Universiti Teknologi PETRONAS (UTP) One-Stop Centre

By:

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Dissertation submitted in partial fulfilment of
the requirements for the
Bachelor of Technology (Hons)
(Business Information System)

Universiti Teknologi Petronas,
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CERTIFICATION OF APPROVAL

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Approved by,

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(Mr. Ahmad Izuddin Bin Zainal Abidin)

UNIVERSITI TEKNOLOGI PETRONAS
TRONOH, PERAK
May 2015

CERTIFICATION OF ORIGINALITY

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

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Amirul Aizat Bin Darail

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Chapter 1
Introduction

1.0 Abstract

One-Stop Centre (OSC) application system is a web-based system that will be used for Universiti Teknologi PETRONAS (UTP) students and support staffs. It aims to replace the current traditional system by reducing direct engagement with support departments in UTP and promotes more online sessions among students and staffs. In this system, students are known as user while the staff will be known as agent. The system requires participation from both parties as one party raised an issue or in the system is known as raising a ticket and another party to attend the issue. The issue (ticket) will be closed upon agreement with both parties, meaning that the requester agree on the resolved of the issue by the agent.

The system is comprises of four departments which are finance, registry, residential village and sports & Co-q Unit. There are many services could be done with these departments including registration, booking, claims, enquiry and request permissions. The system is very transparent as each ticket raised is being recorded in the system and can be reviewed over time. The main benefits of this system is the time and energy spent for a walk-in session is conserved as it is engaging via online. Besides that, it is an interactive web system because the system requires communications interactions from sender and receiver to work successfully. Lastly, the system also will reduce the stress of the staffs in handling the students coming into the office. By having a new system which is more systematic and organized, a staff is able to process many students' requests efficiently and this tighten the relationship between the staffs and students.

1.1 Background of study

For university and college students, their lives in the campus are generally the same. They have to go through all rules and regulations of the campus during their duration of study there. Besides that, there are also procedures and policies needed to be followed so that they can continuously be permitted to stay until they graduated. Most of the students will have to attend different departments such as Finance and Registry department in order to solve the matters regarding course registration and tuition fees.

Moving to a smaller scope, the students of University Teknologi PETRONAS (UTP) also have to deal with these departments. Students need to register their courses each semester and the fees that need to be settled before the credit hours of their classes throughout the semester is accounted for. They also have to register the room which they are staying each semester so the recording of databases are always updated. Apart from that, to use sports facilities at desired just for targeted groups or events, booking should be made so there is no other party uses that particular facility.

Firstly, looking at the finance department, this is a very common department in UTP that all students go for. Every semester, usually in week 9-14 there will be packed at the finance counter for various regarding the fees or other financial matters. During this period also is where the examination slip should be collected and those students who has the outstanding status which prevented them to collect the slip must consult to the finance department for further clarification. When they reached the department, they have to queue up and wait for their turn, regardless of inquire or fees and summons settlement. There are also the email provided to contact the finance department for students to confirm the total fees needs to be paid before they are cleared to collect the examination slips.

Secondly, moving to the registrar department, is where student can register their course subjects for the particular semester. They also can add or drop the course throughout the add/drop period which is usually until the end of week 2. In case the add/drop period is over and a student wishes to drop the subjects taken, they can withdraw the subject with full payment of the subjects withdrawn. The registrar department is also the place where the examination slip are distributed and collected. Besides that, the department also have the access to all the classes' timetables and venues for students to be informed of the latest timetable available. Students can check their coursework marks of all courses taken through the student portal online or by the registrar offices.

For residential village, it is the place where student will register their rooms and the staffs will confirm the rooms upon available. Students may also enquire the fees charged for room for the semester in different residential villages. After the semester ended, the students need to re-register their rooms for confirmation whether they will stay on the same room or change to another room within or different villages. Sometimes, there are cases among students in the village such as noise and misbehave that causes discomfort to another student, therefore they may report to the residential village for further actions. They can also lodge reports for defected property in the room or village so that it can be repaired or replaced to.

Lastly, it is the department of sports and co-curriculum unit, where students can book any sports facilities in UTP for their events and activities. The staffs of the department will book the venue depends on the availability and purpose logic. Apart from that, students can also rent out sports equipment such as balls, bibs and poles. Same as the venue, the approval will be determined by the staff. The department also in charge for co-curriculum slots offered to students. They determine the number of students allowed to take the particular subject upon agreement with the lecturer/trainer/coach beforehand.

1.2 Problem statement

Currently, the way of method practiced by most of the departments in UTP is by manual when it comes to relationship with students. Although they already some

online sites set up by these department, it is not fully utilized and there some key functional that no available online. According to John Callaham (2013), around 80% of the students owns a smartphone while 82% owns a laptop, which shown that the students are adapting to more technological advancement. Looking at the finance and residential village, students still have to queue up which apparently takes about 20 minutes on average on its pack hours to just enquire about the fees or summons in debt. Recently, the finance has set up an email account where student can ask regarding the finance, however the response is too slow and some reports claim that the address is no longer available.

Next, student found out that booking sports facilities manually is such a waste of time and energy. Block B is usually stranded of from other academic blocks which makes the student who do not own any transportation have to walk from their class or room to the block. For booking, students may not know any documents or approval required so they have to walk back and forth just for a simple booking. It is very convenient if a online system could be made where students can do the booking just in front of the computer.

There is also a problem with the recording details in UTP departments. Finance fees details are not very thorough and lack of clarity just from the invoice paper alone. Seeking clarification at the counter may consume time and people who queue behind may wait longer and feeling more frustrated. There are also a few complaints from students where their reports are not entertained after some period of time. This may be the reports are overlooked and the staff cannot recall back because it was properly recorded. This may be solved by giving an ID to each report so it can be recalled in case of overlooked and every actions of the reports are updated. Students who lodged the report may access the ID to see the progress of the report made.

Therefore, a new system should be made where students only accessing to one site where multiple service requests can be performed correlated with departments in UTP. The system will improve the efficiency of the current system and reduce the rate of crowds in every counter of the departments.

1.3 Objective of study

The research aim is to create a one stop centre web service to promote students to perform more services online which are common for students and less engaging the department manually unless necessary.

1. To create a web-based application that can serve as one-stop centre for students in UTP.
2. To re-model the current system into a new technological environment via online through the integration of systems from different depatments.
3. To create satisfaction among users of the developed website.

1.4 Scope of study

1. One stop centre online service is trending in the technology field and widely used in leading corporate organization, government sectors, education and medical. The aim is to attract the attention of the potential users.
2. The target user which is UTP students who often handling matters related to multi-department units in UTP.
3. The focus is more to students who is not in UTP as for internship, exchange programme or 4-months break.
4. Integration process system is becoming important when designing a web-service since it can provide interactivity between users and the application. With the implementation of integration services, it can enhance users' satisfaction and effective user experience.
5. The programming language used for the project is Eclipse.
6. The hardware for this project is usable laptops with Internet connection to run the application.

1.5 Motivation for the project

At the start of the project, there are many project that trigger my interest and among them is topic related to integration of system processes. After reading and being briefed about the general concept of integration system, I realized the potential of having an integrated system in our education system on how it can facilitate and change the current way of the current services. Furthermore, it is very inconvenient for students to always going to the departments for any purposes, regardless of the issues. Developing an online system to entertain these requests will benefit the students in conserving their time and resources drastically. I also intended to ease the students who is not around UTP to request supports via online. Using an online system, they will also had no need of coming to UTP to verify their status or any other issues they face with that required their presence to the respective offices.

1.6 Feasibility of the project

The time allocated by the university to complete the final year project is 2 semester which is around 8 months. With the limited time and resources, proper project planning must be made in order to accomplish and complete the project. For the first semester, the focus is more to planning, analysis and designing phases. In this phases, we are also required to study the previous studies or research done on augmented reality in order to understand the topic better and the value of the project. For the second semester, we will focus on the development and implementation of the project. By handling the required resources correctly, the project will be executable and able to finish within the time limit.

Chapter 2

Literature Review

2.1 Information System

Information system is basically an integrated set of components which aiming for collect, store and data processing therefore transforming it into deliverable information (Zwass,1992) while according to Shasha and Vossen (2015), information systems are the software and hardware systems that supports data-intensive applications. This term may be used in more restricted senses scope sometimes where it refers only to the software used to run a computerized database or referring to a computer system only. It is a collection of both technical and human resources that involving in contributed the storage, computing, distribution and communication for the information required by an enterprise, in a whole or partially. In an enterprise, it is common to see the information system acting as an organization because it has the responsibility to handle the processing of data and information systems (Martinez, 2015).

2.1.1 Types of information systems

There are several types of information systems that are currently being implemented in various businesses and organizations all around the globe. For the planning, the

information is needed for assisting purposes (Riley 2012). Executive Support System (ESS) enable to transform data into summarized reports. It also provide analysis tool that has the ability to project the performances output with data input ratios. According to Janssen (n.d), "organized entreprise and departmental data's access are being facilitated with the existence of an ESS, including analysis utilities provider and able to predict performance assessments. Apart from that, the potential outcomes and statistical data produced are able to contribute to the decision making processes". The next one is the management information system (MIS), where it is a computerized database of information and projected reports as ESS do. MIS creates information systems for data management in such as store, search and analyse the raw data before transforming it into information needed in all levels in organization. According to Sarras (n.d), a MIS should highlights on the critical success areas and support key areas in such the system should able to support act and decision making by meeting the specific needs. Current managerial personnel in organization should migrate their control from the traditional controls to managerial controls as the world has become more technology-oriented and required the management to become more efficient and up-to-date. There are also a system named Decision-support system ("DSS") where it means to assist the management personnel in various situations for a decision - making process where there are no absolute outcomes and creating uncertainty for every decisions to be made. It comprises of tools and techniques to help in gathering the information and analysing the alternate possibilities and available choices. According to Nogueira M, Balduccini M, Gelfond M, Watson R, & Barry M (2001), the system design is consists of an interfaces and a collection of independent modules. The interfaces is merely a medium for users to add or change the information in the system, however, the system will check the validity of the input and provide alternatives in order to satisfy any requirements stated.

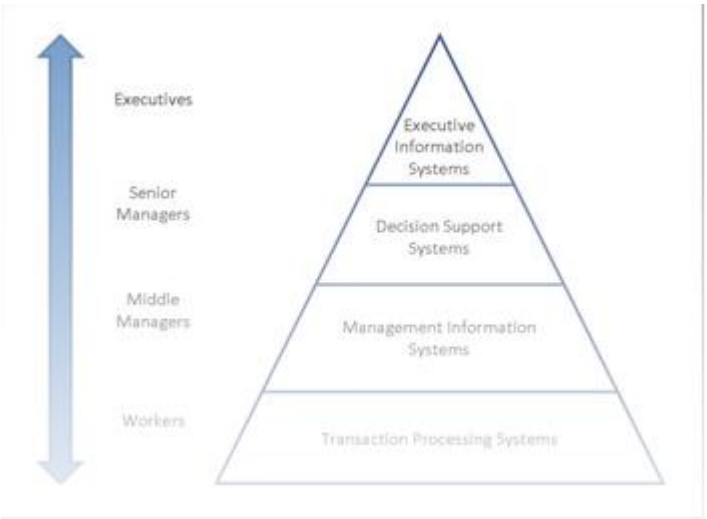


Figure 2.0: Types of IS in hieratical structure

2.1.2 Components used in information systems

To construct an information systems, there are several components that needed to look into as each of them provide different outcomes from the others. Firstly, it needed the hardware or precisely the computer hardware. Among the hardware are the processor, main memory and I/O devices. Printers is also considered a device used as it provide the output of the system in visual form that uses languages understood by human (Zwass, 1998).

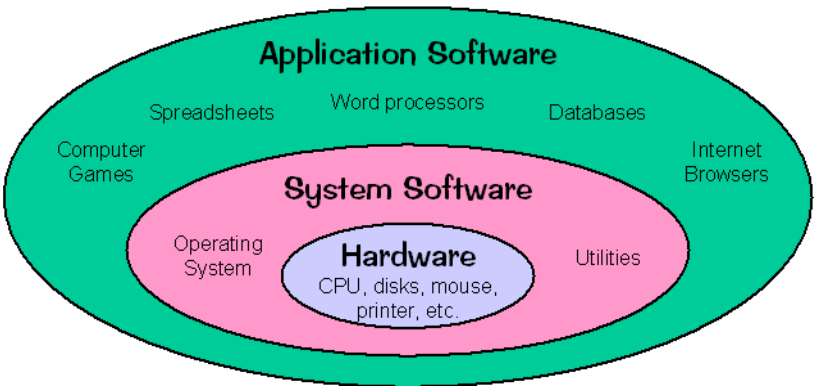


Figure 2.1: Components of an IS

Secondly, the types of software used for the system to be developed. There are two types of softwares, system software and application software. According to PCmag (n.d), application software is intended to process the data for the user while system software is providing the physical layout of the system. Application software may be regarded as data entry as it enable the user to read, update and generate report that

mould the raw data into specific information needed. According to Domain.com (2015), Linux is proved among the favourites for program developers for its easiness to control and reliable as well as setting up permission levels to users. There are several software that worth to learn as it gain benefit for start-up at the path of programming. Java is very reliable as it can run on any operating systems along the fact that most android application are based on Java. For Visual Basic, the programming works according to the user's actions as it is an event-driven language that focused on user interfaces (Bruce, J, 2011).

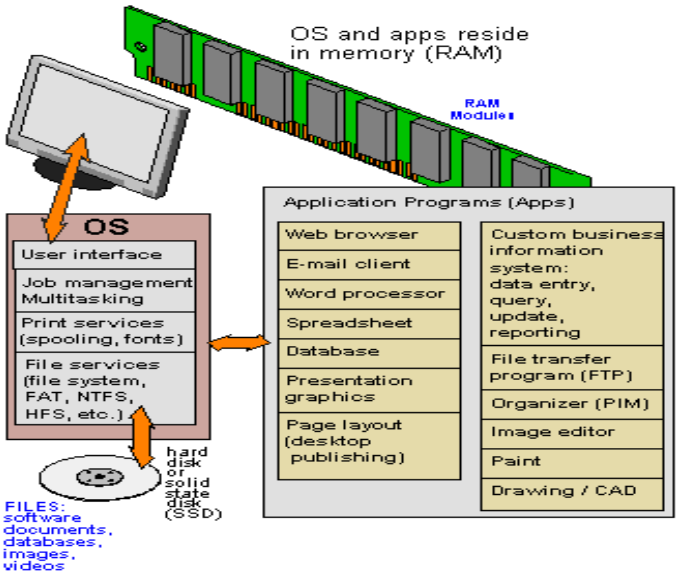


Figure 2.2: System software interactions with application software

Thirdly, as the information systems requires data to work, therefore a database should be set up to contain these data. According to Vogella (2014), databases are easy to integrate with program developed using Eclipse Luna 4.4 as its Data Tools Platform (DTP) provide the tools to perform database tasks. Additionally, MyBhavesh (2013) stated that the DTP plugin enable the developer to perform database development as well as the query funtions within. Most popular databases are supported by Eclipse as supports integration between the program and the database besides that any query and objects can be executed.

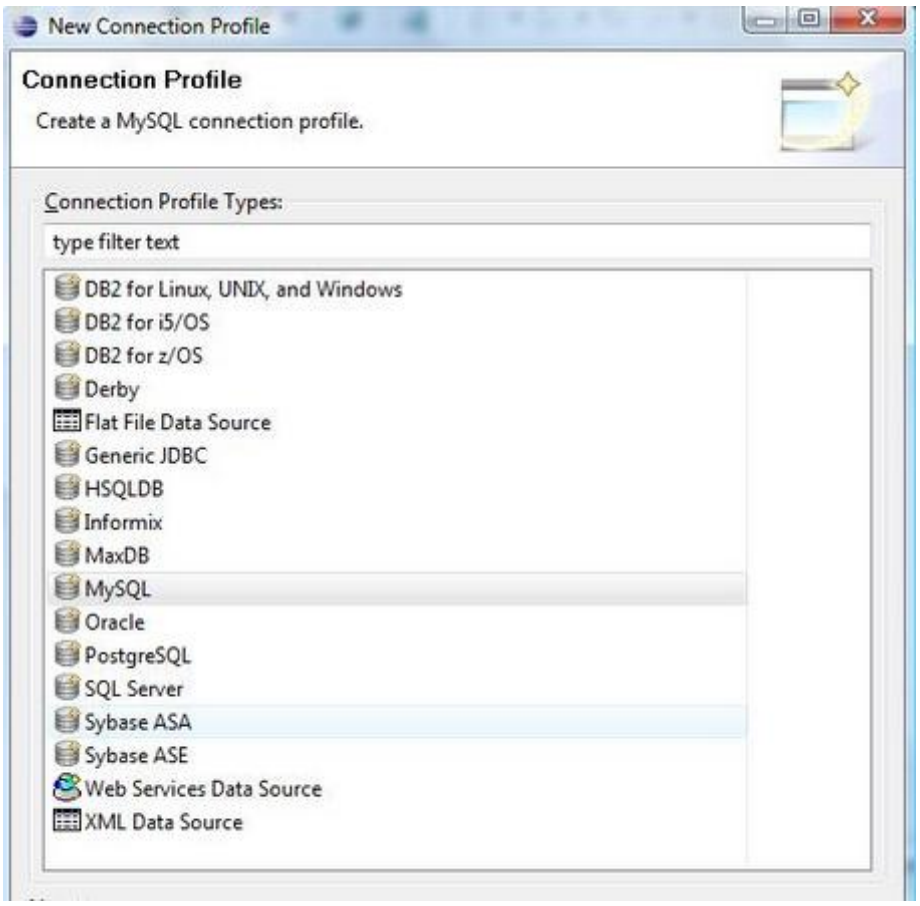


Figure 2.3: Eclipse DTP list of databases

2.2 The background of Internet and technology.

For the project, it is vital phase to know who will be using the system. An online system cannot be developed just out of the blue, but a proper planning is needed in designing the website so it will attract the target users to use it. Besides that, due to technological advance, the usage of Internet has been increased dramatically over the past few years. People from various age has been exposed to the technology era and everything around their world are already engaging in technology based surrounding. According to Tech Blog (2015), the number of the Internet users in 2015 of all

around the world are reaching 2.27 billion. Since 2007, almost all continents in the world has dramatic increase of the Internet users. In Africa, there is the most increasing number of users by 317% compared to Middle East (294%), Asia (143%), Europe (56%), Oceania (27%) and North America (17%).

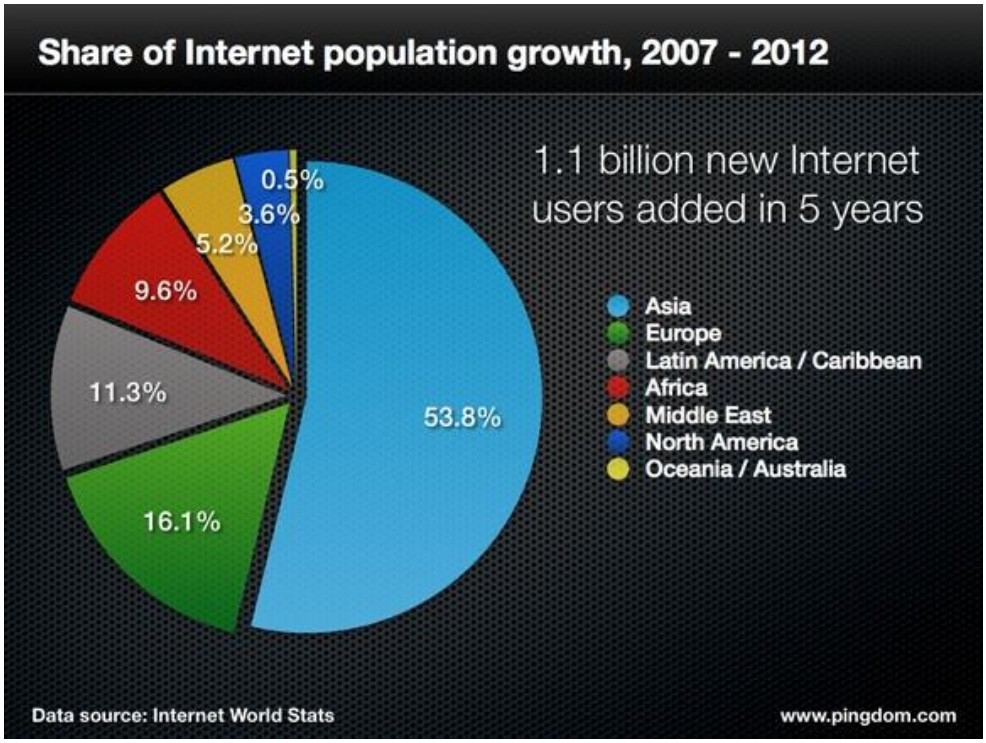


Figure 2.4: Internet users around the world pie chart.

Figure 2.5: Increases number of Internet users in 5 years.

So, in these days, every organizations should be investing in technology features in order to blend in with these type of users. The outcome for this kinds of investments will surely paid off. Everyone knew that the technologies nowadays provide boost to effectiveness and efficiency in their life activities. Besides that, the organization needs to adapt to the current era they are live within so they are not outdated and being left out. If the organization is engaging with any business activities, they may be killed by their competitors. As for the users, they always believe that Internet is resembling the world's mind and brain. They have the mind-set that everything should be done in the virtual world, especially Generation Y. A good system should cater the needs from these users and ensures that the system provide improvements to the current system in terms of its effectiveness especially.

2.3 Designing a Web-Based System

The most vital part in developing a system is to design the website which will be the platform used by the target users. As users are also human being, they tend to judge something based on their first impression towards something. Therefore, developers should be aiming of creating a design that not just supporting the key functionalities but also considering the best interest of the users in terms of user-friendliness, stability and availability. According to Williams B, Holmes C, Hunt J and Phillips J (2015), users are not looking primarily at an improvement in terms of speed, efficiency and access control but rather than they need some sort of guidance and also an assurance for any kind of transaction within the system. The research done by them shown that confidence levels of using a system are very low for users that are older and using the internet occasionally. The same concern is also expressed by

Zellweger P (2010) as he thinks that users that are newly introduced have the negative perceptions regarding the possible risk and uncertainties within the system. It resulted from the new environment experienced by them as before they only engaged with limited channels such as direct approach and phone calls. This creates a uniqueness elements which provided more concern for these types of users. According to Deshpande V.S (2004), user need to be updated more frequently for any actions taken once they have sent a request in order for them to aware of what exactly that they wanted to do. Besides that, the users should be notified through other communication channels such as their email addresses and mobile phones which had been set up beforehand according to the user's preference. Deshpande also stated that user's engagement with the system will be more interactive and proactive by cater their request with upmost care especially enabling them to monitor their status at all times.

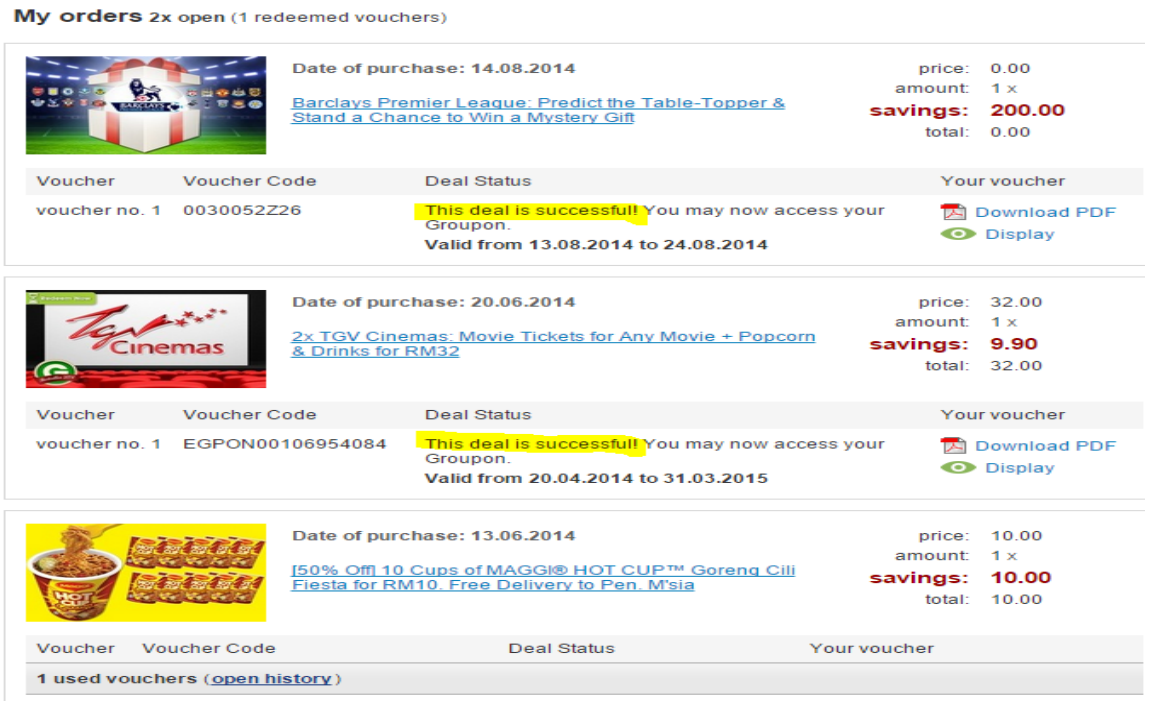


Figure 2.6: Displaying status of request from system at all times.

Source: https://www.groupon.my/myaccount

According to Winterstein B P (2005), there are a few guidelines when developing an online system. Among them are determining the functionalities that are compatible with the environment and programs. Besides that, the system must be always in an organized manner so that user are not frustrated of finding the key functions within the system and promotes user-friendliness. The information on the web should always updated to the real-time system and any changes that effects the institution should be make consistently. Winterstein also emphasizes of utilizing the various resources that may be contributing to the system development such as developers, time and money. It also best to prepare for the contingency plans in case the system fails to kick-in. This is especially for the types of user who not preferring of using online system compared to the traditional system. So, apart from setting up the new system, the current system should not be abolished as to promote users with alternatives in case the system did not work out. Winterstein also suggested that a help section should be included in the system, similar to FAQ sections where users who had any general inquiries can refer there without having to ask directly from the system administer which wasting time.

2.4 Ticketing system in business organizations.

The system to be developed is not the first ever invented. There are already establishing system being implemented within the corporate organizations worldwide. In general, the key functions of the system are the same before it had been modified in accordance to the organization's suitability. According to Listrom (2012), the spartks that lead to the earlier development of the ticketing system is due to overlapping in delivering the information in separate emails and therefore it causes confusion and scape the information originality. The different formats and structures for different parts of organization leading to the lack of constraints in the email proved very hard in relaying the message. According to HappyFox (2015), the ticketing system developed by them able to support business process for cross-functional system by providing their client a faster response and organized channel of communications. It is because the system has developed an algorithm where the workflow of the system are arranged to the workload scale. Apart from that, it also

assist the organization it worked for to sort out any complex processes by scaling out the level and performing decision-making process.

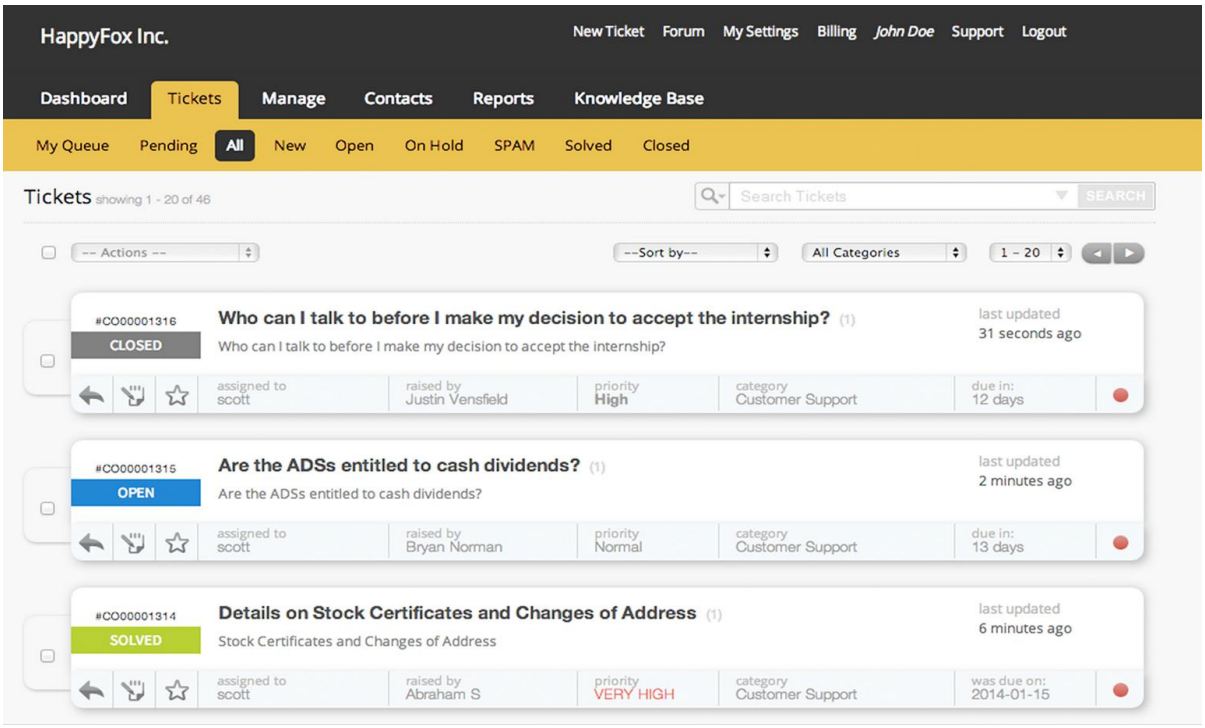


Figure 2.7: HappyFox Ticketing System interfaces.

According to Lambert-Rubicon (n.d), the ticket system developed by them is very beneficial for an IT consultant because it can track assets and perform support services by its custom database application. The system is web-based, meaning the customer of Lambert-Rubicon can access it anywhere and anytime using browser upon prior authentication. It also can generate lists of customer's related business associates including the clients and assets available. The emails of the users of the system are automatically generated so it enable the system administrators to notify those users regarding updates of their requests.

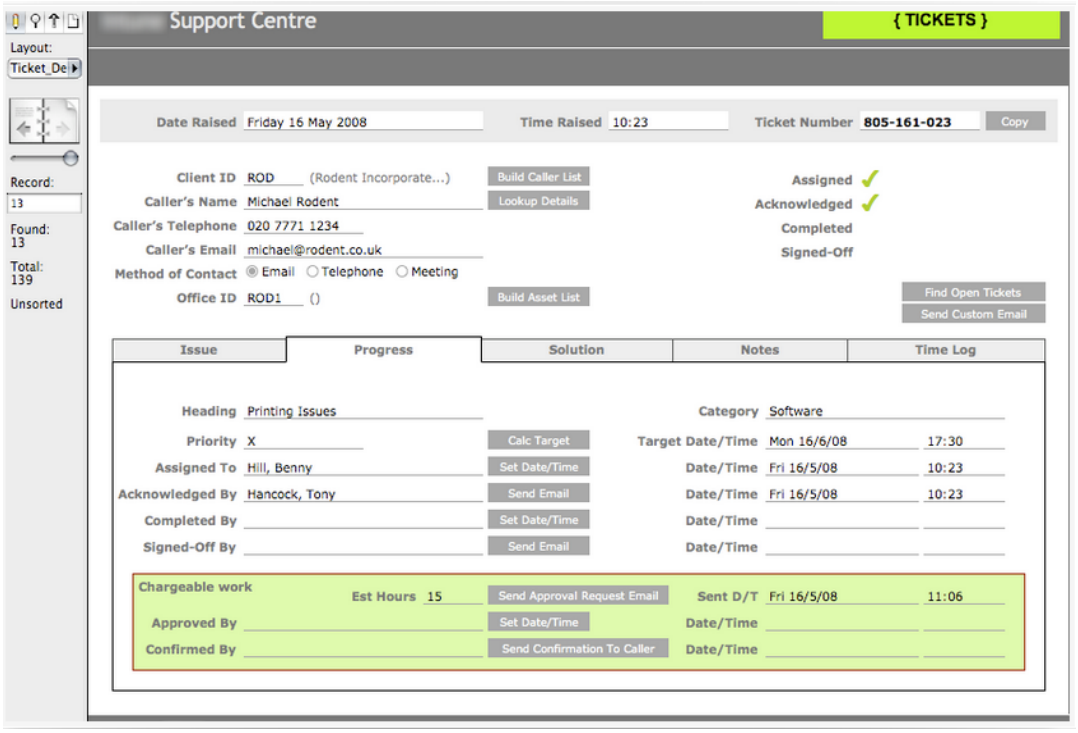


Figure 2.8: Lambert-Rubicon support ticket system

Internet Man (n.d) ticketing system is claimed by the developer that it is not a complicated software as the workload of performing the same job tasks with the aid of the system are not intense as before. The agents of the tickets raised need to report any update done to the ticket and changes the status in accordance to the completion status before archiving the closed tickets. The advantage of the system is the ability of a single system to manage multiple and redundant problems in shorter time and easily managed processes.

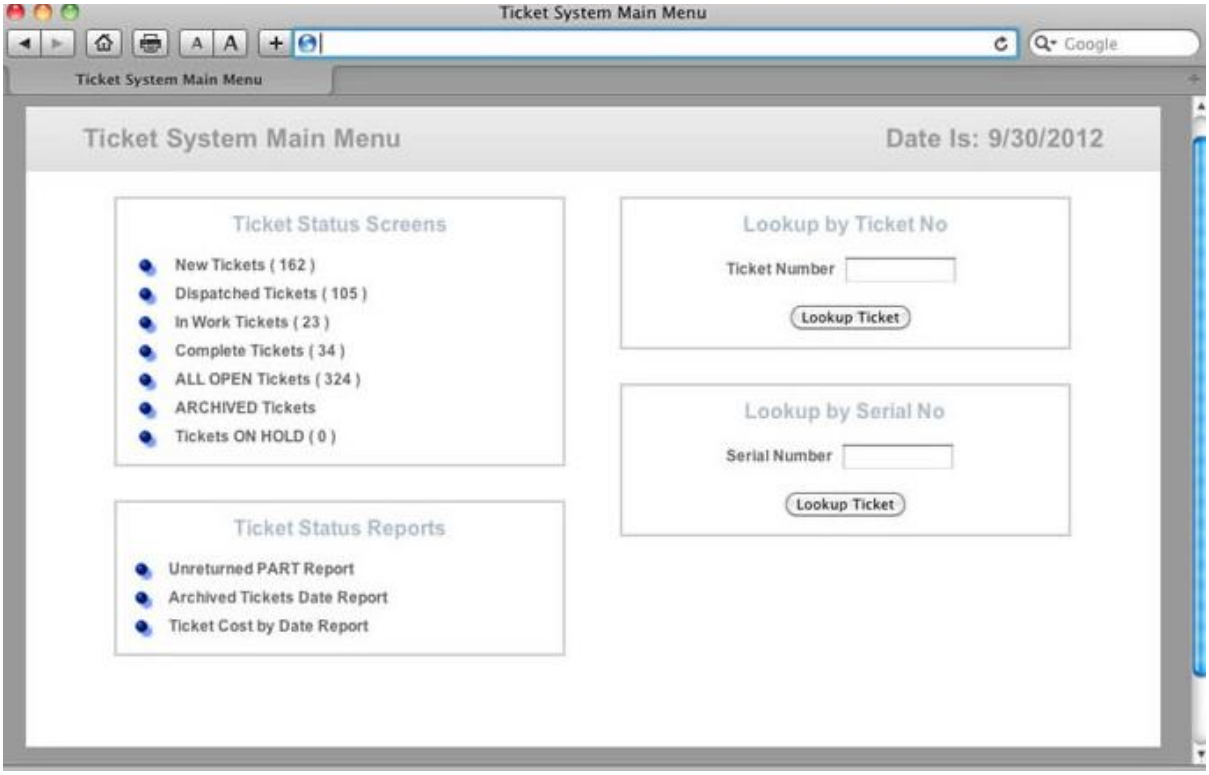


Figure 2.9 : Internet Man Ticketing system main menu interface

Figure 2.10: Pending lists of raised tickets in the system

Chapter 3

Methodology

3.1 Research Methodology

In order to develop a project, it is important for the developer to have proper skills and method required for the project. There are many projects that failed because of variety of reasons from all aspects. Some of the reasons included lack of proper planning, the expectation of the project is unbelievable realistic for the stakeholders, the communication is poorly organized in the team and also poor management of resources. Therefore, in order for a successful project, a proper project planning should be implemented.

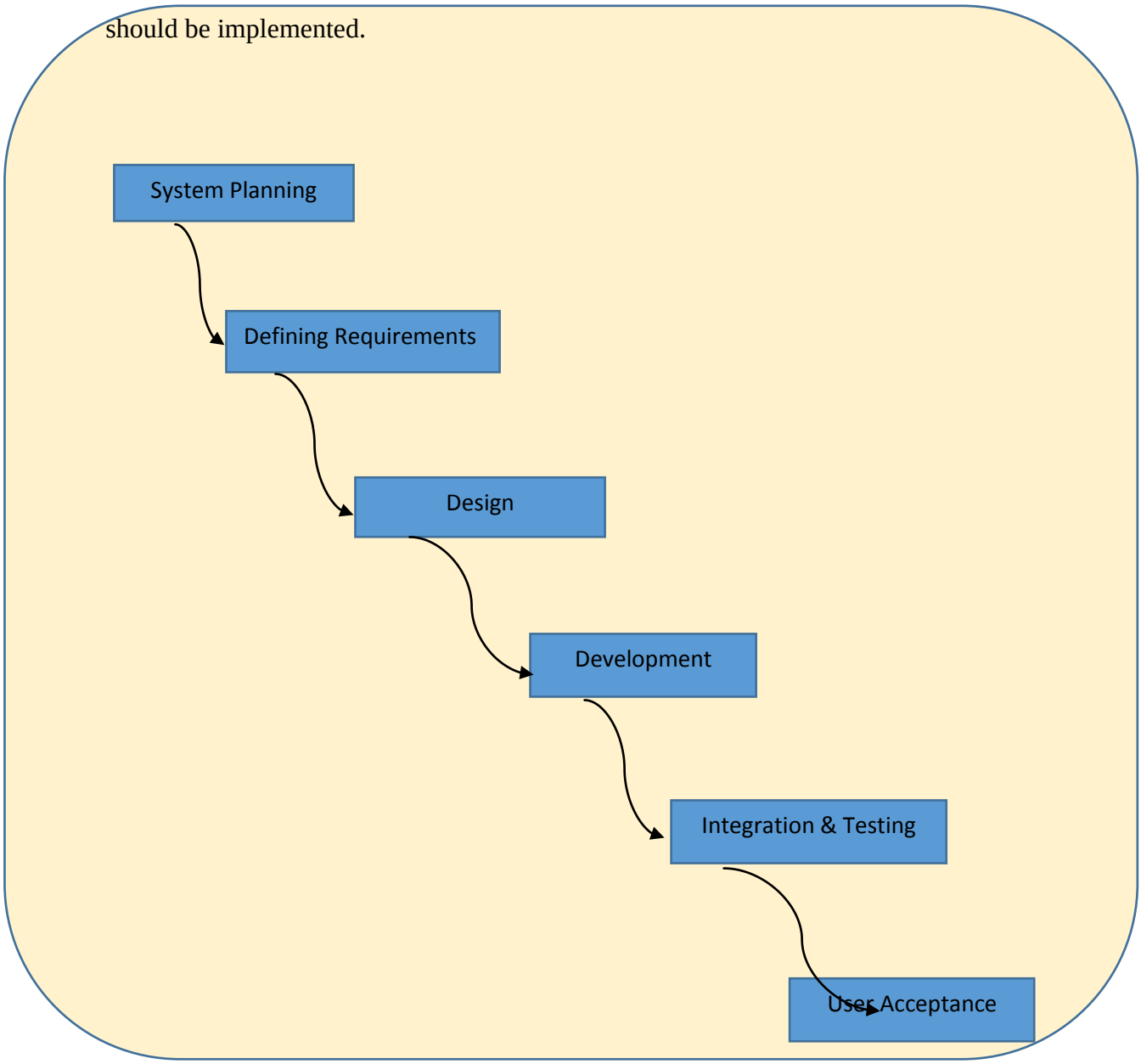


Figure 3.0 : Waterfall Model

The waterfall model methodology is one of the commonly used system development method and it is the methodology used for this project. In short, this model is a process that is executed step-by-step, where everything must be done in order. Firstly, the process in the model is begin with the system planning and is done before the start of the project. After that, the process is followed by the analysis and requirement definition before the system design. The actual project development can be initiated when all the necessary requirement plus information are gathered and tests and user acceptance are conducted after finishing the development processes.

To summarize it, precise planning is required when implementing the waterfall model methodology in order to produce a successful project. The project duration given for the final year project is 2 semesters or around 7 months, therefore it is the best option of choosing the model as each phases of this models able to project the necessary output. Apart from that, the model is simple to implement and easy to track the progress and marks every milestones achieved.

There are 5 parts which have been divided which included:

1. Planning phase
2. Analysis phase
3. Design phase
4. Implementation and development phase
5. Testing and deployment phase.

3.1.1 Planning Phase

For the planning phase, the project developer must conduct some research to get hands of the required information for the project and also the project needs. During the beginning of the project, the problem statements regarding the project must be identified by the developer along with the objectives and scope of the projects. Moreover, the method to develop the project and resources required must be made early decision to avoid any conflicts or problems during the initiation or later stages of the project

developments. Besides that, users must also decide what platform the applications will be on and software used to develop the project. In this project, the platform used is Windows OS and the software used is XAMPP package which comprises of Apache and MySQL programming. Initially, Eclipse is touted to be the main software used to develop this project. During this phase, the literature review must be made in order to study the project relevancy and logic before understanding the advantages and flaws of the previous projects.

3.1.2 Analysis Phase

For the analysis phase, the necessary requirement for the project must be analysed by the developer. Additionally, analysing process should also be done to the problem statements, objectives and project scope in order to develop the project requirement. For this project, the problem is that students have to attend the matters or issues or requests directly to the departments with lack of online options. The aim to the problems is to increase the utilization of the online platform for students and reduces the number of times students have to come to these departments for every issues faced. In this phase, the requirements for the application to be developed must be finalized before progressing to the next phases.

3.1.3 Design Phase

During the design phase, of how the framework will achieve the goal is determined by the system outline. This system outline is comprised by both logical and physical design, which deliver the system specifications that needed to satisfy the system requirement that has been created and identified during the analysis stage. Plus, the detailed information regarding the specification and hardware and software used plan must be develop during this stage. In this particular project, the detail specification of the integrated system application must be develop alongside with the start of the development phase with the required hardware and software that acts as the input to run the application. At the end of the current phase, use-case diagrams for the whole project designs should be completed for the One-

Stop Centre application able to integrate the systems from different database resource pools. Plus, the use-cases that have been outlined should be made to accommodate and compatible with the application. The interfaces of the main screen of the proposed system is created to give ideas of what functions to be developed in the system prototype later on.

3.1.4 Implementation and Development Phase

For the implementation and development phase, it is a must to develop and project, the snapshots of the website to be developed and user interfaces must be delivered early in the development phase. After that, the developer need to create a standardization within the system. It is so that each screens of the project will have the same format and layouts. To do this, a CSS file will be created and all requirements are put in the system which including background color and image. It also included text aligns and positions of the system as well as text font and styles. Moving to the screen developments, the interfaces and coding functions are created by using PHP files where the requirements outlined are put into display. The tables are created using MySQL and all data are stored in the database.

3.1.5 Testing and Deployment Phase

After the project prototype care working and nearing completion, it is brought into testing. There are two testings done for the prototype. Firstly,it is the development testing. In this testing, the system prototype are tested whether it can be running in the server. The coding of the functions and tables created are integrated before testing, to see the co-relation of these two softwares in one system. The same testing is done again and again when new functions are added in. It is vital to see the system able to display these integration between coding and database as it is the core in the project prototype. The second testing is the user acceptance testing. During this phase, a few UTP students are invited to volunteer in testing the project prototype and give feedbacks about it. The personnel who participated in the testing process must check that the application meet the functional requirement of the project and point out

any errors or bug found in the project. One of the main purpose for the testing phase is to test the ability of the application to access to different databases for each department and modify the data. After the testing, any flaws resulting from the bugs, error of functionality drawbacks must be fixed before the end of the deployment phase of the project. The reason is to ensure that any flaws are handled earlier during the testing phase so that no major changes have to be done.

3.2 Tools

In this project, it is necessary in obtaining the right tools for the development. There are many tools will be used in the project and these tools can be divided into 2 types which are divided by software and hardware.

3.2.1 Software

In this project, there are several softwares required to complete the project. For the programming part, the XAMPP package is used to develop the coding functions as well as creating database platform to store data as well as creating tables for the project. Apache HTTP Server is used as web-server software and MySQL database is for the database and tables in the project. XAMPP also included interpreters for scripts written in the PHP is used for coding the functions.

Figure 3.1:

XAMPP is one package of softwares that used its conyents for the project.

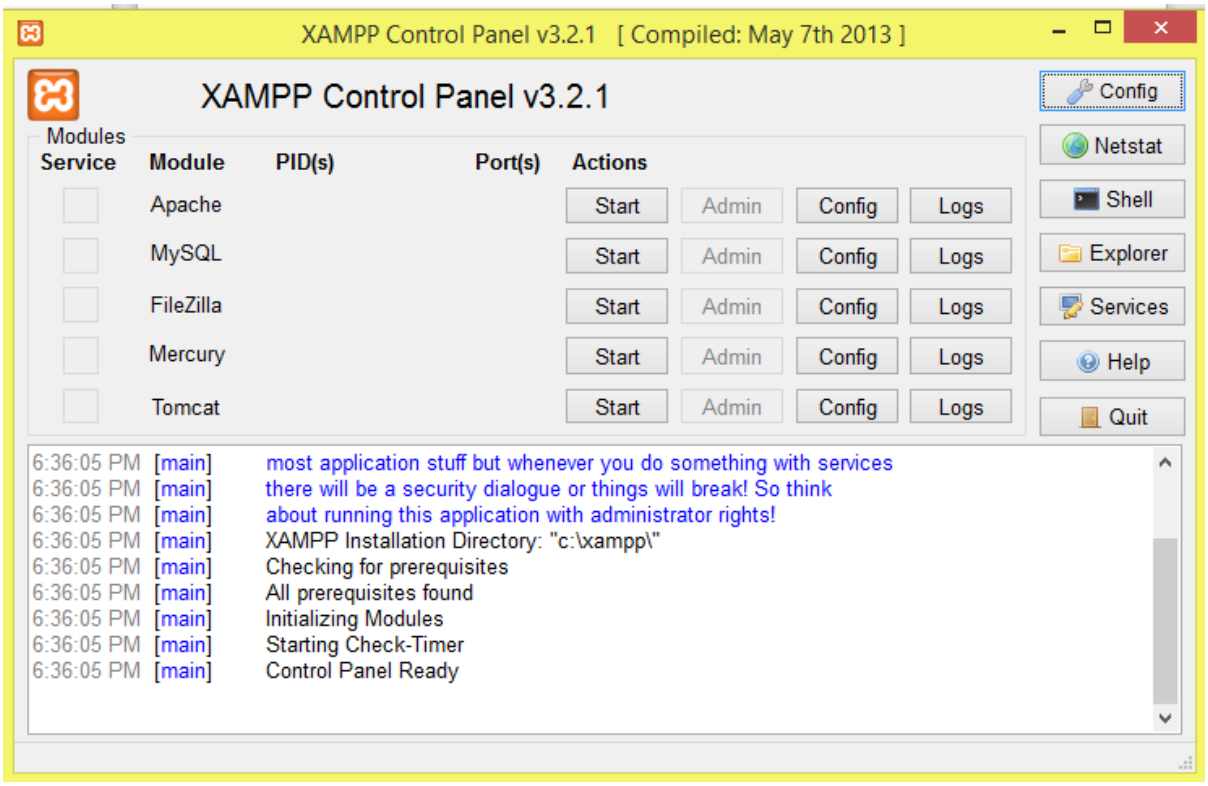


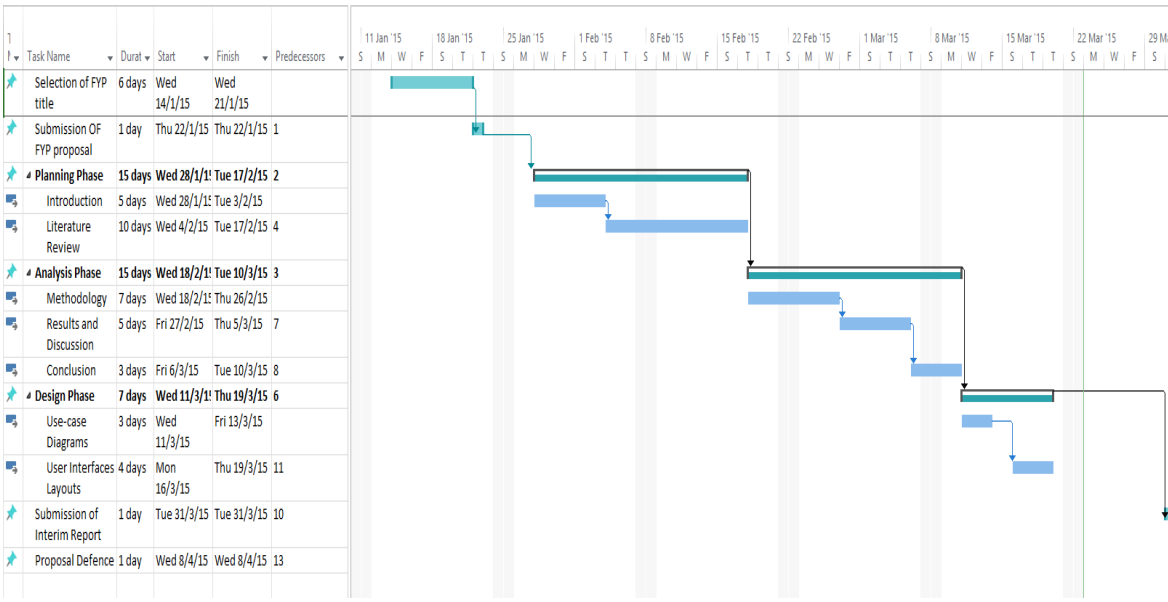
Figure 3.2: List of softwares available in XAMPP.

3.2.2 Hardware

For the project, the hardware that will be used is laptop and desktop with Windows 7 operating system. The laptop and desktop should be able to remain operational and sufficient computer performance. After the working model or the prototype have been completed, it will be tested by Windows 7 laptop and desktop with Internet connection as the medium to access the application on the web.

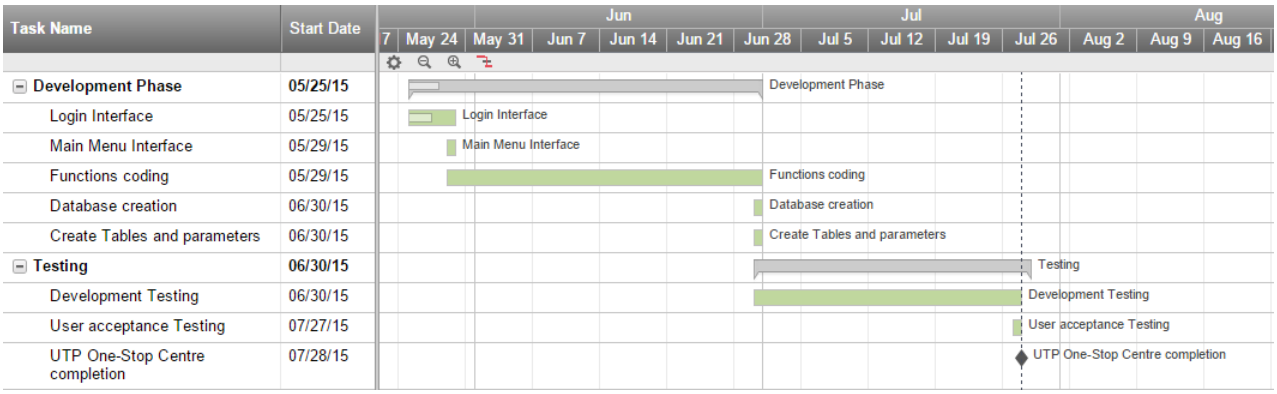
3.3 Gantt Chart

For the Final Year Project 2, the duration is around 4 months have been given to the students to complete the all phases of the project. According to the planning, the general target for FYP 2 is to complete the project with complete working prototype on week 10 on 28th July 2015. The chart below shows the Gantt chart for the project in all phases.



Task Name	Durat	Start	Finish	Predecessors
Selection of FYP title	6 days	Wed 14/1/15	Wed 21/1/15	
Submission OF FYP proposal	1 day	Thu 22/1/15	Thu 22/1/15	1
Planning Phase	**15 days**	**Wed 28/1/1**	**Tue 17/2/15**	**2**
Introduction	5 days	Wed 28/1/1	Tue 3/2/15	
Literature Review	10 days	Wed 4/2/15	Tue 17/2/15	4
Analysis Phase	**15 days**	**Wed 18/2/1**	**Tue 10/3/15**	**3**
Methodology	7 days	Wed 18/2/1	Thu 26/2/15	
Results and Discussion	5 days	Fri 27/2/15	Thu 5/3/15	7
Conclusion	3 days	Fri 6/3/15	Tue 10/3/15	8
Design Phase	**7 days**	**Wed 11/3/1**	**Thu 19/3/15**	**6**
Use-case Diagrams	3 days	Wed 11/3/15	Fri 13/3/15	
User Interfaces Layouts	4 days	Mon 16/3/15	Thu 19/3/15	11
Submission of Interim Report	1 day	Tue 31/3/15	Tue 31/3/15	10
Proposal Defence	1 day	Wed 8/4/15	Wed 8/4/15	13

Figure 3.3 Gantt chart of the project for FYP 1



Task Name	Start Date
Development Phase	**05/25/15**
Login Interface	05/25/15
Main Menu Interface	05/29/15
Functions coding	05/29/15
Database creation	06/30/15
Create Tables and parameters	06/30/15
Testing	**06/30/15**
Development Testing	06/30/15
User acceptance Testing	07/27/15
UTP One-Stop Centre completion	07/28/15

Figure 3.4: Gantt chart of the project for FYP 2.

Chapter 4

Result and Discussion

4.1 Review of the Existing Application

The One Stop Centre is not the first mover in its category. There are a few systems that is similar to the project has been implemented such as HappyFox and Internet Man Online Ticketing system. A review has been made regarding the current system and it found that:

- The application system providing a systematic and organized flow within the system. It is very user-friendly and the application is not complicated to use by users with different background in technology experience.

- Despite all that, the system application is only being implemented to the business organizations level only and not being introduced to educational institutions level. The current companies which developed those systems are mostly based on United States therefore the ticketing system in Malaysia especially on the educational institutes are isolated from these technology advancement.

Figure 4.0 : A snapshot of how a Ticketing system implemented in organization.

4.2 The Preliminary Design and Prototype

There are workflows that should be followed when using the system, to be more understanding, the following flowchart will be used as to represent the workflow and the processes involved in the application. To get the exact ideas how the application will be implemented, the proposed interfaces may help to illustrate on how the system application will work and explain further the project.

4.2.1 Flowchart

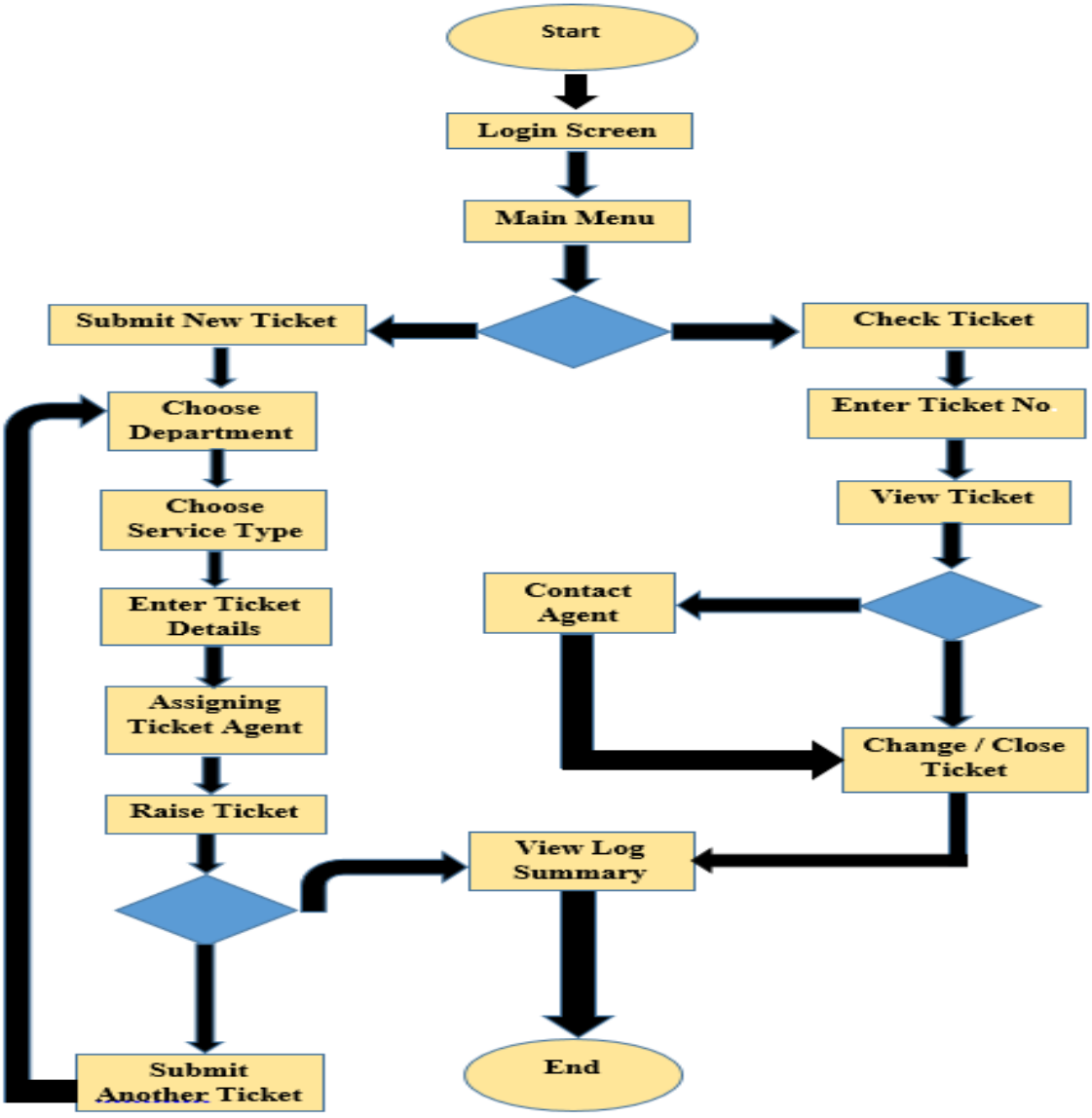
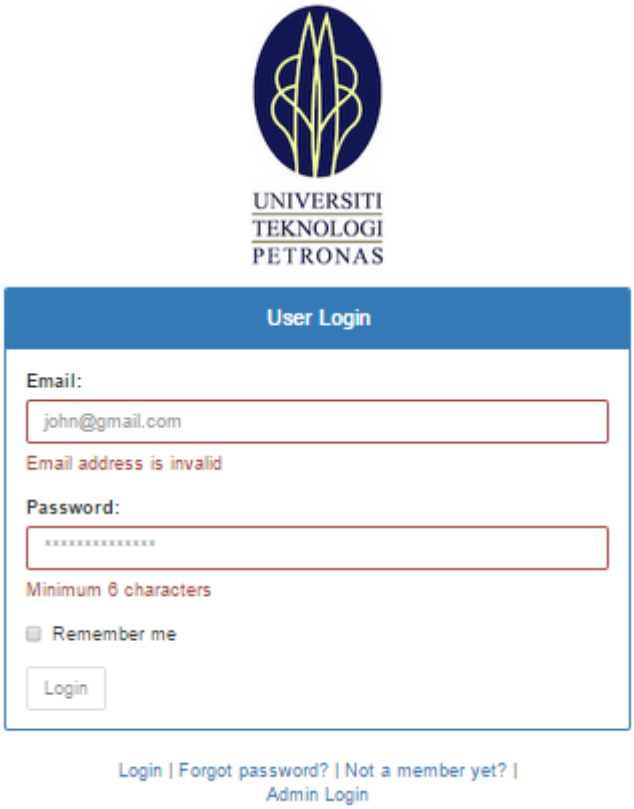


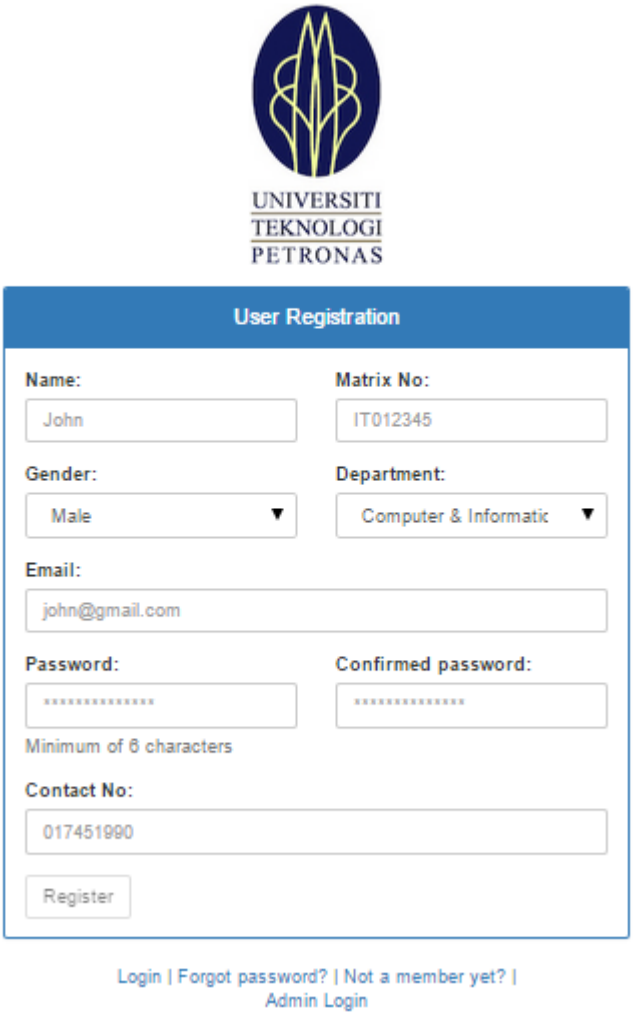
Figure 4.1: Flowchart of the proposed application system

4.2.2 User Interfaces

1. **Login Screen**



- Before accessing the system, student need to login to their account by entering the *username* and *passwords* for authentication purpose and verify that only UTP students will have the access. The username will be in email format while the password must be at least 6-digits long.

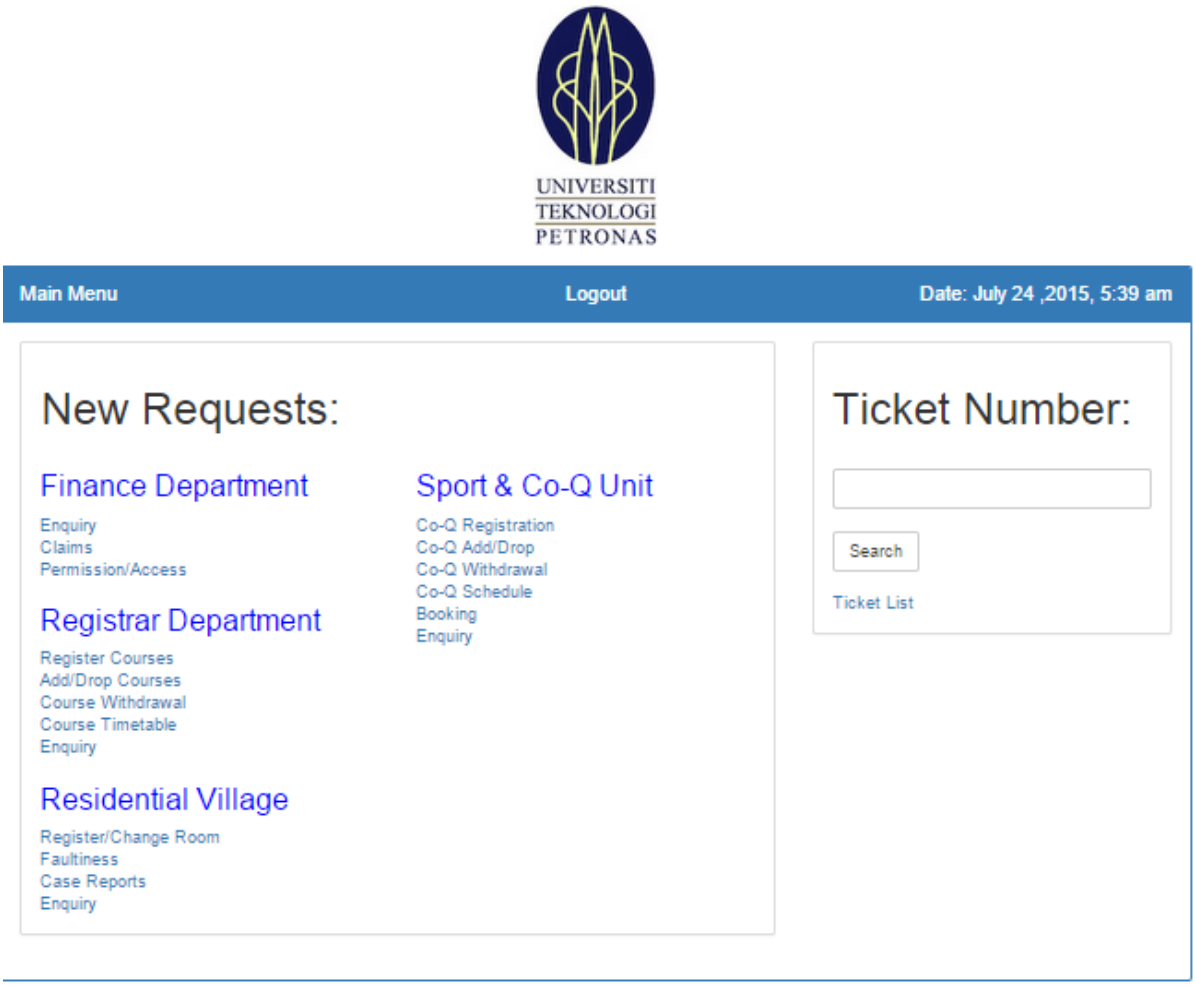


- For student who is first time using the system, they need to enter their personal details as required before the system process the details to generate and to create their new account.

- Students can straightaway login after the registration is successful. One student can only have an account the One-Stop Centre (OSC).

- I n case a student forgot their login password, a retrieval password is sent to their email so the password will be used for their login.

2. **Main Menu Screen**



- The first screen user seen after they logged in. The screen projected lists of departments available within the OSC system. There are also show the date of the login at the top of the screen.

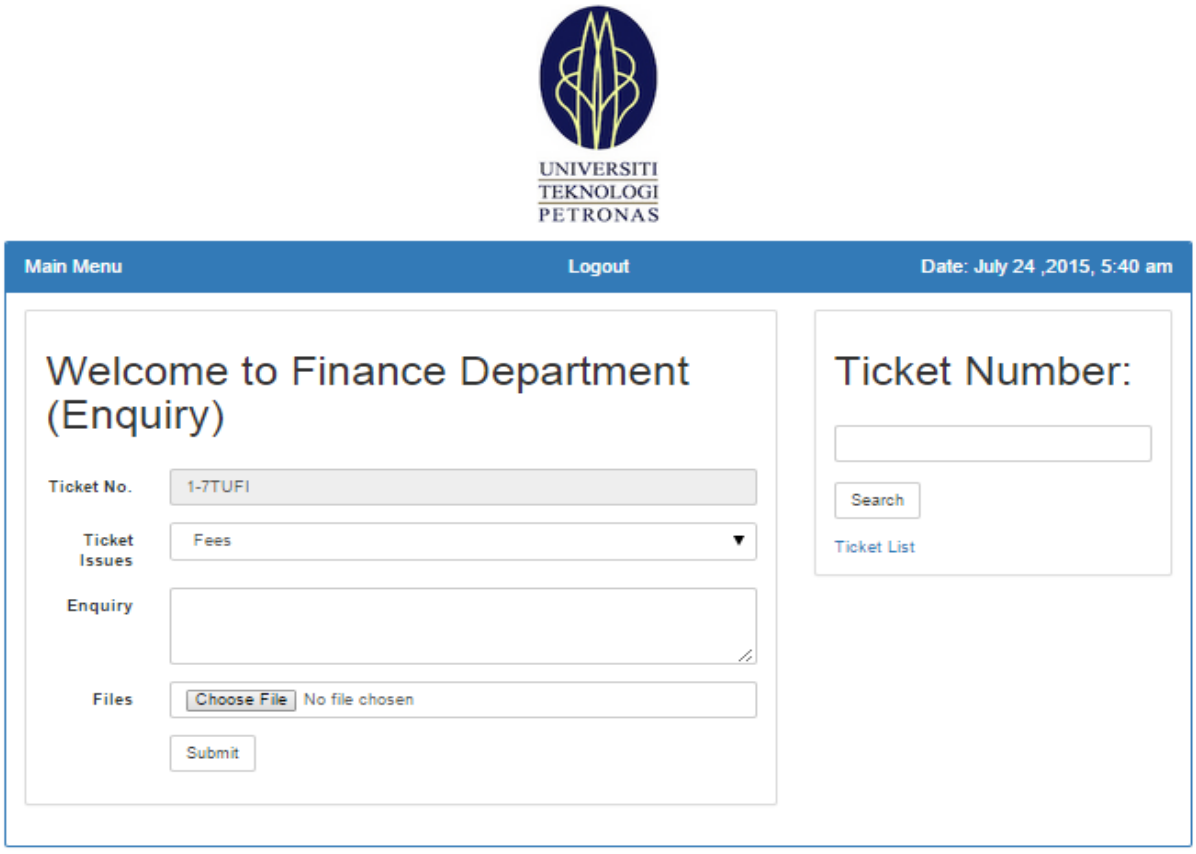
- When user clicks on the department name, the services available will be shown and expanded at the column below, enabling the users to choose the services needed aligning with their requests.

- When a user clicks on a function, the screen will display the information needed to be filled by the user along with the auto-generate Ticket No.

- If user has submitted the ticket, they can check the request progress anytime as long as they know the ticket number.

- User can logout from the system anytime they want by just clicking the logout button.

3. Submitting a new request

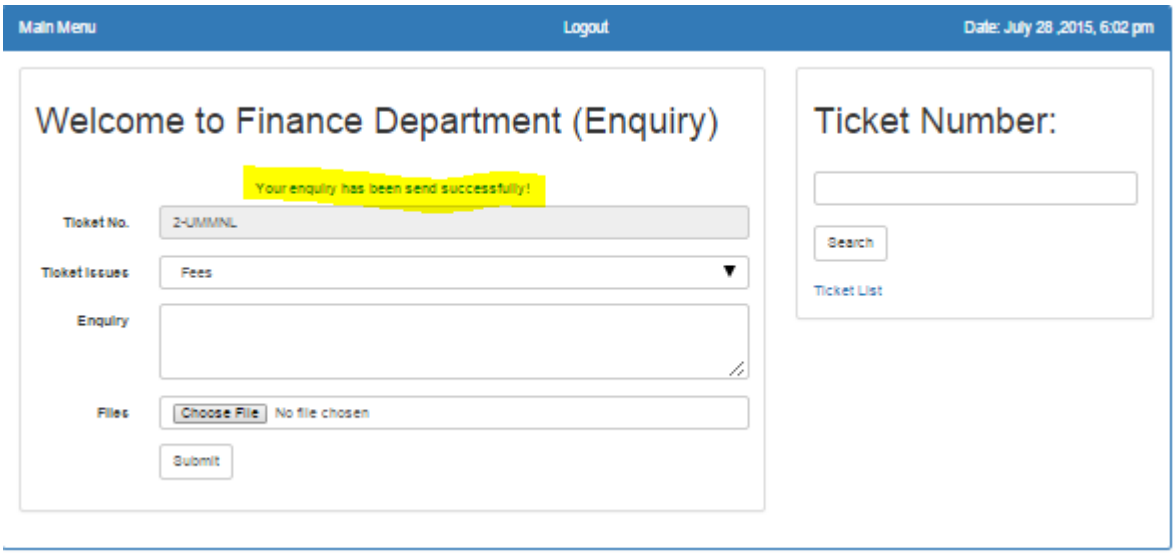


- After choosing the type of request they want to, user are directed to this screen where information of the requester along with the details are required to be entered.

- There are the auto-generated Ticket No at each requests. It is set so it will not be redundant with each other.

- User also have the option to upload pictures or documents along with submitting the request.
-

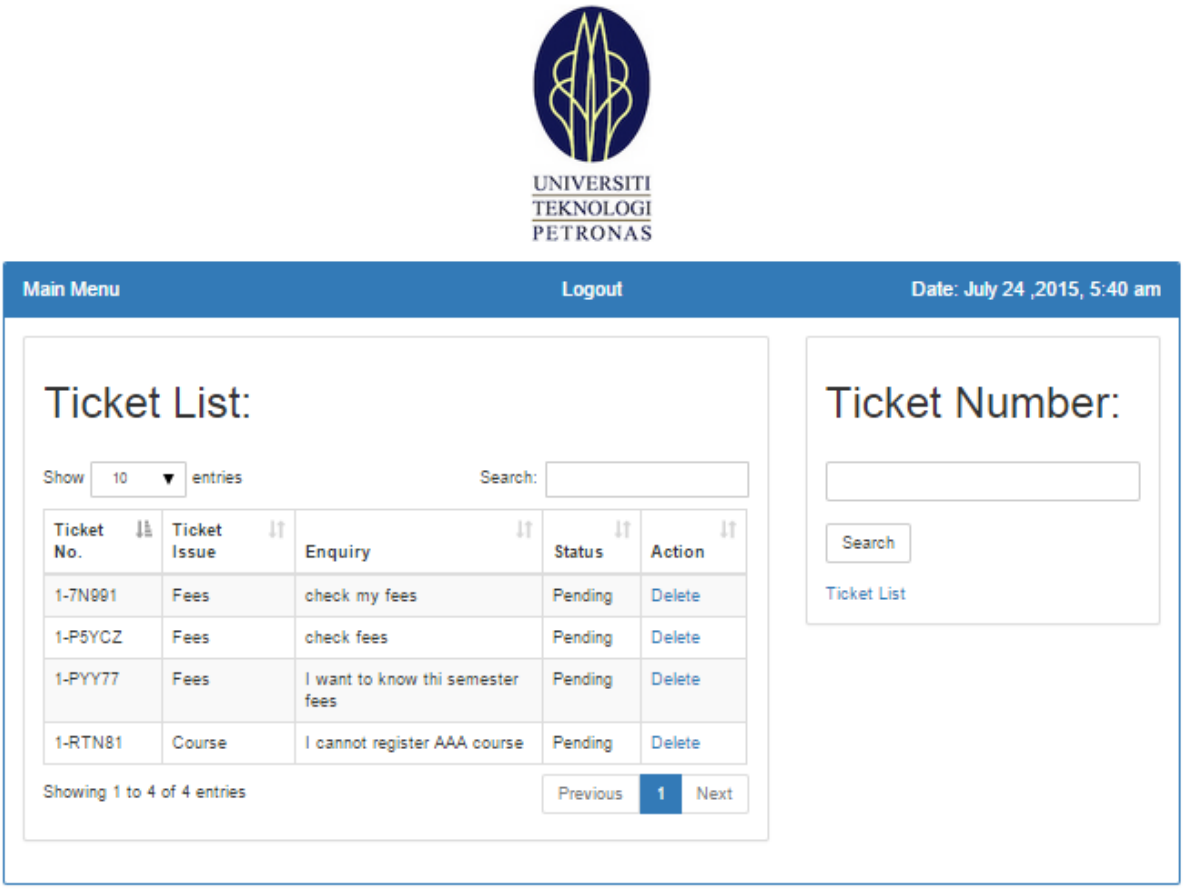
4. **Confirmation of submit**



- User will received a message, stating that their request has been sent to the server and recorded.

- User now will have several options, whether they want to submit another ticket or go to main screen for other purposes.

5. Checking ticket status



- When user search the ticket number on the search area, the result will be displayed in another screen.

- The status of each request are displayed along with the Ticket No.
- User has the option to delete the request sent.

4.2.4 Coding of the system

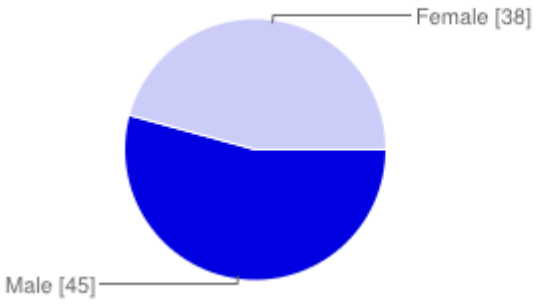
```
<h1>Welcome to Finance Department (Enquiry)</h1>
<br>
<?php
    if (isset($_GET['cat'])) {
        echo "<h5 style='text-align: center; color: green;'>" . $_GET['cat'] . "</h5>";
    }
?>
<form class="form-horizontal" method="POST" enctype="multipart/form-data" action="finance_enquiry_do.php">
  <div class="form-group">
    <label for="inputTicket" class="col-sm-2 control-label">Ticket No.</label>
    <div class="col-sm-10">
        <input type="text" class="form-control" id="inputTicket" value="<?php echo $serial_number; ?>" disabled>
        <input type="hidden" value="<?php echo $serial_number; ?>" name="ticket_number">
    </div>
  </div>
  <div class="form-group">
    <label for="inputTicketIssue" class="col-sm-2 control-label">Ticket Issues</label>
    <div class="col-sm-10">
        <select class="form-control" id="inputTicketIssue" name="ticket_issue">
            <option value="Fees">Fees</option>
            <option value="Summon">Summon</option>
            <option value="Invoice">Invoice</option>
        </select>
    </div>
  </div>
    <div class="form-group">
        <label for="inputEnquiry" class="col-sm-2 control-label">Enquiry</label>
        <div class="col-sm-10">
            <textarea class="form-control" rows="3" id="inputEnquiry" name="ticket_enquiry"></textarea>
        </div>
    </div>
    <div class="form-group">
        <label for="inputFile" class="col-sm-2 control-label">Files</label>
        <div class="col-sm-10">
            <input type="file" class="form-control" id="inputFile" name="fileToUpload">
        </div>
    </div>
    <div class="form-group">
        <div class="col-sm-offset-2 col-sm-10">
          <button type="submit" class="btn btn-default">Submit</button>
        </div>
    </div>
</form>
```

4.3 Survey Analysis

The author had issued a series of questionnaires which has been posted in social media platforms such as Facebook and Twitter. There are several questions asked to the participants regarding the implementation of the current system in their institutes and how their perception towards it and the services overall. Below is the questions asked to these participants. The aim of this survey is to understanding their

satisfactions levels towards the support departments and analysing more preferred methodology for improvements.

1. Kindly provide your gender :

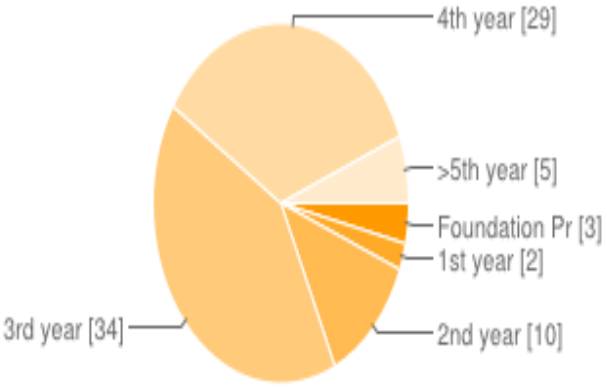


Male	**45**	54.2%
Female	**38**	45.8%

- A total of 83 respondents has taking part in this survey where included both gender of men and women. 54% are male and 46% female made of the total respondents.

- Respondents are students from different year of study from different courses

2. What is your current year of study?

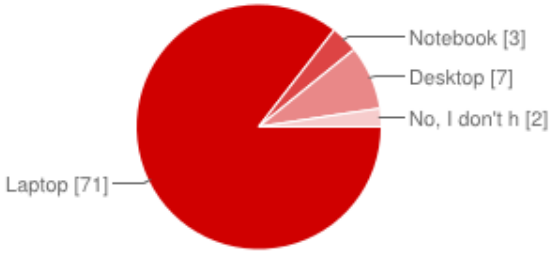


Foundation Programme	3	3.6%
1st year	2	2.4%
2nd year	10	12%
3rd year	34	41%
4th year	29	34.9%
>5th year	5	6%

- The respondents are nothing but all from an educational institute background whether from universities or college. Most of them are the UTP students itself.

- Most of the respondents are from the 3rd and 4th year students. Meaning that they are aware of the system in their places of study, especially in UTP throughout their experience over the years.

3. Do you own a computer?

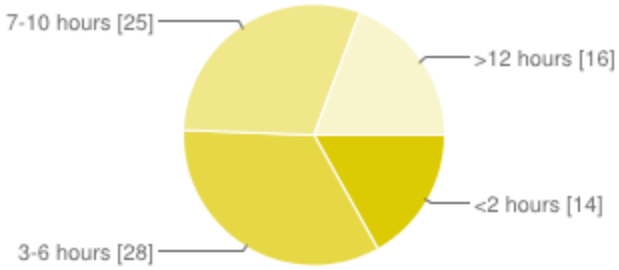


Laptop	71	85.5%
Notebook	3	3.6%
Desktop	7	8.4%
No, I don't have any	2	2.4%

- 98% of the total respondent have their own computer while only 2 respondents which makes around 2% did not own one.

- This shows that the project will be able to be accessed regularly as the system is a web-based application.

4. In a day, how much time you spent in front of the computer?

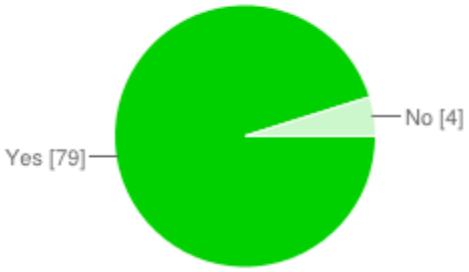


<2 hours	**14**	16.9%
3-6 hours	**28**	33.7%
7-10 hours	**25**	30.1%
>12 hours	**16**	19.3%

- The pattern of answer is very vast for this question. Some of them spent little time with their computer while others are always having the computer by their side.

- At least 80% of the total respondents spent more than 3 hours in front of their computer, suggesting they preferred in computer activity than outdoors.

5. Does your institute/university/college have their own online student portal?

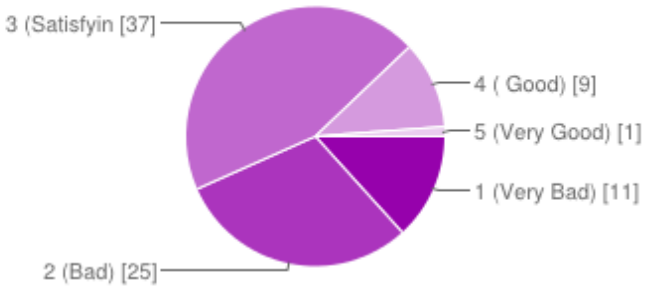


Yes	79	95.2%
No	4	4.8%

- Most respondents have their own institutional online student portal at their place.

- Means that these respondents are already exposed with the usage of the online system which enable them to weigh up the pros and cons of using online system compared to traditional system.

6. How do you rate the student portal in terms of overall performance?

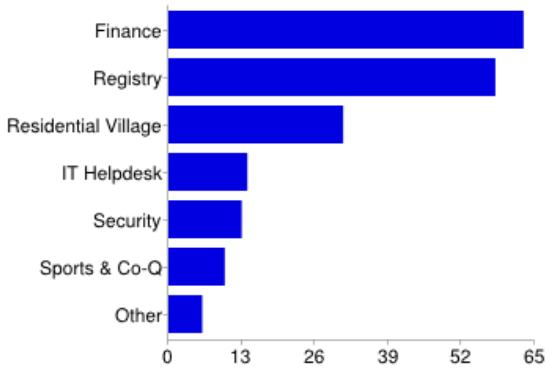


1 (Very Bad)	11	13.3%
2 (Bad)	25	30.1%
3 (Satisfying)	37	44.6%
4 (Good)	9	10.8%
5 (Very Good)	1	1.2%

- This question aims to know the satisfaction of the respondent to the current system.

- About 43% of the respondents feel that the system is unsatisfactory while only 12% feels that the system is good for their use

7. Based on your study programme, which of the following departments you frequently engaged with?



Finance	63	75.9%
Registry	58	69.9%
Residential Village	31	37.3%
IT Helpdesk	14	16.9%
Security	13	15.7%
Sports & Co-Q	10	12%
Other	6	7.2%

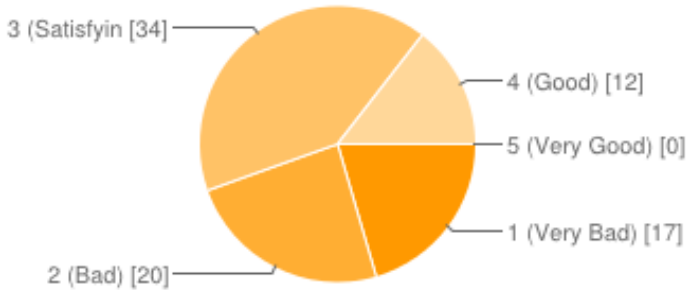
- This question aims to know the relationship of the students and the support departments.

- Based on the results, the respondents are most engaged with Finance and Registry departments, mainly for fees and course subjects' settlements.

- It is obvious that these departments are mostly packed with students during office hours and the staffs will have troubles times handling all those students without proper managing system.

- There are also some respondents that engaged with other departments such as IT Helpdesk and Sports unit. It may because they are handling events and complicated issues to engage with.

8. How do you rate the current services in these departments?



1 (Very Bad)	**17**	20.5%
2 (Bad)	**20**	24.1%
3 (Satisfying)	**34**	41%
4 (Good)	**12**	14.5%
5 (Very Good)	**0**	0%

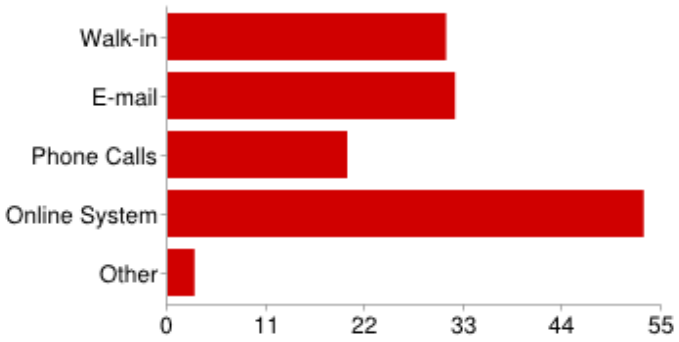
- This question aims to understand their experience and satisfaction levels when engaging with these departents.

- The rate may include the friendliness, efficiencies, and response time of the departments.

- 44% of the respondents feels the services are unsatisfactory while 15% believes the services are good.

- Some changes needs to be done to improve the services, as well as improving the relationship with students and managements.

9. What would your preferred methods of engaging these departments?



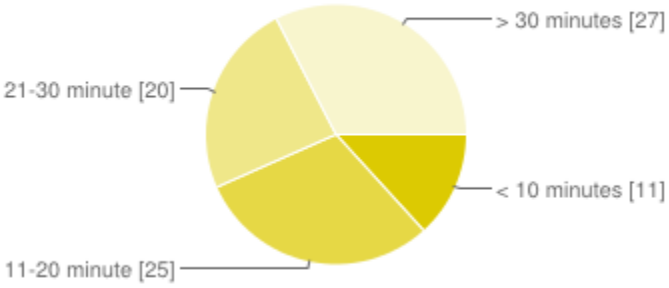
Walk-in	31	37.3%
E-mail	32	38.6%
Phone Calls	20	24.1%
Online System	53	63.9%
Other	3	3.6%

- This question aims to understand the trend of the students in their daily activities life. It also aims to see the effect of technology in influencing their decision.

- About 64% of the respondents preferred an online system as their platform of engagement, followed by E-mail and phone calls by 39% and 24% respectively. It shown that student do not want to come in regularly in these department for any matters.

- This is vital for a new system to be developed as it needs to determine the target users who will be using the system. As more students preferred online engagement, the implementation of the system would likely be a great success.

10. For walking into the department, approximately how much time does it take?

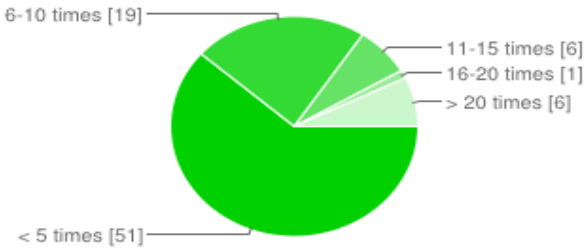


< 10 minutes	11	13.3%
11-20 minutes	25	30.1%
21-30 minutes	20	24.1%
> 30 minutes	27	32.5%

- This is question is asked because to know the response time of the departments in respondents' institutes for every engagement they went for.

- The median of the results shows that it normally takes about 20-30 minutes to finish a session with these departments. It is quite a long time looking that there are other alternatives that can save both time and energy for the same purposes.

11. How many times do you engaged with these departments in a semester?



< 5 times	51	61.4%
6-10 times	19	22.9%
11-15 times	6	7.2%
16-20 times	1	1.2%
> 20 times	6	7.2%

- This question is to understand the frequency of a student engaging with these departments.

- Most of the respondents engaged less than 10 times in a semester, making a total of 84%. Meaning that these departments are not

preferred by the students to come often although there are many sessions that may lead them come into.

4.3.1 Feedback from the respondents

After the survey questionnaires, respondents are given the platform to give their feedback regarding on how to improve the performances of these departments. Because of that, the author has summarized the feedbacks in bullet points below:

- The staffs need to response with student calls. The calls made always not be pick-up.
- The registration period for co-curriculum sports should be extended.
- The staffs should be friendlier to student and clarify an issue more clearly instead of redirecting the students blindly to other departments.
- The current system is satisfying, considering that the work culture in Malaysia is generally the same standards. Providing an online system is one of the alternatives to increase the efficiency.
- The departments' systems should updated their database faster.
- The staffs did not follow the office working hours.
- If an issues is related with more than one department, the policy and rules should be standardized instead of making their own rules.
- There should be a personnel hired to check the email and online system especially after working hours because most students are active in engaging the platform at nightime.
- A new system should be created where any feedbacks from students are entertained alongside the system performance and usability.
- A new system to ease the procedure of any payment.
- More counters to be open to settle their financial outstanding status.

Chapter 5
Conclusions & Recommendations

5.1 Conclusion

Students in educational institutions are always have many conflicts with the support departments throughout their period of study. The problems that commonly raised are the response time of the staffs, the procedures which are complicated and friendliness of the staffs. The current systems has been implemented to students to ease the process workflow, however the performance and usability of the system hinders the interests of students to use it.

However, based on the technology advancement, the generations nowadays are trending of using their mobile gadgets for assisting them in their daily activities. Students especially have experience the usage of different systems and applications in their life, regardless of any affiliation with the universities, colleges or their social activities. This means that they are able to make judgements for a system whether it is beneficial or not to them. Students just not need an online system, but a system where they feel they are cared and simple to use. It is a waste to waste resources on a new project if the basic requirements or problems of the students are not analysed. Therefore, it is better for a simple system but it can help the students in terms of complexity and efficiency.

So, in order to tackle these problems, the developer needs to design proper layout of the system to be implemented later. The designs should include the required

key functionalities and creates a user-friendly environment for its target users. Apart from that, the new online system should always made available to the system, which means user can access it normally even in high traffic loads. Furthermore, the system should aiming to increase efficiency and effectiveness which means the system will not cause complications which bears more difficulty to the students of using it. Ignoring this elements will cause it becoming just another system which including in failed products.

5.2 Recommendations

Improvement is a must to keep the application relevant to the business environment. The application may still be improved to suit the users and to accommodate with any future changes in the specifications and pricing calculations. These are the functions that could be implemented in the application by future developers:

- More status should be displayed such as ‘Open’, Resolved’ and ‘Awaiting Confirmation’ to provide more accurate feedback on processing the request.
- Add print functions to request sent.
- More functions to be added into the system, so it would be more replicating the current systems in UTP under one roof.

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Appendix

Student One-Stop Centre

This study aims to create a integrated systems among the departments available in an educational institute, university and college. It is hoped that by this study, students are more satisfied with the services level provided by the supports departments in the near future.

The author would like you to spend some of the quality time in answering this survey. Your cooperation is truly appreciated. Thank you.

1. Kindly provide your gender : *

- Male
- Female

2. What is your current year of study?*

- Foundation Programme
- 1st year
- 2nd year
- 3rd year
- 4th year
- >5th year

3. Do you own a computer?*
(If the computer is borrowed to you, considered it your own)

- Laptop
- Notebook
- Desktop
- No, I don't have any

4. In a day, how much time you spent in front of the computer?*
(This may include libraries and cyber cafes computers)

- <2 hours
- 3-6 hours
- 7-10 hours
- >12 hours

5. Does your institute/university/college have their own online student portal?*

- Yes
- No

6. How do you rate the student portal in terms of overall performance?*
(Stability, Availability, Speed, Interfaces)

- 1 (Very Bad)
- 2 (Bad)
- 3 (Satisfying)
- 4 (Good)
- 5 (Very Good)

7. Based on your study programme, which of the following departments you frequently engaged with?*
(You may choose more than one options)

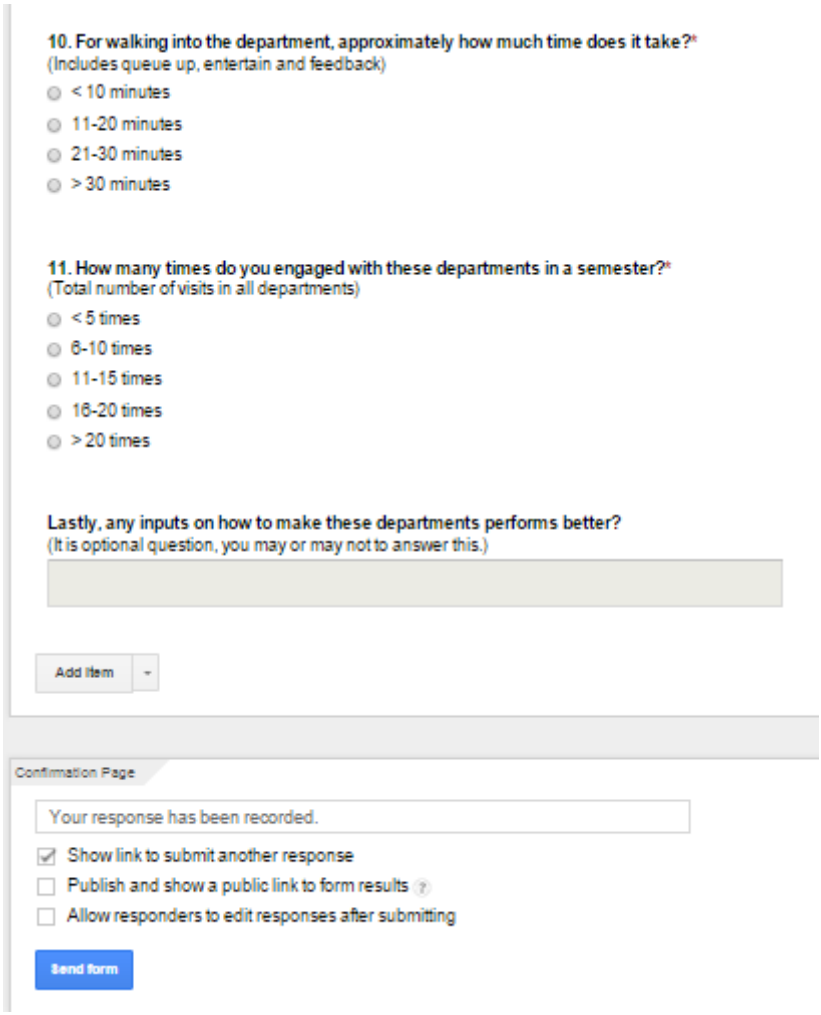
- Finance
- Registry
- Residential Village
- IT Helpdesk
- Security
- Sports & Co-Q
- Other:

8. How do you rate the current services in these departments?*

- 1 (Very Bad)
- 2 (Bad)
- 3 (Satisfying)
- 4 (Good)
- 5 (Very Good)

9. What would your preferred methods of engaging these departments?*
(You may choose more than one options)

- Walk-in
- E-mail
- Phone Calls
- Online System
- Other:



10. For walking into the department, approximately how much time does it take?*
(Includes queue up, entertain and feedback)
- < 10 minutes
- 11-20 minutes
- 21-30 minutes
- > 30 minutes

11. How many times do you engaged with these departments in a semester?*
(Total number of visits in all departments)
- < 5 times
- 6-10 times
- 11-15 times
- 16-20 times
- > 20 times

Lastly, any inputs on how to make these departments performs better?
(It is optional question, you may or may not to answer this.)

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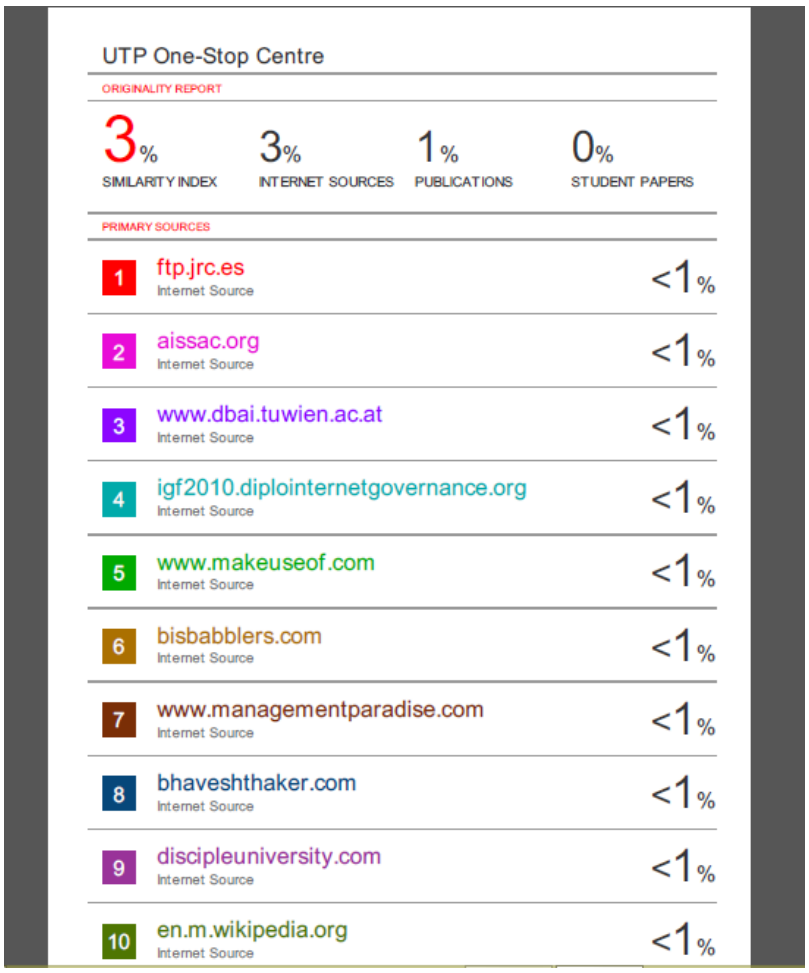

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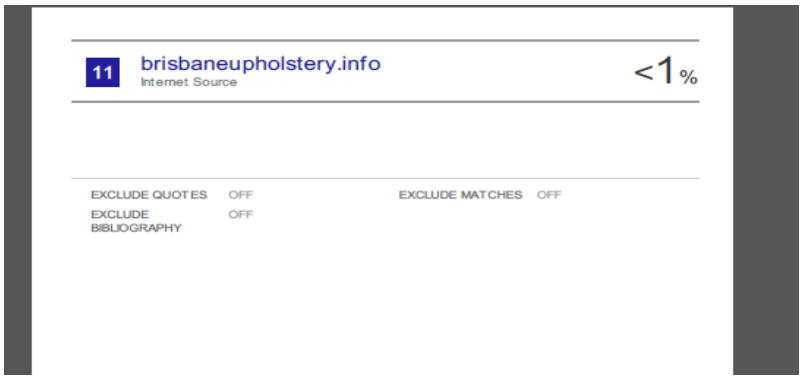

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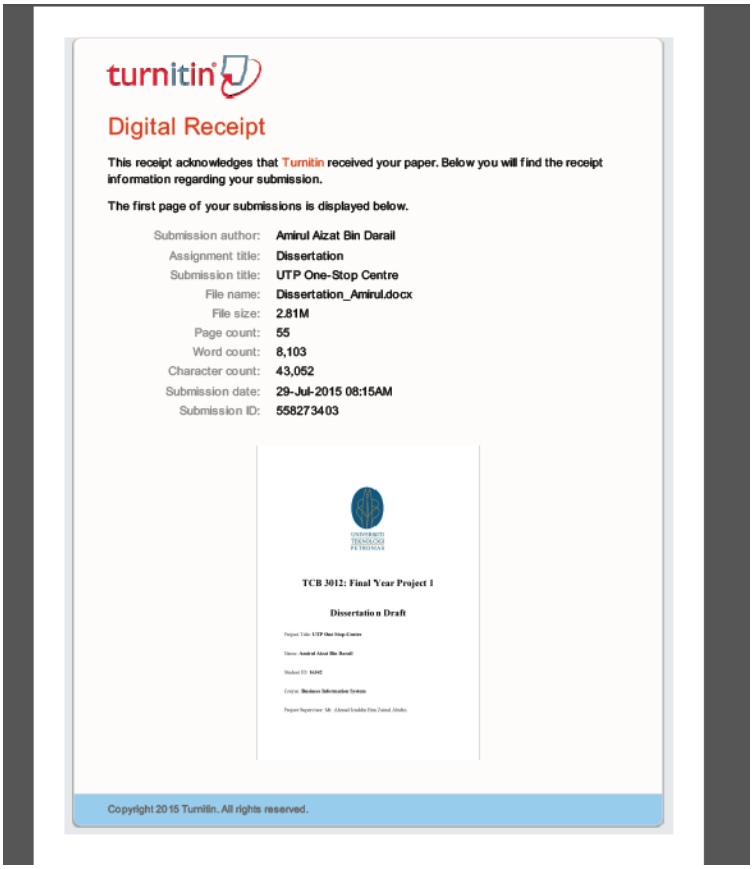

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