UNIVERSITI TEKNOLOGI PETRONAS

"Web Based Application: An Online Management System for the Student Exchange Program in Universiti Teknologi PETRONAS"

By

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An interim submitted to the
Information and Communication Technology Program
Universiti Teknologi PETRONAS
In partial fulfillment of the requirement for the
BACHELOR (Hons) OF TECHNOLOGY
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Universiti Teknologi PETRONAS

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CERTIFICATION OF APPROVAL

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Approved:

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UNIVERSITI TEKNOLOGI PETRONAS
TRONOH, PERAK

September 2014

CERTIFICATION OF ORIGINALITY

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

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MUHAMMAD AZEEM BIN MAZALAN

ABSTRACT

The document discussed about the Final Year Project titled Web Based Application: An Online Management System for the Student Exchange Program in Universiti Teknologi PETRONAS (UTP). The objectives of this project is to create a functional system using a web based technology to automate an obsolete process in data management, develop an efficiency in handling data and allow ease of access for to the system. The stakeholder of the project is Center of Student Internship Mobility and Adjunct Lectureship (CSIMAL) department in UTP. The problem that the department currently facing is the mobility program, student exchange program where application for the program is paper based application. The system that has been developed is to convert the manual paper based application that is currently used by CSIMAL to an automated system by creating a functional system by using a web based system, mainly HTML and PHP.

The methodology that has been used for the project is the waterfall model, requirement, design, implementation, verification and maintenance. The use of waterfall model is suitable in developing a web based application, where each iteration shows the progress for the project. The outcome of the project is a functional web based system called Mobility Center, to cater for the student exchange program application for CSIMAL.

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CHAPTER 1

INTRODUCTION

1.1. BACKGROUND

Centre of Student Internship Mobility and Adjunct Lectureship (CSIMAL) has proposed a project to a final year student, into making a project to cater for their needs. The project that has been proposed is a web based application, an online management system where the portal is to handle for the student exchange program here in Universiti Teknologi PETRONAS (UTP).

The student exchange program in UTP covers inbound students, where the students from foreign university who would like to undergo the student exchange program in UTP can use the system, and also includes outbound students, where students from UTP would undergo students exchange program outside UTP according to the list of Memorandum of Understanding (MOU) University. Each year the number of students involve in the program increase and CSIMAL is in need of an automated to cover the needs of the increment.

The system will include a front end, which is the general user interface (GUI) and the back end, which consist of the database for the system. The system will be a fully automated system, with certain parts of the system it needs a manual transfer of data by an entity. The web based application, in which it is an online management system, which covers on how the students will be applying for the exchange program, getting the necessary information on how the program will be running, the qualification that a student need, in order to apply for the program. Not only that it also covers for the background work on handling the database, for those who would be applying, for admin to carefully monitor the application process and notify any updates and deadline of the application and also submission of any necessary documents pertaining the program.

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1.2. PROBLEM STATEMENT

The increasing number of students attending UTP has made it impossible to store every data of each student in paper. CSIMAL, one of the most important department in UTP which handles most of the data in UTP are one of the department, which need to cater to the increasing number of students. CSIMAL until recently are using manual paper based to handle the mass database of students.

According to feedback during an interview with and given by the manager of CSIMAL and two of the clerk that are currently working under CSIMAL department, the data that CSIMAL has to go through is quite a number. CSIMAL, caters to a lot of program as fore mention in its name of the department such as student internship and the student exchange program, mobility. In handling the student exchange program the process of going through documents and having to notify students of the current needs of program, paper work to be cover is hectic, especially if those apply are in hundreds and these are all being done manually that is through paper based application. The selection process also needs a meticulous matters to be observed in detail.

Therefore a web based application in online management system need to be created to ease the flow of handling the information and database of these student. Where having a web based application means that it can be accessed almost anywhere and also a proper backup of the data are stored in save secured server and can be retrieved, if in any case of emergency or worst case scenario.

1.3. OBJECTIVES AND SCOPE

The objective of the project are:

- ***To design a website to ease everyday task***: To automate a system whereby the system helps in the task that can be handled much more effectively
- ***To develop an efficiency in handling data:*** To allow a better working environment in which database is handle more securely
- ***To allow the ease of access***: To give the stakeholders (administrator and students) to have the ease of access of information regarding the Mobility program in UTP

The scope of study focused on how web based application has really helped improve the efficiency of work and allow for a more secure and user friendly way without the hassle of pile of paperwork. It also focused on the existing systems that are already been used by other university and on the students feedback regarding the system that CSIMAL have implement.

CHAPTER 2

LITERATURE REVIEW

2.1 WEBSITE DESIGN

Web design has been an essential part of web based application. Web based application are the technology that breaks the boundaries in designing an attractive website in order to attract its users. The use of web based application, the main skeleton for it is, HTML (hypertext markup language). HTML is a basic form of web based application where it act as a backbone in structuring a web based application. The complexity of a web based application can be range from intricate as a word processor or a spreadsheet to as simple as a discussion or sign-in a guest book (Nations, n.d).

According to Avigdor Gal and John Mylopoulos (2001), the leading tool in designing applications is the web itself, a study prepared by ActiveMedia Inc., as a market research firm, the expenditure on web site technology and services are reaching to about 3.6 billion. The growth of use of the web applications are slowly becoming reliable in part of the human daily lives. Company not only marketing but in all of industry are joining in to the fiasco of producing a web application in way to connect with their customer and also help manage and promote their business. The uses of web application nowadays are vast to the limitation of imagination of the humans.

The portals business is a highly competitive industry. The market for Internet products and services is also highly competitive. There are no substantial barriers for entry into these markets. As a result, competition will continue to intensify in the portal industry (Chan, 2000).

The same concept also applies towards website design as the above mention statement that, it is vast to the limitation of imagination humans. Website design caters for many purpose for different type of usage. It can be use by anybody and it is free. The current trend on website design nowadays are trying to invoke those who uses it, as a means of attracting internet citizen to come to their website.

"Web content has been identified as one of the main factors contributing to repeat visits. As content on the web includes text, pictures, graphics, layout, sound, motion and, someday, even smell, making the right web content decisions are critical to effective web design. While an understanding of marketing strategies that attract visitors to websites is beginning to emerge, how to convert web surfers to repeat visitors is a less well-understood phenomenon. Through an empirical study, the authors develop the Website Preference Scale (WSPS)" (Rosen & Purinton, 2004).

Though content are important in taking into consideration of what makes a website an attraction towards the user, as mentioned by Rosen and Purinton in the excerpt above, it also mention that graphics and layout other criteria to a website, though human perceived what first attract them the most. An impression of love at first sight implies in the way how internet users attracted first is by the design of the website.

Colour has the potential to elicit emotions or behaviours, yet there is little research in which colour treatments in website design are systematically tested. Little is known about how colour affects trust or satisfaction on the part of the viewer. Although the Internet is increasingly global, few systematic studies have been undertaken in which the impact of colour on culturally diverse viewers is investigated in website design. Our visual and cognitive systems have adapted to perceive and process colour information, which is contained in every visual stimulus we encounter (Elliot and Maier, 2007; Kaya and Epps, 2004). Colour information such as hue, brightness, and saturation has the potential to affect our perceptions, physiological reactions, emotional reactions or behavioural intentions (Valdez and Mehrabian, 1994). In the commercial realm, colour influences our attitude and expectations toward brands. For example, red is the colour symbolizing Coca Cola, and blue is associated with IBM. While there has been some investigation of colour in print or other media, "despite its importance surprising little is known about the influence of colour in advertising" (Latomia and Happ, 1987, p. 37). Further, there is relatively little research regarding colour in online, Internet-based environments. In particular, the impact of colour in website design is sparse although a few researchers (Lui et al., 2004) have tackled this challenge. (Cyr, Head & Larios, 2010).

Baloglu and Peckan (2006) stated that, internet with current and emerging multimedia features provides ample opportunities and particularly useful for dealing with intangible nature of the service, and transforming marketing mix variables to capitalize on the informational and transactional potential of the Internet, and to gain a competitive advantage. In any industry of the world website has been used to facilitate each respected industry as so, each industry portrays a different sets of function as needed to say that will lead to different designs for their website in order to attract its users. It is seen in the industry of higher education the approach towards design is not focus but towards more of its functionality. However the functionality implemented in it are also scarce and barely useful.

2.2 AUTOMATION OF WORKING PROCESS

Manual labour are the thing of the past for a modern day world. Things are vastly changing forward in parallel towards the advancement of technology. No longer have people used typewriter to type a letter that is to be sent to postman for delivery, with the tip of your finger you can write and send a letter in a format of e-mail, which is a lot faster for the sender and the receiver. Although this does not depict that postman are insignificant, it shows that with advancement of technology people can work faster and much more efficient.

Together with the development of technology, not only a simple task can be changed the way how things are conduct, it also allow much more to be done. Computer technology has recently been applied to the automation of office tasks and procedures. Much of the technology is aimed not at improving the efficiency of current office procedures, but at altering the nature of office work altogether. The development of automated office systems raises a number of issues for the organization (Olson & Lucas Jr., 1982).

Workflow Management Systems are a mature technology for automation and control of business processes. One widely accepted definition of workflow comes from the Workflow Management Coalition: "Workflow is the computerized facilitation or automation of a business process, in whole or part". An extended definition in works out the definition as "…a system that defines, creates and manages the execution of workflows through the use of software, running on one or more workflow engines, which is able to interpret the process definition, interact with workflow participants and, where required, invoke the use of IT tools and applications." With the rise of the Web as the major platform for making data and services available for humans and applications a new challenge has become prevalent requiring not only the support of workflows within individual organizations, but also workflows crossing organizational boundaries referred to as interorganizational workflows (Stoilov & Stoilova, 2005).

In order to allow the understanding of the work process in a business an effective study needs to be conducted, in order to fully utilize the capabilities of a system towards its business acquisition. According to Venkatraman (1994), Information Technology (IT) has the role in shaping a unique future of business. IT has become a fundamental enabler in creating and maintaining a flexible business network. By using a framework that breaks the IT enabled business transformation into five subsequent levels that each level has its characteristics and offers guidelines for deriving maximal benefits. Organizations has to determine the level at which the benefits are in line with the cost or efforts of the needed changes and then proceed to higher levels as the demands of competitions.

Venkatraman (1994) mentioned in his research, in pursuing IT changes in business every employee needs to be aware of the changes that has been made and it should not cater to only those in the higher ups. Changes needed to exploit internally where it can sprung a competitive edge in a business, even though the changes can be imitated by the competitors, even with standard IT applications, when accompanied by corresponding changes in internal business processes can result in significant advantages. Even within the level of localized exploitation, it is important to recognize that no single IT application, however powerful, is strategic in its generic form. There is absolutely no evidence that deploying proprietary interorganizational systems per se provides any competitive advantage, without realising the business that goes around with the system that is being used. IT is not simply a utility like power or telephone but a fundamental source of business scope reconfiguration to redefine the "rules of the game".

Proper recognition in order to apply automation towards a business, organization need to fully realise the business and build the automation surrounding the system and not the other way around. It is best to say it needs to be in parallel, where IT is there to compensate the shortfall of the business to help it in some parts of the business.

2.3 STUDENT EXCHANGE PROGRAM

A fully rounded academic education elements and seen as for a long time important are student mobility or studying in universities other than the institution at which the student originally admitted (Messer & Walter 2006). Student mobility or student exchange program has long been integrated in to the higher education learning map for students to study abroad from their original campus into another campus.

Student exchange program is a way to cultivate culture among students and in turn exchanges knowledge about different environment practices on different type of universities. According to Dolores Messer and Stefan C. Wolter (2006), there is a certain amount of significances that student mobility programs can have on the academic and professional profiles of student. Student who are involved in the program came out to a much more mature kind of experience, this due to the fact that different culture that is practice and also different ways of managing things on different universities, the student learn to adapt to the surrounding environment. Thus after the program ends there is so much more to learn and share in a way that it could improve or benefit the students home university.

Another benefit of student exchange program is that, two universities will establish in cooperation by drawing up a memorandum of understanding (MOU) between the two, the significance to the MOU are usually high-levels officials of the universities (Liew & Mendis, 1996). Many beneficiary towards the exchange programs also impacted on the university itself. It is a bridge to promote cooperation between universities.

A. C. Liew and F. V. C. Mendis also mention that though the student exchange program is straight forward there is need to take certain precautions to ensure of its success, which are publicity, application process, academic standards, incentives and last but not least welfare. These requirements are important to have to ensure the relationship between universities are well kept. Both parties have to ensure that their student are well taken care of and that more cooperation to have in the near future.

CHAPTER 3

METHODOLOGY

3.1 DEVELOPMENT PROCESS

There are so many practiced ways onto developing a system. Methodology is a way for the development of the system to be conducted. In web based application, it falls under the software development for which there are so many different ways in order to develop a system. Different types of model are used for different type of development. As for the web based application system that has been work on, the model for system development is the waterfall model.
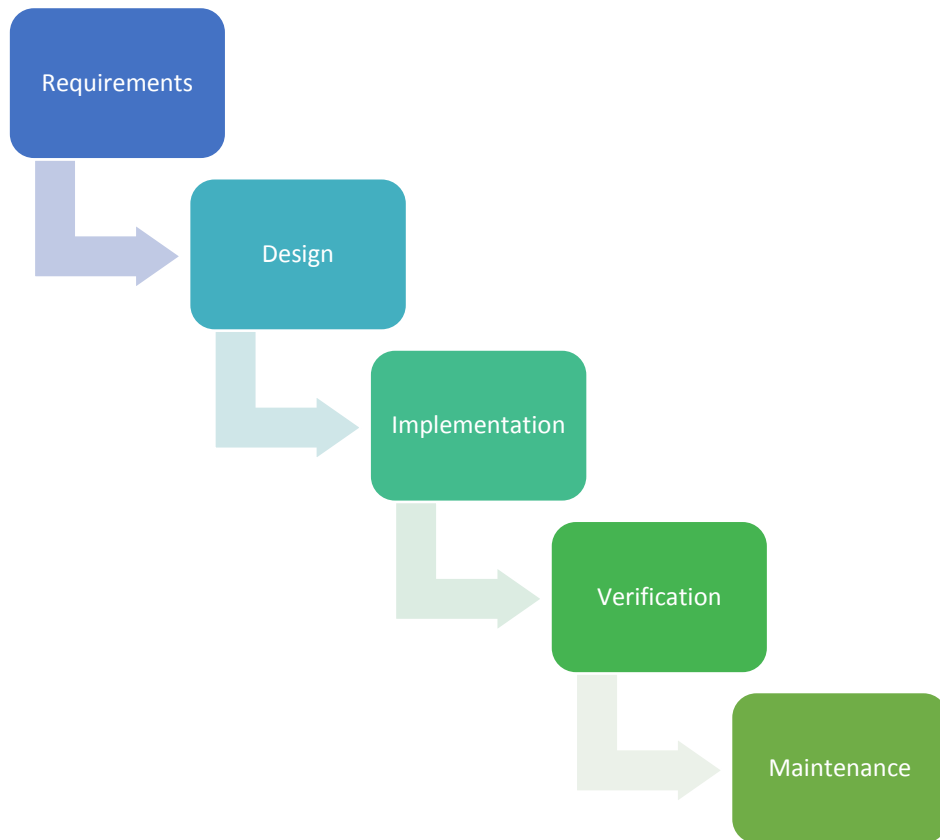
Figure 1: Waterfall Model for System Development

The waterfall model consist of Requirements, Design, Implementation, Verification and Maintenance. Each of this steps represents on how to develop a system should be carried out.

In the first step of carrying out to develop a system, there must be a clear requirement of what the system can and should do. Therefore the highest stakeholders for the system, CSIMAL, are the most important involve for the gathering for the system. Several meetings and interviews sessions have been conducted in order to find out what are the supposed criteria for the system.

CSIMAL has stated that their problem for the department right now is handling a massive amount of work that is from paper to computer and that in handling it one by one for a lot of student would be time consuming. CSIMAL propose a system that could help out to lease the burden in of the department that is the student exchange program area, where each year the number of student are increasing. An online database management system where CSIMAL can handle things through online and the database are stored in server rather than on paper.

For the system, CSIMAL wanted it to be a specific web portal only for student exchange program in UTP that will be monitored by CSIMAL and also ITMS. The system that CSIMAL wanted is to have everything in one place including, application, news and announcement and database management where CSIMAL can handle things through computer with as minimal used of papers as possible.

Requirements gathering is one of the most important steps, due to the fact that the whole development phase will be based on what the requirements that the clients needed, and will run throughout. Having a more focus requirement will lead to a more focus development for the project, thus without straying far out.

The first phase for this Final Year Project I, will be focusing around requirements and some of the designs which will touch only the surface in order to have clear view on what the system might look like to clients.

3.2 REQUIREMENTS GATHERING

Several sessions of interview has been conducted with CSIMAL Manager and the clerk's in the department in order to gather the requirement that is needed for the system. Requirements gathering is to gather on what the system can and should do. Gathering the requirements is a necessity in order to have a clear focus on what should be implemented in the system. Having a requirements can set a goal for which where the project is headed without straying away for what should be done. Having a clear requirement of the system help in also in development work to come in the near coming of the project.

The stakeholders for these project is CSIMAL and also the student who would be applying for the program and also UTP ITMS. In order to understand more what the system should have, CSIMAL is to listed on what the system can do for them. From what CSIMAL has been describe for the system it is a basic university web portal where the students can access it and most of its functionality is for CSIMAL to be able to control the data of the application and some features to ensure that there is clear communication between CSIMAL and the student, like an announcement or news notification in the website.

A more detailed requirement has been construct in order to clearly understand each and every details of the system in order to make the progress during the system development more focused. The detailed are in the next page:

Table 1: User Requirements Documents

*Must Have	1.0	Local Students	- To apply for the student exchange program:
			
			    o Log in using their UTP PRISM credentials (Username: email, Password)
			
			    o Fill in their Personal Details (Surname, Given Name, Matrix No, Date of Birth, IC No, Gender, Citizenship, Country of Birth, Mailing Address, Permanent Address, Phone No, email)
			
			    o Fill in their Academic Details (Current Department, Proposed Specialization/Major, Date of Enrollment, No. of Semester Completed, No. of Credit Hour Completed, Latest CGPA, Sponsor)
			
			    o Fill in their Extra-Curricular Activities (Society/Club, Position, Level of Participation, Achievement)
			
			    o Pick their Financial Support (Self-Sponsored or Need Financial Support)
			
			    o Choose their Place of Study (MOU University)
			
			    o Fill in their Proposed Study Guide (Course Title, Units, Equivalent Course in UTP, Credit Hours)
			
			- Able to view the main webpage of Student Exchange Program
			
			- Able to view news and announcement

			- Able to view the FAQ's page - Able to view status of application: o Notifications of application (Submitted, Pending, Rejected, Success)

	2.0	International Students	- To apply for the student exchange program:
			   o First time user must register to able to apply (First Name, Last Name, Username (email), Password, Re-enter Password, University)
			   o Log in using their registered credentials (Username and Password)
			   o Choose their program of interests (Exchange Program, Summer Program, Research Attachment)
			   o Fill in their Personal Details (Title, First Name, Middle Name, Surname/Family Name, Home/Permanent Address, Main Contact Telephone Number (including STD/ Area Code), email)
			   o Fill in their Main Contact Person(In case of Emergency, Related) (Name, Relationship, Address, Contact Number)
			   o Fill in their further details (Age, Gender, Date of Birth, Country of Birth, International Passport Number, Nationality, Marital Status, Sponsor (if applicable),

				Sponsor's Address, Sponsor's Contact Number)
				o Fill in their Current Studies at Home University (Level of studies (UG or PG), Year of Study, Name of Degree, Major Area of Study, Country of Current Study, Name of Home University, Duration of Current Degree, Latest CGPA)
				o Fill in their current enrolled courses at Home University (Course Code, Course Name)
				o Fill in their study plan in Host University(Mode of study (Taught course, Internship/Research), Commencing Semester (Jan-May, May-Sept, Sept-Jan), Commencing Year of Study at Host University)
				o Fill in their Course/Subject Preference(Course Code, Course Name/ Research Title)
				o Applicants need to send their proof of English Language Proficiency, Declaration by Applicants to CSIMAL
				o Applicant should also send their Signature of Study Abroad, Exchange Program Coordinator (Home University)(Name, Title, Office/Organization Name, Mailing Address, Telephone Number, Fax Number, Email contact) to CSIMAL

			○ Checklist of the things that they need to fulfill - Able to view the main webpage of Student Exchange Program - Able to view news and announcement - Able to view the FAQ's page - Able to view status of application: ○ Notifications of application (Submitted, Pending, Rejected, Success)
	3.0	Administrator	- Authorize personnel login - Able to view Local Applicants Database - Able to view International Applicants Database - Able to update news and announcement - Able to manage both (Local and International) Database - Able to set the status of application (Submitted (Auto), Pending, Rejected, Success) - Maintain webpage system
*Should Have	1.0	System	- Data management - Notification System for the status of the applicants - Workflow of application - News and Announcement - 3 different views for 3 different entity: ○ Administrative view ○ Local student view ○ International student view - FAQ page: ○ Contains the general Rule of application for the student

			exchange program for both Local and International
			○ FAQ is separated for Local and International to avoid confusion
			○ For local, linking to the MOU University Site for further information
			○ For international, linking to the UTP website for further information

The above table are the requirements table for the system. It is divided into to two section. First section is Should Have, the second Must Have. In the first section, must have, the requirement is to meet the system's needs. The second section, should have, the requirement must be there if possible, but project success does not rely on this.

In the must have section, the entity are divided into 3 separate entity for the system, in which the each of the entity is important for the system. The entities are local students, international students and administrator. In the, should have section there is only one entity in it, that is the system itself.

Must have, the first entity that is the local students, the things that the applicants must have is, to apply for the exchange program, students should log in to the site using their UTP PRISM credentials, username and password. Applicants can fill in the application form from an online form with the needs of the information provided from UTP that is, their personal details, academic details, extra-curricular activities, their financial support, place of study and a proposed study guide. Each of the details are the basic necessity that is provided by CSIMAL through the manual form.

For the international students, in order to apply for the exchange program in UTP, the applicants must first have to register themselves into the database, the system requires a login credentials to have student to apply for the exchange program. After applicants have registered, applicants can proceed can fill the online form for the exchange program in UTP provided, the online form details are as follows, program of interests, personal details, main contact person, further details, current studies at home university, current enrolled coursed at home university, study plan in host university, course/subject preference.

For international student the application differs where applicants need to submit a proof of English Language Proficiency to UTP and also it should be declared by the applicants. Applicants should also send their signed signature of study abroad/exchange program from their coordinator to CSIMAL. Since there are things involve in order to bring students from abroad to Malaysia, there need to be dealt with a peculiar issues such as student visa and permit. Therefore the applicants would have a checklist of things that the applicants need to prepare for CSIMAL in order to get the approval of visa and etc.

For both entity, local and international students, there are some requirements that are matched because it involves the whole system as one. Both are able to view the main webpage of the Student Exchange Program. And are able to view any latest news and announcements directly from CSIMAL. Students also can view the Frequently Asks Questions page. Where in the page it will contain the information that the students need in order to be eligible to apply for the program and also question that might come to confusion for the students. Applicants who applied for the exchange program can, must be logged in, view their status of the application.

The last entity for must have is the administrator, CSIMAL, the entity for the requirement are focus. CSIMAL needed a system where the department can handle all the manual based application directly into the computer. For the administrator, an authorize personnel login are the first requirement. Administrator should be able to control the webpage and maintain it.

The main focuses for the Administrators are the database for the student exchange program. In managing it, the requirements that fit the best for the admins are, CSIMAL are able to view local and international applicant's database in a separate view, allowing to manoeuvre through database easily. The database can be manipulated where certain information can be hidden for added flexibility in managing database.

Administrators for the system should also be able to update a news and announcement for the webpage. The announcement and news system is to allow for the students to get the latest news that is directly from CSIMAL as to not confuse it with other resources. Pertaining managing the database of the applicants, the Administrator also should be able to set the results of the applicants, in terms, the status of the applicants whether the applicants are accepted, rejected, the applicants are still pending and documents are submitted. The requirements for must have covered the three entity mentioned before.

The section, only one entity exist, that is the system itself. The system should a data management capability for it to be function, notification system for the status of the applicants. Workflow of application should be embedded in the system, where when applying for the program, each details in the form should be filled and must adhere to what it wants. The system should have a dedicated news and announcement RSS Feed for the any updates on the student exchange program and such.

The system itself has three different views for each different entity stated before, administrative, local and international student. A dedicated Frequently Asks Question page where, in the page, in should contain all the necessary solution for any question from the student that might came across any problem and questions.

The requirement described are fairly simple, the background work of the database handling and manipulation are a somewhat complicated. Therefore there need to be a thoroughly constructed database in order to cater for years to come in CSIMAL.

3.3 SYSTEM DESIGN

The architecture for the system of the Mobility Centre for CSIMAL consist several mechanisms, that is, the user itself, the interface of the page that is connected to the server and the application that is embedded in the server whilst connected to the database itself.
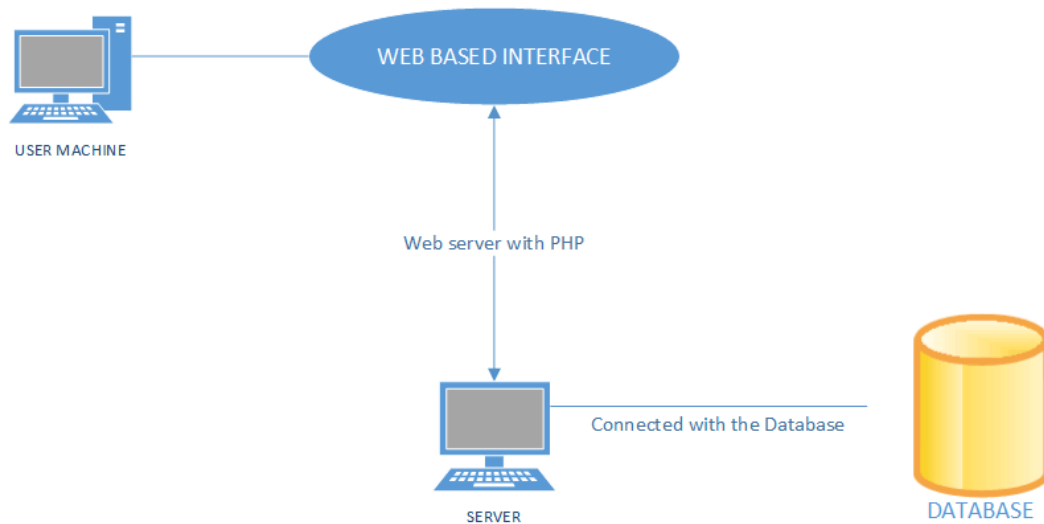
Figure 2: Mobility Center System Architecture

The architecture that is presented above consist of the components that will be used in the system. User uses their own machine to access the website. The website is accessible through internet, in which running in the background, it is connected to a dedicated server. The server function to connect the website to its database. However the database is only accessible for the administrator of the page which is the stakeholder CSIMAL. In order to make the availability of the website, probably due to high traffic the server is separated with its own dedicated database. This is also to increase the security on the database where it is to prevent from malicious attacks.

The use case for the system is illustrated below:
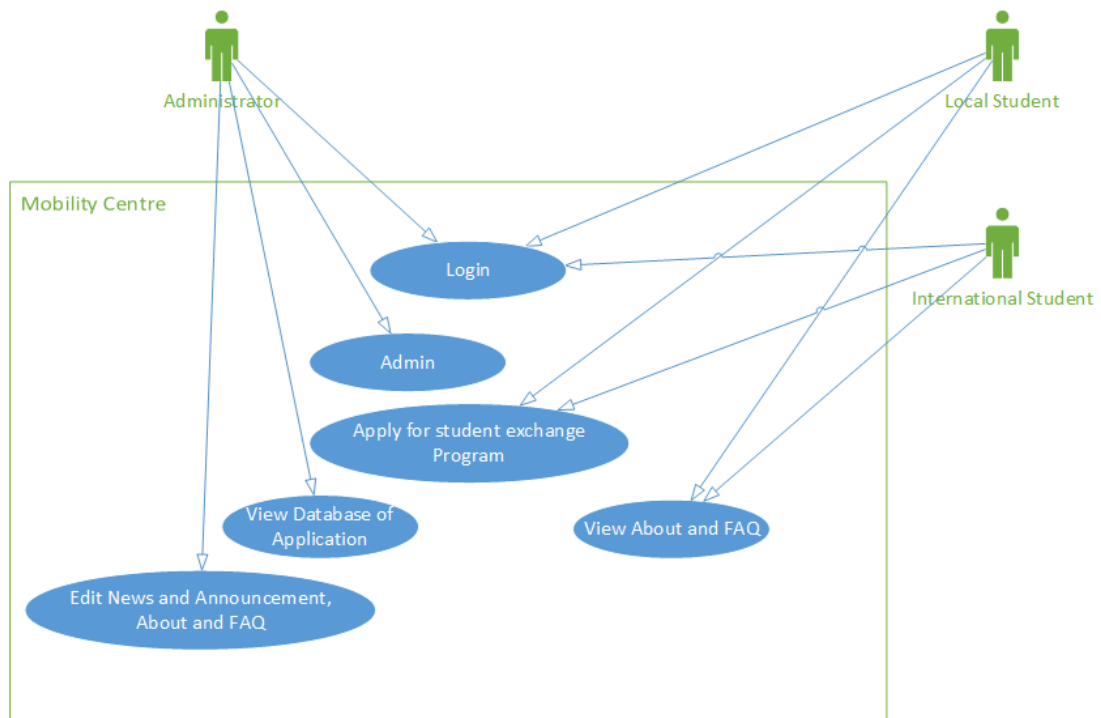
Figure 3: Use Case Diagram

In the use case, it portrays those who will be using the system for the Mobility Centre. The first actor is the Administrator for the system, the administrator consist of those who will maintain the system and also the CSIMAL clerk who will be using the system for the student exchange program application. The next actor portray as the local student and mainly guest who will visit the system. The next actor is the international student.

3.4 KEY MILESTONES

Key Milestones are the significant goals that have been achieved throughout the development of the project. Each key milestones achieve is presented below, represents the progress of the project for which the developer thought was necessary in order to get the project up and running to a more focused view. With each key milestones the progress can clearly be seen with each iterations is followed by the other.

In order to achieve the key milestones, each task has its own objective prior to what the objective of the project, the objective is set to know where the development progress is and the significance of the task being carried out have an impact on the project.
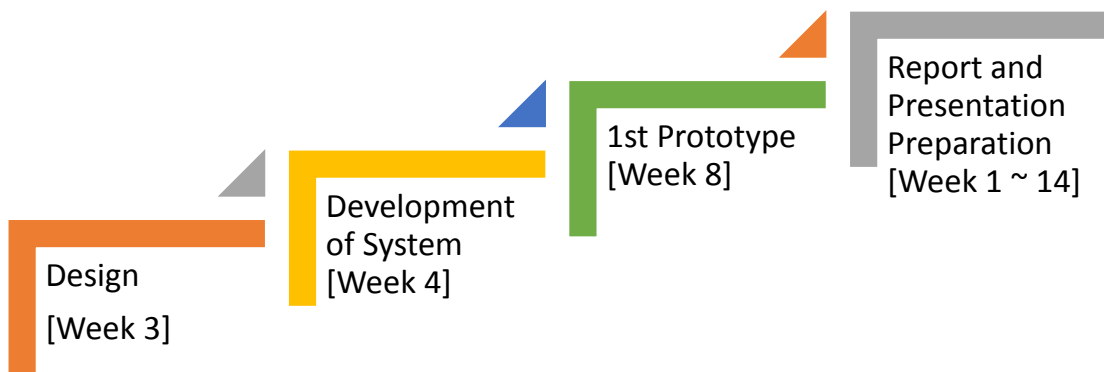
Figure 4: Key Milestones Iterations FYP2

3.5 GANTT CHART

Table 2: Gantt Chart for FYP1

No.	Activities/Week	1	2	3	4	5	6	7	8	9	10	11	12
	Planning Phase												
1	Proposed Topic and Identify Title	■	■										
2	Project Handling Capability		■										
3	Project Planning			■	■								
	Analysis Phase												
4	Methodology Analysis				■	■							
5	Interview Session				■		■	■		■			
6	Requirements Gathering				■	■	■	■	■	■			
7	Research Material Findings						■	■					
8	Results and Analysis										■	■	
9	Report Finalization												■

Table 3: Gantt Chart for FYP2

No.	Activities/Week	1	2	3	4	5	6	7	8	9	10	11	12
	Development Phase												
1	Design of System	▓	▓	▓									
2	Approval of Design		▓	▓									
3	System Development	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓
4	Database Management for System							▓	▓	▓	▓	▓	▓
5	Completion of Development										▓	▓	▓
	Testing Phase												
6	Modules for System								▓	▓	▓		
7	Test Script								▓	▓	▓		
8	System Testing									▓	▓	▓	▓

3.6 TOOLS REQUIRED

Software

The project revolves around database and the way that it can be manipulated, therefore it is required that there is a software for to cater for the prototype during the development process of the system.

The software that is needed to build the environment of the system are still in consideration, in which software has the best outcome and compatible in UTP's environment.

The list below are the software that will be considered to use in developing the system:

- XAMPP
    - PHP 5.3.10
    - Apache 2.2.21
    - MySQL 5.5.20
    - phpMyAdmin 3.4.10.1
- WAMP
- Microsoft Web Expression
- Adobe Dreamweaver
- Notepad++

Hardware

The hardware for the system that to be developed on is the developer's own computer:

- ASUS N53SV LAPTOP
    - 4GB RAM MEMORY
    - 750GB Internal Hard Drive
    - 500GB External Hard Drive (Back-up)
- Online Hosting

3.7 DEVELOPMENT TOOLS

From the suggested software before the developments tools that has been used to develop the project has been marginally changed due to the fact of the listed suggested tools are incompatible with the developers machine. The hardware used are still the same as mentioned in the above previous list.

The software that is used to develop the system is WYSIWIG Web Builder 9. It was decided that the software used is much more user friendly and capable to tackle what the developer are trying to develop that is a web based application.
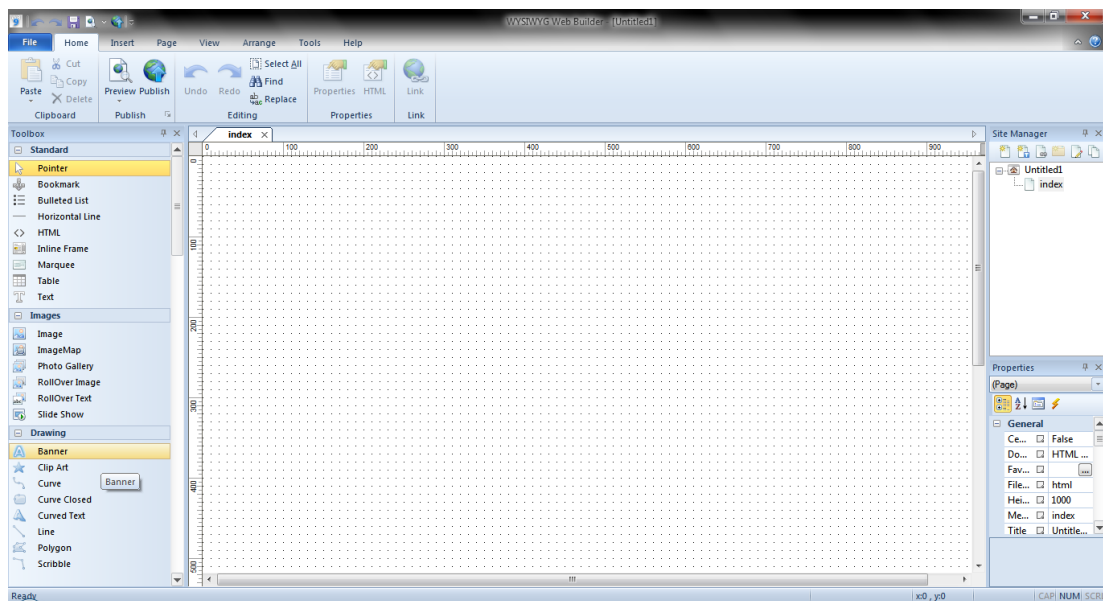
Figure 5: WYSIWIG Web Builder 9

It contains many functions that can help the system to be build and the web builder also contains several template where user can use as a reference in building their own website.

However the developer does encounter certain problem with the system whereby the web builder only helps the developer in managing the interface of the system not the overall usage of the website, in this case, the developer encounters problem connecting the system to a database via PHP where it would not connect the created website to the database environment XAMPP that the developer used.

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3.8 SURVEYS AND FEEDBACK

In helping out to better understand the system that CSIMAL has been using for the student exchange program, surveys has been conducted to find out what the students, that have been involved with the program itself has to say on the way CSIMAL has been conducting the program.

The main focus for the surveys and feedback from the students involved is that, to know on how CSIMAL are handling the applications for the exchange student. What students have to go through in order to apply for the program and the way CSIMAL communicate with students throughout the process of applying for the student exchange program in general to clear out things that the student might or might not be satisfied about?

The surveys is conducted to also know what students might think that CSIMAL needed to improve on their department and to have an honest opinion of things can be done for the betterment of the department in handling students' needs.

The questions that the survey includes are as follows:

1. How did you find the information about the Student Exchange Program in UTP? *
2. How clear did the information provided in the application form for the Student Exchange Program? *
3. How helpful was CSIMAL in regards to any of your problem? *
4. In regards to their responds to emails or question that you asked, if it were answered or avoided
5. Are you satisfied with the overall experienced in applying for the Student Exchange Program with CSIMAL? *
6. How is your overall experienced in applying for the Student Exchange Program with CSIMAL? *
7. What would you suggest in order for CSIMAL to improve the application method of the Student Exchange Program in UTP? *

Each of the question above are a required question, mark with asterisk (*), which means all above the question is a must answer to get the students honest opinion and to get their feedback and ideas for which can be beneficial to the CSIMAL department, in which they can use these ideas for the betterment of future for the department.

The aspect of the question stated above is to have a clear understanding on how the students encounter in applying for the program that is offered in UTP and in how the department handle the situation through the whole process of the application.

3.9 INITIAL DESIGN

In the designing the interface for the system the developer has made an initial prototype design to allow for a more in depth look on what the system will look like to its users. The collection of figures below are the initial design of interface for the system.
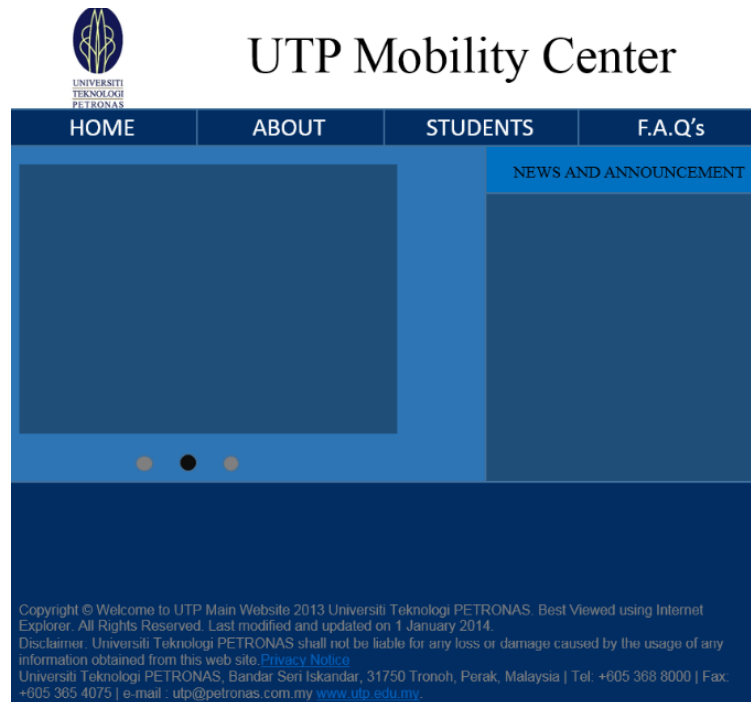
Figure 6: Initial Design of Main Page

The figure shown in the previous page, figure 5, is the initial design for the main page and the rest of the figure, below, is the concept of what the interface might look for the system. The concept of the design is to follow the UTP colour pallet as much as possible to stay with the theme for its professional corporate look.
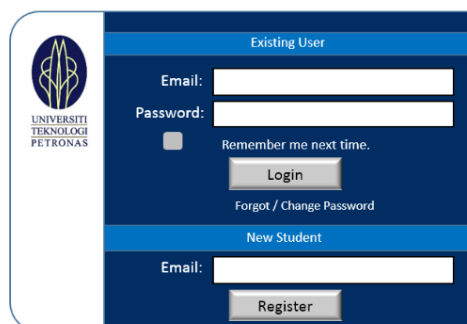
Figure 7: Initial Design of Login page

CHAPTER 4

RESULTS AND DISCUSSION
4.1 SURVEYS AND FEEDBACKS

Below are the results from the survey feedback that has been sent to 16 students that are currently and previously involve in the student exchange program. The details of the students are not disclosed as to allow the honesty of answering without any consequence. By having this survey students are freely to give their feedbacks. Most of the feedback question are choices question and only two questions are open ended.

4.1.1 QUESTION 1
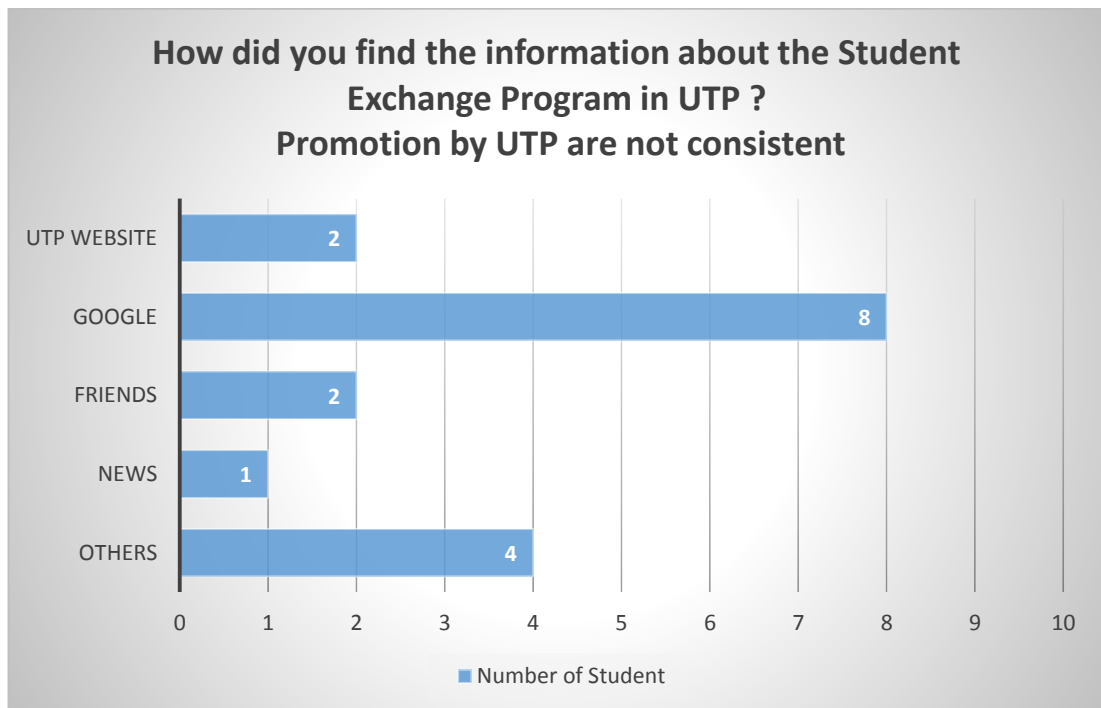
Figure 8: The results for question 1

Student are given the between 5 answer for this question, they only need to choose one. The choices of answers are:

- UTP Website
- Google
- Friends
- News

The questions pertain is to know how the applicants know about the student exchange program in UTP. The medium that they use to get the information for the program is needed to know since that is how CSIMAL can improve upon their advertising for the program in order to attract more foreigners to come and do their exchanges studies program in UTP.

From the result above we can see that, out of 17 respondent, two of them get the information for the program through the UTP website. A whopping eight out of 17 respondent got to know the program through google about UTP and the program. Getting to know the program from friends out the 17 respondent only two of them are influenced. Through news only one person respondent has it as their preference. Four respondent opted for others, in which each has their own answer which are, 2 of the respondent states it is an offer from the university, one of them are based on their own interests and the last one is based on university partnership. Through these result it will help UTP to advertise and promote the program more to gain more applicants into applying for the program.

4.1.2 QUESTION 2
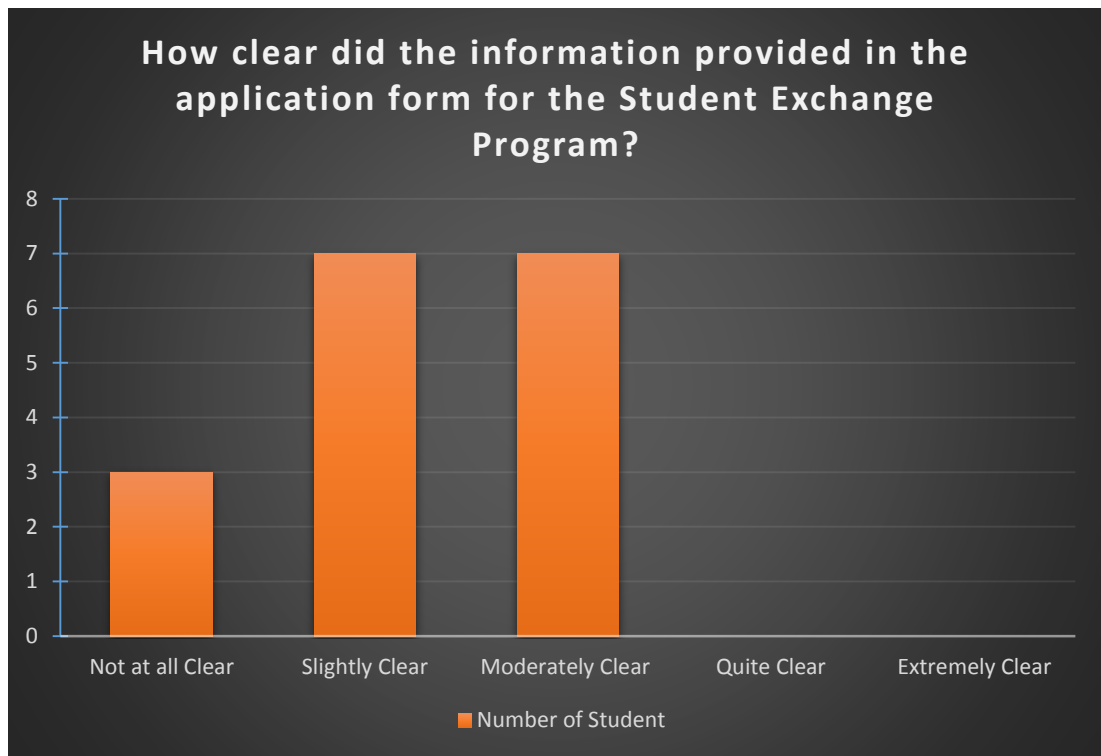
Figure 9: The result for question 2

An application form was provided in order for student to apply for the exchange program, the form for local and international are different as there are different needs to be taken care of. The application form includes information for what the students is required to have, the questions relate to how the application form stated its information. If the form was any help in stating what needs to be done by the applicants.

The list below shows the choice of answer for which how clear did the information presented in the form:

- Not at all Clear
- Slightly Clear
- Moderately Clear
- Quite Clear
- Extremely Clear

The results has shown that seven respondent opted to say that the information provided in the application form is moderately clear. Another seven respondent opt, saying that the application form is slightly clear. Three out of 17 respondent stated that the form are ambiguous and not of any help. For quite clear and extremely none of the respondent choose the choices of answers. It shows that the application form lacks information and needs to be in more detail in specifying the criteria that they want to fill in the form.

Since the international applicants have some documents that they needed to submit the instruction must be clear and concise so that the applicants can keep track of what needs to be done for the application from the results shown above it shows that the application form has moderate explanation on what the applicants need to apply for the program. Application form need to be clear and uses simple English for better understanding.

4.1.3 QUESTION 3
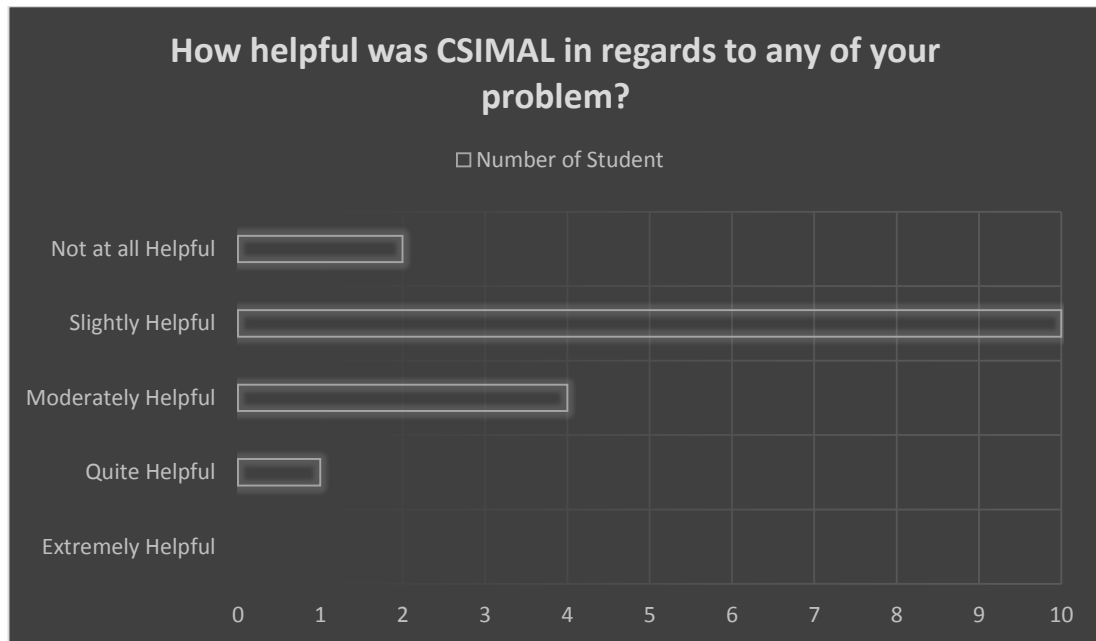
Figure 10: The result for question 3

The questions is directed to know the experience that the applicants gone through in seeking help during the application of the program, where any question from the applicants are directed to CSIMAL and how CSIMAL responded to their question or problems. It is aimed to know the applicants satisfaction towards CSIMAL response to their difficulties.

The choice of answers for the questions are as follows:

- Not at all Helpful
- Slightly Helpful
- Moderately Helpful
- Quite Helpful
- Extremely Helpful

The result shows that the CSIMAL has provided a good help in consolidating towards the applicants difficulties for the program, in terms of application. Two respondents said that CSIMAL was not helpful at all, meaning that the help they want are not being received from CSIMAL. 10 out of 17 respondents choose slightly helpful, that says CSIMAL has provided with a certain degree of help to them.

Moderately helpful was voted by 4 respondents which in term they are satisfied with the help given by CSIMAL. One respondent choose quite helpful, this might shows that the respondents is satisfied with what CSIMAL has cater for them. None of the respondents voted extremely helpful, it shows there is a slight unsatisfactory criteria in terms of customer service or something related to that does fulfill the applicants need that they have not choose it as their respond.

4.1.4 QUESTION 4
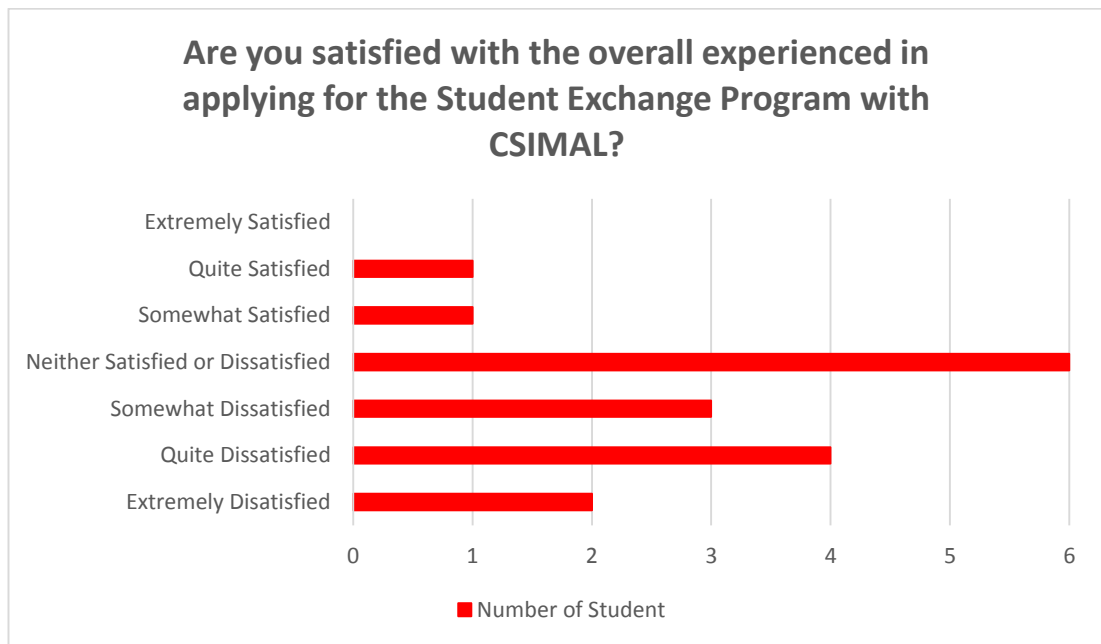
Figure 11: The result for question 4

For the 4th question the purpose of the question is to know the overall experience of the applicants. The question asks with a choice of what depicts their satisfaction level towards the overall experience whether or not it is up to their satisfactory.

Based on the overall outcome of the result it shows that only a certain number of applicants are satisfied with the overall experience. One respondent choose quite satisfied with the overall experience of the application shows that they have a breeze running of applying for the program. Another respondent chooses somewhat satisfied which in relate that the services provided are up to their par. 6 out of the 17 respondents chooses that they are neither satisfied of dissatisfied about the whole experience of applying for the program.

Three respondents respond with somewhat dissatisfied with the experience, showing that they might have encountered through problems during the application process. Four and two respondents' choose quite dissatisfied and extremely dissatisfied, respectively, showing that the overall experience is a tough experience for them to apply for the program.

4.1.5 QUESTION 5

How is your overall experienced in applying for the Student Exchange Program with CSIMAL?

Table 4: Surveyors Feedback Experience

No	Respondents respond
1	Hard and rough
2	No comment
3	Meticulous and some explanations are not clear
4	Quite hard because there is no online application for it. Everything is mailed
5	Somewhat rough and hard to keep track on things
6	Tiring because of all the documents that needs to be handle
7	Everything is manual that's a first, I thought we could do things online
8	There needs to be an procedure document on how to apply
9	CSIMAL did not even try to promote any student exchange programs to the students of UTP. I mean, how are we supposed to know it even existed if we don't have time to ask if it is there?
10	well, I can't say that I am experience enough with the Student Exchange Program with CSIMAL since I never been into one but I bet it sucks since they handle my internship program pretty badly
11	Response to emails and question was good but can be improve
12	A bit dissatisfied when there are things that are a bit ambiguous in applying
13	Surprise to see that they still uses paper based form instead using online
14	No problem at all, just that there are things that are quite unclear and vague
15	No comment, because I have never applied for it.
16	quite good actually if they put more enthusiasm in their working lifestyle
17	Good, very interesting

What can be summarized from all of the response above applicants are somewhat discontented with the overall experience and gave few remarks that is nonchalant Out of the most response one respondent gave a good review stating that it was good and very interesting. For the least the number of respondents that is the only responder with a satisfactory remark.

4.1.6 QUESTION 6

What would you suggest in order for CSIMAL to improve the application method of the Student Exchange Program in UTP?

Table 5: Surveyors Suggestions

No	Respondents respond
1	Build an online applications where students can apply online
2	No comment
3	Hire more workforce to cater for the university
4	Make an online application site for the program
5	Have a better system or management in handling everything
6	Work out a new system to lessen things in documents
7	Online less clutter and easy to keep track
8	Upgrade to a better system to handle and manage things better
9	Promote, promote, promote. Do not leave anyone in the dark about this program.
10	I would suggest cheaper fees so that the customers namely the students will feel motivated to get involve with the program
11	Have a clear description and instructions of what needs to be done and the proper procedure
12	Make up a clear procedure to apply for the program
13	I prefer online enrolling rather than paper easier to manage and handle
14	Improve on the details of the form given to student
15	Heavy promotion, especially during new intakes and any other academia related university events.
16	there should be a sharing session between students and CSIMAL so both can understand each other
17	Be more reactive

The question is aimed to know the ideas from the applicants of what sort of improvement should be made in CSIMAL in order to increase their satisfactory level. The responses that they have given are beneficial and can be taken into consideration into implementing it.

One of the responses was that CSIMAL to hire more workforces in the department to cater with the increasing number of student in UTP. This logical since there will be an increase in the year to come more workforces should be hired to cater to the increase.

Several respondents suggested that CSIMAL makes an online application for the program. The suggestion is on point to needs of the university where technology should be implemented in this sort of program. Other respondents said that CSIMAL should have a better system or management in handling everything, shows that there need to be a restructuring and reformatting on how they handle things.

4.2 SYSTEM DESIGN

The prototype that the developer has been doing is displayed in the figure below, although the prototype is still in a working progress, due to the problems encounter for the database PHP connection, the end result of the system would displayed as the figure below.
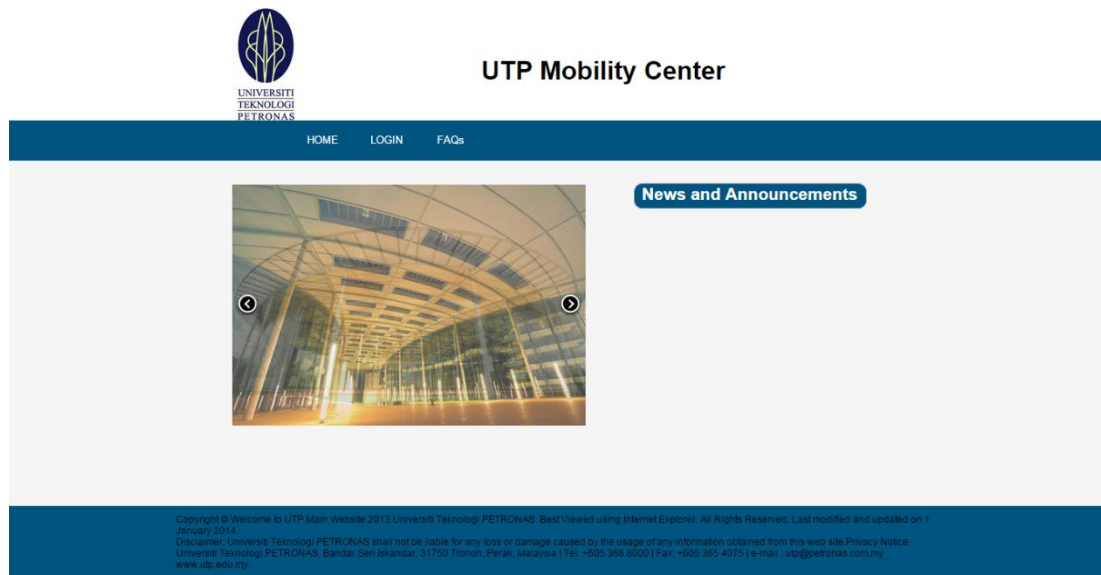
Figure 12: Main Page of the system

The main page of the system is as shown in Figure 11, above where it consist of UTP logo and the system name, which is the Mobility Centre. Below it contains the ribbon menu for the system, which consist of Home, Login and FAQs (Frequently Asks Questions). Each menu has its dedicated page. And for the FAQs page the page is segregated for the International and the Local, for the system is to cater to both which is, Inbound and Outbound.

Figure 13: FAQs Page

The above (Figure 12) is the FAQs page for the system. The FAQs are separated to International and Local. Because there is a difference in terms of student qualification that are needed in order for the student to be eligible in applying for the exchange program in UTP and out of UTP.

Figure 14: Login Page

The login page (Figure 13) is for the three main users of the system. That is the Administrator, the local students and International students. The database that is used for the local student is suggested to be connected with the UTP student portal and the international student need to be register in order to use the system.

Figure 15: Sign Up Page

Figure 16: Student Main Page

The sign up, Figure 14, page is where for new user, mostly the inbound student has to do before logging in to the system. The student main page, Figure 15, is where the page is redirected when the student has login to the system. It consist of the students' information and the button that is clickable for the student apply for the exchange program. The application status is where students are able to view the status of their application for the program. It is updated time to time within the period of the process of the application.

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Figure 17: Application Form page

Application form page is where the students apply for the exchange program, Inbound, where international students will be undergo a term in UTP according to the program that they are attached to. By automating the form it will help improve the system in handling the data for CSIMAL

Figure 18: Administrator Login page

The administrator login page are viewable by only those from CSIMAL who have the authority of handling the system. The page for the system admin to login.
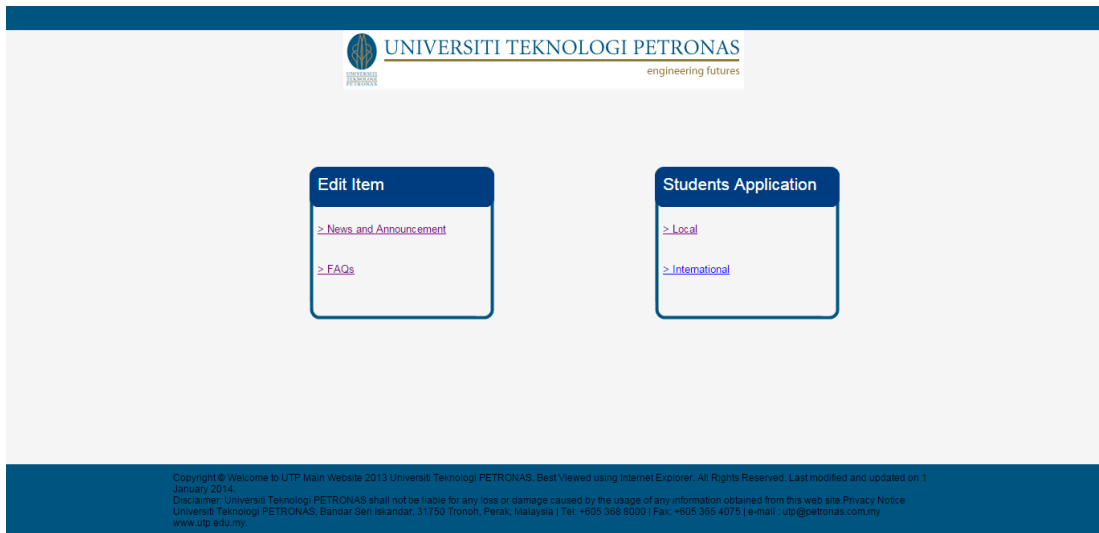
Figure 19: Administrator Main page

The above page is where the page will be redirected to once admin has login to the system. It consist of the Edit Item and Students Application. In Edit Item, a clickable link is provided to the admin in order to update the news and announcement for the system. FAQ's is for when a new terms and condition has been implemented in the program is where admin can update it. Students Application on the other hand is where all administrator can view the application for the student exchange program. By clicking to the designated program admin will be able to view the applicants who have applied for the program. The view that the administrator will find is provided below, Figure 19.
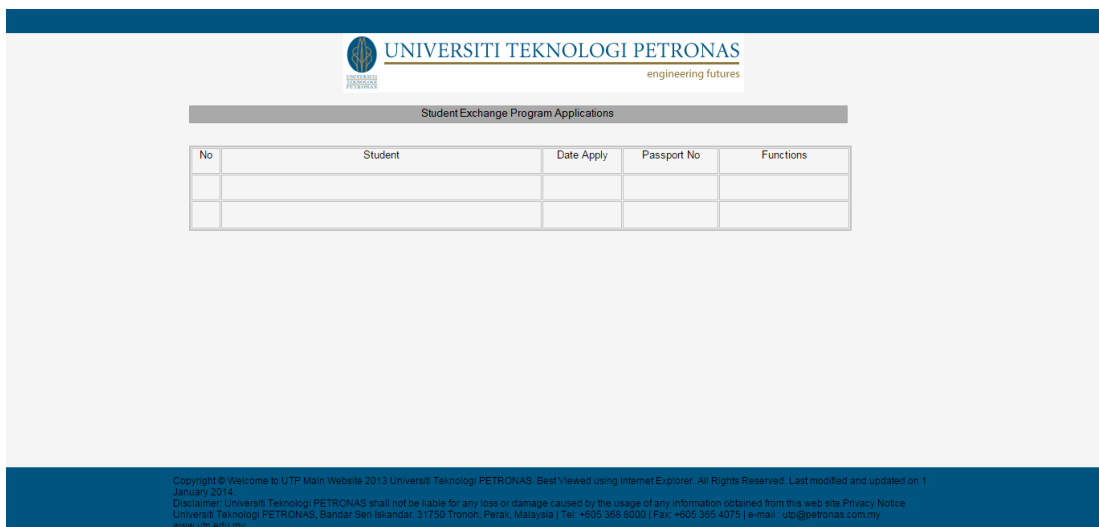

Figure 20: Application view page

CHAPTER 5

RECOMMENDATION AND CONCLUSIONS

There are several recommendations that can be implemented in the system, although these recommendations will not change the system as a whole, it will provide users and the stakeholders of the system a robust system and thus providing more functionalities in handling the data for the CSIMAL department.

One of the key recommendations that can be added into the system is to build more functions in the system that the current developer has failed to implement into the system. One features that can be recommend are auto email reply, with this alerting the users and also the administrators can help notify each party with ease and need not to check the system every single day. Another features is a proprietary functions to enable the Administrator to handle additional database in years to come for the system.

The next recommendations might not be of any impact towards the system however it will help in captivate the users of system to use the system and can be an attracting point for student to visit the system. A much more improved website design should be consider for maintenance in the future development for the system.

As a conclusion, technology is an imperative part of the development of today's world. One should left it out or be left out because of it, one should follow along the great advancement that human have achieved with pride. By walking one on one with the advancement of technology one could be successful when one can manage it well. As an institute to follow the improvement of technology is a need in order to pull in more outcome from the bright minds of the future and it starts with the institute itself. With the project in hand the developer would say that the objectives of this project has clearly met to a certain degree although not perfectly satisfied, improvements are welcome and most certainly invited where flaws should be perfected with much integrations and implementations for the system.

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