Hotel and Flight Online Booking System for UTP Human Resourse Department

by

Nurool Suhana Bt Shahrin

12158

Dissertation submitted in partial fulfillment of

the requirements for the

Bachelor of Technology (Hons)

(Business Information Systems)

May 2012

Universiti Teknologi PETRONAS

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CERTIFICATION OF APPROVAL

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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.

_____

(NUROOL SUHANA BT SHAHRIN)

ABSTRACT

This report present a new developed web based system that help to solve the tasks of Human Resource and Administration department (HRMA) of Universiti Teknologi PETRONAS (UTP) in the bookings of hotel and flight of its staffs. Booking of hotel or flight are very common tasks that need to be done by the department almost everyday. However current systems are manual systems and not being integrated yet. These will lead to inefficiency of data management especially in monitoring the status of requests. This report will gives an overview of the underpinning project developed especially in its objectives, problem encountered, scope of study, methodology as well as the findings in developing this project. This project developed purposely to enable staffs to book hotel rooms and flight tickets as requested, generate guarantee letter automatically, send notification to respected endorsers, able to store and retrieve data and allow applicants to access and request the system via personal computer or mobile device by eliminating manual works and increase the flexibility of the system itself. By using Prototyping Methodology as its methodology, this system will be developed to use case-based reasoning method in order for it to complete the task independently. The case-based reasoning functionality embedded in the system provides the system and its users with the options to review past similar request and reuse the solution for the new request to be handled. A realistic case demonstrates an idea on how the overall system will help HRMA staff to reduce time needed for every request to be handled. This approach shall help HRMA to have a better enhancement in their database management system. Implementation of this new system has been proven reduced the time taken needed for every cases handled by HRMA staff. It also helps improve the efficiency and effectiveness in storing the data into this structured system as time taken to apply and endorse can be reduced. Besides speed up the overall process and increase its flexibility, paper usage also can be reduced as the no more hardcopy form being involved. Testing of the project shows that the system able to provide a desired solution which allow users to book the hotel and flight according to their needs. This shows that the developed system will be having net advantages once implemented.

ACKNOWLEDGEMENT

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LIST OF ABBREVIATIONS

UTP   Universiti Teknologi PETRONAS

HRMA   Human Resource Management & Administration

CBR   Case-Based Reasoning

CHAPTER 1

INTRODUCTION

1.0 INTRODUCTION

1.1   Background of Study

Booking of hotel or flight are very important task that need to be done by the department of HRMA in UTP. However current system is manual and time-consuming works. As there are interrelated and a growing number of new and existing requests, it is getting hard to manage and supervise every single request efficiently and effectively. A new automates system need to be developed in order to speed up the process and increase its flexibility. Besides that, mission of the department "go-green and paperless work" can be achieved as the needs of paper usage are reduced.

The new automated system will focus on the improvement of the database management as it can increase the overall productivity of HRMA department in managing the data of reservation. It eliminates data redundancy, promote data consistency, develop the ability of sharing information across departments, get better backup and recovery system, boost the effectiveness of file storage and effectively increase the productivity of the department itself.

The case-based reasoning (CBR) functionality embedded in the system provides the system and its user with options to review past similar requests and reuse the solutions for the new request to be handled. CBR is the process of solving new problems based on the solutions of similar past problems. It is a prominent kind of analogy making. CBR is a powerful method for computer reasoning as it can help in making decision and this approach are all based on past cases personally experienced by human. This approach shall help HRMA in managing the information as most of the requests are repetitive and almost similar with each other. These problems are going to need similar decision making. It will be further discussed in methodology part.

1.2 Problem Statements

Current procedures of Hotel and Flight Reservation systems require UTP staff who wanted to book for hotel or flight is to fill up separated hardcopy forms and submit it to HRMA department using hardcopy form. They need to get the endorsements from Programme Head and Registrar or Director Concerned. From HRMA side, they have to manually check the hardcopy form. Any errors or problems will be informed later after they done checking. If no error being found, they will start to process the hardcopy form by key in one by one data into an excel sheet. This process is a time consuming of work and need to be done manually.

Since there are a growing number of new and existing requests, it is getting hard to manage every single request efficiently and effectively. A new automated system need to be developed in order to speed up the process and increase its flexibility. Implementation of this new system will increase the control and accuracy of information pass in the entire process.

Main weak spots of both current systems are that they are highly labor-intensive to operate as it needs to be done manually. It requires continuous monitoring to ensure that each request is counted and maintained as scheduled. It is also difficult to share information throughout different departments in UTP. This is due the documentation recorded are limited to HRMA department only and there is a lack of computerization in accessing the records. The time spent in monitoring the record can be channeled to more productive activities for a better department performance. As this manual system relies heavily on the actions of people, it will increase the possibility of human error. There are also could be chances for HRMA staffs might forget to record a new request. Inaccuracy in physical counts will result to a delay of booking and reservations of either hotel or flight tickets.

Besides that, data recorded could be repeated and might have accidentally switched since it is in hand written. Moreover, there are also too much of paper usage since the form needs to be submitted and endorsed in hardcopy. Data and papers that are stored in filing cabinet consumes excessively place and difficult to be maintained and traced in the future. Hence, this project will be developed for HRMA department of UTP to help them to manage new and existing requests and this can lead to a better management performance.

1.3 Objectives

The objectives of this system are to develop a web-based system of hotel and flight booking of UTP employees as with the following functions:

- To reserve for hotel rooms as requested
- To reserve for flight tickets as requested
- To generate guarantee letter automatically
- To send notification to respected endorsers
- To be able to store and retrieve data
- To provide secured information management system
- To allow user to spend less time locating previous information.
- To allow people access the system via personal computer and mobile device.

1.4 Scope of Study

The project of Hotel and Flight Online Booking System is a system that combines and automates the process of Hotel and Flight Reservation that is initially being done manually by HRMA staff of UTP. This project involves computer programming, modelling, simulations, analysis and product design. The area and scope of the project are narrowed down to hotel and flight reservations only to ensure the project is feasible and could be completed within the allocated time frame.

The study to develop this project focus limited to hotel and flight reservation of UTP staff and the process will be carried out by HRMA department of the university itself. Hence it is concerning to HRMA department with their staff as the first group of user who are going to execute the process and overall UTP staffs as the group of second user who are going to initiate the whole processes.

This project involving preparation, implementation and evaluation of existing systems which are including the preparation of documents needed, checking existing database, supervise new form coming in and implementation of criteria that necessary in the system. Scope for hotel

reservation covers the reservation of hotel room utilising the list of hotels that provided credit facilities to UTP while, for flight reservation it covers the domestic as well as international flight ticket reservation through the agencies registered with UTP. Flight reservations are limited to Malaysia Airline only.

CHAPTER 2

LITERATURE REVIEW

2.0 LITERATURE REVIEW

2.1   Problem Formulation

The development of Hotel and Flight Booking has been a forward-looking objective of HRMA department to improve their quality of task performance. Studies and research projects have been carried out, to examine the potential or actual impact of the development of this system to the entire performance in the department. This impact is seen both through the generation of new information management and work performance of staff in HRMA. The evidence collected suggests that it would be a better system if both systems combined into two. Apparently both are interrelated and need a specific system to manage data in and out of these tasks.

A clear and common wrapping up taken from HRMA and UTP staff, it would be a huge advantage if hotel and flight reservation can be automated. Both systems fit together as part of an important management in administrative tasks. Optimized from the relation of HRMA and other UTP staff, reason for this development is highly critical. Thus a relatively new demand for integration of just one element of each of their networks to meet this intermodal need represents a challenge in multiple dimensions. Although some have made notable progress in service integration, many different options have emerged, and some real issues still remain to be addressed. These issues extend from the basics of common information platforms and the data redundancy in managing information and scheduled endorsement.

The problems that are seen by each party, particularly HRMA staff and other UTP staffs and some initial suggestions for possible solutions to those problems. As worked with evidence from research, from interviews with the main interested parties, and the views from users who are actually requesting for hotel and flight reservation found that online system is a need to make whole system work effective, efficient and simpler. The study therefore offers a broad structure in which a variety of perspectives can be examined and analyzed, in order to

promote the concept of automation of manual work more effectively for the future. Contributions to this analysis comes from many parts, and in many alternative forms from the academic studies which have been collected, to the direct views of the daily basis work of HRMA staff specifically in hotel and reservation system and so on.

2.2   Case Base Reasoning

A case in case-based reasoning (CBR) is a contextualized piece of experience, which can be represented in various computerized forms [1]. In this case CBR method will be used as the method for gaining experience and giving advice in the decision making part by suggesting alternative place for hotel room registrations. Unsuitable hotel location seems to be an unavoidable problem. Based on historical data, there were applicants who experienced this kind of problem and it is hard for HRMA to find alternative and suitable hotel location for them. Since the problem is repetitive, a logical countermeasure is used to store the data describing hotel locations, situations and implement procedures that will reuse this information to solve similar problems when encountered. When a sufficiently large database is created, it can be applied to analyze any other hotel suggestions based on its location and purpose of it. More sophisticated approaches make use of hierarchical representations or generalized cases.

Essentially the concept of CBR is a 'problem-solving episode', based on the cognitive science distinction between semantic and episodic memory. A case is defined as a 'contextualized piece of knowledge representing an experience that teaches a lesson fundamental to achieving the goals of the reasoner' [2]. The experience a case represents can be structured in various ways. Case representation in case-based reasoning (CBR) makes use of familiar knowledge representation formalisms from Artificial Intelligence (AI) to represent the experience contained in the cases for reasoning purposes [3].

CBR is a continuous cycle which involves 4 crucial steps:-

1. RETRIEVE (find similar problems)
2. REUSE (reuse proposed solution)
3. REVISE (adapts and repair proposed solution)
4. RETAIN (integrate in case base)

A new problem is solved by retrieving one or more previously experienced cases, reusing the case in one way or another, revising the solution based on reusing a previous case, and retaining the new experience by incorporating it into the existing knowledge-base (case-base) [4]. Figure 2.1 presents how case-base reasoning system process works:-
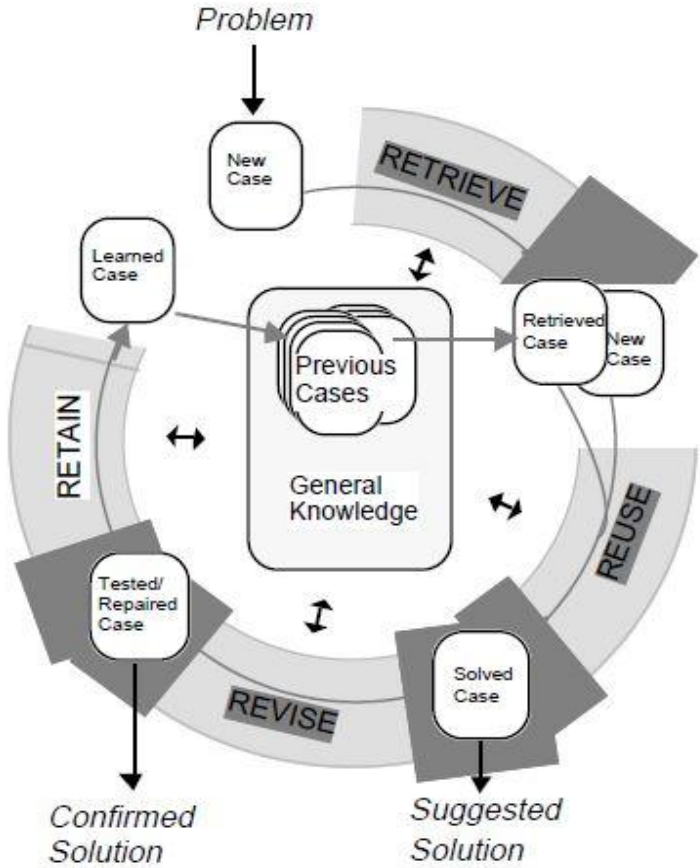

Figure 2.1: Case Base Reasoning process

Case base reasoning solves new problem by using or adapting solutions that were used to solve old problems. Technically, once new case coming in, mandatory information will be captured into the system from that particular new case. Mandatory information from previous case will be retrieved and being compared with the new case. If similar mandatory information captured between these two, system will reused the same method, procedure and information and adapt it to the new case by revising it. The new procedure and information will be repair and again retain into the system [1]

In Case Base Reasoning, a case will have two major components, a solution and a specification. The solution is the one which will be reused and the specification is used to

discover similarity to new target problems. The specification is usually represented as a set of feature values [4]. In this case location and requirement of staying attributes going to hit the specification of a case. Hence, Case Base Reasoning system must have a retrieval mechanism which capable to efficiently capture case similarity with the previous one. There are many techniques in use but the two most common are based on decision trees or nearest neighbour techniques [2].

Nearest Neighbor Retrieval is the technique that going to be used to retrieve information from the previous case. Nearest Neighbor Retrieval retrieves the most similar cases using weighted sum distance function. This concept is applied in CBR through distance calculation of the cases' various features. Degree of similarity is between 0 and 1, 1 being identical. Therefore, similarity of each feature is 1 subtracted by the distance. The formula as follow:

$$similarity(Case_I, Case_R) = \frac{\sum_{i=1}^{n} w_i \times sim(f_i^I, f_i^R)}{\sum_{i=1}^{n} w_i}$$

Based on wi is the importance weight of a feature, sim is the similarity function of features, and fiI and fiR are the values for feature i in the input and retrieved cases respectively. Figure 2.2 shows the matching process using matching engine to match up new and previous information:-
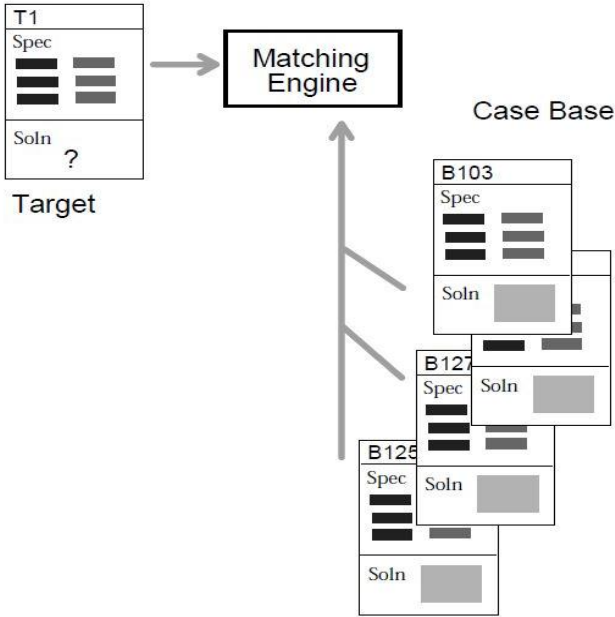

Figure 2.2: Retrieval process in Case Base Reasoning

Given a new case (T1) coming into the system, system will match it up with previous case by comparing it*s* specifications from both sides to find the solutions. Shown in fugure 2.3 is the match up process using Nearest Neighbor Retrieval [1]. T1 will be considered to be grouped into group 2(KLCC area):-
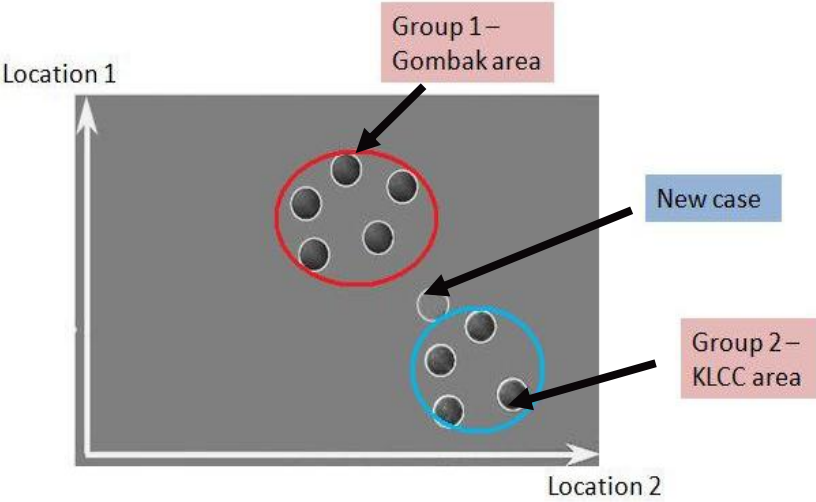

Figure 2.3: Matching engine process based on Nearest Neighbor Retrieval

2.2.1   Benefits of Case Base Reasoning

Generally benefits of Case Base Reasoning are presented in the Table 2.1 as below

Table 2.1 Benefits of Case Base Reasoning

Benefits	Description
Provides consistent answers for similar case	Similar case which needs similar solution will be provided by the system and this will increase the procedure consistency from the point of view of applicants.
Holds and maintains significant levels of information	System will capture information that is very useful for future references. Hence there is no losing of important information.
Easy to be used by management	System will help and replace the task of management staff itself. Leaving less work load and increase its efficiency.

CHAPTER 3

METHODOLOGY

3.0 METHODOLOGY

3.1 Prototyping Methodology Model

This chapter will cover the details explanation of methodology that is being used to make this project complete and works well. The method is use to achieve the objective of the project that will accomplish a perfect result. In order to develop this project, the methodology based on System Development Life Cycle (SDLC), generally three major steps, which is planning, implementing and analysis being used.
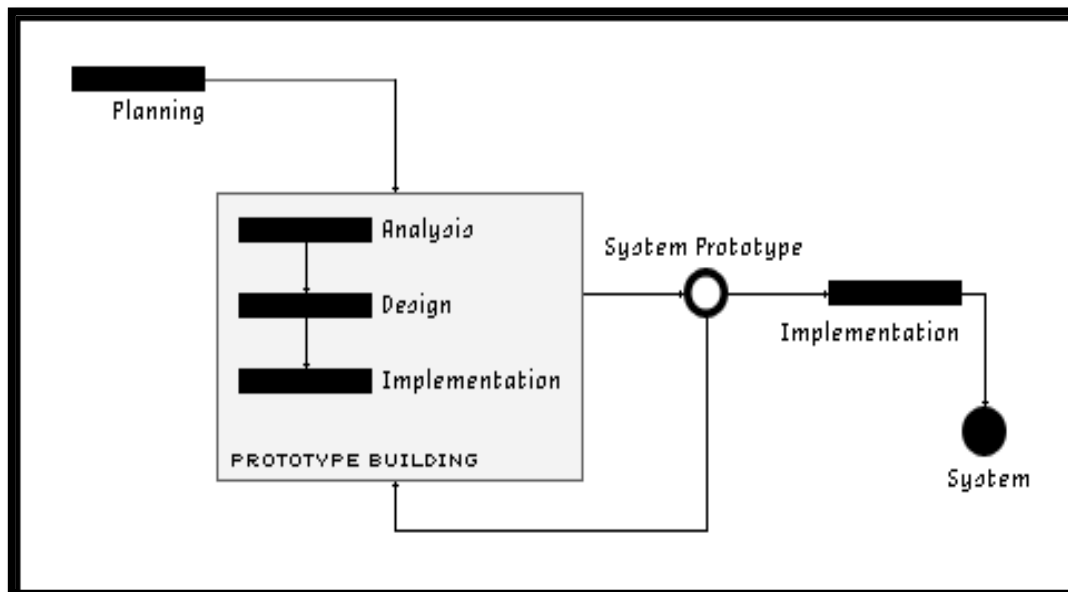

Figure 3.1: Prototyping Methodology

Prototyping methodology is used in the development process. Prototyping methodology is chosen as it allows continuous improvement and development of the project. The advantage of prototyping methodology is that, it accelerates rapid development processes.

3.1.1　Planning

In this project initiation phase, the systems business value and fundamental process of understanding why an information system will be build will be identified. This phase involved estimating time, cost, quality, change, risk and issues to make sure the project is completed within the budgeted resources. The planning phase produced a milestone-driven schedules, feasibility analysis and detailed project planning schedule for the development and implementation of the system. Work done in this phase is including discussion on project feasibility with HRMA staff and research on similar project previously done by others. Project management was done after project initiations which included work breakdown structure of the project, checking project timeline and check the details of system requirement.

3.1.2　Prototype Building

In the prototype building phase, the prototype being developed part by part and presented to the users and project sponsor. They have to provide comments and the comments will be used to re-analyze, re-design and re-implement a second prototype that provides more of the features.　This process shall continue in the cycle until the analysts, users, and agreement for the prototype had provided enough of agreed functionality.

In the prototype building, the stages include:

a) **Analysis**

The main purpose for this phase is to gather user requirement so that at the end of project, it will produce a system that meet clients expectation. This phase investigate the current available system; identify opportunities and improvement as well as developing a new concept for the systems. For this system, there will be an interview conducted to HRMA staffs of UTP regarding this system. The deliverables of this phase are system proposal and high level initial design. Main component are analysis strategy on current situation of business conduction and requirement gathering from project stakeholders of what they expect from the to-be system.

b) Design

This phase will focus more on the technical part of the system especially on how the system will operate in term of hardware, software, network infrastructure, user interface, forms, reports, and the specific programs, databases and files that will be needed. This is the development of the basic architectures design for the system, interface design, database and file specification and program design. System developer will understand and get familiar with the programming language used before getting ready to code the system.

c) Implementation

The main activity involved in this implementation part is implementing developed system and recoding according to the user requirement as well as to remove critical error found in the program to make sure the program run successfully for the next implementations. The steps involved in implementation phase are system construction and installation.

3.1.3   System Prototyping, Testing & Final Implementation

The final phase is the implementation phase. This is the phase where the actual system being implemented. The goal for this system is to implement the system correctly, efficiently on the device involved. The system will later be tested to ensure it performs as per designed. Testing is one of the most critical stages. The deliverable from this testing phase is Internal Testing, Unit Testing, Application Testing and Stress Testing. This is to make sure that the system produced is error free and in a high quality condition. The testing environment simulates a majority of the targeted platforms to make sure it work successfully on the targeted test platform, without having a significant issues as well as to make sure it continue to operate well after installation. In the deployment phase, it involves finalizing user documentation, finalizing the system set-up and conducting user training to get user familiar with the new system.

3.2   Key Milestone

Tables 3.1 and 3.2 below show Key Milestone of FYP 1 and FYP 2 in the planning phase:

Table3.1: FYP 1 Key Milestone

Milestone	Date
Submission of proposal to research cluster	08/02/2012
Meeting with HRMA staff	20/02/2012
Submission of extended proposal	29/02/2012
Viva: Proposal Defense and Progress Evaluation	21/03/2012
Submission of Interim Report	11/04/2012

Table 3.2: FYP 2 Key Milestone

Milestone	Date
Submission of Progress Report	Week 8
Poster Exhibition and Pre-EDX	Week 11
Submission of draft report	Week 12
Submission of Dissertation (soft bound)	Week 13
Submission of Technical Paper	Week 13
Oral Presentation	Week 14
Submission of Project Dissertation (Hard Bound)	Week 15

3.3   Gantt Chart

Figure 3.2 shows the gantt chart used as a guide in the planning phase:

Key	Jan	Feb	March	Apr	May	June	July	Aug
Planning	■	■	■					
Project chosen	■							
Gather Information		■						
Interview sessions		■						
Survey			■					
Analysis		■	■	■	■	■		
High level analysis		■						
Core module analysis			■	■				
Supporting module analysis			■	■				
Design					■	■		
Database development					■	■		
Software development					■	■		
GUI development					■	■		
Quality assurance					■	■		
Implementation					■		■	■
Installations							■	■
Detailed training								■

Figure 3.2: Gantt Chart

3.4   Tools

Generally, information will be collected by studying documents needed, checking existing database, supervise new form coming in and implementation of criteria that necessary in the system as requested by HRMA department. Tools or equipment required in developing of this project are Internet Programming (XHTML), Visual Basic, Oracle 9i, Microsoft Access, MySQL, CSS Grid Builder, Ajax and Javascript. This system can be access by using internet browser via computer or mobile phone with required password to categorize the users. The information collected is then analyzed and distilled into credible, reliable and useful results for presentation of the system. The following are the elements that need to be taken care of during the development of this project:-

Table 3.3: Important elements to develop a system

Elements	Descriptions
Architecture	All computer operating systems are designed for particular computer architecture. Most software applications are limited to particular operating systems running on particular architectures. Although architecture-independent operating systems and application exist, most need to be recompiled to run on a new architecture.
Processing power	Most software running on x86 architecture define processing power as the model and the clock speed of the CPU. Many other features of a CPU that influence its speed and power, like bus speed, cache, and MIPS are often ignored.
Memory	Memory requirements are defined after considering demands of the application, operating system, supporting software and files, and other running process. Optimal performance of other unrelated software running on a multi-tasking computer system is also considered when defining this requirement.
Secondary storage	Hard-disk requirements vary, depending on the size of software installation, temporary files created and maintained while installing or running the software, and possible use of swap space.
Display adapter	Software requires a better than average computer graphics display, like graphic editors and high often define high-end display adapters in the system requirements.
Software requirement	Software requirements deal with defining software resource requirements and pre-requisites that need to be installed on a computer to provide optimal functioning of an application. These requirements or pre-requisites are generally not included in the software installation package and need to be installed separately before the software is installed. Software that going to be used are Internet Programming (XHTML), Visual Basic, Oracle 9i, Microsoft Access, MySQL, CSS Grid Builder, Ajax and Javascript.

Analysis is required for a thorough understanding of the existing system specifically the parts that must be automated. Once the problem is analyzed and the essentials understood, the requirements must be specified in the requirement specification document. The requirements documents must specify all functional and performance requirements, the formats of inputs, outputs and any required standards, and all design constraints that exist like business culture and security reasons.

3.5 Project Activities

Basically this project requires a lot of research from historical data, interviews to staff involved, paper works, conference papers and journal. These researches involve the development of automate system of Hotel and Flight Online Booking system for HRMA staff of UTP. Interview session conducted with Mr Aminur Rashid bin bin Mohd Shariai and Mrs Rodziah Bt Mohd Isa who are HRMA staffs that involve in this system.

For this semester there are important milestone such as extended proposal, proposal defense and interim report which require full commitment and effort in completing this project. Hence during this semester this project will involve more on the Planning, Analysis and Design Phase that require programmer to understand system requirement, business aspect, and technical design as well as to understand PHP and other coding languages that used in developing this project.

CHAPTER 4

RESULTS AND DISCUSSIONS

4.0 RESULT AND DISCUSSIONS

4.1   Introduction

In the market nowadays, there are fast increasing number of automate system developed to replace manual system that proved has many disadvantages such as data redundancy and high chances of human error. Automation is the use of control systems and information technologies to reduce the need for human work in the production of goods and services. Automation has had a notable impact in a wide range of industries including hotel and online booking systems.

The main advantages of automation are:-

- Replacing human operators in tasks that involve hard physical or monotonous work.
- Performing tasks that are beyond human capabilities of size, weight, speed, and endurance.
- Economy improvement: Automation may improve in economy of enterprises, society or most of humanity. In this case automation of   existing   hotel   and   flight reservation system in automation will increase job performance of the department.
- Reduces operation time and work handling time significantly.
- Frees up workers to take on other roles.
- Provides higher level jobs in the development, deployment, maintenance and running of the automated processes.
- Increase Reliability and precision of data and information

Automation of desired tasks are very important. As a process becomes increasingly automated, there is less and less labor usage and quality improvement to be gained.

There is huge growing of company that offering automation systems including hotel and flight online booking system. However, company that requested to buy automation system need to pay high commission for the system that they want to be developed. Hotel Online system normally being implemented in hotel system which will be later integrated to other systems

that work with it. For example order, room location and payment. It is rare online systems that monitor employee requisition especially in hotel and flight booking. Examples of company that automate hotel system in market are ATC Automation System, HDL system and many more. Same goes to Flight reservation system.

Resulting of UTP business, both system are interrelated and need to be combined together to improve the data integrity. Hotel and flight automation has evolved from being cutting edge technology to a standard that every entity should have in order to improve the performance of administrative task regardless what type of business they might have. Given this, various companies have developed a wide variety of systems to suit the needs. Basically the system need to be a simple yet sophisticated system. Simplicity is an important consideration for an automation system. Simpler system allows control over basic functionality and provides a reasonable number of options in overall performance.

Criterias that are expected to be improved in are shown below:-
- Speed up the process
- Increase the efficiency and effectiveness of the system.
- Eliminate the usage of paper
- More secured information management system.
- Able to store and retrieve data precisely.
- Allow people access the system via personal computer and mobile phone.

4.2   Requirement Gathering Result

Followed the result obtained from requirement gathering techniques used by the author as discussed earlier.

4.2.1   Document Analysis

The scope of the document analysis techniques includes studying the technical documentation of the current manual system been used by HRMA department unit. The main purpose of this documentation analysis is to get better understanding on the *as-is* system, identify the weakness and come out with ideas on how the *to-be* system should be.

The study on the technical documentation concludes that the *to-be* system has to automate the manual process that currently being implemented by HRMA department. Instead of having

manual mechanism to book hotel and flight booking system, the *to-be* system will automates this system and can be done online. Appendix A and B illustrate the manual form that currently being use by HRMA staff for hotel booking and Appendix C and D for flight booking.

Other document that has been analyzed is the hard copy form of guarantee letters and sample application that has been processed. The to-be system will integrate these two to ensure it can be done via online.

4.2.2   Observation

By doing personal observation, the reality of the situation can be seen. It helps the author in preparing the interview questions. From the observation, it shows that UTP Co-Curriculum Unit is having problems in handling their process manually. It is very difficult for them to track previous file due to it been stored in hardcopy form. Current procedures of Hotel and Flight Reservation systems require UTP staff who wanted to book for hotel or flight is to fill up separated hardcopy forms and submit it to HRMA department using hardcopy form. They need to get the endorsements from Programme Head and Registrar or Director Concerned. From HRMA side, they have to manually check the hardcopy form. Any errors or problems will be informed later after they done checking. If no error being found, they will start to process the hardcopy form by key in one by one data into an excel sheet. This process is a time consuming work.

4.2.3   Interview

HRMA staff has been chose as the target interviewees. The main purpose of the interviews conducted is for author to get a better understanding on how business process of hotel and flight booking being conducted. These series of interviews have helped author in identifying major problems encountered by HRMA staff in conducting these tasks.

Three interview sessions have been conducted with Executive of HRMA department. Table 4.1 - 4.3 provides summary report of the 1st, 2nd, and 3rd interview sessions. A lot f information collected from these 3 interview sessions.

Table 4.1: Interview report-1st Interview Session

Date: 16 Feb 2012	Interviewer : Nurool Suhana Shahrin
Person Interviewed: Mr Khairul Badrisham B Ramly & Mr Aminur Rashid	
Email: khaibad@petronas.com.my aminur.rashid@petronas.com.my	
Purpose of Interview: • To meet person-in-charge in Hotel & Flight Online Booking system. • Understand the brief information about the department intentions • Identify HRMA business process • Identify major problem(s) encountered in each of the business process.	
Summary of the Interview: • Business process in hotel and flight identified. Hotel and Flight Booking being done separately. • Information of the current business process of the unit is tabulated. All business process being done manually. • The major problem in the current business process is difficulties in monitoring every case closely as it being stored in hardcopy form. Plus, there are difficulties in sharing information across departments in UTP.	

Table 4.2: Interview report-2nd Interview Session

Date: 09 March 2012	Interviewer : Nurool Suhana Shahrin
Person Interviewed: Mr Aminur Rashid & Mrs Rodziah Bt Mohd Isa	
Email: aminur.rashid@petronas.com.my	
Purpose of Interview: • To have a better understanding on information flow and system requirements expected form HRMA department. • Collect documents needed such as hardcopy form and collection of database. • Identify major problem(s) encountered in each of the business process.	
Summary of the Interview: • Information of the current business process compiled. • Business requirements identified and discussed. Both systems must be integrated together and no more hardcopy form. • Status and information can be shared across entire department in UTP.	
Open Items: • Guarantee letter can be submitted via fax since not all hotels has online system.	

Table 4.3 Interview report-3rd Interview Session

Date: 02 April2012	Interviewer : Nurool Suhana Shahrin
Person Interviewed: Mr Aminur Rashid	
Email: aminur.rashid@petronas.com.my	
Purpose of Interview: • To discuss on business requirement and to-be system to be developed. Ask feedback from HRMA staff regarding the to-be system. • Ensure to-be system meets requirements and expectations of HRMA department. • Discussion on additional features to be added into the system	
Summary of the Interview: • To-be system discussed and meets HRMA requirements. • Additional requirement which is status of application send to email of applicant will be included into the system.	

4.3 Requirement Definition

It is very important to define the scope of the research. It helps to provide the information needed to model the system and support activities, information obtains and analyze. It can describe what the system needs to be. It can be divided into 2 categories which are functional and non-functional requirement.

Functional requirements are the capture of intended behaviour of the system. This behaviour may be expressed as services, tasks or functions the system is required to perform. It will be further discussed in figure 4.1: use case diagram in functional model part. Table 4.4 summarized the non-functional requirements.

Table 4.4: Non-Functional Requirements

Elements	Descriptions
Operational Requirement	The system must be
Performance Requirement	The system must be available 24-7
Security Requirement	Only HRMA staffs have the authority to access and update the database.
Cultural and Politic Requirement	The core business process of HRMA staff must not be changed and the system is flexible to be added more functionality.

4.4   System Modeling

4.4.1   Functional Model – Use Case Diagram

The Use Case Model is used to describe the system functionalities from the users' perspectives. Figure 4.1 illustrate Hotel and Flight Online Booking System Use Case Diagram. Table 4.5 defines the user profile of Hotel and Flight Online Booking System.
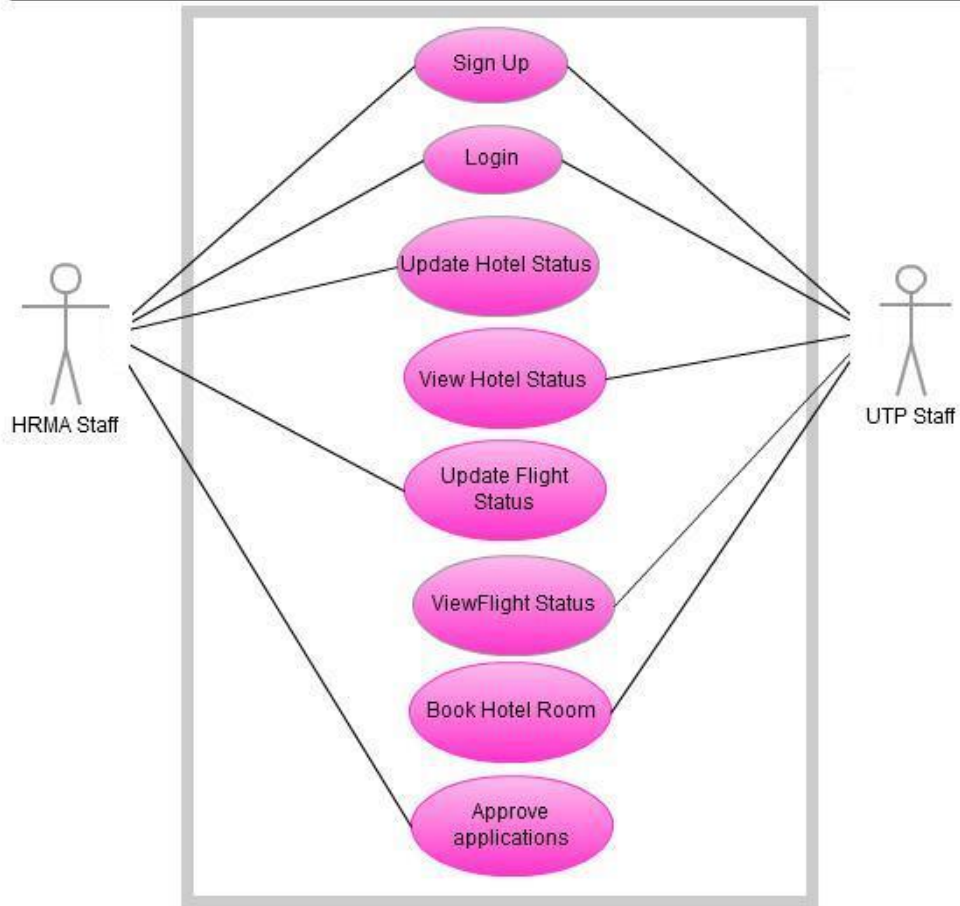
Figure 4.1: Use Case Diagram

Table 4.5: Hotel and Flight Online Booking System.

User	Descriptions
HRMA Staff	HRMA staffs are given the authorization by UTP management to access Hotel and Flight Online Booking System. They responsible in managing both hotel and flight booking.
UTP Staff	UTP staffs are applicants who initiate the entire process. They will be able to book, view the status and receive important information from administrations for both Hotel and Flight Online Booking System.

4.4.1   Structural Model – Class Diagram

Class diagram stores and manage information in the system. It shows the classes and the relationship among classes that remain constant in the system. Figure 4.2 shows the class diagram for Hotel and Flight Online Booking System.
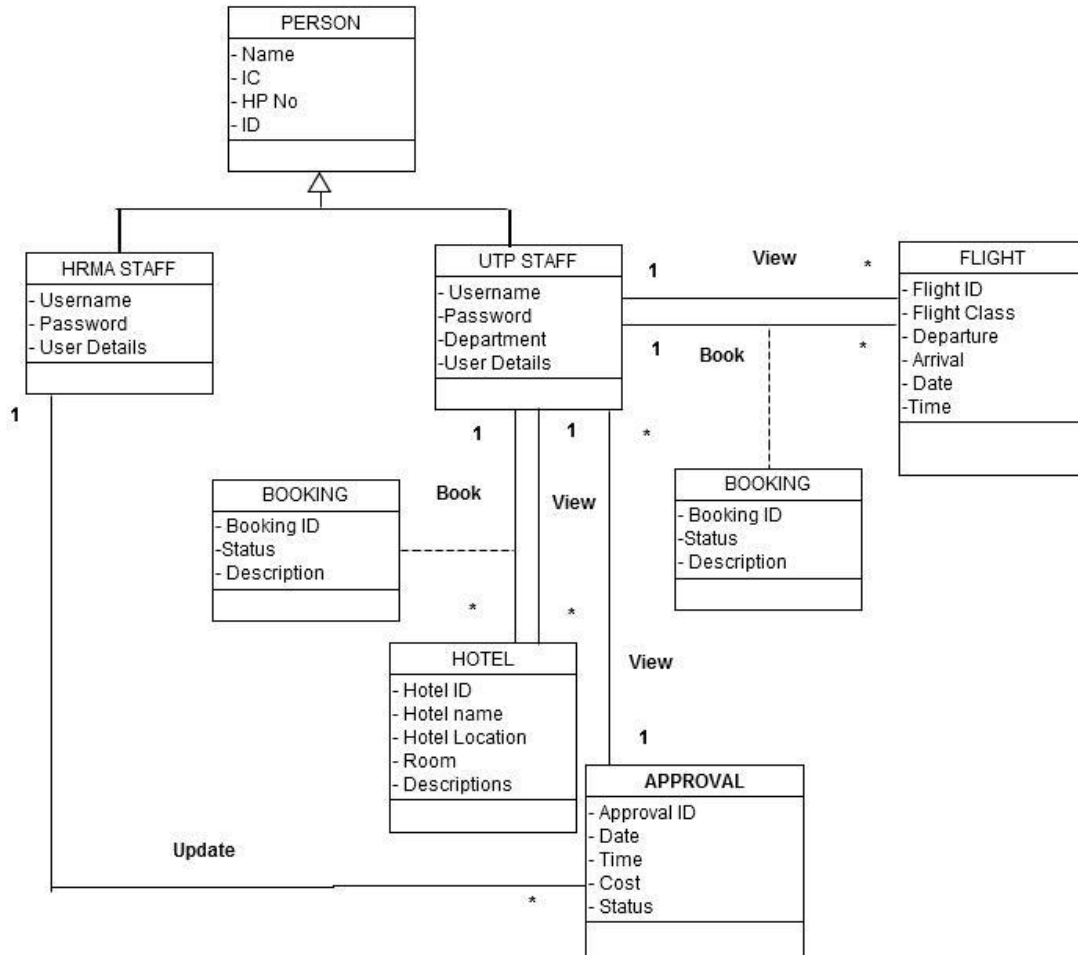
Figure 4.2: Class Diagram

4.5 System Overview

To-be system will be developed to fulfill the requirements as stated before including user, functional and non-functional requirements. It has been expected to cut the time frame as most of its activities will be automated and available on net. User can request and check the status anytime as they want. Figure 4.3 and 4.4 illustrate *as-is* system of hotel and flight reservation respectively. Figure 4.5 illustrate to-be system which integrated both hotel and flight system into one system.

4.5.1 As-Is System
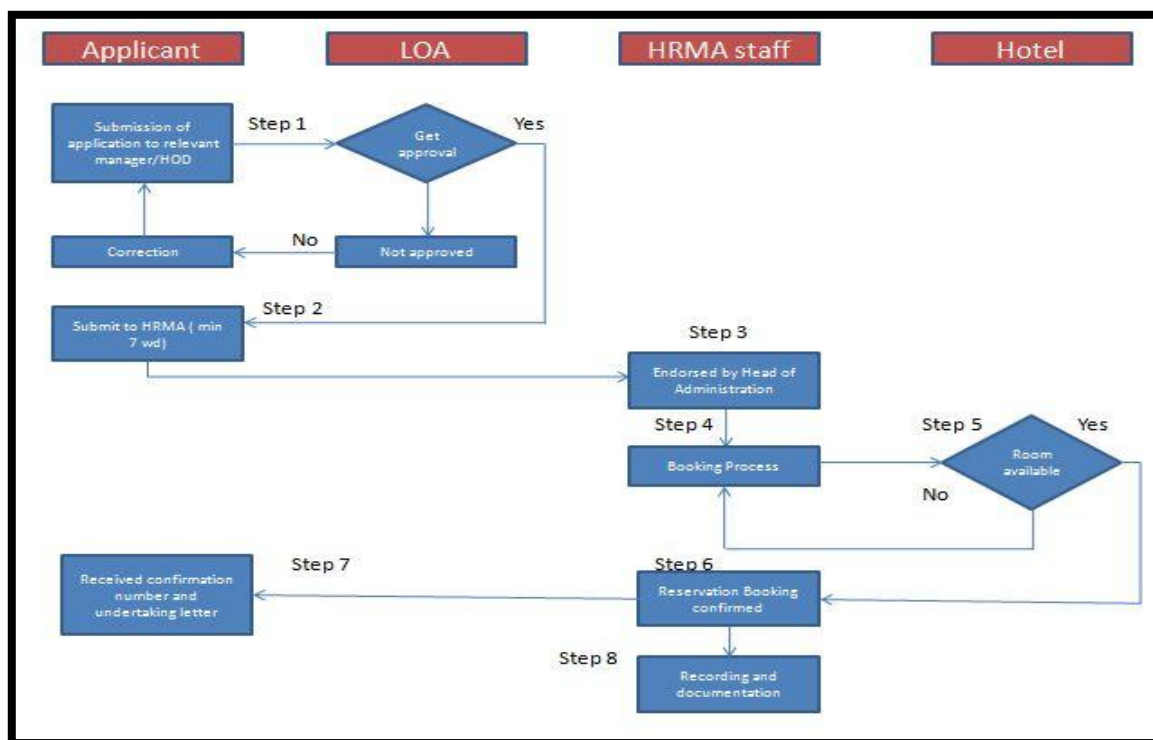
Figure 4.3: As-Is Hotel Reservation System
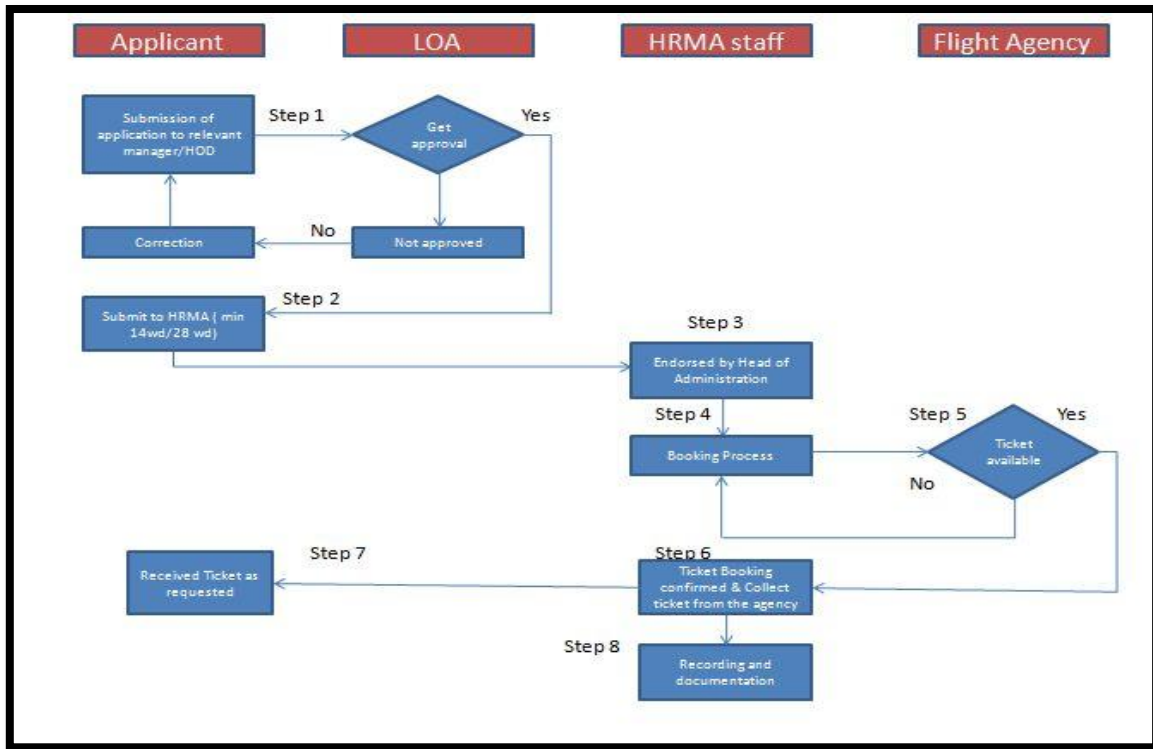
Figure 4.4: As-Is Flight Reservation System

4.5.2   To-Be System
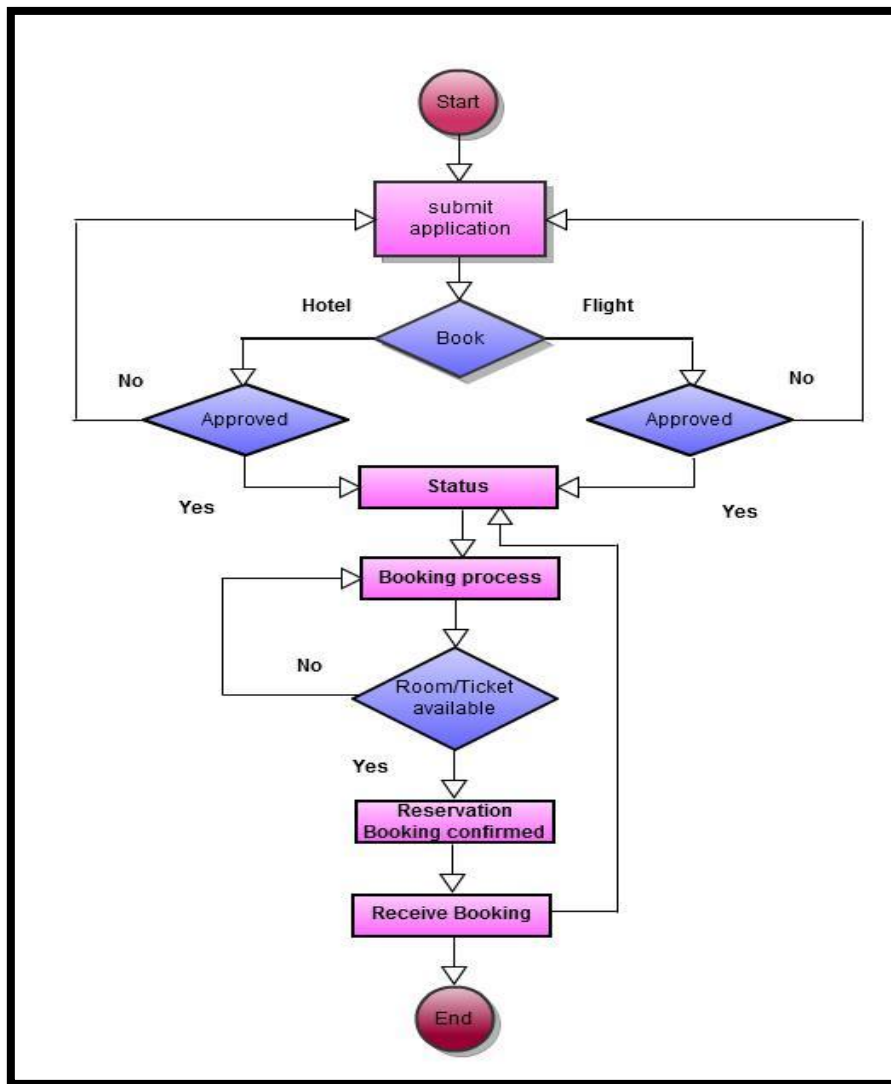
Figure 4.5: Flowchart of To-Be System

Figure 4.6 and 4.7 activity diagrams for applicant as well as user respectively.
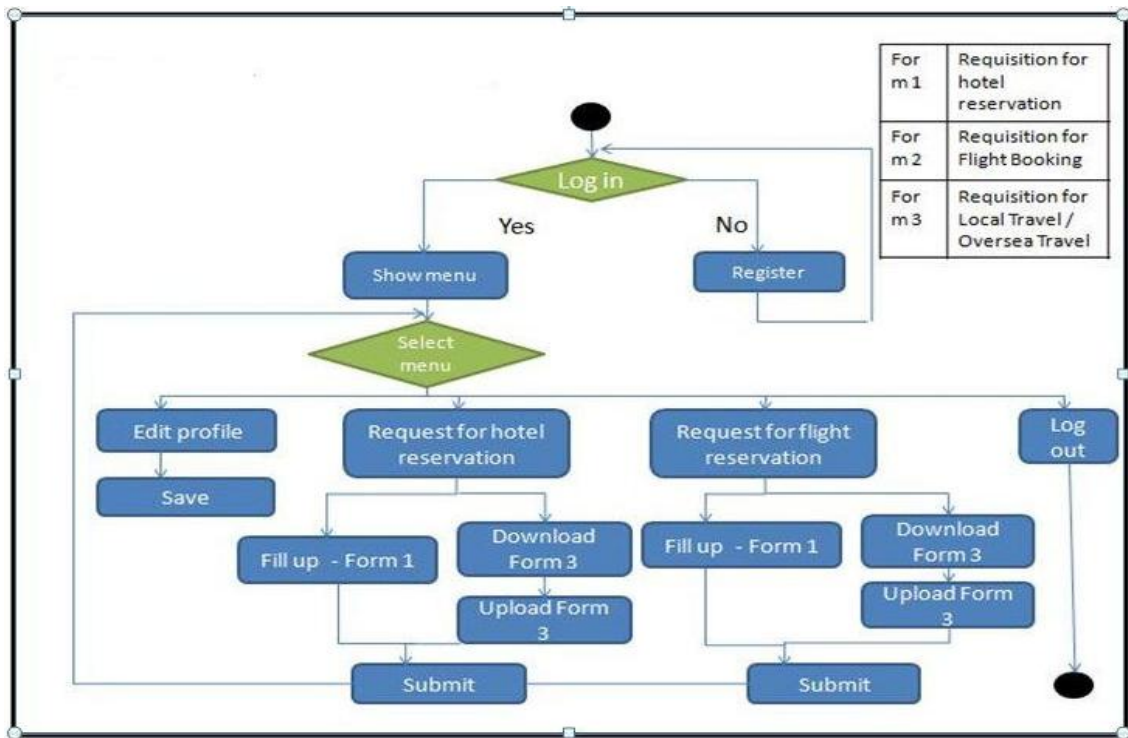
Figure 4.6: Activity Diagram of Applicant
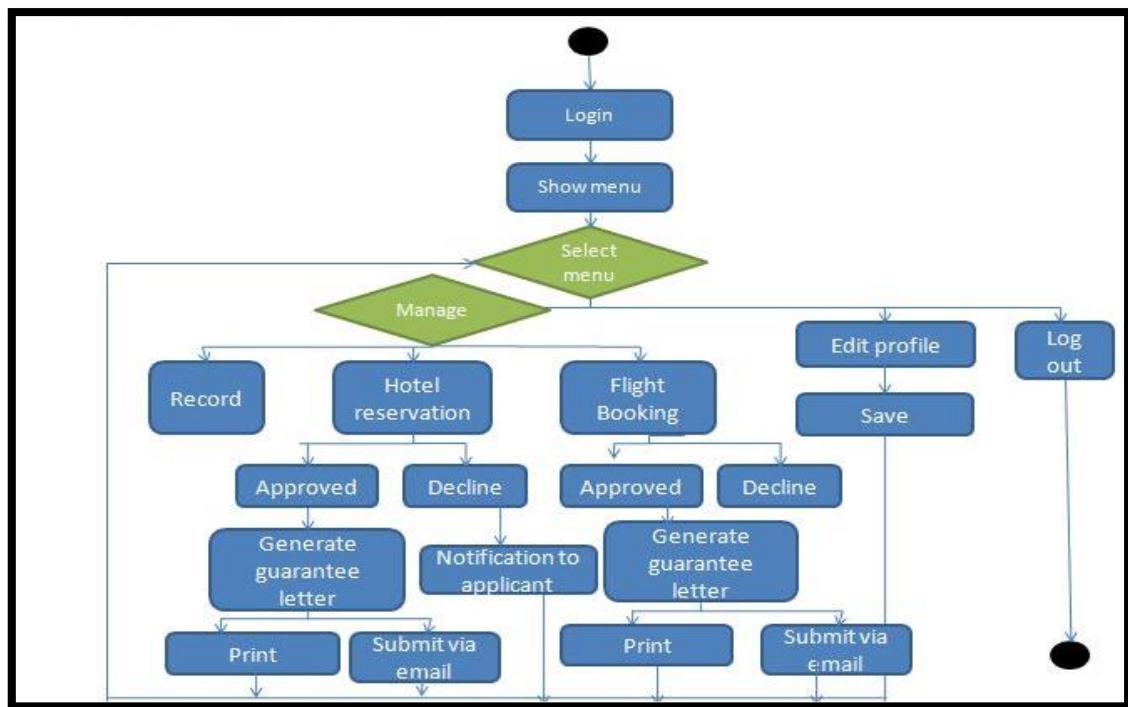
Figure 4.7: Activity Diagram of User

Case based reasoning method is going to be used in decision making part of hotel reservation. Take into account that in the hotel reservation, users have to make a decision whether to approved or reject the request base on rules and requirements needed. If the

requirements have been fulfilled, it is then depends on the hotel room availability. The case-based reasoning functionality embedded in the system to provide the system and users with options to review past similar requests. The system going do match up based on similar chase and suggest other hotel location for the applicants. If there is no similar chase, system will prompt user to make a decision. This is going to ease the work of users in long term. Flight Reservation does not need this decision making as applicants have only one option.
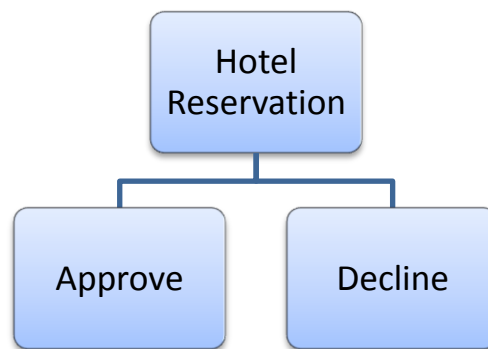
Figure 4.8: Decision making part of Hotel Reservation System

Additional of case base study alternatives, this system will also using Google API as one part of system alternative suggestions if encounter problems such as fully booked hotel or criteria unmatched. There are many ways to embed Google Maps directions into system. One of it is to embed it in coding. With the Distance Matrix API, users can find the best driving routes and the time it takes to get to their destination

Figure 4.9: Map of Malaysia

4.6 System Architecture and User Interface
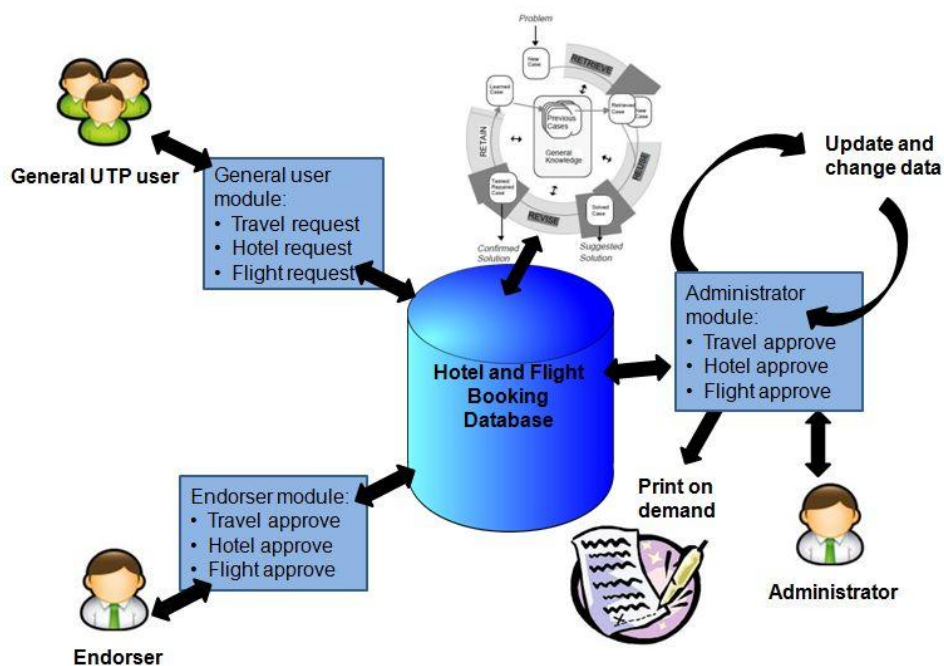
Figure 4.10 System Architectures

Figure 4.10 illustrates that the system will have 3 basic levels which are user/applicants, endorser and lastly HRMA admin. Below are some of user interfaces of this system.

Figure 4.11 shows the home page of the system.
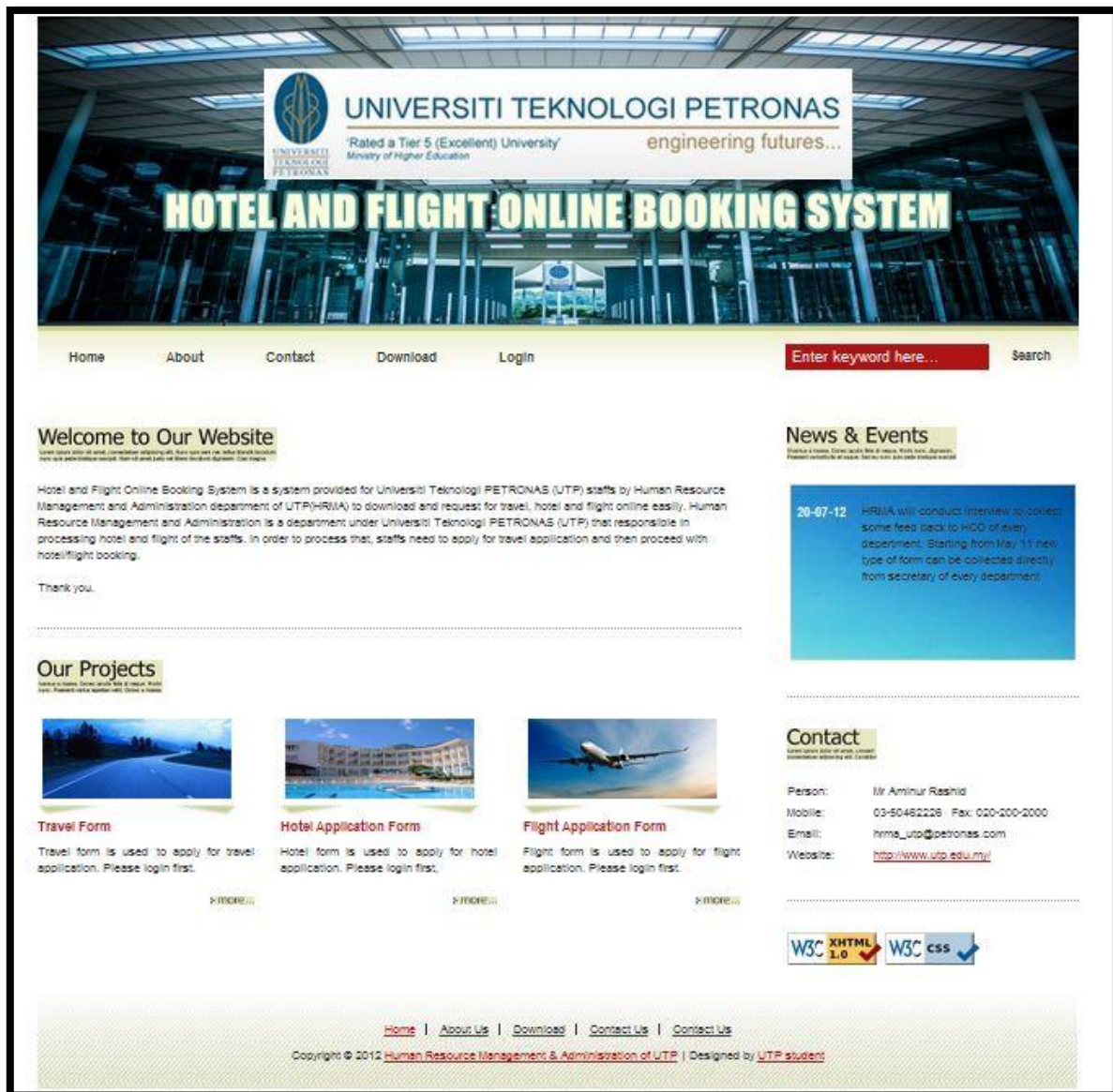
Figure 4.11: Home page

In Figure 4.12, all users will need to sign up and create his/her username and password to access into the system. The username and password will be stored into the database. It is for user authentication to access the system.
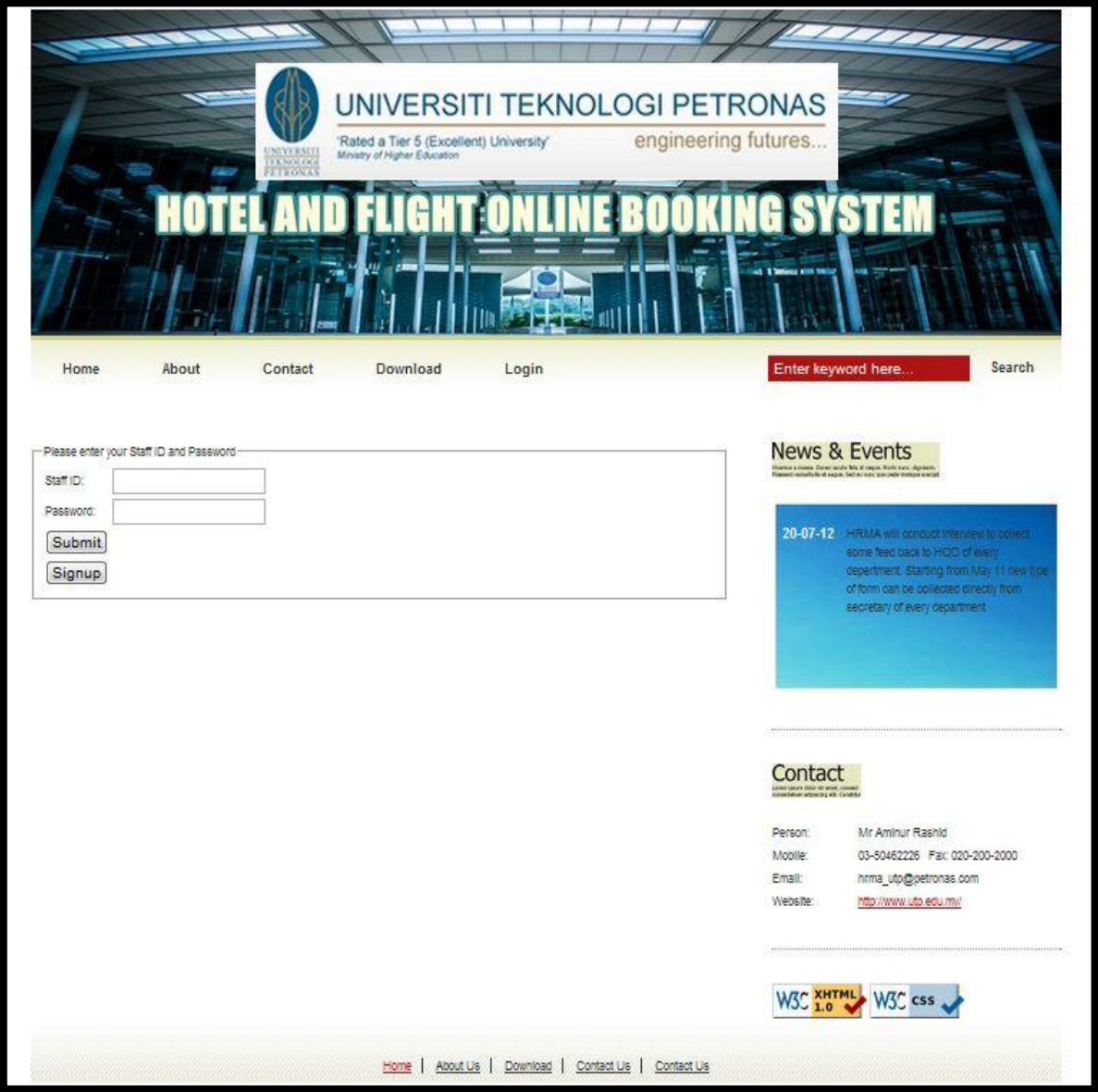
Figure 4.12: Login page

In Figure 4.13, after login, user will be directed to activity page where he/she can chose to fill up form as desired, check his/her application status, help for guideline or can eventually logout.
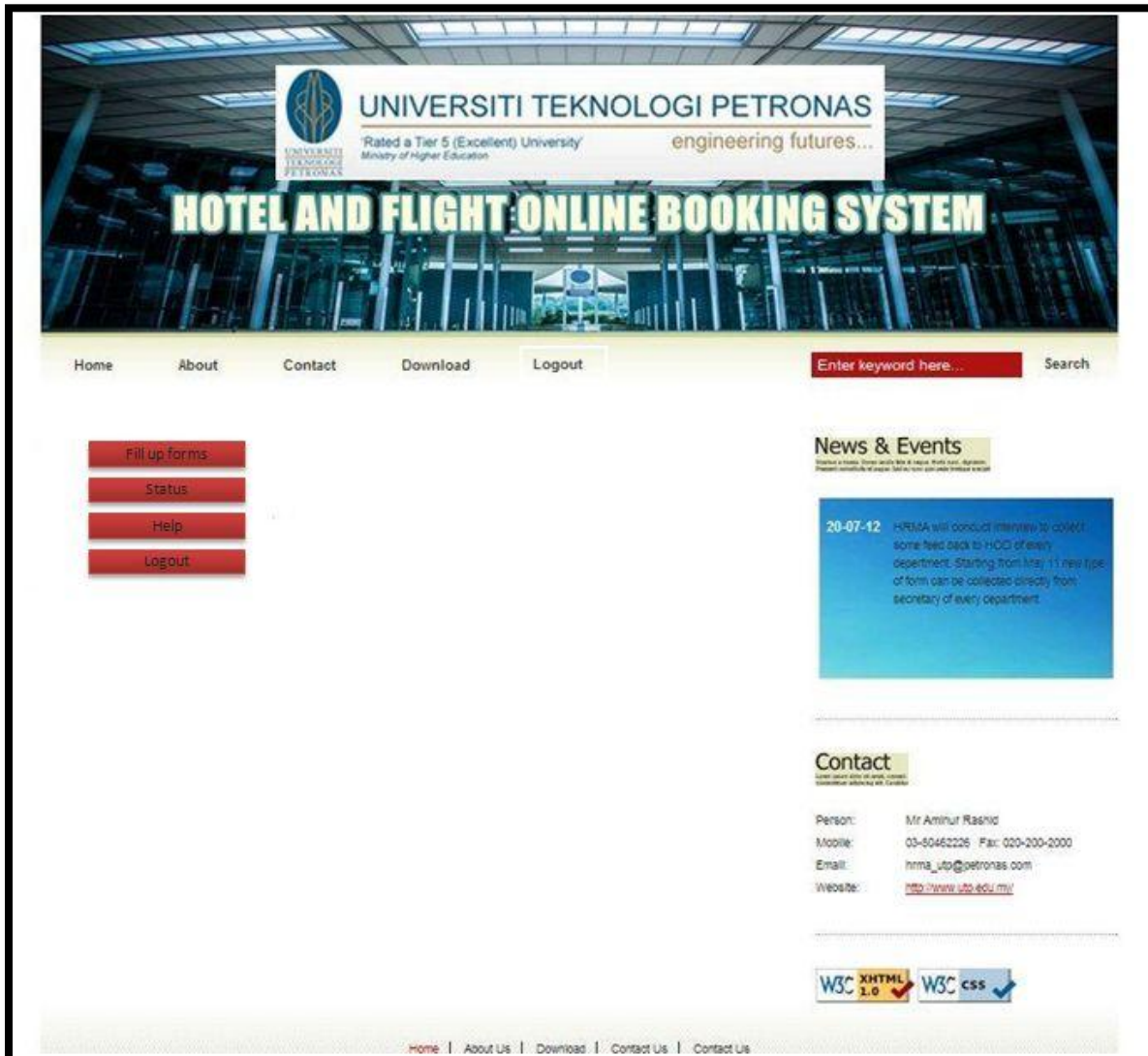
Figure 4.13: Activity page

Figure 4.14 shows the page where user can choose to fill up travel, hotel or flight applications.
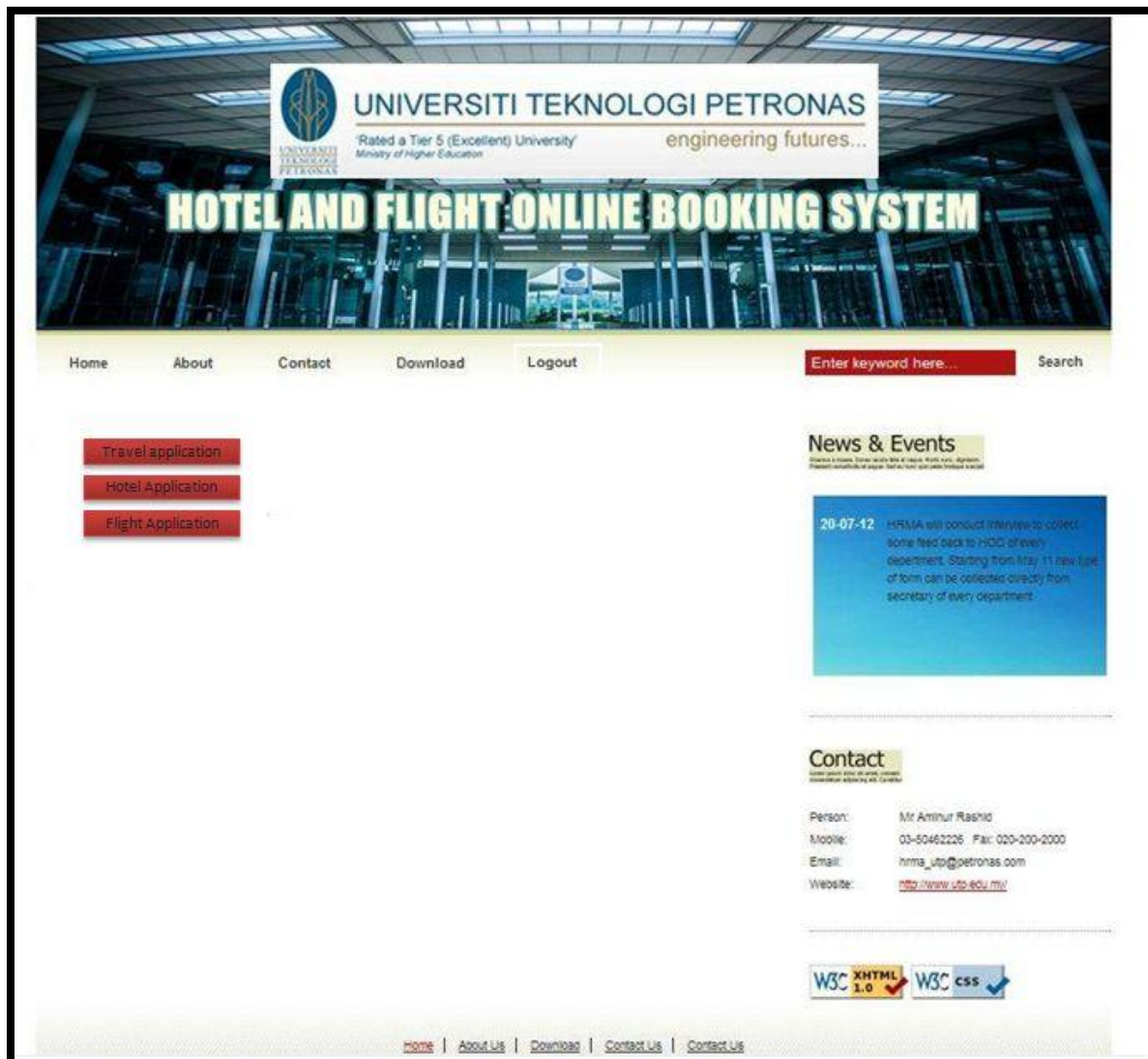
Figure 4.14: Form application page

Figure 4.15 is the page directed after user chose travel form. It has been divided into 2 part where 1st part is captured from database and 2nd part where user needs to fill up the details.
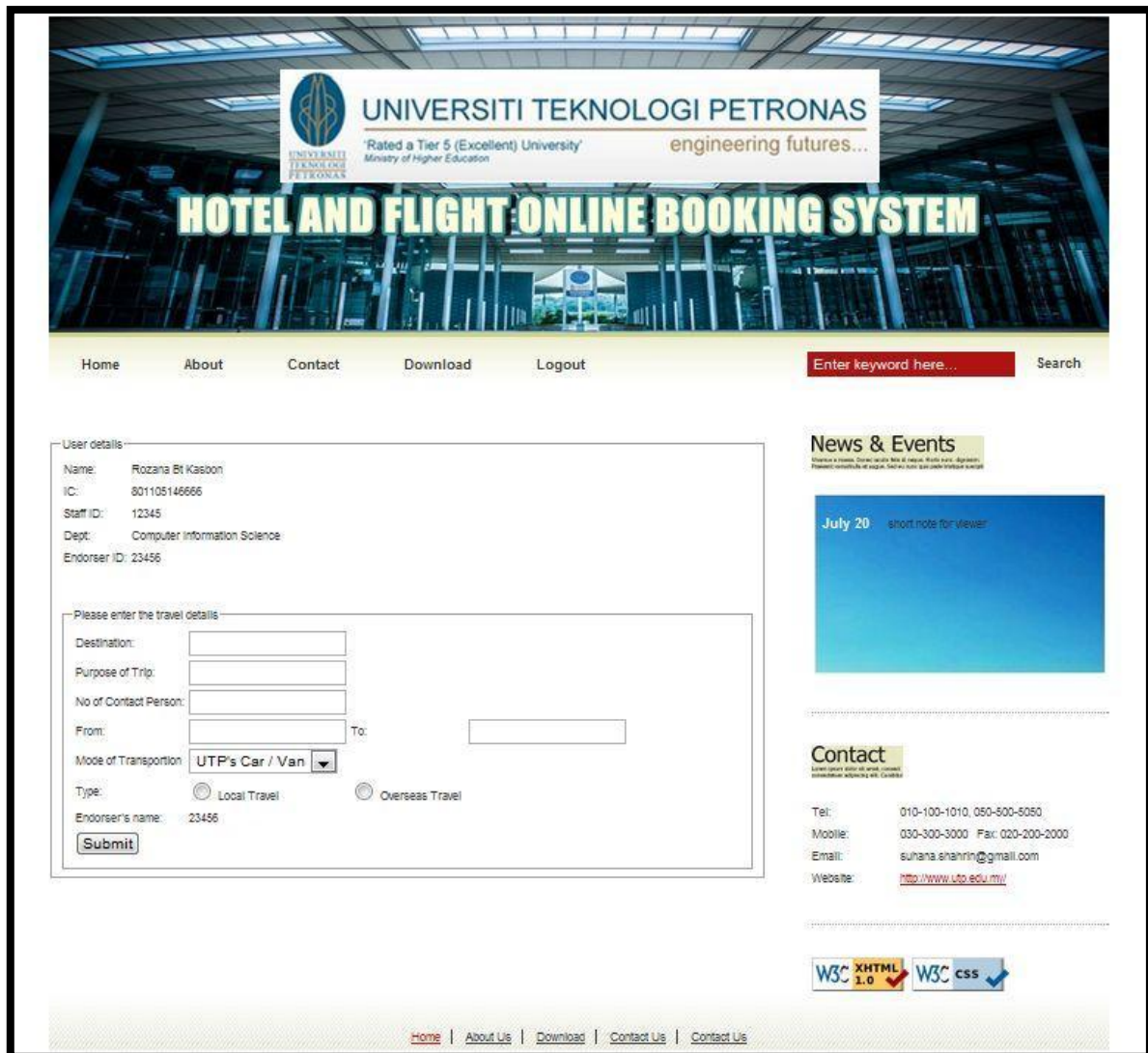
Figure 4.15: Travel form

Figure 4.16 is the page directed after user chose hotel form. It has been divided into 2 part where 1st part is captured from database and 2nd part where user needs to fill up the details.

Figure 4.16: Hotel form

Figure 4.17 is the page directed after user chose flight form.

Figure 4.17: Flight form

In figure 4.18, after login, endorser able to endorse user's application by choosing approved or rejected. Once endorser chose it, it will be automatically saved into the database.
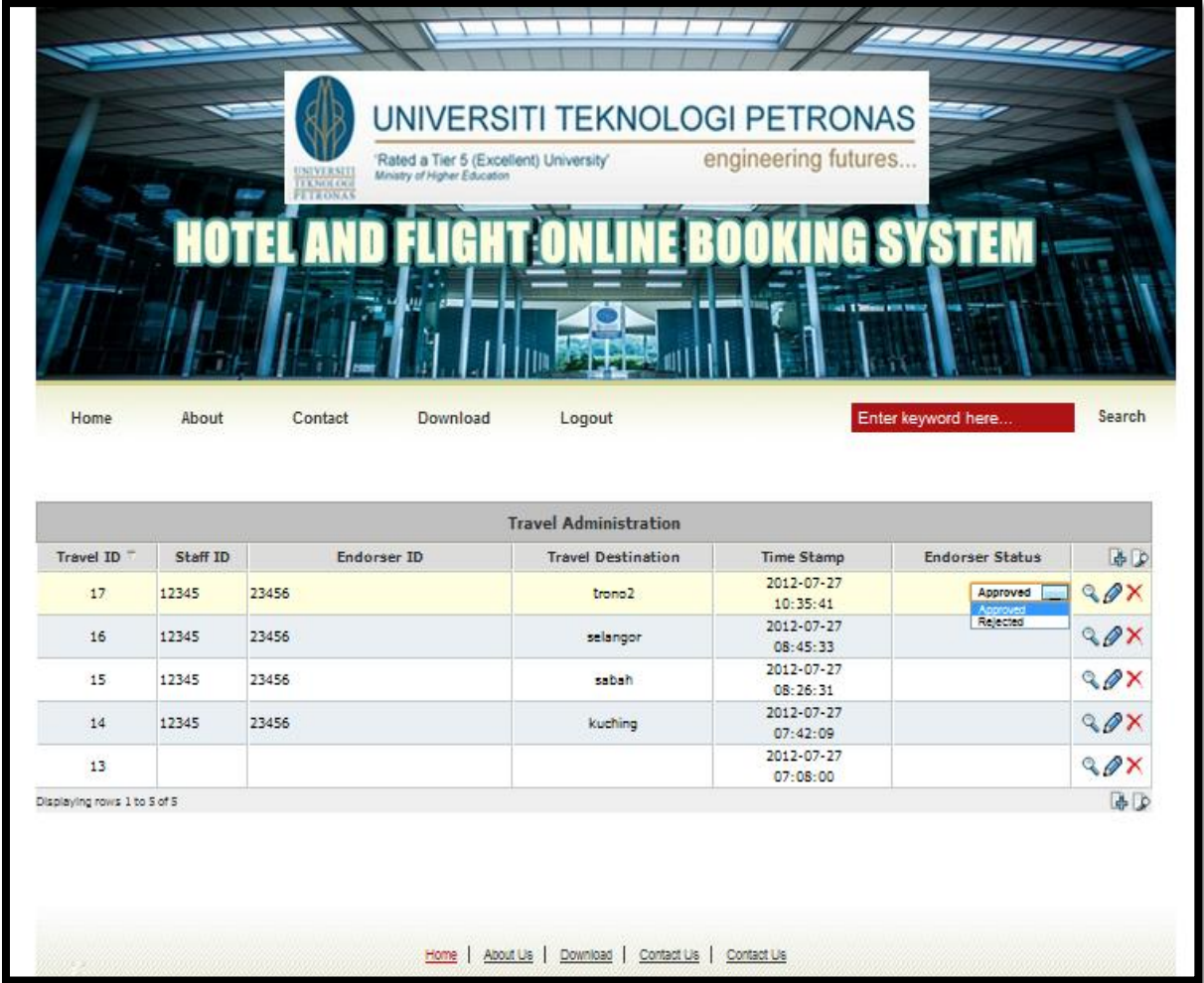
Figure 4.18: Endorser's approval page

In Figure 4.19, after login, HRMA admin able to endorse user's application by choosing approved or rejected. Once endorser chose it, it will be automatically saved into the database.
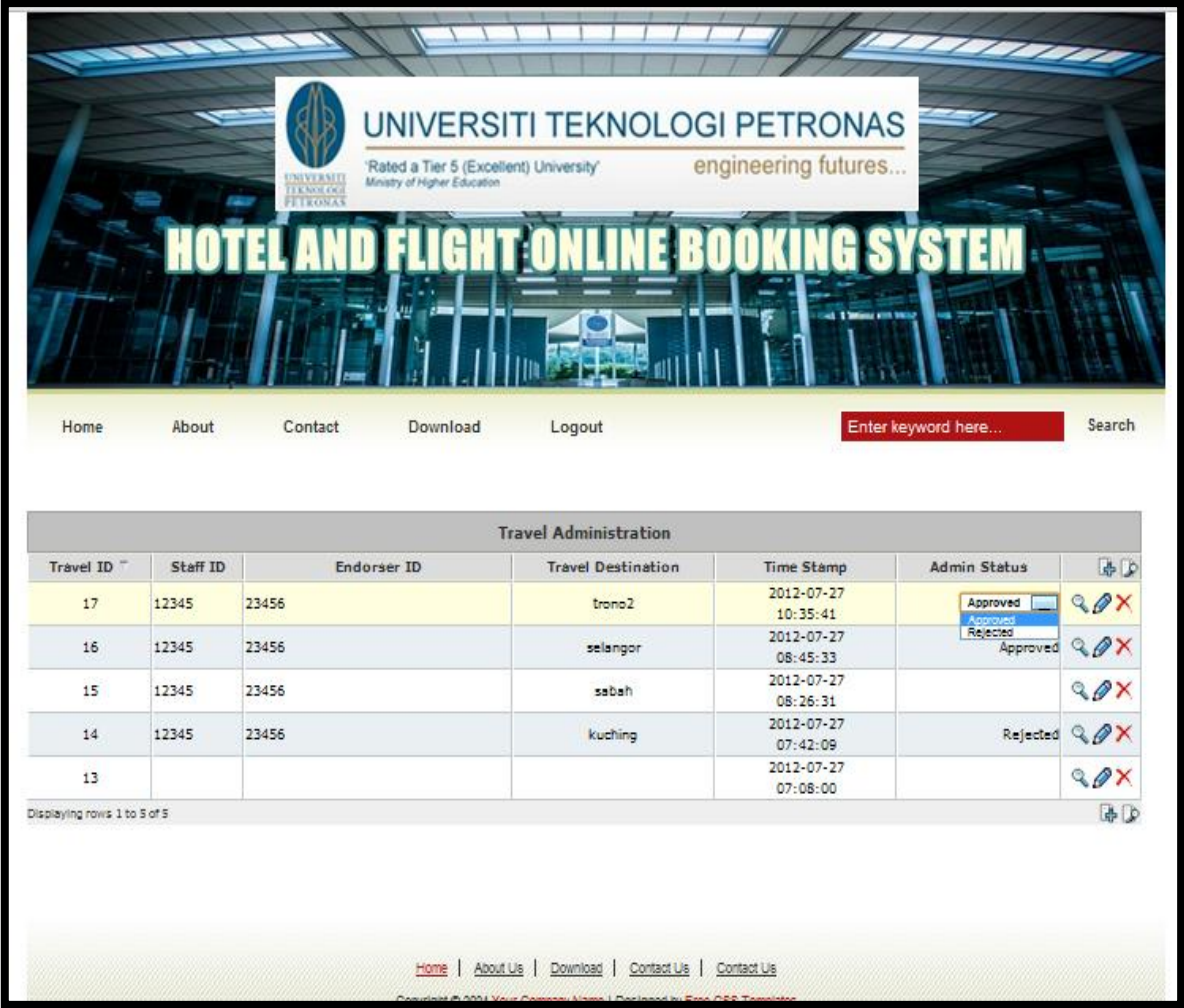
Figure 4.19: HRMA admin's approval page

Figure 4.20 shows the image of HRMA admin interface where after clicking edit details button, HRMA admin able to edit the record in case of any changes required.

Figure 4.20: HRMA admin's edit record page

Figure 4.21 shows email received regarding new updates in application. This email will be received by user and endorser.

Figure 4.21: Email notification

CHAPTER 5

CONCLUSION AND RECOMMENDATION

5.1   Conclusion

Hotel and Flight Online Booking System is a new automate system which will allow HRMA staff of UTP to reserve hotel and flight tickets based on request of applicants which are UTP staffs itself. This system is very significant to be developed and improved as the current systems are manual and very difficult to be maintained especially when HRMA staffs have to handle more that then current system could. This new system can replace most of human operators in the tasks and frees up workers to take on other roles, perform tasks that are beyond human capabilities of size, weight, speed, and endurance and provides higher level jobs in the development, deployment, maintenance and running of the whole processes. This system can increase the reliability and precision of data and information that running inside it. Hence, this project are expected to fulfill its objectivity which is a developed web-based system of hotel and flight booking of UTP employees as the system can reserve hotel and flight tickets as requested with the capability to function well and allow user to do it online. Progress in database and connection between developed functionalities are expected to be finished soon as to allocate plenty of time for implementation and testing phase. Interviews and study conducted previously shows that the proposed system's deliverables are favorable to be implemented in day-to-day tasks. Based on this, it can be conclude that the research made is successful as it brings both users and developer come to an agreement on how the proposed system could ease the user and meet up the business needs.

5.1   Recommendation

As for the recommendations, it would be better if whole HRMA business process being integrated into one system as it can increase the capability of HRMA department in handling their tasks for a better job performance. Since Hotel and Flight Booking System is not focusing on this, hopefully functionality of other systems of HRMA department can be integrated in this system.

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APPENDIX A:HOTEL BOOKING FORM

BORANG UTP - 18

REQUISITION FOR BOOKING HOTEL
(Permohonan Untuk Penginapan Luar Kawasan)

Part A : To Be Completed By Users (Perlu Diisikan Oleh Pemohon)

1. Name (Nama)

2. Department (Jabatan)

3. Destination (Destinasi)

4. Purpose Of Trip (Tujuan Perjalanan)

5. Duration Of Stay (Tempoh Penginapan)

From :

To :

6. State reason if staff intend to stay in other hotel. (Nyatakan sebab sekiranya kakitangan ingin menginap selain dari hotel yang disarankan.)

7. Name & Address Of Hotel (Nama & Alamat Hotel)

8. Telephone Number (Telefon Nombor)

	Requested By (Permohonan Oleh)	Approved By
Signature (Tangan)		
Rubber Stamp (Cop)		
Date (Tarikh)		

Part B : FOR FINANCE / HRM USE ONLY [UNTUK KEGUNAAN JABATAN PSTM / KEWANGAN]

Budget Code	Approved Amount (RM)	Current Balance (RM)	This Requisition Amount (RM)	Budget Balance (RM)

APPENDIX B: FLIGHT BOOKING FORM

BORANG UTP - 19

UNIVERSITI TEKNOLOGI PETRONAS

Borang Permohonan Penerbangan (BPP)
Requisition for flight booking

BUTIR – BUTIR KAKITANGAN *(Staff details)*

Bil No.	Nama Penumpang (Passenger's Name)	No. K/T (Staff No.)	Jabatan (Department)	Kod Tanggungan Jabatan (Department Code)	No. Tel (Tel No.)
1					
2					
3					
4					
5					

Perhatian : Jika butir-butir perjalanan adalah sama, sila gunakan satu borang untuk satu hingga lima penumpang, dan sertakan lampiran untuk lebih daripada lima orang penumpang.
Attention : Please use one form for maximum five passenger and please attach another form if more than five passenger.

BUTIR – BUTIR PERNERBANGAN *(Flight details)*

Tarikh (Date)	Dari (From)	Ke (To)	Kelas (Class)	Anggaran Waktu (Expected Time) Berlepas (Departure)	Tiba (Arrive)

(Tujuan Perjalanan)
Travelling Reason

Waran menggunakan Malaysia Flight Manual? — Ya / Tidak* (Yes / No) — Nombor WFM :

Y.. Kelas Ekonomi, C... Kelas Perniagaan, F.. Kelas Pertama
* Sila potong yang tidak berkenaan (Dash which ever irrelevant)

KELULUSAN *Approval*

Permohonan oleh : (Requested by)
Tandatangan (Signature)
Nama (Name)
No. Tel (No.) — Tarikh (Date) :
Catitan : (Remark)

Tiket Penerbangan diterima oleh : (Flight ticket received by)

Kelulusan oleh : (Approved by)
Tandatangan (Signature)
Nama (Name)
Jabatan (Position)
Tarikh (Date)
Cop Rasmi Jabatan : (Official stamp)

UNTUK KEGUNAAN AGEN PENERBANGAN
For the use of flight agent
Nombor Inbois (Invoice No.)
Nombor Tiket Penerbangan

Sila alamatkan semua inbois beserta dengan borang ini ke :
Pengurusan Sumber Tenaga Manusia & Pentadbiran,
Universiti Teknologi PETRONAS,
Bandar Seri Iskandar,
31750 Tronoh,
Perak Darul Ridzuan.

APPENDIX C: LOCAL TRAVEL FORM

BORANG UTP - 07(A)

REQUISITION FOR LOCAL TRAVEL (I)
(Permohonan Untuk Perjalanan Dalam Negara)

1	Name (Nama)	:
2	Department (Jabatan)	:
3	Destination (Destinasi)	:
4	Purpose of Trip (Tujuan Perjalanan)	:
5	Contact Person and Phone Number (Nama & Nombor Telefon Untuk dihubungi)	
6	Duration (Including travelling days) (Tempoh - termasuk hari perjalanan)	From (Dari) — To (Sehingga)

7. Mode of Transportation (Jenis Pengangkutan)   Comp. Car / Van (Kereta/Van Syarikat) ☐   Own Car (Kereta sendiri) ☐

Reason For Using Own Car (Alasan menggunakan kereta sendiri)

Air Plane (Kapal Terbang) ☐   Train (Keretapi) ☐   Taxi (Teksi) ☐   Other (Lain-lain) ☐

Please Specify (Sila nyatakan)

8. Pecahan Pendahuluan Perjalanan / Kereta

TARIKH		TEMPAT	Jumlah Hari	Elaun Kereta Mil	TANDA NAMA DIPERLUKAN					Kadar Belanja	Jumlah Perbelanjaan	
DARI	HINGGA				EP	ELK	ERL	EKS	LE		US$	RM

	Requested By (Permohonan Oleh)	Endorsed By (Section Heads/Programme Heads Concerned) (Disahkan Oleh - Ketua Jabatan/Ketua program Berkenaan)	Approved By (Registrant/Directors Concerned) (Diluluskan Oleh - Pendaftar / Pengarah Berkenaan)
Signature (Tanda)			
Rubber Stamp (Cop)			
Date (Tarikh)			

NOTE :
1. This form is to be used for official business trips (Inclusive of on job training) & could be completed and approved prior to the travel.
2. Overseas trips must also approval from Rector.

APPENDIX D: OVERSEA TRAVEL FORM