, the system can be operating by staff in UTeM which are assign to maintain the system. As for the map, the must contact developer for pointing the area in case there are new building in the campus. This is because of due to lack of availability in software.



7.7 Conclusion

To develop a system, it need to run a future plan with it. Every product must have commercial values as the system will be used by the user in the future. While having many of advantages, every product cannot avoid from weakness. Each of the weakness can be improve by having a suggestion to overcome it. In the same time, the product will be able improve continuously.

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