Web-based Language Translator to Facilitate Communication between International students and Non-Academic Staffs

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Web-based Language Translator to Facilitate Communication between International students and Non-Academic Staffs

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in partial fulfillment of the requirement for the degree

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ABSTRACT

The birth of Web-Based Language Translator in the computer world has brought harmony among people regardless of variation in their languages. This project work focuses on the development of a Web-Based Language Translator that translates Malay language into English language, and vise-versa to facilitate a smooth communication between the non-academic staffs and the international students of the University Utara Malaysia. Also, we discussed related works on the language translation in accordance to Web-Based Application. We also describe five unique systematic ways to achieve our research objectives. In addition, the project describes system prototype development adopted for this research, its functional requirements, use case diagram and use case specification, sequence diagram, collaboration diagram and the class diagram. The evaluation of the techniques used to show the level of usefulness and operability of the system is also discussed. Consequently, the users of the prototype found it flexible, consistent with helpful and effective user guidance through the software analysis and descriptive analysis.

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13th September, 2010

TABLES OF CONTENT

CHAPTER THREE

RESEARCH METHODOLOGY

CHAPTER FOUR

SYSTEM PROTOTYPE DEVELOPMENT

LIST OF TABLES

LIST OF FIGURES

CHAPTER ONE

INTRODUCTION

1.0 Background of the study

Her-Sen, Hui-Chih & Chi-Kuang (2009) confirm in their studies that Information Communication Technologies (ICT) have a great immense on the free flow on communication, both formal or informal communication, more of it is the role ICT playing in the dissemination of information, translation of languages, and public address systems; all of which are the backbone of communications.

Lim & Benbasat (2000) revealed that, presently in any kind of communication, being interpersonal, intrapersonal, or organizational communication, the great impact of ICT on them can't be over emphasized, ICT has successfully transform the process and ways of which people communicate to each other, or in cooperate communication. Taivo (2008) added that people are now easily communicate globally, across borders, cultures, and with different languages, all which are successful with the advent of ICT.

Taivo (2008) holds that, above average of the organizational developmental change are usually related to the technological innovations, particularly international businesses survive with their capabilities in communicating in different languages and across

boundaries, which backboned with the advent and adoption of ICT. The success lamented that, without communication technologies, international business would be incapable of managing their operability internationally, and there would be no path of international communication.

This study centers on how language differences limits the communication efficiency between the international student of different language speakers and local non-academic staff, that speaks and understand only his or her native languages.

Online dictionary offers a very suitable definition based on the context of this study where a language is conceptualized as an expression of cognitive thoughts and personal inner feelings, with a natural attained signals, that are usually unique within culture, nation, and locations such as; sounds and gestures. It is added that such a system defines specific rules to be followed (grammar) for combining the components of the language and it is used by a nation, people or other distinct community. From the definition, it can be seen that language itself is communication which means communication cannot take place without a specific language, but can be delivered in different channel. Communication technology serves as one.

Cardwell (1960) defines communication as the art of sending and comprehending meaning, which arbitrarily differ according to biological differences, in accordance to the above internet dictionary definition. The source explains that, communication uses a both literally distinct tools to convey messages, thus language, either body or spoken language is the only communication tools, but are unique according to some demographical

features such as boundary. Therefore communication across boundary to be successful, there is need for language translation, or and language comprehension. This is the point that calls the interest of this study, and how language could be understood across boundaries, for the purpose of academic or business usage.

1.1 Problem Statement

Many researchers articulated that, education is one of the causes of travelling out of one's country and culture, to learn from other people educational culture, their national culture, and some other attaching benefits (Lily, 2001; Lee, 2006). Reasonably, these benefits can only be achieved through interactions and communication, which is only being done with language, which is understandable by the two communicating parties. Thus, travelling out will be useless or defeated if such benefit is not exploitable. There is a need for developing a means of communication in foreign land.

Language theories have been articulated that, second speakers of a particular language, are always to be supported with some additional skills to convey their inner feelings and thought correctly with the language (McGroarty, 1984). Obviously, English language is not always the first language of international students, but they have to communicate with it. It is then becomes necessary to investigate their difficulties in communicating with this language and suggests a panacea to the communication problem.

Series of empirical studies have revealed that, employees could be regard has incompetent staff if lacking the expected communication skills. (Beth, Selwyn, &

Sridhar, 2000) thus employees and international or global organizations need to focus and strive heavily to develop more and more of solutions that can resolve the communication problem, has the world is greatly becoming a very small village, people now study, reside, transact, and invest across their nations, with the great help of technologies. Communication technology should also be used to create an effective communication path needed in global transactions.

Doubtlessly, UUM international students are obviously faced by communication problem, as a second speaker of English language particularly with the non-academic staffs of the university, which minimally or not at all, able to speak English language fluently. Since communication between these two parties extremely unavoidable, there is a need to resolve the communication problem faced by the parties. Therefore this study aims at developing a web-based application that helps in minimizing the communication problem between the interaction of international student and the non-academic staff of the Universiti Utara Malaysia.

1.2 Objectives

As it is established by this study problem statement, this study objective is mainly focused at the development of a web-based language translator that translates Malay language and English language, to facilitate a smooth communication between the non-academic staffs of UUM and the international students. The main objective is separated into three specific objectives that this study tries to achieve as the following:

- To identify the design requirement for the development of a Web-based language translator application.

- To develop a web-based prototype, that can translates Malay to English language and English to Malay language. To ease the communication process.

- To evaluate the usability of the developed application.

1.3 Research Question

This study is conducted in order to answer the following questions:

- What are the design requirements to develop a web-based language translator, to ease communication between UUM non-academic staff and international students?

- How can a web-based application capable of translating Malay to English language and English to Malay language for the purpose of communication?

- Is the application developed usable by the end users?

1.4 Significance of the Study

The result of the study is significantly recommended to be implemented on the front-desk of the non-academic staffs of UUM, where international students frequently visit for the purpose of academic enquires, fees payment, co-curriculum activities, and so on. The developed language translator application will be useful for the both literal and contextual translation of the staff and student languages. This greatly effects the achievement of the motive behind this research.

1.5 Scope of the Study

(a). the development of web-based application that will translate Malay language to English language and English to Malay language. The system will be an online system that will be linked to the UUM official website, for an easy access to non-academic staff.

(b). With the aim of developing this proposed web-based language translator application that will be translating official interactions between international student and UUM non-academic staff, particularly, the translation of Malay language to English language with the used of the web server languages and software, incorporated with electronic language translator.

1.6 Organization of the Report

This study report is organized in a six chapters report; the summary of the organization is presented below.

Chapter One: the study general introduction and background is revealed here, the problem statements, and list of the study objective are presented therein.

Chapter Two: rigorous reviews of the previous related researches are presented, to form this study justifications, directions, and requirements towards the development of the application.

Chapter Three: this chapter is used to present the methodology used for the development of the language translator.

Chapter Four: the steps of the adopted methodology are executed here, and the system is developed, and analyzed.

Chapter Five: proper system analysis is done here, and the study findings in also revealed.

Chapter Six: presents the conclusion of the study, recommendation, and directions for future research.

1.7 Summary

This chapter presents the study background, the topic introduction and how it lead to the research problem, the problem statement that will be solved upon the successful achievement of the research objective, the research objectives are also listed, the research question which the research objective achievement will provide an answer to, the scope and the significance of the study which provide the motive for the execution of the study. The literature review that grounded the process or decision on all the aspect of this research is present in the following chapter.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

In this chapter, all the reviewed literatures that justify, grounded, and affirmed the process of the study are presented. Discussions in the literature review focus on previous related research, to direct these study decisions, particular literatures on related works, essence of communication and effort on understanding languages.

2.1 Language and Communication

As evidence from the definition of communication, and theorist argument, it is quite impossible to separate language from communication (McGroarty, 1984; Lily, 2001; Fiol, 2002). Communicative competence is the level of which individuals are capable of using language as an effective communication tools. McGroarty (1984) argues that communication competence is usually seen low in a second language speakers, and non native speakers of a particular language, particularly in their listening comprehension ability, fluency, and their literacy skills. Practically Malaysians are not native speakers of English language, and above average of the international students are English language second speakers. This study suggests the development of language translator to solve this communication problem.

It is established in this study background, that interactions of international students with the non-academic staffs on their university campus is unavoidable, one or two educational undertakings will bring them to their desks. In these educational transactions, the above established differences in communication competency could hinder a productive operability of the non-academic staffs. Researchers backgrounded these perceptions by affirming that, individuals express some level of inordinate amount of fear and anxiety in oral exchange with other people, (Hurt, Scott, and McCroskey, J. 1978; McGroarty, 1984; Lily, 2001; Fiol, 2002). Hurt et al. (1978) helps our understanding by concluding that, those inordinate fears and anxiety are directly traced to the law competency in their communication tools, that is the language used in communicating.

2.2 Communication Barrier

Many studies have been focused to the establishment of the fact that students experienced higher level of communication apprehension than other second language speakers. The communication apprehension is likely to experience anxiety in public settings in a discussion among peers, or even in formal conversation with officers (Hurt, et, al. 1978). This is one of the facts that constitute the motive behind this research objectives and prompt the suggestion of developing and a web-based application that can enhance the communication between international students and non-academic staff of UUM.

According to Committee on the Conference on College Composition and Communication (CCCC) Language Statement (1975), there have been series of efforts in determining the kind of language habits that should be developed by students from different social,

economic and cultural backgrounds. It implies that the language variation will definitely affect communication between the students and administrative staffs. The question raised is "should school uphold language variety or modify it or eradicate it?" (CCCC) Language Statement, 1975, p.711) this worries come from communication difficulties associated with variety of languages use within schools. This project aims at developing a web-based application that solves the language variation that affects effective communication among students from various country and the university non-academic staffs.

To support this view, Terrence (1985) also revealed that in a bid to achieve the required reform in the school system, to meet the current global standard, communication issues should not be neglected, though this study is concerned with only the communication among the international students and the non-academic staffs.

It is obvious that, pursuing educational degree out of the students' mother country, communication will become a serious problem. For example communication is one of the main difficulties faced by Arab students and it may negatively affect their performance educationally, and their social stay on the campus. Hence, a number of studies investigating experiences of international students concerning foreign language difficulties have demonstrated a lack of language competence as a substantial problem (Cammish, 1997). Moreover, the author indicated that many students enter the host country and they believe that they speak the Queen's English only to find that their

accent, grammar, pronunciation and that of their host do not match and both parties have difficulty understanding the other.

More elaborating, (Antoon, Jan and Nicole 2002) affirmed in their survey on the usefulness of computer and multimedia in company's electronic communication, their study justified the achievement of this study with its ground conclusion stating that information communication technology has elevated the benefit of electronic communication, which has brought many multinational company today to their stand. An instance is the way computer has helped marketers or business partners in interacting and communicating more effective and productively (Marianna 2003). Such study significantly supports the motive of this research in developing a web-based spoken language translator that facilitates smooth communication between office attendance and attendee in an international university.

2.3 Related Works

Ney, Niessen, Och, Sawaf, Tillmann, Vogel, (2000). Carry out their research in the field of spoken language translation, the study focuses on speech translation of German-English language through three different analytic studies, and used the result as an experimental result performed on text transcription and speech recognizer output. During the execution of experimental result gathered from their study adopted approaches the study notify that; verbmobil task entails different problems in the translation of different vocabularies from English language to German language and vice-versa , such as the difficulties faced in generating meaning for the unknown perfect sentence, and the

transcription of continues spoken words. All of the highlighted characteristics of the developed system are under ratable in an electronic web-based bilingual translation, that deeply capture the two languages words by data basing all the words of the Malay Language, and English Language to perform a rigorous translation and given meaning to spoken words.

Presently in the WWW of the internet world, uncountable websites exist therein that translate English words from other world languages. Google translate is an example of translating application on the internet. The application translates more than fifty languages. In series of usage experience, the system may appear ineffective by the way it wrongly translate sentences. The deficiency of Google translates maybe addressed to the fact that it translates huge number of languages (Google Translate 2010). unlike this study language translating application that intended in focusing on two languages (Malay language and English Language) for the purpose of communication, and not just words translation.

This problems faced by user in using language translation such as Google translate that translates word documents without a limited number of words. WordLogo; another online free translation websites also translate documents with limited number of five hundred words (WorldLogo Translation LLC 2010). Similarly Applied Language Solution performs word translation into more than seventy languages with a limit number of one hundred and fifty words in a single translation (Appied Language Solution 2010). It has been strongly highlighted in this study background that syntax construction of words

differs in every language, and this is the main problem faced by most language translation application. This study application tends to pave the way of this problem by focusing on just two languages to immensely support communications.

2.4 Web-based Application

Gellersen and Gaedke, (1999) revealed that, web applications are online application that cannot be accessed if at the absence of internet. The source emphasizes that there some grounding technologies that back and ground the development of any web application, amongst is the internet protocols, programming languages, and database, more specific, the development of web application usually involve files like, image files, libraries, web components, and web linkages, these serve as part of the requirement needed in developing the language translator for official communication.

More to that, (Armstrong, Ball, Bodoff, Carson, Evans, Green, 2004), revealed that the general functionality of the web application depends on three phases, first is the interface; those that serve as the web browsers, this web tools allow the physical navigation of the web pages. The second phase that involve in the web application functionality is the logic tools, these tools provide the main technological supports needed to develop, access, execute any web application, these include the programming languages used in developing the application, such as; CGI and JAVA. Lastly is the database phase, that

helps in storing all the web server components, these tools are the main and basic requirement for the development of language translating application.

2.5 Summary of the Chapter

This chapter discusses all necessary literatures to ground the need for this study and also to establish the requirements for the proposed language translator. The discussion entails introduction, related studies, research gap for the study, WAP technology and it component.

CHAPTER THREE

RESEARCH METHODOLOGY

3.0 Introduction

This chapter displays the adopted research methodology that was used in this study. In any research, methodology is the process that articulate all the executed consistent activities upon the completion of the research (Hoffer, George, and Valacich, 2002). Theorist claimed that research methodology is more than just the gathering of method perform in a research; but it is also a repellence of a systematic ways adopted in the field of research (Orlikowski, and Baroudi, 1991). For this research there are five unique systematic ways of achieving the research objective, they are all detailed explain below.

3.1 Methodology Design

On the record of achieving the set of objective of this study, a critical and analytical reviewed on past related research will be done to list and adhere to the set of requirement needed in developing and creating an online application that translate Malay Language to English language and English language to Malay language for the benefit of official and office conversation. The highlighted requirement from the literature review will be directed to the development of the language translation application prototype.

This study will adopt the general research design methodology from the conclusion of Vaishnavi and Kuechler (2004), as their study explains it that it is the best research

methodology design that capture all the required steps and approaches in developing software applications. Previous related study in this field of research has successfully adopted this research design, which justifies this particular study stand, on the research methodology. Figure 3.1 below show all the five involved stages of this study prototype development :

- Awareness of Problem
- Suggestion
- Development
- Evaluation
- Conclusion

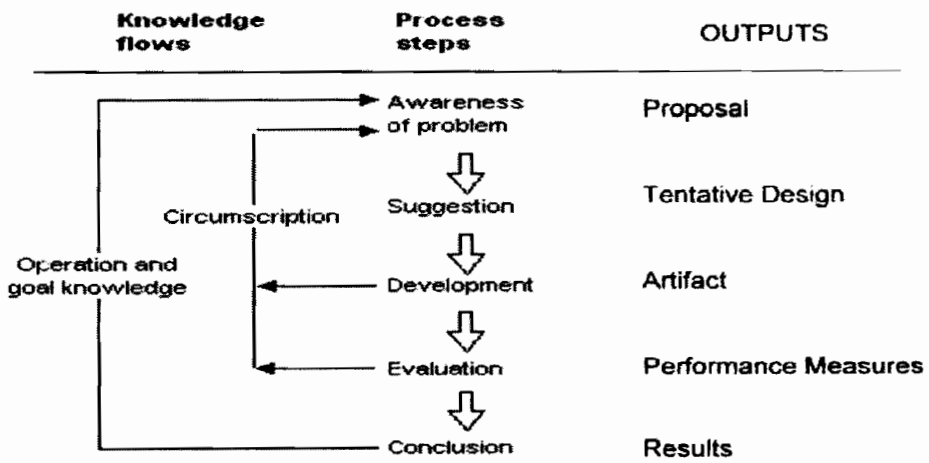

Figure 3.1: Research Design Methodology (Vaishnavi & Kuechler, 2004)

3.2 Awareness of problem

Starting with problem awareness, is the general understanding of research idea, conceptualizing it to enable to explore and exploit all possible ways and panacea in solving the established problem. This study is defiantly on the focuses on solving a particular problem, thus; smooth interaction between the international students of UUM and non-academic staffs. This study suggested a development of a language translating application that can help in translating the staff language (MALAY LANGUAGE) to the international students, and the international student's language (ENGLISH LANGUAGE) to the staffs.

As a result of the useful directions from an expert in this field of research and exploration of different sources of academic write up such as; journals, seminal, news papers, websites, etc. this study selected three basic and fundamental ways of gathering information and requirement in developing the language translating prototype. They are as listed below;

- Asking users about their requirements
- Website observation and
- Documentation.

3.3 Suggestion

The study is aimed at suggesting the development of a web-based application that would enhance a smooth communication between UUM non-academic staff and international student by interpreting both parties' languages. As such this study suggests the development of the application prototype that would reveal the feasibility report and productiveness of the study suggestion; this prototype development will also explain the real life presentation and appearance of the application.

The web-based language translating application, as suggested in this study, is grounded with the personal notifications, supported with interrogating some international students in UUM, and crowned with the approval of the study evaluator. The outcome of this face is a tentative design; it depends on the other phases of the adopted research design methodology.

3.4 Development

The system starts to be developed in this phase, adhering to the entire highlighted requirement as revealed in the literature review, and the below subtopic of prototype development will explain more of the application development requirement that are followed in this study. This phase develops the main application prototype that will reveal the physical experience of the study suggestion to user. The user feedback, comment and critique, will be welcomed to support the end conclusion, findings, analysis, and recommendation or documentation of this research. Laudon & Laudon, (2000) hold that there are three distinct stages in prototype and the adopted steps are;

Step 1: Develop Initial Prototype.

Step 2: Use the Prototype.

Step 3: Evaluate as Operational Prototype.

And they are explained with the figure 3.2 below;

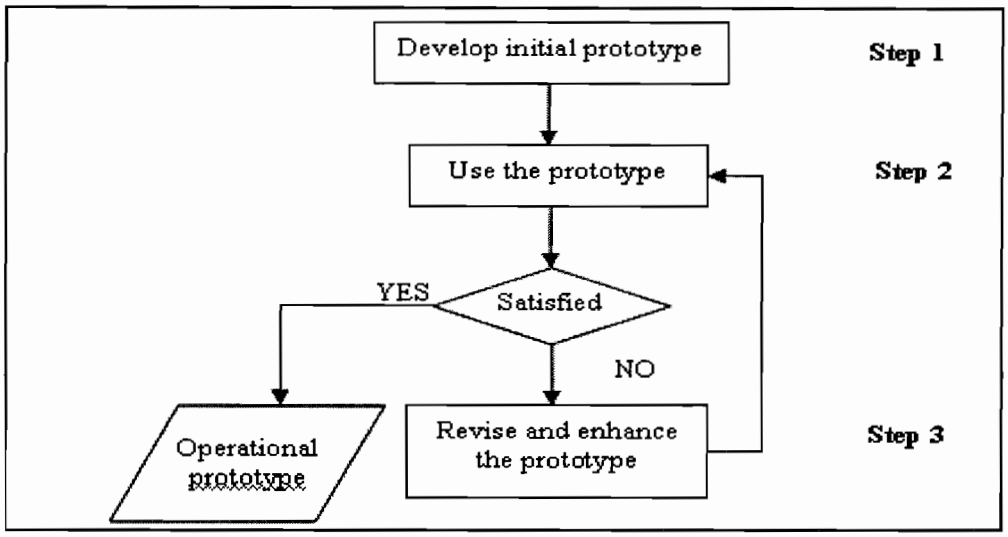

Figure 3.2: The Prototyping Process (Laudon & Laudon, 2000).

3.4.1 Prototype Development

This study, in line with the conclusion of the related studies will adopt the traditional waterfall software development life cycle (SDLC) paradigm. SDLC is one of the most recognized and efficient conceptualized model in managing and developing and online-based application, as it fit the path of this research, it is a software developing software that best highlights the activities and steps in developing and online application. The SDLC model is universally accepted software development paradigm which is found very useful in describing complicated activities and processes involved in software

development and the basic elements of SDLC selected for this study are identified as the core elements (Gem-up Consulting Inc., 2008). It manage the software development from the predevelopment stages until the antidevelopment phases. For this study, we are going to look at the five basic interrelated phases of SDLC which include;

- Planning,
- Information gathering,
- Requirement Analysis,
- System design and
- Testing.

3.5 Evaluation

This phase follows the prototype development phase. This phase will be used to achieve the third objective of this study, as listed in chapter one, thus; evaluating the usability of the developed system. In this section, the study will evaluate user's opinion the opinion will be gathered and analyzed to support the success of the application development. From the gathered user's opinion as this phase works as the study feedback, the researcher will directed to the weakness and the strength of the developed prototype.

3.6 Conclusion

This phase is the end to study travelling, from the users evaluation on the developed prototype, researcher draw out recommendation, findings, limitation of the application, the strength of the application, to contribute meaningfully to this field of research, and to greatly achieve the initial set of objective of the study.

3.7 Summary

This chapter exposes the research methodology adopted for the achievement of these research objectives, and how it introduced in the development of the language translator application, the adopted development method include five main phases; such as planning, information gathering, requirement analysis, system design and testing and all are executed for the successful development of the application prototype.

CHAPTER FOUR

SYSTEM PROTOTYPE DEVELOPMENT

4.1 Introduction

The design and development of the prototype developed for the purpose of testing has been presented in this chapter. A prototype has the same functionality as the final intended system but is a scaled down version. The development process was carried out following all the steps discussed in Chapter 3. Chapter 3 listed the process of the system development in the three step process of designing, modeling and prototype development. The Unified Modeling Language (UML) was used to design and model the system. The UML design diagrams are discussed in detail in this chapter.

4.2 WBTL System Requirements

Institution of Electrical and Electronic Engineers defines requirements as the conditions of capability required by a user to achieve the intended objective (IEEE, 1998). User requirements have been defined and organized under two categories, namely; functional requirements and non functional requirements.

4.2.1 WBTLS Functional Requirements

Functional requirements identify the system components, attributes that are required to achieve the intended results (Bennett et. Al., 2002). The objective of determining the functional requirements are:

- to identify the user requirements
- to identify the other requirements known as non functional requirements

All the system components must be identified at the system requirement gathering stage itself (Dennis , 2005).Table 4.1 lists the functional requirements of the WBTL system. The system can be accessed by two types of users namely, student and staff.

Table 4.1: WBTL System Functional Requirement.

			Actors	
Requirement _ ID	**Requirement Description**		**Student**	**Staff**
WBTLS_01	**Log In**		✓	✓
	The users of WBTL system (Student, Staff) must log-in into the system using their "user name" and "password".			
WBTLS _02	**Make Registration**		✓	✓
	Both of the Student and Staff have the ability to register on the Web based language translator and be a member of the system.			
WBTLS _03	**View general info**		✓	✓
	Any visitors can get some info about the WBTLS via surfing in About us page.			
WBTLS _04	**Check Email Box**		✓	✓
	This function involve delete sub functions Read email, create new email and delete. The email student page will be in English and the staff page will be in Bahasa Malay.			
	WBTLS _ 04_ 01	**Read Email**	✓	✓
		Via this function the Student or Staff can read the received email in the box.		
	WBTLS _ 04_ 02	**Create New Email**	✓	✓

		By this function the student or staff can replay on the email received		
	WBTLS_04_03	**Delete Email**	✓	✓
		Student and staff can delete the read email		
WBTLS _ 05	**Log Out**		✓	✓
	The staff and student shall log-out from the system			

4.2.2 WBTLS Non-Functional Requirements

The following table illustrates the list of the non-functional requirements of the WBTLS system

Table 4.2: The Non-Functional Requirements of WBTLS

Requirement _ID	Description	Priority
WBTLS_06	**Reliability issues**	
	The WBTLS system must ensure 24*7 operations with an availability of 100%. Means a real time system.	Mandatory
WBTLS_07	**The system Usability**	
	The WBTLS system should be has friendly interface, which ensure that the system is easy to use and usefulness.	Mandatory
WBTLS_08	**Security of the system**	
	Student and staff information will be used only for the collected purposes and never be disclosed to 3rd parties without prior consent of the uses. User information will be stored with the highest security of the system and database. All users must be authenticated prior to gaining access to the system.	Mandatory
WBTLS_09	**issues of Maintainability**	

	The WBTLS code source should be in a good structure so that make it easier to developer to maintain and extend the system or feedback.	Mandatory

4.3 Modeling of WBTLS System

Design of the system has been carried out using UML. This section describes the design process in detail. Developers and users are presented with a different perspective of the system through UML diagrams at various degrees of abstraction. Visual modeling tools are commonly used to create UML diagrams. Use case diagrams, sequence diagrams and class diagrams are the commonly used UML diagrams (Barclay & Savage, 2004).

4.3.1 WBTLS Use Case Diagram

Use case diagrams illustrate what a system does from the point of view of an observer from the external. The focus is on what a system does rather than how. The use case diagrams are closely linked to scenarios. A scenario, it can define is an example of events when someone interacts with the system. A use case is a review of scenarios for a single task or objective. An actor is what or who initiates the events involved in that task (Martin & Kendal, 2000).

In this system there are two main Actors that are the Staff and the student, concerning the main functionalities of system are constitute on log in , log out, check email and registration.

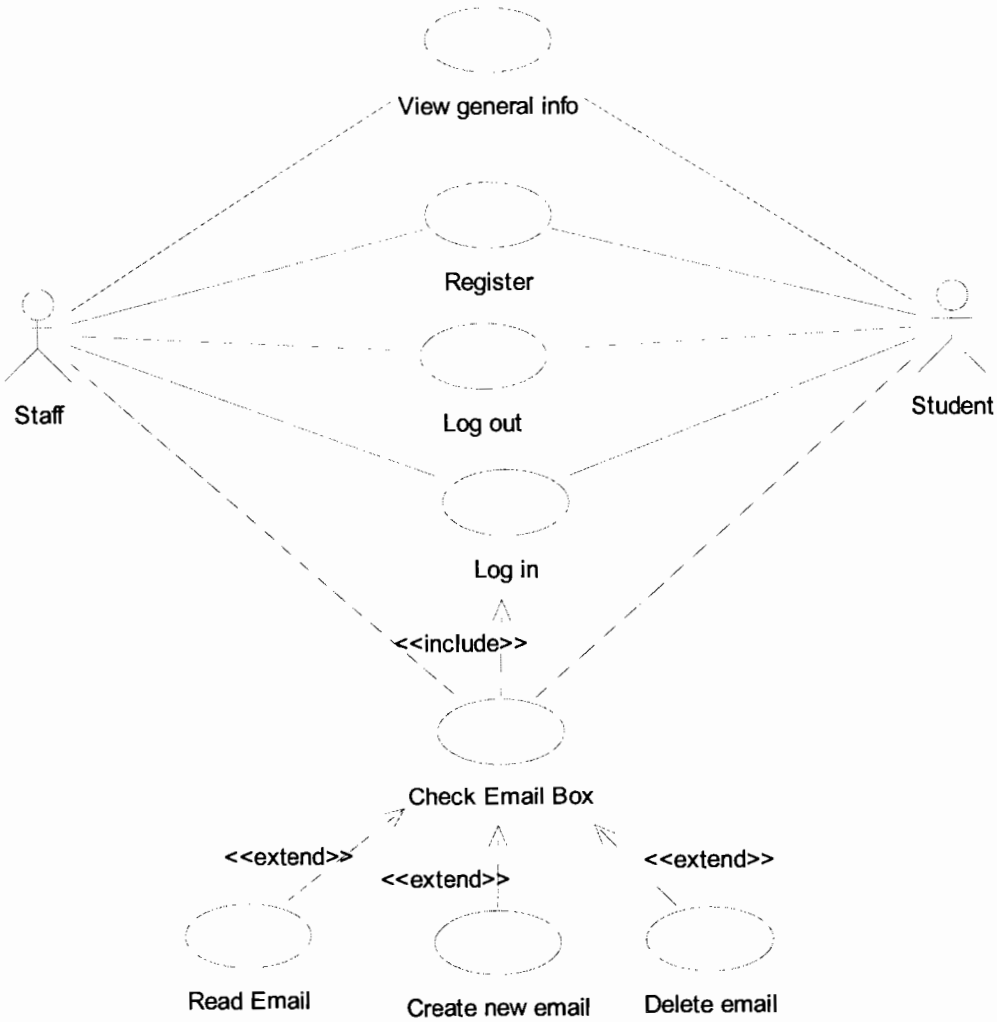

Figure 4.1: WBTLS Use Case Diagram.

4.3.2 WBTLS Use Cases Specifications

The WBTLS use case specifications are depicted in tables 4.3 to table 4.5 respectively.

Table 4.3: Log In use case specification

Use Case Name: **Log in**	ID: **WBTLS _01**	Importance Level: **High**
Actor: **Staff, Student**		
Brief Description: The log in function guarantees that only certified systems 'users get access to the system. An allowed user is a user who has an account on the system that means considered as a system member. The systems' users should enter a valid password and username to get access to the system.		
Basic Flow of Events This use case start when the user click on log in button The system will display log in panel. The staff or student key-in username and password and click on log in button. The system will display the member page. **[Exception 01 : Wrong user name or password]**		
Alternatives Flows It is not applicable.		
The Exceptional Flows : **[Exception 01: invalid password or user name]:** The system will display "Wrong user name or password" if the user enter a wrong pass or username.		
The Characteristic of Activation Press on log in button		
Pre-conditions Student or Staff should a member of the WBTLS system.		
Post-conditions Student or Staff page will be displayed.		

Table 4.4: Register Use Case Specification.

Use Case Name: **Make Registration**	ID: **WBTLS _02**	Importance Level: **High**
Primary Actor: **Student , Staff**		
Brief Description: This use case permits Student or Staff to create new account in the system and be as system member. In this case the Staff/Student is required to fill up registration form proposed by the system , and send it , and he/she will get on his/her own username and password.		
Type: **External** / Temporal		
The Basic Flow of Events **1**. This use case begin when Staff or Student click on Registration link. **2**. System displays the registration Form concerning on the Student and Staff. **3.** The Student or Staff should Fill up the Registration Form fields (Name, Address, Email, Phone number, password, username, and occupation and the most important is the type of user (Staff/Student)) and then click on submit button. **4**. System will verify the new entered data and then send to new register a confirmation message (**E2**: INCOMPLET REGISTRATIONFORM) (**E3**: DATA ENTERED EXISTED ALREADY)		
Alternatives Not applicable		

Exceptions : **E2 : INCOMPLET REGISTRATIONFORM** **2.** Student/Staff acknowledges the message. **E3: DATA ENTERED EXISTED ALREADY** **2.** Student/Staff acknowledges the message.	**1.** System will display the message "INCOMPLET REGISTRATION FORM" if Studen/Staff doesn't fill up the entire required information field. **1.** System will display the message "DATA ENTERED EXISTED ALREADY" if Student/Staff submit similar information already existed on the system
Characteristic Of Activation Click on Registration Link.	
Pre-conditions The system should be ready. Student/ Staff have different information.	
Post-conditions Increase the number of the **WBTLS** members.	

Table 4.5: Check Email Box Use Case Specification.

Use Case Name: **Check Email Box**	ID: **WBTLS _04**	Importance Level: **High**
Primary Actor: **Student , Staff**		
Brief Description: This use case permits Student or Staff to create new account in the system and be as system member. In this case the Staff/Student is required to fill up registration form proposed by the system , and send it , and he/she will get on his/her own username and password.		
Type: **External** / Temporal		
The Basic Flow of Events **1**. This use case begin when Staff or Student click on Emails link. **2**. System displays the Email page for the Staff/ student. The page contains three sub function **(A1: Read Email, A2: Create New Email, A3: Delete Email)** **3.** The Student/ Staff shall choose one operation		
Alternatives **A1: Read Email:** Staff/Student click on read email, the system will display email panel contain the content of the received email. **A2: Create New Email:** the system will display a space for staff/student , student/staff can write an email and send it **A3: Delete Email:** the system will update the email box when the student / staff delete one from the read email.		
Exceptions : Not Applicable.		

Characteristic Of Activation Click on Email Link.
Pre-conditions The system should be ready. Student/ Staff have email box means registered before.
Post-conditions Email read / new email / Delete.
Rules and Constraints **The Staff page should be in Malay language.** **The student page should in English language.**

4.3.3 WBTLS Sequences and Collaboration Diagram

According to (Johan, 2004), a sequence diagram is an interaction diagram that emphasizes the time ordering of the messages. Graphically, a sequence diagram is a table that shows objects arranged along the X-axis and messages, ordered in increasing time, along the Y-axis.

Typically you place the object that initiates the interaction at left, and increasingly more subroutine objects to the right. Next, you place the messages that these objects send and receive along the Y-axis, in order of increasing time from top to the bottom.

The WBTLS sequence and collaboration diagrams are shown in figure 4.2 to Figure 4.10 respectively.

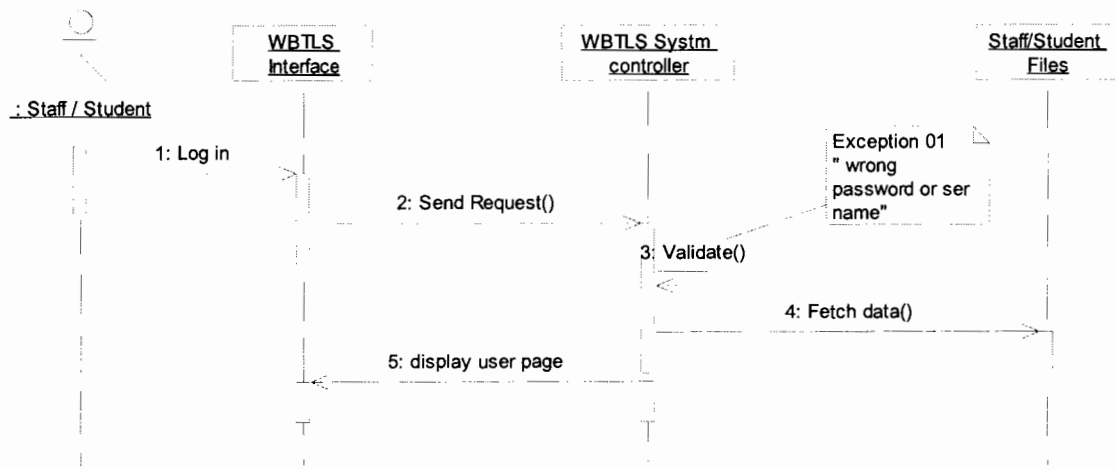

Figure 4.2: Log in Sequence Diagram.

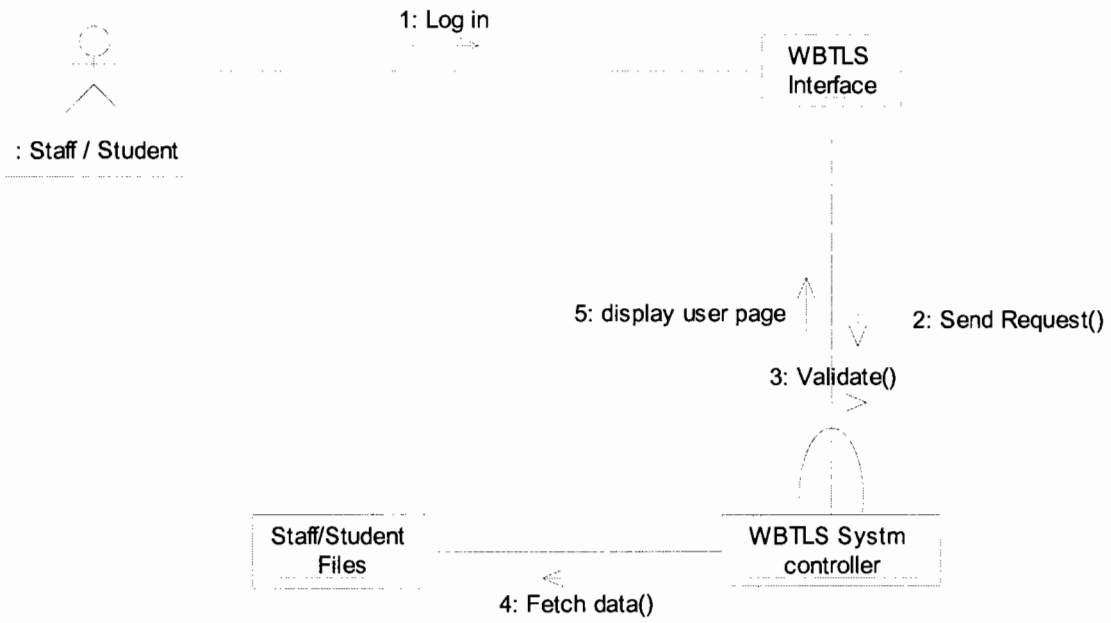

Figure 4.3: Log in Collaboration Diagram.

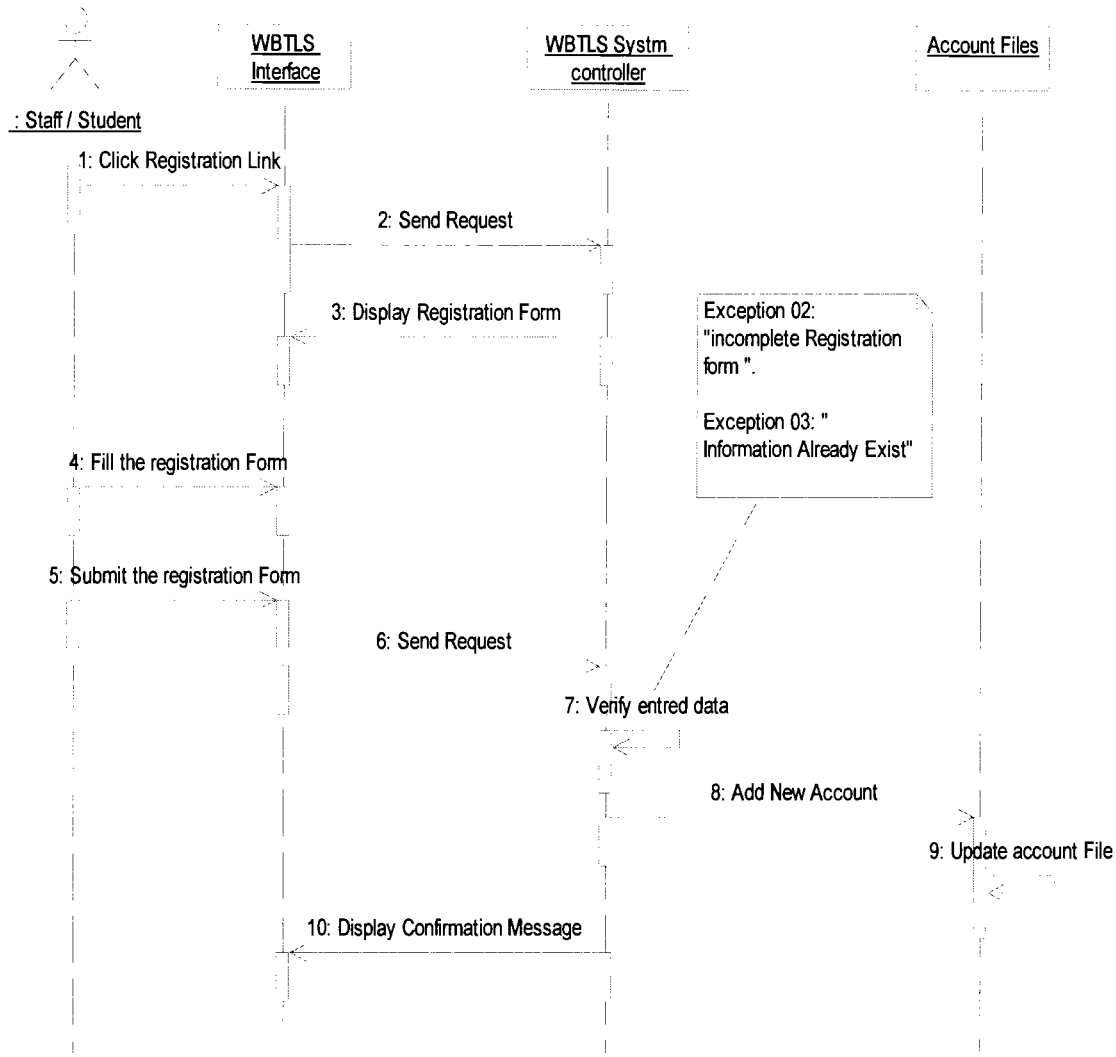

Figure 4.4: Make Registration Sequence Diagram.

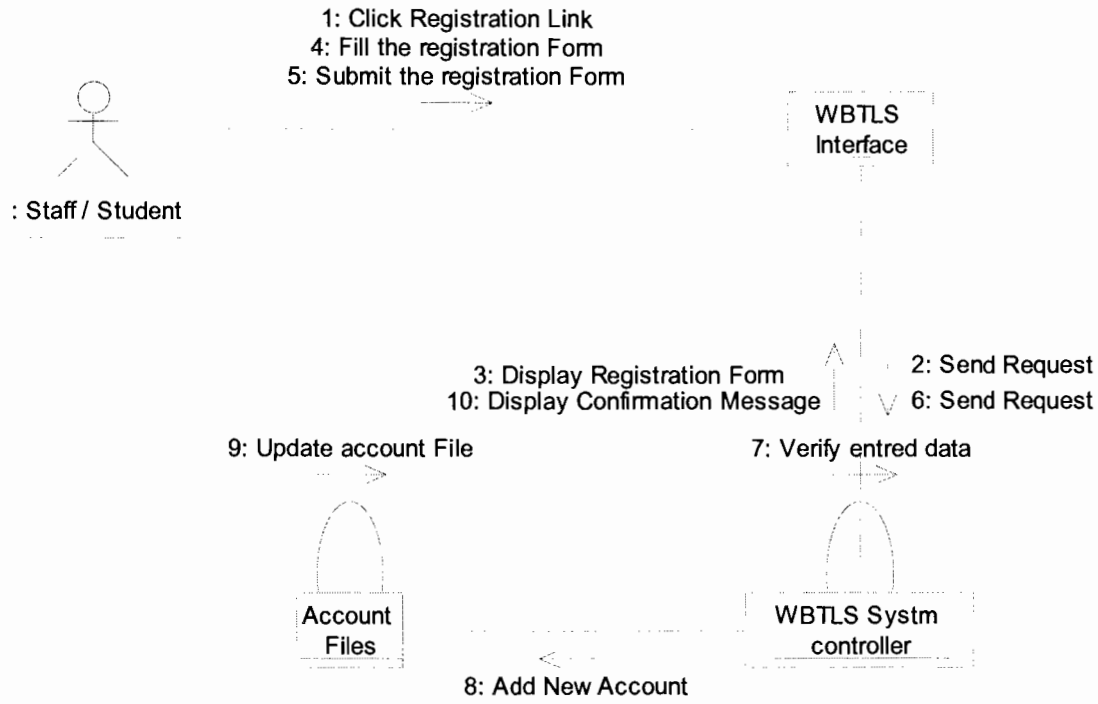

Figure 4.5: Make Registration Collaboration diagram.

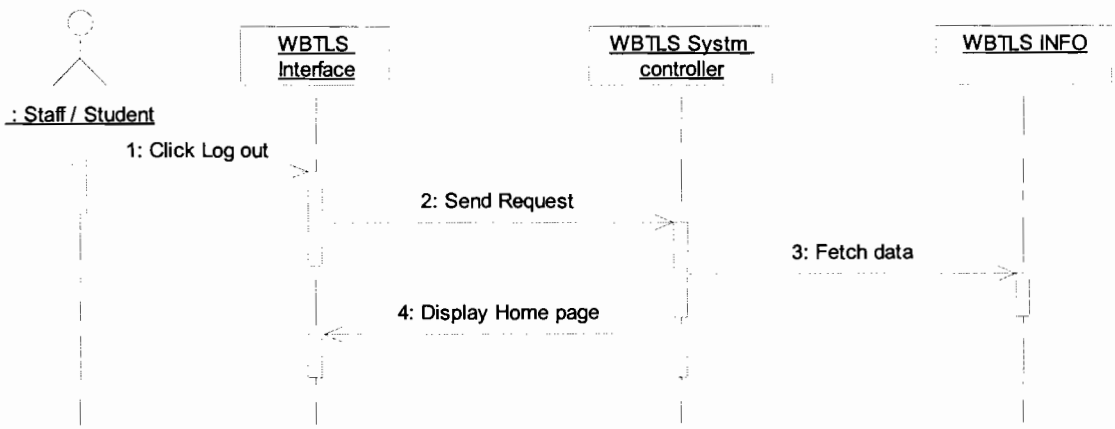

Figure 4.6: Log out Sequence Diagram.

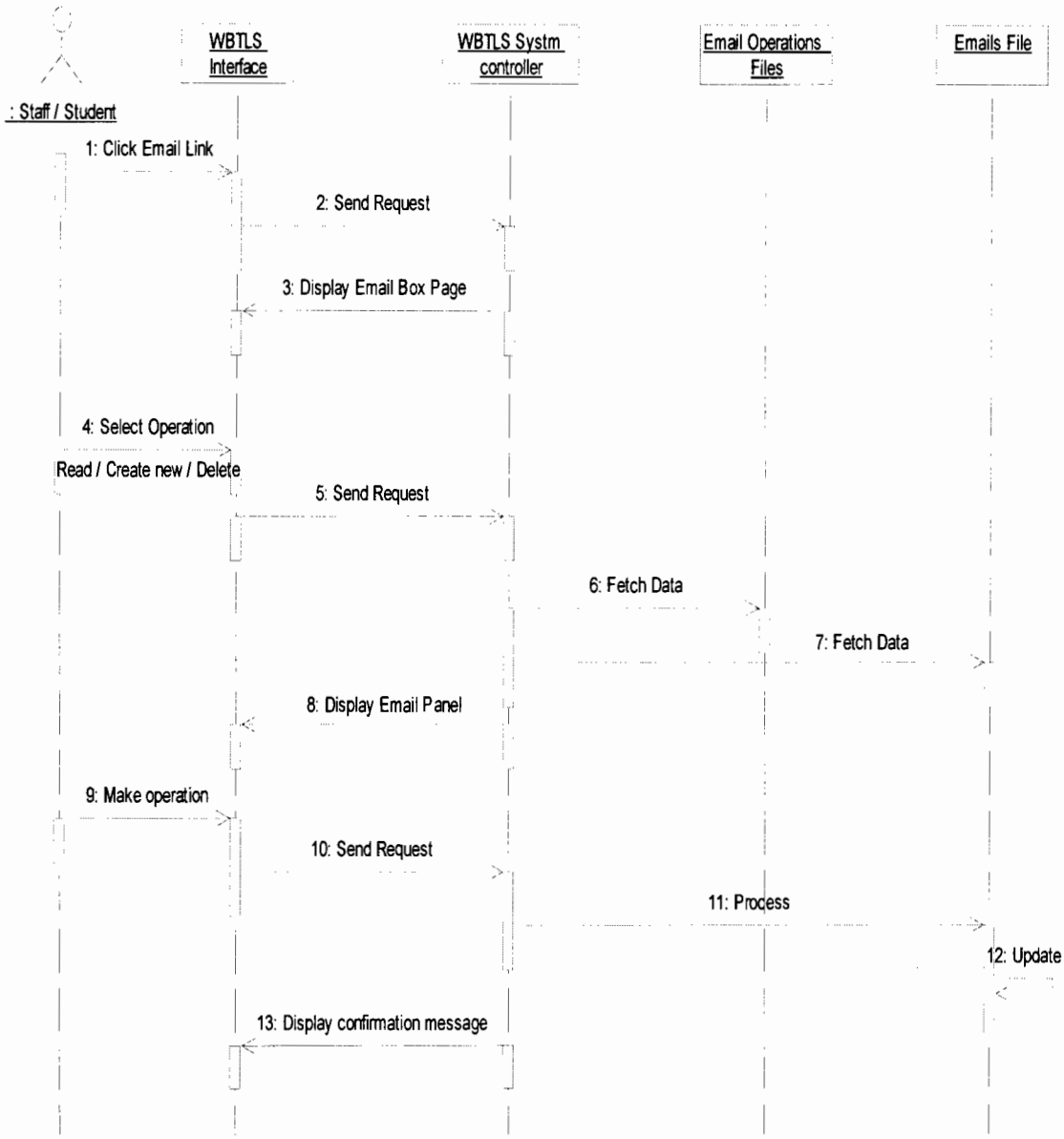

Figure 4.7: Check Email Sequence Diagram.

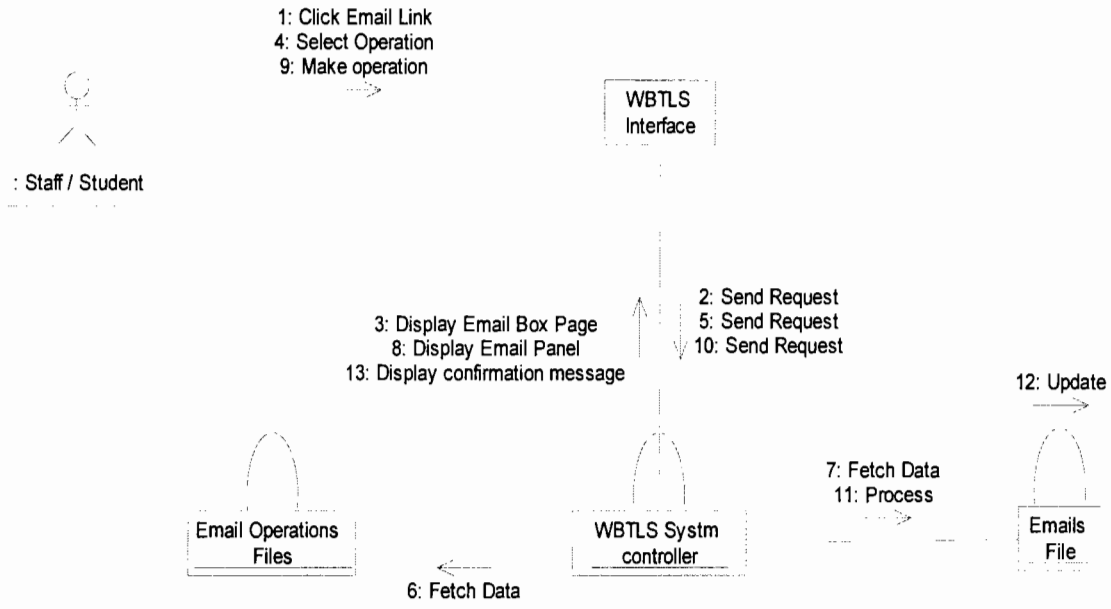

Figure 4.8: Check Email Collaboration Diagram.

4.3.4 WBTLS Class Diagram

Referring to (Atle, et al, 2008), Class diagrams are the most common diagrams found in modeling object-oriented systems. A class diagram shows a set of classes, interfaces and collaborations and their relationships. Before drawing a class diagram consider the three different perspectives of the system the diagram will present; conceptual, specification, and implementation. It should not to focus on one perspective and it is better seeing how it all works together.

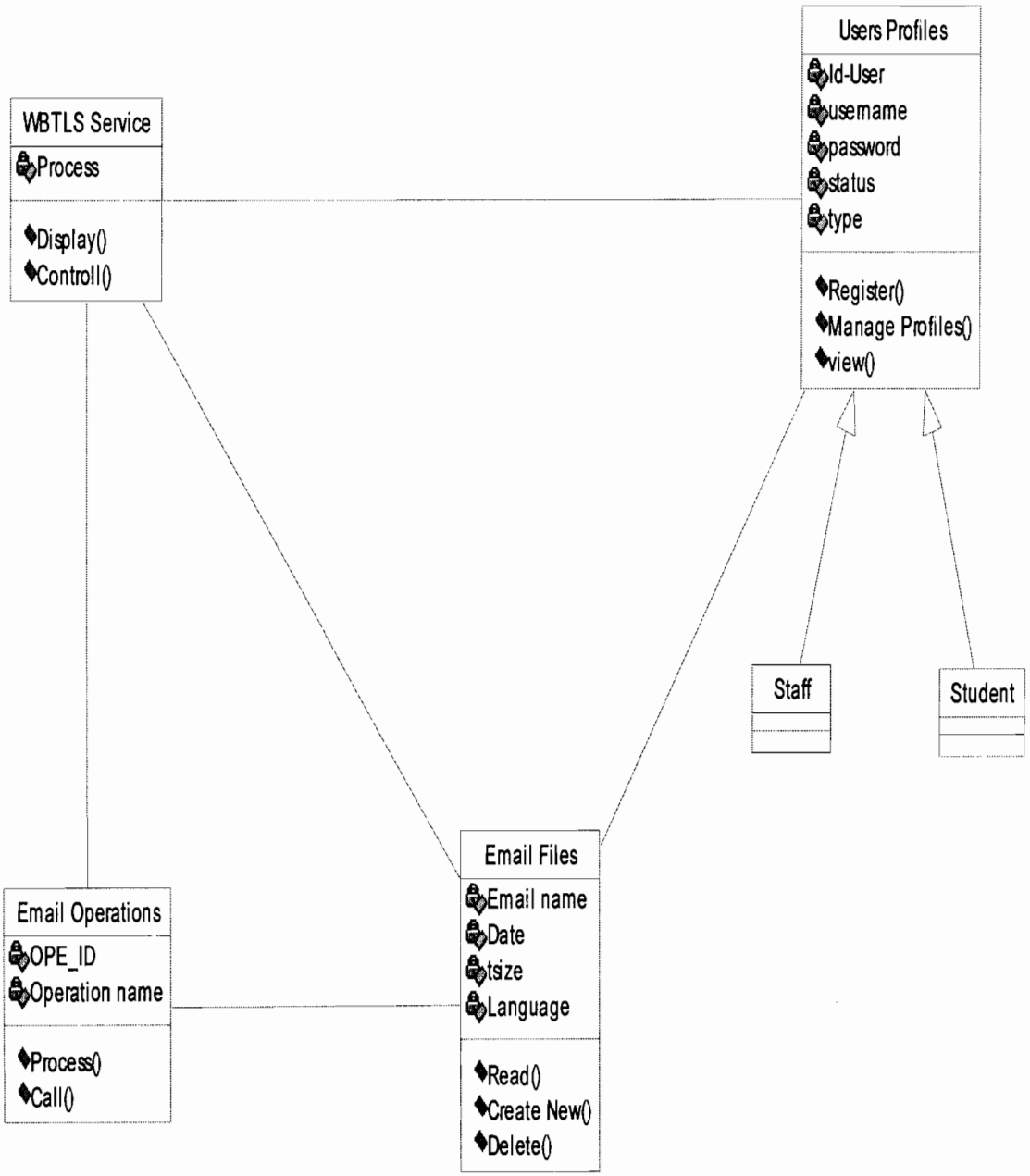

Figure 4.9: WBTL Class Diagram.

4.4 The Prototype Implementation

The prototype of the web based Language Translator system has been successfully implemented in this phase and all the system functional requirements that were determined before have been fully conducted. The system prototype design was decode into program code. JAVA language was used for coding. It was completely developed with .NET Framework using JSP as incorporated development Environment (IDE). Microsoft SQL Server 2008 was used as the Database to amass and get back all information.

The following figures are some screen shoot of the system.

Screen Shots

Main Page:

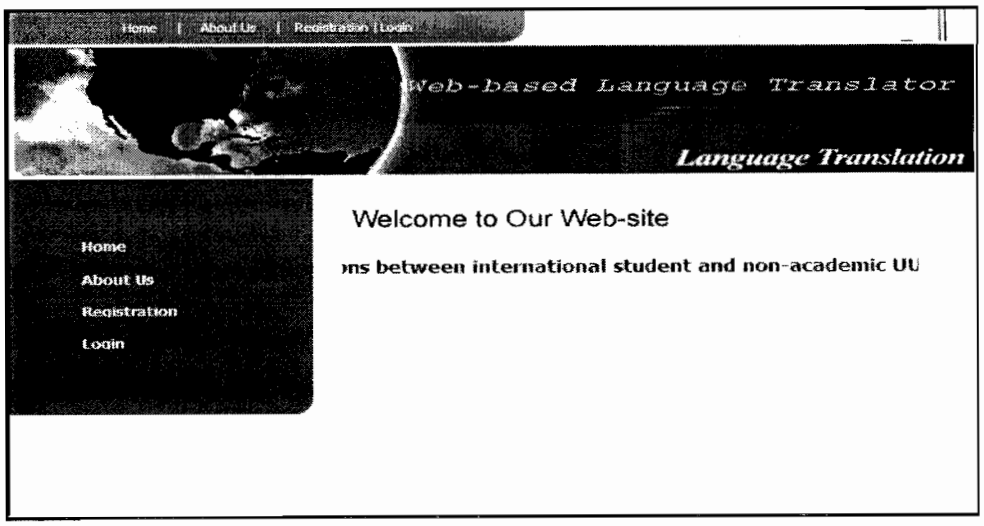

Figure 4.10: Main page

Registration Page

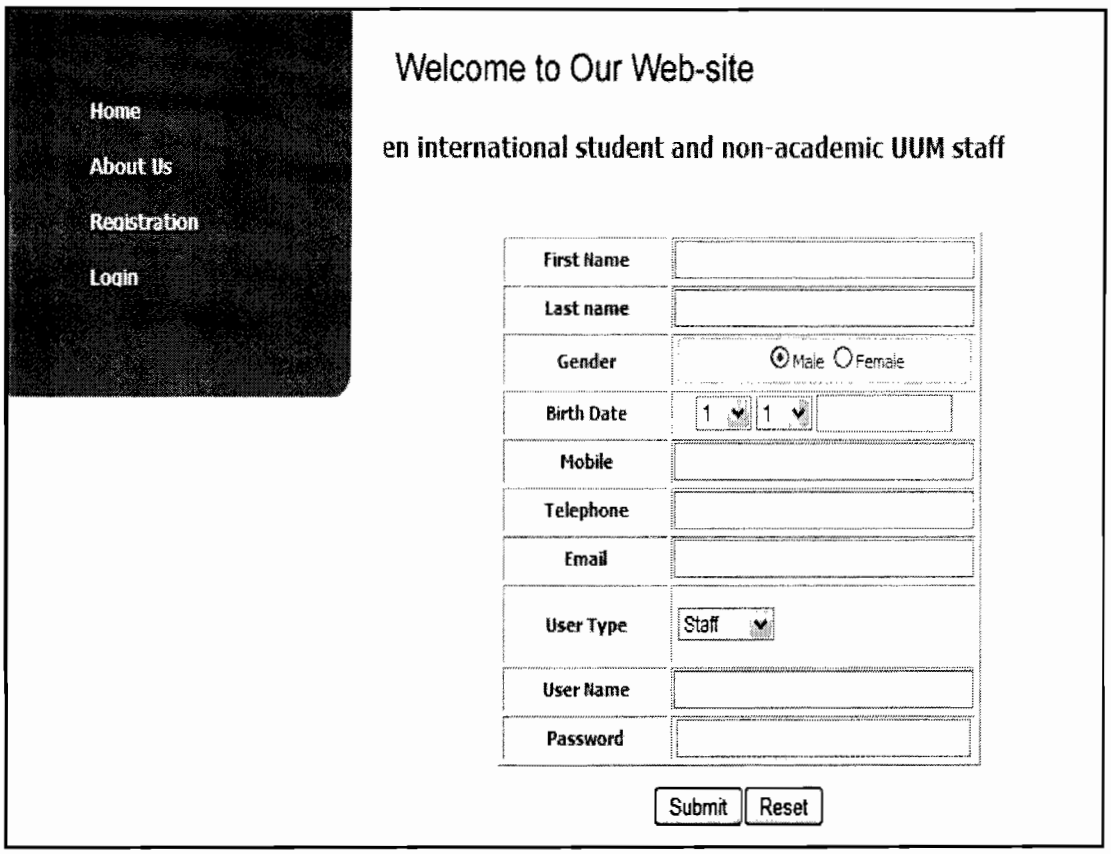

Figure 4.11: Registration page

Log-In Page

Figure 4.12: Log-in page

Main page for Staff

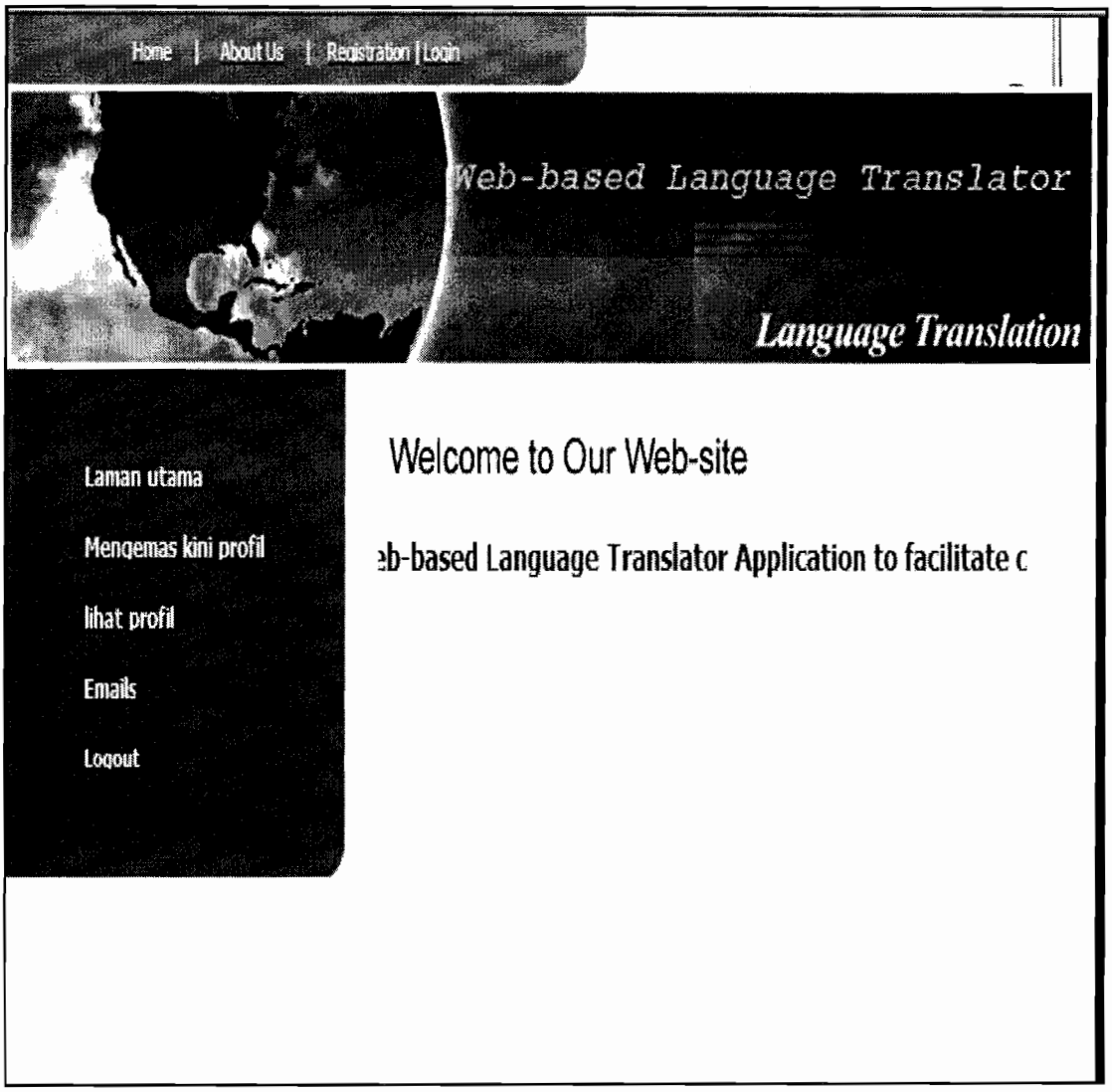

Figure 4.13: The Main page for Staff

Email Page

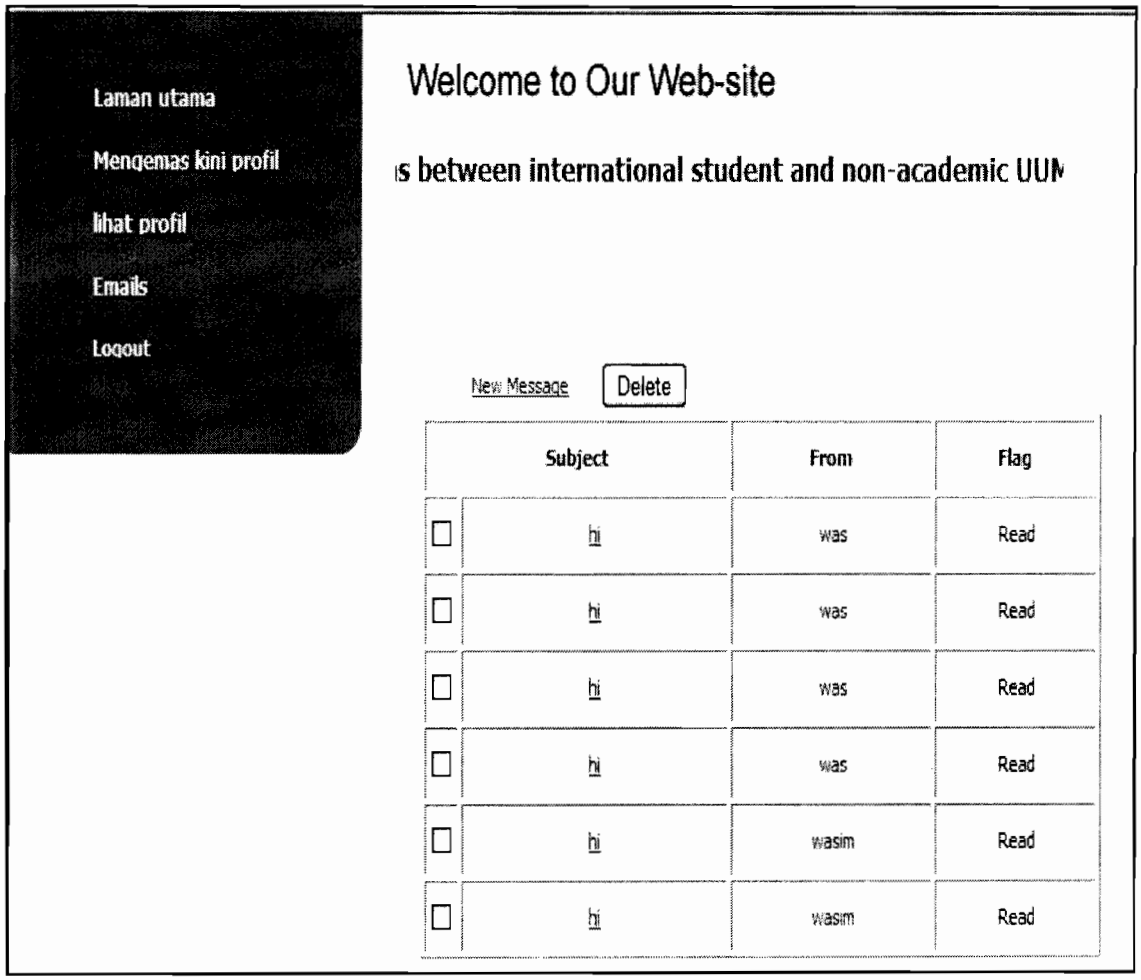

Figure 4.14: Email page

Send Message Page by the Staff

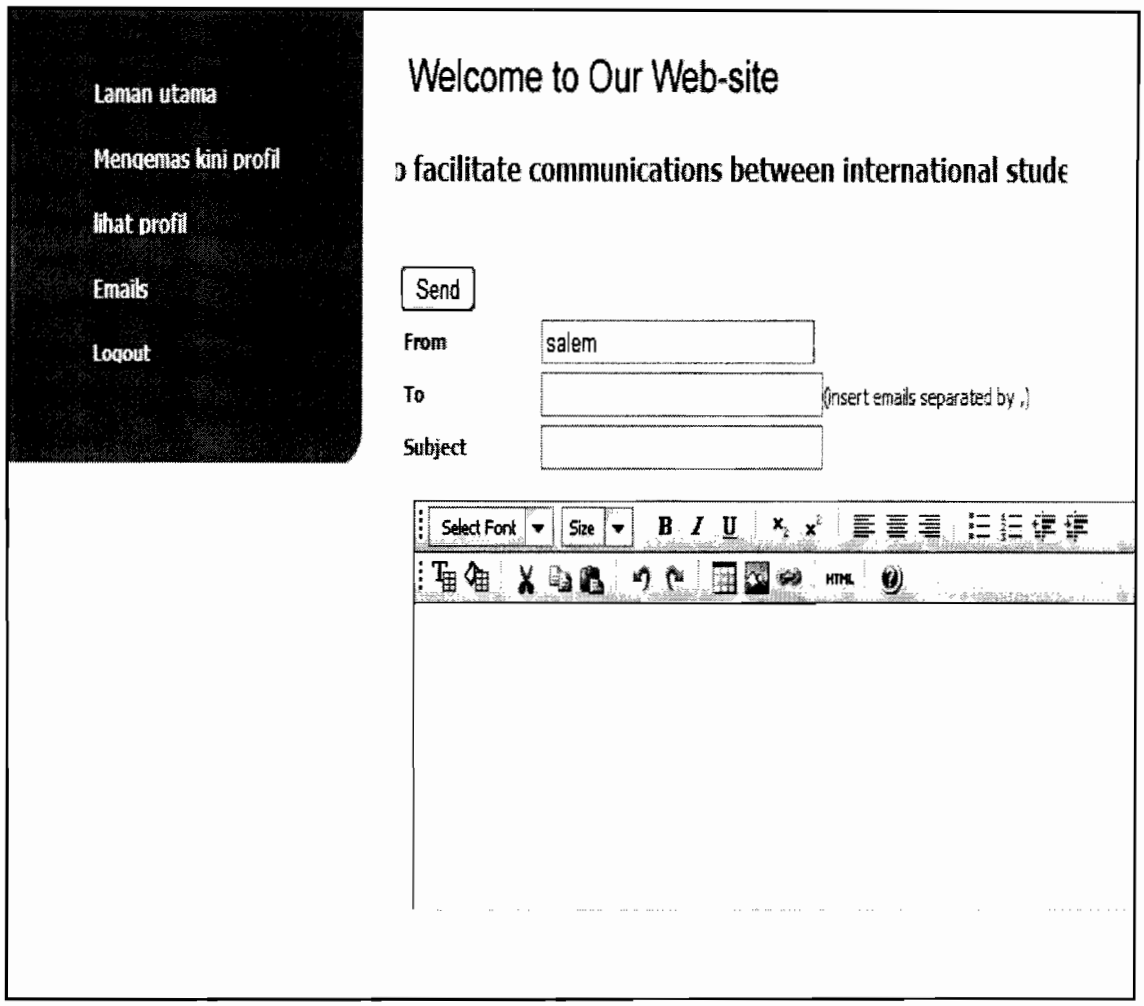

Figure 4.15: Send Message Page by the Staff

Update Profile Staff Page

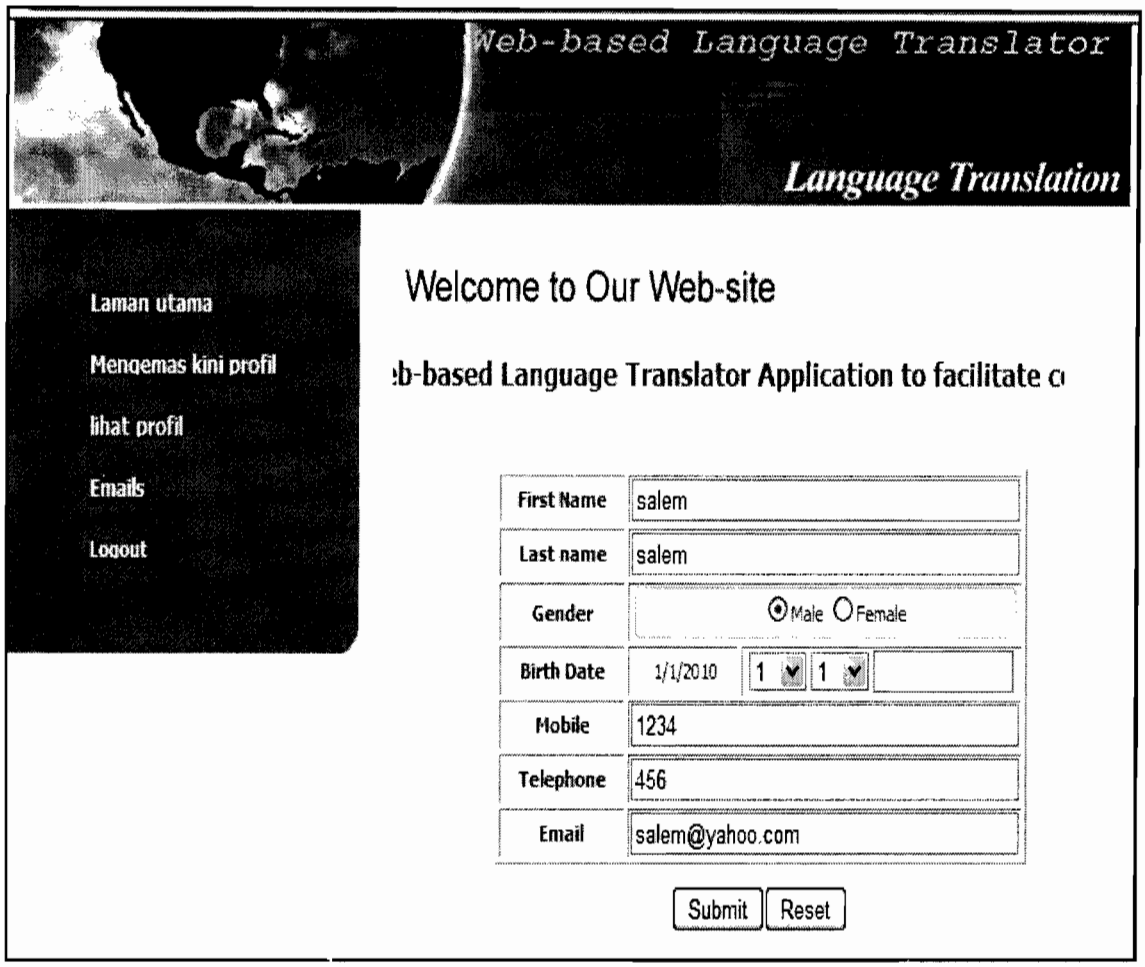

Figure 4.16: Update profile Staff Page

View Profile Staff Page

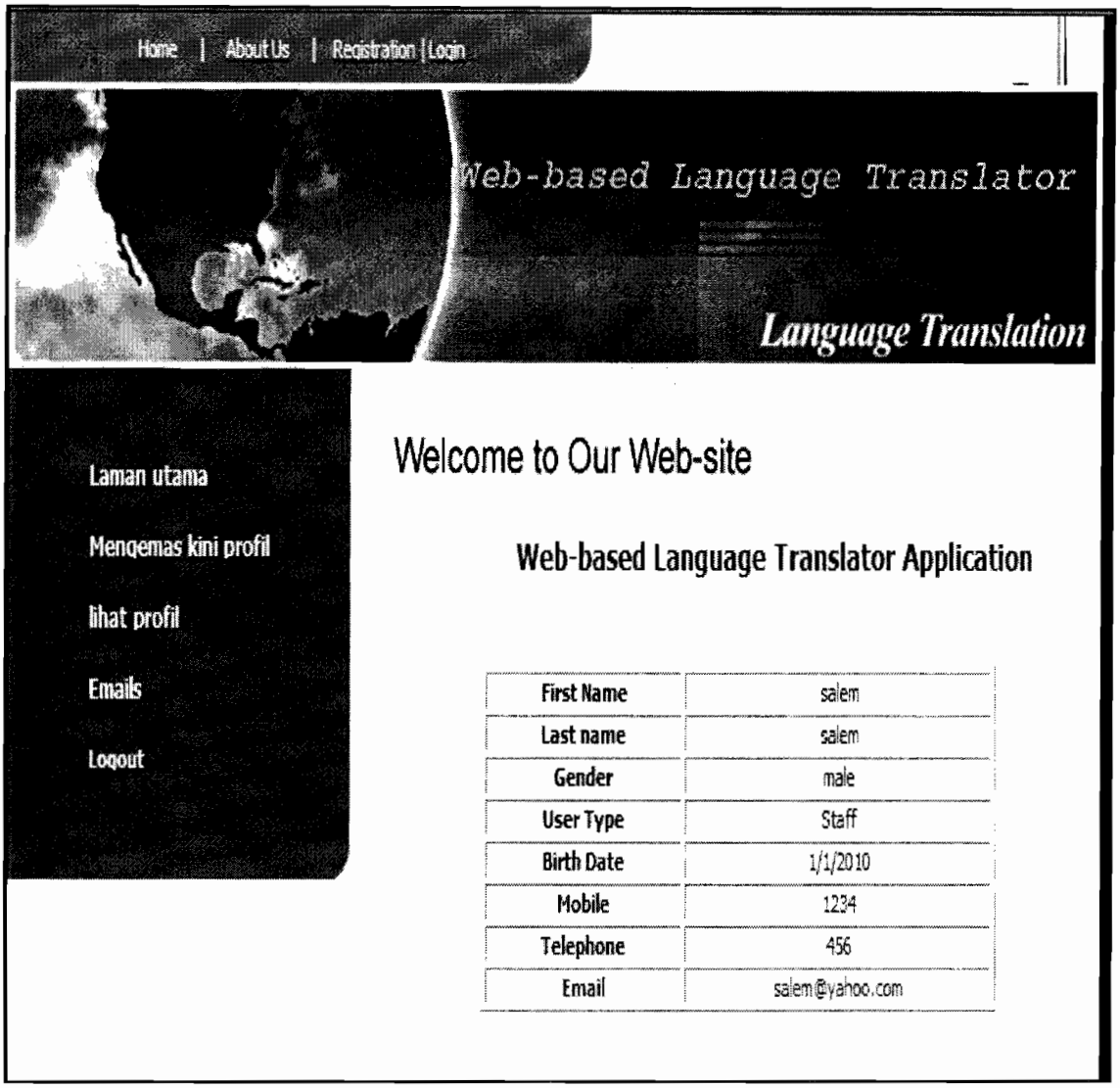

Figure 4.17: View profile Staff page

Main page for Student

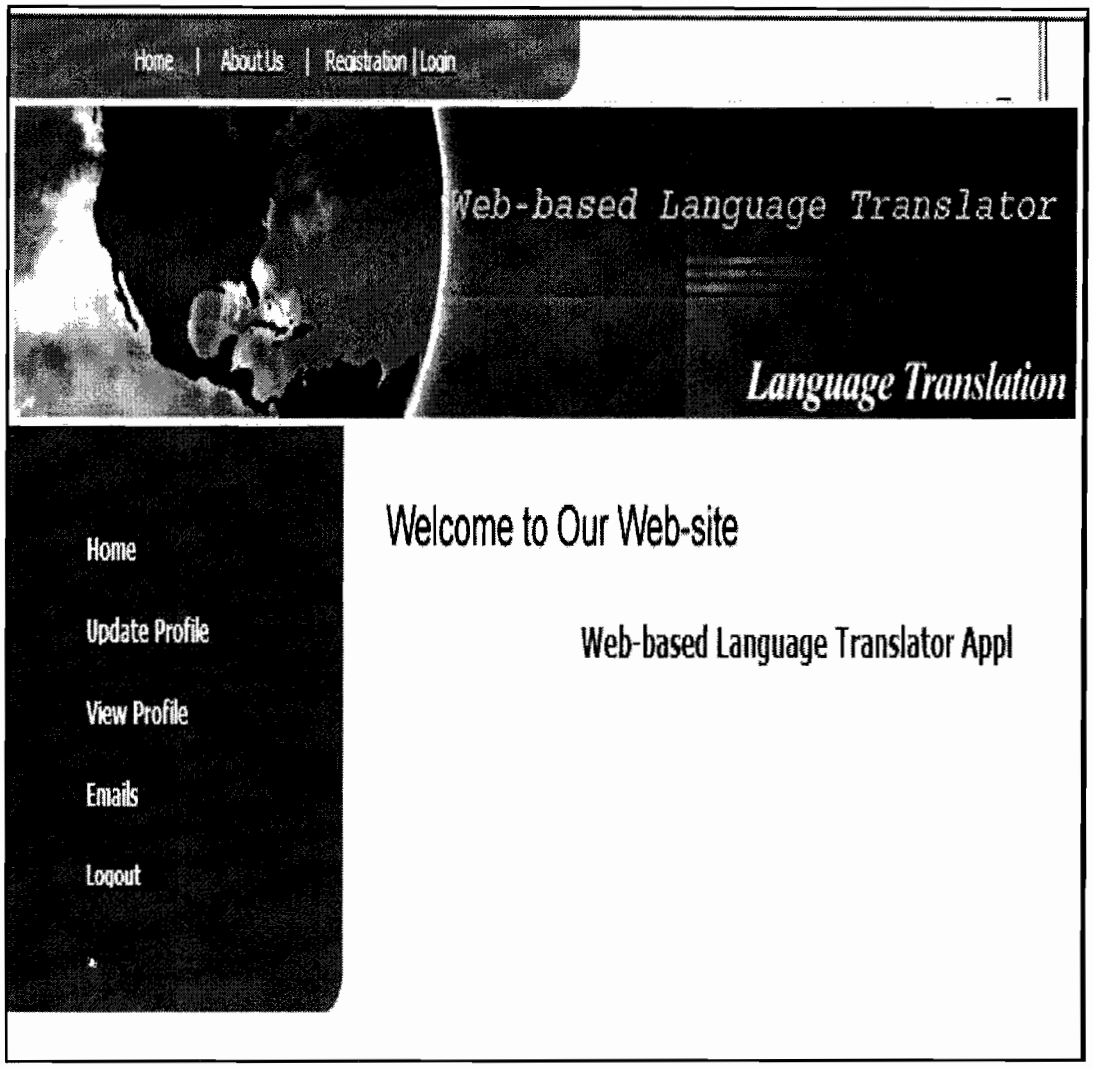

Figure 4.18: Main Page for Student

Email page for Student

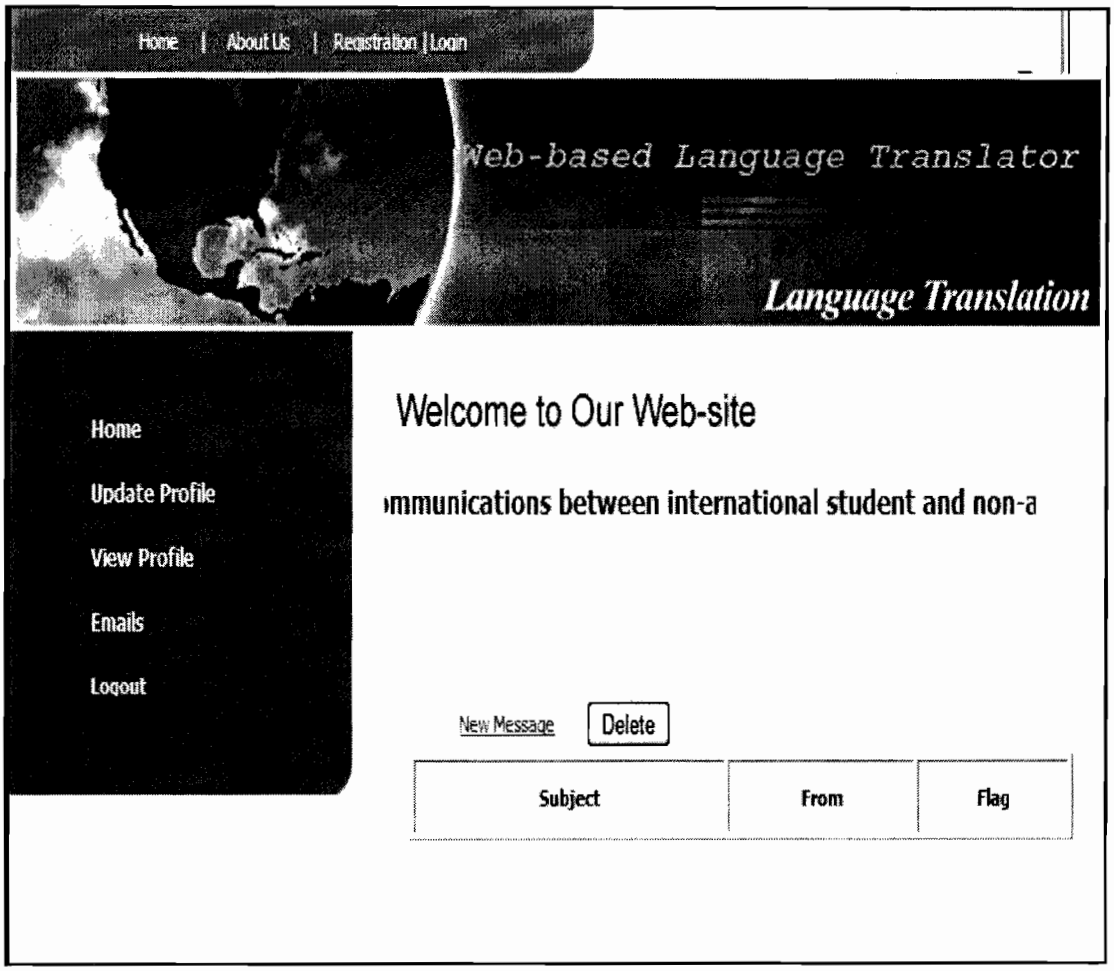

Figure 4.19: Email Page for Student

Send Message Page by Student

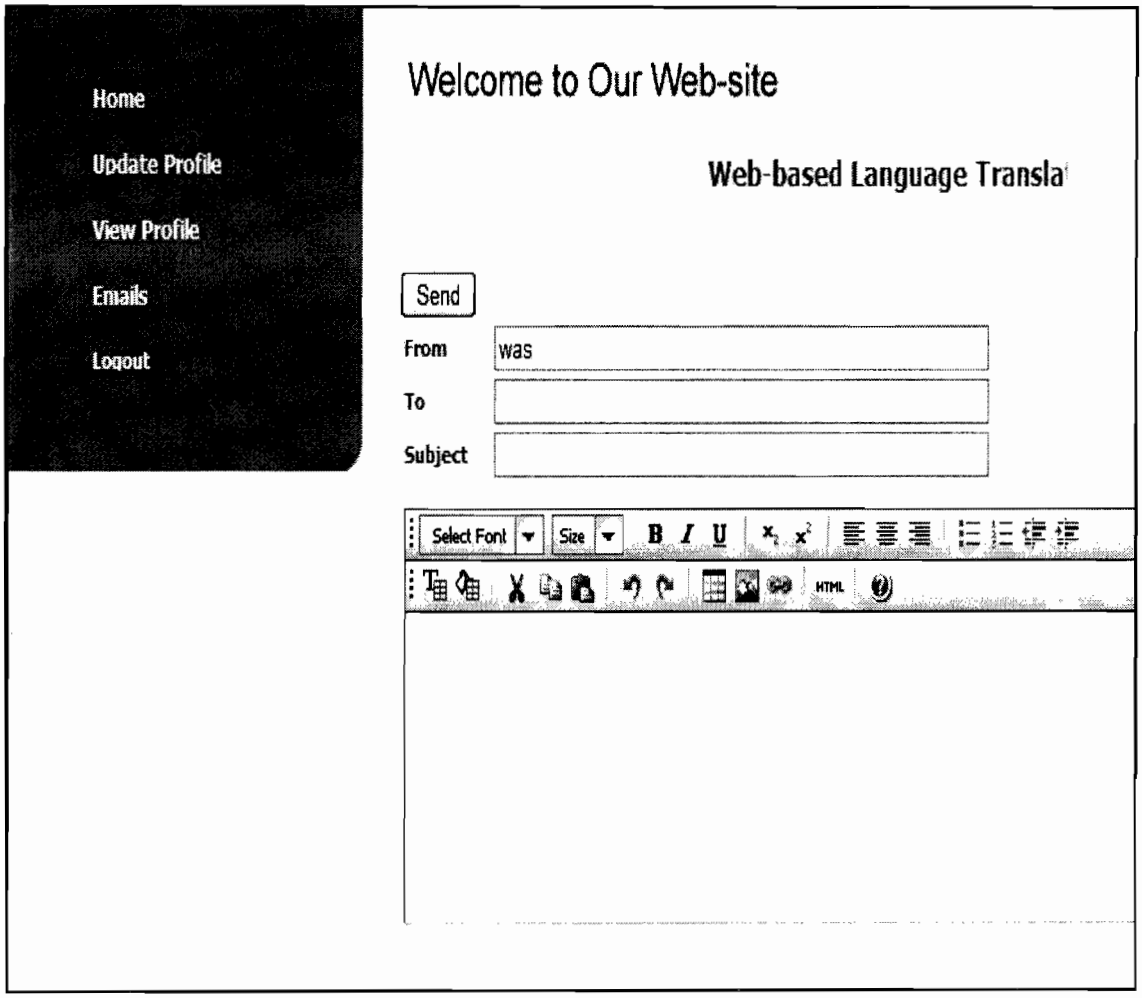

Figure 4.20: Send Message page by Student

Update Profile Student Page

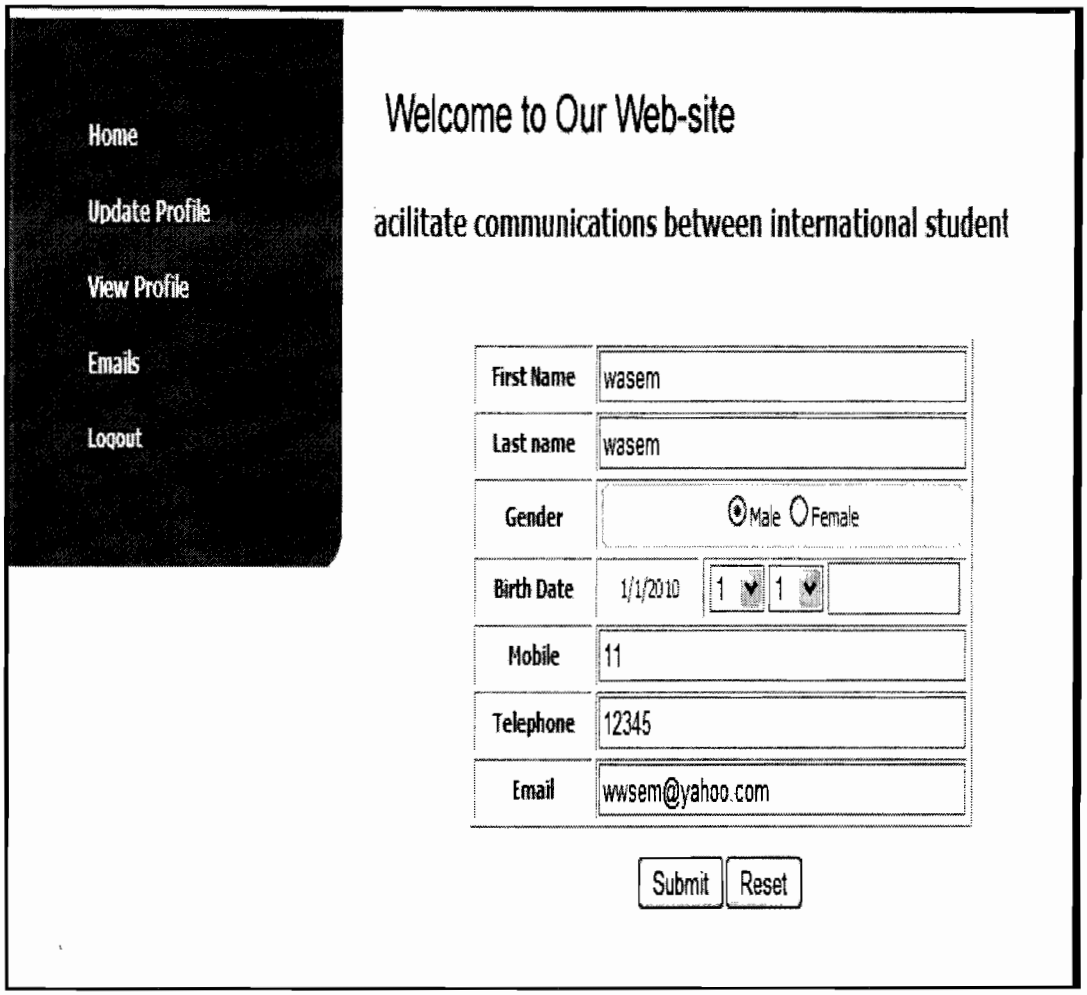

Figure 4.21: Update profile Student Page

Update Profile Student Page

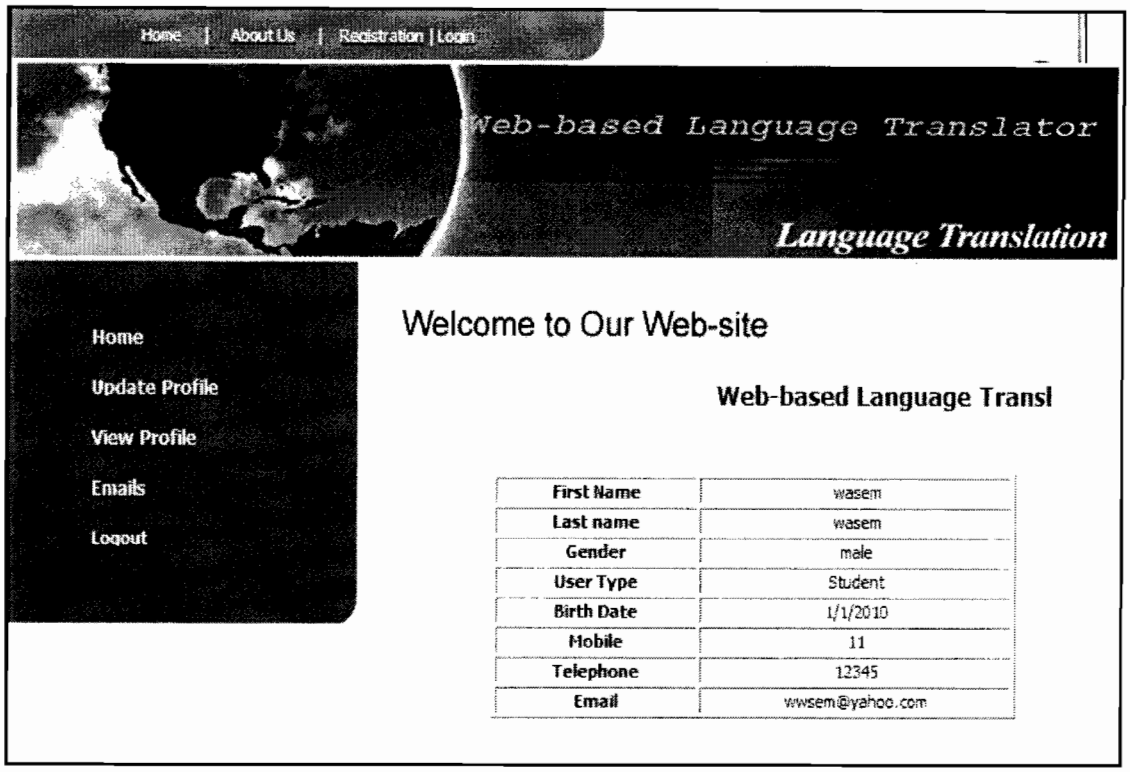

Figure 4.22: View profile Student Page

4.5 Summary

This chapter discusses the main phases from the research step which the development and design phase. System requirements and UML design was carried out in details, finally a prototype enhancements was illustrated with some screen shoot.

CHAPTER FIVE

DISCUSSION OF RESULTS

5.1 Introduction

The main aim of this chapter is to discuss the evaluation of the web-based language translator prototype and to use the descriptive analysis as well. A usability test is one of the most fundamental methods in usability evaluation and is combination of fitness for purposes, ease of use, and ease of learning that makes a product effective.

5.2 Evaluation Technique

The evaluation was performed after the system has been developed to determine the level of usefulness and operability of the system; it is tested through a questionnaire and interview.

The questionnaire had been distributed to international students and non academic staffs of University Utara for administering, while interview was conducted with the top management of English language centre. The sample size was 70 respondents; each participant was given a brief description of the functionality of online web-base language translator prototype. Then, they were allowed to use and explore the developed prototype. Finally, they were given a set of prepared questionnaire in order to obtain their perceptions. The aim was to see the level of

satisfaction and perception of the developed prototype ease to use and operability of the prototype system.

5.3 Evaluation of Questionnaire

The questionnaire questions were prepared and consist of four main sections. First section contains the general information which intended to gather demographic data about the sample and its distribution. The second section included questions about the web flexibility; while the third section included questions about web-based consistency. Fourth section was including questions about web-based user guidance. The questions were close ended and scaled in five levels from "strongly disagree" to "strongly agree". (1=strongly disagree; 2=disagree; 3=not sure; 4=agree; 5=strongly agree). Finally, there was an interview with the top management of English language centre, where several question related to usability and benefits of the web-based language translator prototype with DSS feature were asked.

5.4 Data Analysis

The data collected through the questionnaire was analyzed using SPSS software (version 13). The section below describes the results obtained from the data analysis.

5.4.1 DEMOGRAPHIC DISTRIBUTION OF SAMPLE

The following are gathered from the first section of the questionnaire. Out of the 70 participants, 20 (28.6%) of them are non academic staff of UUM, while 50 (71.4%) of them are students. The analysis shows that 60% of the participants are male and 40% are female. The age of the sample ranges from 18-44 years old. For the race distribution of the study sample, 41.5% are Malaysian, 12.8% are Chinese, 12.8% are Indian, and 32.9% are other nationalities. Statistical analysis of the data also indicates that 80% were considered to be experienced using web application, while the rest 20% were considered to be beginner users. According to the level of education, 30% were undergraduate, 45.7% hold degrees and 21.4% had master's degree. It shows that only 2.8% hold PhDs.

5.4.2 USABILTY TESTING RESULTS

Usability can be defined as a software quality attributes. It is also defined as an extent to which the product can be used by the user to achieve specific goals.

The usability evaluation of the perception of users on the web-based language translator prototype described using descriptive statistics. The important role of statistic is data gathered formulation that can easily understand by projecting group. Descriptive statistics can be used for this purpose.

The following tables show the mean and standard deviation for each section of the questionnaire.

5.4.3 WEB-BASED FLEXIBILITY

This table shows the mean level of evaluation of user to the web-based flexibility, mean is more than 4 which reflects the users' agreement that web-based is flexible. N: number of questionnaire respondents, std. deviation: standard deviation.

Table 5.1: Web-based flexibility

	WEB-BASED FLEXIBILITY	N	Mean	Std. Deviation
1	Is the design for data entry flexibility?	70	3.84	0.71
2	Does it provide flexibility user guidance?	70	4.08	0.60
3	Are the menu options dependent on context?	70	4.18	0.74

5.4.4 WEB-BASED CONSISTENCY

This table 5.2 shows the mean level of evaluation of user to the web-based consistency, mean is more than 4 which reflects the users' agreement that the web-based is consistent. N: number of questionnaire respondents, std. deviation: standard deviation.

Table 5.2: Web-based consistency

	WEB-BASED CONSISTENCY	N	Mean	Std. Deviation
1	Is the assignement of colour codes conventional?	70	4.07	0.93
2	Is the display format consistent?	70	4.18	0.74
3	Is the wording consistent across displays?	70	4.34	0.61
4	Are symbols for graphic data standard?	70	4.27	0.84

5.4.5 WEB-BASED USER GUIDANCE

This table 5.3 shows the mean level of evaluation of user to web-based user guidance, mean is also more than 4 which reflects the user's agreement that the web-based has effective and helpful user guidance. N: number of questionnaire respondents, std. deviation: standard deviation.

Table 5.3: Web-based user guidance

	WEB-BASED USER GUIDANCE	N	Mean	Std. Deviation
1	System feedback: How helpful is the error message?	70	4.24	0.90
2	Does it provide explicit entry of corrections?	70	4.17	0.74
3	Is completion of processing indicated?	70	4.11	0.62
4	Are repeated errors indicated?	70	4.25	0.65

5.5 Summary

This chapter concentrates on the evaluation of the web-based language translator prototype by a sample of target users, while there was explanation of the content sections of the questionnaire. The users found this prototype flexible, consistent with helpful and effective user guidance through the software analysis and descriptive analysis.

CHAPTER SIX

CONCLUSION AND RECOMMENDATIONS

6.1 INTRODUCTION

This chapter reviews this project finding to explain the outcome of the project,

its problems, and limitations of the study and the recommendations for future work on this project.

6.2 PROBLEMS AND LIMITATIONS

This web-based language translator prototype is developed purposely for international students and the non academic staff of university utara Malaysia. The prototype is tested using local host server. However, with limited financial resources, no actual web server can be employed in testing the prototype.

6.3 RECOMMENDATIONS FOR FUTURE WORK

Due to the time frame and financial constraint, few things such web server could not afford to use for this project to assure the entire functionalities of the system. Therefore, future works is recommended to carry out to fill in this and other deficits that came upon during the work of this project. It would be more

suggestive to advice the one who needs to pursue some future works on this project to follow every steps included as it will be helpful for their research work.

6.4 CONCLUSION

The users of this web-based language translator prototype will be offer an opportunity to know many things about one another, because it the easiest and fastest way to get information once the language is being translated. Finally, this prototype will be a great advantage for the international students as they will be more effective and productive in their career, while the non academic staff will also find it easier to work with the international student due to the availability web-based language translator.

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