WEB BASED ONLINE VOLUNTEER TRAINER SYSTEM (OVTRS)

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TABLE OF CONTENTS

CHAPTER ONE: INTRODUCTION

1.1 BACKGROUND TO THE STUDY 1

1.1.1 Brief background information on Universiti Utara Malaysia (UUM) 2

1.1.2 Corporate Social Responsibility at the Universiti Utara Malaysia (UUM) 3

1.1.3 The International Telecomunications Union – Univerisiti Utara Malaysia (ITU-UUM): The Asia Pacific Centre of Excellence for Rural ICT Development 3

1.1.4 The main research issue 5

1.2 STATEMENT OF RESEARCH PROBLEM 7

1.3 RESEARCH OBJECTIVES 9

1.4 RESEARCH QUESTIONS 9

1.5 RESEARCH SIGNIFICANCE 9

1.6 SCOPE AND LIMITATIONS OF THE STUDY 11

1.7 CHAPTER SCHEME 11

CHAPTER TWO: LITERATURE REVIEW

2.1 INTRODUCTION 12

2.2 THE INTERNET TECHNOLOGY 12

2.2.1 Types of Web Sites 13

2.3 WEB APPLICATIONS 13

2.3.1 Benefits of Web Applications 13

2.4 PROTOTYPING 14

2.5 ONLINE SYSTEMS 15

2.5.1 Online Registration System (ORS) 15

2.5.2 Benefits of Volunteer Trainer Registration System 16

2.6 THE DATABASE 17

2.6.1 Selected database system (MySQL) 17

2.6.2 Strength of MySQL 17

2.7 FINDINGS AND POSTULATIONS FROM PREVIOUS RESEARCH 18

2.8 CONCLUSION 20

CHAPTER THREE: RESEARCH DESIGN AND METHODOLOGY

3.1 INTRODUCTION 21

3.2 RESEARCH DESIGN AND METHODOLOGY 21

3.2.1 The Problem Identification Phase 22

3.2.1.1 Interviewing 22

3.2.1.2 Document Sampling 22

3.2.1.3 Determination of system requirements 23

3.2.2 The OVTRS Design Phase 23

3.2.3 The OVTRS Development Phase 23

3.2.4 The OVTRS Evaluation Phase 24

3.2.5 The OVTRS Deployment Phase 24

3.3 THE OVTRS OUTLOOK 24

3.3.1 OVTRS Operation 24

3.3.2 Summary of OVTRS Features 25

3.4 COMPARISON WITH OTHER METHODOLOGIES 26

3.5 LIMITATIONS TO THE METHODOLOGY 28

3.6 CONCLUSION 29

CHAPTER FOUR: ANALYSIS AND DESIGN

4.1 INTRODUCTION 30

4.2 SYSTEM REQUIREMENTS 30

4.2.1 Non-Functional Requirements 31

4.2.2 Functional Requirements 32

4.3 UNIFIED MODELING LANGUAGE (UML) 34

4.3.1 Login 35

4.3.2 Trainer Registration 37

4.3.2.1 Add a Trainer 37

4.3.2.2 Modify a Trainer 37

4.3.2.3 Delete a Trainer 38

4.3.3 Trainee Registration 39

4.3.4 Trainers Enrollment 40

4.4 USE CASE MODEL 41

4.4.1 Actors 42

4.4.2 Sequence Diagram 45

4.4.3 Collaboration Diagram 45

4.4.4 Class Diagram 46

4.4.5 Class Session Description 48

4.5 CONCLUSION 49

CHAPTER FIVE: PROTOTYPE DEVELOPMENT AND EVALUATION

5.1 INTRODUCTION 51

5.2 PROTOTYPE DEVELOPMENT 51

5.2.1 Platform for Developement 51

5.2.1.1 Hardware Requirement 51

5.2.1.2 Software Requirement 51

5.3 EVALUATION OF THE PROTOTYPE 56

5.3.1 Usability Test 56

5.3.2 Data Analysis 56

CHAPTER SIX: CONCLUSION AND RECOMMENDATION

6.1 INTRODUCTION 61

6.2 LIMITATIONS 61

6.3 RECOMMENDATIONS AND FUTURE WORKS 62

6.4 SIGNIFICANCE AND CONTRIBUTION 62

REFERENCES 63

APPENDIX A 66

LIST OF TABLES

Table 1.1: ITU Asia Pacific Centre of Excellence 4

Table 2.1: Summary of Findings and Postulations from Previous Research 19

Table 3.1: Methodology Comparisons 28

Table 4.1: NonFunctional Requirements 31

Table 4.2: Functional Requirements 33

Table 5.1: System Aspects Frequencies 58

Table 5.2: Descriptive Statistics 59

Table 5.3: Summary of Reliability Test 60

LIST OF FIGURES

Figure 3.1: Five Phases of OVTRS Development 21

Figure 4.1: Login Activity Diagram 36

Figure 4.2: Trainer Registration 38

Figure 4.3: Trainee Registration 39

Figure 4.4: Trainer Enrollment 41

Figure 4.5: Use Case Diagram 44

Figure 4.6: Login Sequence Diagram 45

Figure 4.7: Login Collaboration Diagram 46

Figure 4.8: Class Diagram 48

Figure 5.1: Home page of Online Volunteer Trainer Registration System 53

Figure 5.2: Registration Menu 54

Figure 5.3: Trainer Registration Form 54

Figure 5.4: Trainee Registration Form 54

Figure 5.5: Administrator Home Pgae 55

Figure 5.6: Venues Home Page 55

CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND TO THE STUDY

The arrival of the internet on the global stage has transformed many aspects of human existence by turning cumbersome activities into easy tasks. It is one of the biggest contributors in making the world into a global village. The use of the internet has grown tremendously since it was introduced; this is mostly due to its flexibility, reduced costs, ease of use and availability. Nowadays people can access the internet easily in their homes, work places and service centres. The internet have empowered individuals and communities with new ways of doing things, as well as transformed our ways of learning and sharing knowledge.

Advancement in computer technology and the evolution of internet technology in the last few decades has enabled sophisticated system to be built for home, enterprise and industrial users. Computer technology allows us to store, update, remove, present and retrieve data in a systematic way. Apart from that, the security of computer based systems is considered higher than manual systems (Turban, Lee, King, and Michael, 2004).

In their quest to achieve excellence and efficiency, many organizations have introduced enhanced data collection mechanisms that supports decision making at the management level of these organizations. Organizations nowadays implement various information systems in order to achieve maximum efficiency, reduce cost of operations and effort as well as improve operational competitiveness. The introduction of computer-based

information system tends to reduce the errors and problems associated with manual systems (Laudon & Laudon, 2004).

However, organisations are consistently faced with the challenges of the dynamism and rapid changes in the modern operating environment which compels them to respond in such a way that will allow these organisations to excel. According to Johnson, Scholes and Whittington (2008) organisational response is often majorly focussed on improvement in operational quality and efficiency.

1.1.1 Brief background information on Universiti Utara Malaysia (UUM)

Universiti Utara Malaysia (UUM) was officially established on 16 February 1984 as the sixth Malaysian public university. It is the only university that was set up to specialise solely in management education from the very beginning of its establishment. (Retrieved from http://www.uum.org.my/index.php/en/about-uum) .

The University's objectives are as follows;

- To be the centre of excellence for management education.
- To be the leading referral centre in all aspects of management scholarship and practice.
- To be the premier resource centre in the field of management studies.

The vision of the University is to become an Eminent Management University. While the mission of the University is to be a consistently pre-eminent centre of academic excellence in teaching and learning, research, consultancy, and publication in the field of management, and, at the same time, to bring forth highly competent human capital that is commited to serving in the development of the nation and all humanity.

The University has three main Academic Colleges, namely UUM COB (UUM College of Business), UUM CAS (UUM College of Arts and Sciences), and UUM COLGIS (UUM College of Law, Government and International Studies) from http://www.uum.org.my/index.php/en/about-uum

1.1.2 Corporate Social Responsibility at the Universiti Utara Malaysia (UUM)

In addition to its core business of providing quality teaching, conducting extensive research, and promoting a culture of scholarly publications, the University contributes to the social, economic and intellectual development of communities beyond the campus. The University has a crucial role to play when engaging the surrounding local communities in community-based projects, in developing or strengthening community-university partnerships through collaboration with other government agencies and/or the private sector. It is realisation of this corporate social responsibility objective that the University conducts computer appreciation training programmes in rural areas to enhance skills among rural community members. (This information is retrieved from http://www.uum.org.my/index.php/en/about-uum)

1.1.3 The International Telecomunications Union – Univerisiti Utara Malaysia (ITU-UUM): The Asia Pacific Centre of Excellence for Rural ICT Development

The International Telecommunications Union (ITU) is a United Nations (UN) agency responsible for the global growth and development of telecommunications as well as Information and Communications Technology (ICT). In discharging some its responsibilities and inline with Doha's World Telecommunication Development Conference 2006 resolutions (WTDC, 2006) which among others emphasize the need for human capacity building initiatives especially in the developing nations, the ITU established six Centres of Excellence across the globe.

In the Asia Pacific region, the establishment of the Asia Pacific Center of Excellence (ASP CoE) is based on five specific themes, namely: ICT Policy and Regulatory, Spectrum Management, Corporate Management, Rural ICT Development (Connectivity) and Technology Awareness. Each theme is handled by a specific Centre of Excellence programme located in a selected institution in various Asian countries, thus catering to the specific needs of countries and/or relevant sub regions. This distribution is depicted in below Table 1.1.

*Table 1.1: ITU Asia Pacific Centre of Excellence (*http://itu.uum.edu.my/index.php*)*

Asia Pacific Centre of Excellence – Theme	***Institution***
Rural ICT Development	Universiti Utara Malaysia (UUM)
Technology Awareness	Pusan University, South Korea
Policy and Regulation	Institute of Communication Technology, Pakistan
Specturum Management	Ministry of Communications, Iran
Corporate Management	Telecom of Thailand Academy, Thailand

The ITU – UUM Asia Pacific Centre of Excellence for Rural ICT Development commenced operations on 2 January 2007 with the primary responsibility of organizing executive training workshops to policy makers, decision-makers, and service providers in the telecommunication industry in the region. As indicated by the ITU-UUM website, the main objectives of the the centre include; providing high quality ICT training that contribute to life-long learning and personal development, developing and stimulating research in the areas

of ICT and to be recognized in producing quality research outputs and services, developing best practices in rural ICT development, sharing and disseminating the knowledge acquired, providing consultancy to promote ICT access and equity knowledge through participation in community outreach programs throughout the world and seeking business opportunity for the sustainability of the centre of excellence. (Retrieved from http://itu.uum.edu.my/index).

The ITU-UUM organises training events that focuses on rural ICT development and utilises the services of volunteer trainers. However, volunteer registration is done manually at the expense of time, money and efficiency.

1.1.4 The main research issue

The focus of this research is to create a computer-based Online Volunteer Trainer Registration System (OVTRS) for ITU-UUM. The proposed trainer registration system is expected to replace the existing manual trainer registration system due to its many shortcomings. Presently, trainer registration at ITU-UUM is mostly carried out manually by paper work. A trainer sometimes is required to travel long distances to the site of training that insuer high costs. The creation of an automated trainer registration system will improve the training process and will solve trainer availability problems especially in conducting training in rural areas far away from ITU-UUM.

The proposed automated trainer registration system will list available on site volunteer trainers who can have expertise. This will be advantageous to ITU-UUM. Moreover, the opportunity to have such volunteers creates a great chance for training programs in rural areas to take place and attract a greater number of trainees, which itself will result in better trained and skilled workers. The proposed system will attract more volunteer trainers because the automated registration process will allow volunteer trainers to reduce travelling cost and effort, which as a result will decrease the training programs fees as well.

Again, the challenges of trainers' availability are greater in rural areas than it is in city areas. This could be contributed to the lower living standard in rural areas in comparison with city standards.

Also, unlike in the city, the competition for training programs is lower in the rural areas this makes few trainers interested in offering their training experience. These problems can be solved by automating the registration process of the trainers and designing a volunteer trainer registration system.

This research project, therefore introduces a design for a system which enables ITU-UUM to capture volunteer trainers and register them into the ITU-UUM training programme and follow up the programme through the system. The proposed system will allow trainees to have better communication with their trainers. The proposed system design will rely on five main principles of automation, dynamism, paperlessness, intelligence, and rationality which most current automated systems are based on. These principles will facilitate the creation of a high quality system that will result in improvements in the quality of training programmes available.

The proposed system will allow volunteers to register into the training programs according to their interests. Information on the volunteer trainers will be captured and made available to training programme management group to enable them planing and creating various training sessions for the trainees. Trainees then can view the information and they can also register into the training sessions using this system. All these data are kept in the database for future use. This system does not only ease the volunteer trainer registration process, but also allow wider reach for prospective trainees to the training programmes. This could all be possible at the lowest possible cost to the trainers, trainees, training management as well as ITU-UUM.

1.2 STATEMENT OF RESEARCH PROBLEM

Training programs for rural community can be costly due to the travelling cost, the cost of setting up training materials, and other costs needed in order to carry out training programs in the rural areas. Moreover, as the rural community is known to have a lower living standard costs in comparison to other developed areas, the rural community is unable to pay the fees for the training programs. Thus, ITU-UUM tries to get qualified volunteers to train the community through various training programmes at reduced costs. There are many professionals who will like to contribute to the community, these set of people are willing to train rural community persons for free. However, because sometimes training programmes are carried out in different locations that increase the cost of the training programmes. Rural community training programmes are expensive especially in terms of paying transportation and accommodation costs. This situation is aggrevated by the manual trainer registration system presently operable.

Therefore, the proposed automated system is designed to reduce the cost of conducting a training programme in the rural community through making it easy for volunteer trainers to register.

There are numerous advantages to be derived from the automated system over the existing manual system. The automated system is capable of carrying out repetitive processing whereby computers can perform same or similar tasks over and over very quickly and with a high level of accuracy. The automated system also has considerable speed of data processing. This is because a computer system can process raw data very quickly to produce information.

Other benefits of the automated system against the manual system include data storage capacity. Presently, the manual trainer registration system requires information to be

stored on paper in filing cabinets which takes up expensive storage space. A computer system can store the same amount of data in a fraction of the space. Other advantages include the ability to backup data easily and increase security by password protection or encryption.

Another big advantage of a computerised data storage system over a paper based system is that searches are virtually instantaneous. Data can be sent from one location to another easily and quickly. Information can be output from a computer system, either on-screen or printed, in the form of graphs, charts, reports, pictures, sound etc. This will make the training programmes easily comprehensible to trainees and will make the conduct of training easier for trainers. Moreover, volunteers are available on site which allows the cost of training to be reduced and as a result, more training programs can be carried out.

Thus, this proposed system is designed to allow professionals to register as volunteers who will train the rural community as part of their Corporate Social Responsibility (CSR) and in line with the objectives of the Asia Pacific Centre of Excellence for Rural ICT Development. By capturing the volunteered trainers' information into the system, more available trainers can be recognized in the future when planning other training programs.

Generally, the proposed system will solve the following problems:

- Manual processing problems
- Time and speed
- Storage and space boundary
- Lack of immediate retrievals
- Lack of immediate information storage
- Lack of prompt updating

1.3 RESEARCH OBJECTIVES

1. To identify the trainers requirements for the registration system of ITU-UUM training programmes.
2. To design volunteer trainer registration system for ITU-UUM in order to reduce the time, cost and effort associated with the existing manual system
3. To develop a prototype of the Volunteers Registration System for ITU-UUM training programmes.

1.4 RESEARCH QUESTIONS

This project is designed to answer the following research questions;

1. What is the system specification required for the creation of an automated registration system?
2. What is the design specification required for the creation of an automated registration system?
3. How to evaluate the proposed system ?

1.5 RESEARCH SIGNIFICANCE

This project will be beneficial to the rural community due to the capability of the proposed automated system in creating low cost training programs for the rural trainees. At the same time, the proposed system will ease the work for ITU-UUM staff. They do not need to spend time collecting information regarding the trainers. Instead, the system will have all information on available volunteer trainers. The automated system will also facilitate ITU-UUM staff training which will have greater positive impact on the quality of rural community training programmes offered by ITU-UUM.

Specifically, developing a volunteer registration system will attract the following benefits:

i. Planned and organized approach to work and responsibilities

ii. Accuracy: the new system will ensure the availability of timely and accurate information

iii. Realibility: the new system will provide consistent storage and easy data retrieval

iv. Elimination of duplication of data and efforts: Provides economic use of storage space and consistency in the data stored

v. Immediate retrieval of information: One of the main benefits of the proposed system is to provide for a quick and efficient retrieval of information. Any type of information would be available whenever the user requires. It helps in making faster decision making.

vi. Immediate storage of information: In manual systems there are many problems associated with large volume data storage, this system will eliminate such problems.

vii. Easy to operate: The system should be easy to operate and upgraded within a short period of time and will fit into the limited budget of the user

Basically, selecting qualified volunteer trainers at minimum cost is one of the many benefits of the proposed automated system. The system will also be immensely beneficial to other bodies interested in automating their systems, research institutes, government and its agencies, academic institutes as well as computer organisations.

1.6 SCOPE AND LIMITATIONS OF THE STUDY

The scope of this project is mainly focusing on the training programmes managed by ITU-UUM. These training programmes are carried by University Utara Malaysia to train the rural community as part of its Corporate Social Responsibility (CSR). The project's main emphasis is on designing a volunteer trainer registration system, which will have an interactive interface that will allow the training staff to automate the volunteer trainer registration process. The project may experience problems of time and cost.

1.7 CHAPTER SCHEME

The study is structured into 5 chapters namely;

Chapter One: This is where background and motivation of the study is discussed. Other aspects covered by this chapter include; statement of research problem, research objectives, research questions, research significance, scope and limitations of the study, flatform for development and chapter scheme.

Chapter Two: This chapter discusses expert findings and postulations with respect to internet technology, web applications, prototyping, online systems, online registration system, the database as well as findings and postulations from previous research.

Chapter Three: This chapter discusses the research design and methodology, the OVTRS Outlook, comparison with other methodologies, limitations to the methodology and provides a conclusion.

Chapter Four: This chapter discusses the analysis of the proposed automated system.

Chapter Five: This chapter describes the prototype development and evaluation.

Chapter Six: Discusses the conclusion with recommendations for future works.

CHAPTER TWO

LITERATURE REVIEW

2.1 INTRODUCTION

This chapter surveys literature with respect to internet technology, web applications, online systems, findings and postulations from previous research, database as well as a conclusion.

2.2 THE INTERNET TECHNOLOGY

According to Shelly, Cashman and Vermaat (2006, pg.12) "the Internet is a collection of worldwide networks that connects million of individuals, educational institutions, government agencies, and businesses organisations."

The internet otherwise known as the World Wide Web (WWW) or the Web has a range of capabilities that include e-mails, File Transfer Protocol (FTP), newsmedia, chat facilities, instant messaging and internet telephony among several other military and civilian uses. The Web consists of billion of documents called Web pages which contain text, audio, graphics and video. Some Web pages are fixed (static) where all the visitors will see the same content; whereas others are changing (dynamic) Web pages, where visitors can customize some or all of the viewed content. This collection of related Web pages and associated items such as documents and pictures stored on a Web server will become a Web site; and a Web server is a computer that delivers the requested Web pages (Shelly, et.al, 2006).

2.2.1 Types of Web Sites

According to Shelly et. al (2006), there are several types of Web sites that can be broadly categorised into the following; Portal, News, Informational, Business Marketing, educational, Entertainment, Advocacy, Blog and Personal.

2.3 WEB APPLICATIONS

According to Carat (2002, p20) "a Web application is a software application that delivers its functionality to a user from a Web server, through a network such as the World Wide Web or an intranet". The user views and manipulates the application through a Web browser (Carat, 2002). It is a client and user application that present dynamically-tailored content based on request parameters, tracked user behaviors and security considerations (Shklar & Rosen, 2003).

2.3.1 Benefits of Web Applications

Web applications have been proven to be of immense benefit to organisations in all spheres of human endeavour including governments, individuals, private and business organisations (Ahn, Ryu & Han 2004). The development of web applications has made more and more organisations using web applications to increase their efficiency, productivity and customer satisfaction. While at the same time web applications have substantially helped in decreasing administrative, operational and personnel costs in various organistions.

There are many other advantages for the web-based application as follows; they are custom designed to meet the specific needs of users, the user is not the administrator, the application is in one place, they provide round the clock access from any web-browser in the world to the data stored in the custom system, they can be accessed from everywhere, they

are secure, fast, and extremely reliable. Web applications are compatible with various platforms, they immediate update in case of releasing new versions. Web applications are also light, simple and portable (Ahn et al, 2004).

2.4 PROTOTYPING

According to Dennis, Wixom & Tegarden (2005, pg.56) "a prototype is an early sample or model which is built to test a concept or process or to act as a thing to be replicated or learned from". A prototype is expected to provide detailed information and interactivity between users and the system (Ala'a, 2009). According to Dennis, Wixom & Tegarden (2005) there are three types of prototyping methods as follows;

1. **First-of-a-Series Prototype**

   This prototype involves creating a first full-scale model of a system or pilot. This prototype is completely operational and real. It allows users to experience realistic interaction with the new system.

2. **Patched-Up Prototype**

   This prototype is about constructing a system that works but is patched up. Programs are written rapidly with the objective of being workable rather than efficient. For example, an information system that has all necessary features but is inefficient. Users can interact with the system, getting accustomed to the interface and types of output available. However, the retrieval and storage of information may be inefficient.

3. **Non-operational Prototype**

   This prototype is concerned with a non-working scale model that is set up to test certain aspects of the design, for example a full-scale model of an

automobile that is used in wind tunnel test. The size and shape of the automobile are precise even though the car is not operational.

2.5 ONLINE SYSTEMS

Online system refers to a computer system which allows online users to transmit and receive information.

In general, online system means that other devices such as video cameras, scanners, audio devices, and other hardware are running and connected to a computer system. However, recently, the term online indicates the connection to the Internet. The connection can be established through a phone line, by using dial-up or DSL modem, a cable modem, broadband and even a wireless connection. Online computer can also be done through a connection to a computer network (Treiber, 2007). Nowadays, an online system provides a convenient way of doing things at any time and anywhere and plays a major role in almost all organizations. Some examples of the current familiar online system are as follows; Online Banking System, Online Recruitment System, Online Reservation System, Online Registration System (SRS) (Treiber, 2007).

2.5.1 Online Registration System (ORS)

According to Boroson (2003) Online Registration System is a web-based program aimed to make the registration process easier and more convenient. Online Registration System (ORS) attempts to remove problems associated with registration by providing several services to users through the internet. Most aspects in online registration system are automatically verifyable and therefore could reduce human mistakes.

Online registration is an example of Web-based application that is custom designed to meet the specific needs of its users. The online registration system is equipped to provide

- **Ease of Use:** Most versions of database use SQL, given credence to its ease of use. It is easily understandable to new or beginners and causes less trouble while in use.

2.7 FINDINGS AND POSTULATIONS FROM PREVIOUS RESEARCH

Different studies addressed and reported the importance of online services. According to Cui (2005) who discussed the usefulness of using a web-based academic departmental community model, argue that the model significantly assist in the strengthening of departmental identity and community as well as advancing its mission. Concepts such as 'wiki' and anthill community underpin this model.

On the other hand, Naini (2008) reported the weaknesses of paper based registration process for graduate students. The author emphasised the weakness of the manual paper based system by highlighting the cumbersomeness of the system where graduate students have to fill course plan documents and send to their advisor as an email attachment for the advisor's approval. The advisor then approves and signs the course plan. To proceed further with the registration process, the student should submit the approved document to the department.

This system is an electronic and interactive registration process. In the WISRAS process, the student fills the course plan page on the intranet site of the department and submits it online, which generates an email confirmation of the course plan submission to both the student and the advisor. The advisor then checks the course plan of the student on the intranet site and electronically approves it, generating an email confirmation of approval to the student and the department.

Another author Yasuhiko (2006), also studied student registration process and highlighted some problems regarding the registration process, such as the difficulty of performing registration accurately due to the extremely complex rules in a registration system. To solve such problems the author suggested that the system should be constructed with a high degree of precision and databases with a variety of information and programs that precisely describe the rules are needed. Additionally, a study conducted by Ahmad and Yusoff (2001) reported the needs for a better integrated process design in higher education institutions that implemented e-learning to incorporate learner's expectation into the desired process, and proposed a basic design of the courses registration process that could be integrated on-line. Also he recommended that the integration of productive processes from registration process to learning process should be created to ensure learners' expectations are consistently met.

Accordingly, Zainal & Hasibuan (2005) developed an online academic registration system that is intergrated with other E-learning systems in order to eliminate the cumbersome paper based manual systems being operated by some institutions. A summary of the findings and postulations of some authors are presented in Table 2.1 below;

Table 2.1: Summary of Findings and Postulations from Previous Research

Author	Research Issue	Findings/Postulations
Naini (2008)	Student Registration Process	Proposed the use of WISRAS
Yasuhiko (2006)	Student Registration Process	Construction of systems of high precision and rules
Cui (2005)	Web-based academic departmental community model,	Useful model in strengthening departmental identity and community

Zainal & Hasibuan (2005)	E – learning	Developed online academic registration system
Ahmad and Yusoff (2001)	E-learning and E-registration	Intergarated E-learning system

2.8 CONCLUSION

The second chapter discusses the literature review of several related papers and applications that discusses the benefits of the internet technology, web applications, prototyping, online systems, online registration system, database and findings from previous research. The overwhelming idea conveyed by various authors cleary amplifies the immense benefits of substituting manual systems with automated systems.

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

3.1 INTRODUCTION

This chapter discusses the research design and methodology used in this study as well as the System Development Life Cycle (SDLC) was adopted in system development phase to develop the prototype OVTRS.

3.2 RESEARCH DESIGN AND METHODOLOGY

The methodology used in this research is an adaptation of the work of Vaishnavi and Kuechler (2007). The methodology comprises of five main phases as follows:

1. Problem identification phase.
2. System design phase.
3. System development phase.
4. System evaluation phase.
5. System deployment phase.

The five phases outlined above are depicted in Figure 3.1 below:

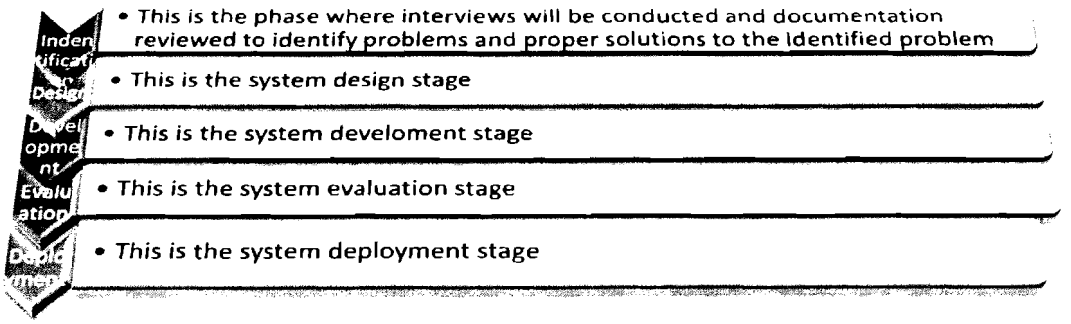

Figure 3.1: Five Phases of OVTRS Development (Vaishnavi & Kuechler (2007))

3.2.1 The Problem Identification Phase

At this phase of the system development, the problems that arise in the real situation are identified. After that, the problem statement, objectives and scope of the proposed system prototype are defined clearly. Furthermore, previous studies by other researches which are related to the problem are also scrutinized to gain ideas and concepts that can be used to solve the problems which had been identified. The problems prevalent in the existing manual system problems are identified clearly by using the interview technique and document sampling as described below:

3.2.1.1 Interviewing

The interview technique is used to gather information about the current manual system. The present volunteer trainers were interviewed to get a brief understanding on how the system flows and the problems they frequently faced when using the manual system. Other than that, the UUM staffs were interviewed to get a better understanding on how the volunteer trainer registration is done. Based on interview was conducted with Assoc. Prof.Dr. Wan Sheik Osman a head of ITU-UUM, she stated that sometimes traning programmes are carried out in different locations that increase the cost of the training program, rural community training programmes are expensive especially in terms of playing transporation and accommodation costs, so it needs for an automated system to reduce the cost of conducting a training programme in the rural community through making it easy for volunteer trainers to register.

3.2.1.2 Document Sampling

Document sampling is a fact-finding technique where existing documents are used to gather required information. All related documents for volunteer trainer registration were gathered for analysis. According to Treiber (2007), a good analyst obtains facts from existing documents rather than people.

3.2.1.3 Determination of system requirements

At this stage of the system development, the needs of the stakeholders of the system are determined. This stage produces a broad outline of the system and the identity of the functions and technology to be used. The flow of the system is also determined. The requirement may be either functional or non-functional requirements:

- **Functional Requirements**

  Functional requirements are statements of services that the OVTRS prototype should provide, how it should react to particular inputs and how it should behave in particular situations.

- **Non-Functional Requirements**

  The non-functional requirements are the constraints on the services or functions offered by the OVTRS prototype. These include data representations, specific response time and memory requirement, as well as constraints on the development process, standards and so forth.

3.2.2 The OVTRS Design Phase

At this stage the project requirement is further analyzed. The flowchart, relational database design and UML of the program are created. The UML which includes the use case diagram, use case specification and sequence diagram is created.

3.2.3 The OVTRS Development Phase

Often system requirements may change over time, therefore system development must be adaptive to changes software code and architecture are constantly reconstructed to optimize and update the internal structure of the software. The software was coded by using PHP, MySQL for the database storage.

3.2.4 The OVTRS Evaluation Phase

At this stage of the system development, the prototype is evaluated continuously to assess the progress, thus preventing defects and decreasing the risk of failure in the project development cycle. All the functional requirements were tested from time to time to ensure that it can function perfectly. The functional requirements of the system are tested and validated by the stakeholders of the system. The Usability test was used to evaluate the functionality of the prototype. The tests will be carried out in a stand-alone computer.

3.2.5 The OVTRS Deployment Phase

After all the modules are tested in several iterations and have passed the quality assurance stage, the software will be delivered to the specified user. The targeted users of this software are the training managers, the corporate social responsibility managers. The software will be uploaded into the school official website and will only functional during the training season.

3.3 THE OVTRS OUTLOOK

The Online Volunteer Trainer Registration System (OVTRS) is expected to be an integrated web based system designed to accept, process, and manage registrations of volunteer trainers in the ITU-UUM computer appreciation training programme for rural communities. The OVTRS is proposed to be user friendly and easy to use, affordable, accessible from any computer, connected to the internet, save time, the user interface is clean and simple, and may lead to increased participation in trainings.

3.3.1 OVTRS Operation

The system administrator (there can be any number of administrators, all with separate passwords, and with access from any internet based computer) uses a simple interface to initiate the registration process. Users can then register directly on-line from the

host web site. The registration form is totally customized to suit individual volunteer trainer requirements, so any information beyond name and address can be included and captured. If users set up an account they can sign in to their account and all their information is pre-populated in the registration form, saving them time.

The system automatically counts the registrations, so that when a training programme is filled, the system can either shut down any more registrations, or switch to a waiting list. This can be done without any intervention on the part of the administrator. Once the registration is entered, both the user and the administrator get a confirming e-mail with the details of the registration. The administrator has full access to all registration records on-line, and can also keep track of all documents that may be required at a later date (waivers, proof of prerequisites). Changes can be made with the click of a mouse. For example, if a user is on the wait-list for a particular training programme, and a spot opens up, all the administrator has to do is recall that record and change the designation from "wait list" to "registered". Summary reports are available instantly, showing the number of registrants per training programme and how many are on the wait list.

Staying in touch with registrants is very simple. It is also possible to select any combination of registrants and send them all an e-mail, in just seconds. As well, it is possible to easily remind all participants the week before the start date, or even notify them all instantly in case cancellation or postponement of a session.

As well as on-line access, it is possible to download any combination of registrants or members to an Excel spreadsheet in case of local record keeping on the computer.

3.3.2 Summary of OVTRS Features

- Complete registration and membership system available from any internet connected computer
- Fully integrated and customized for the intended web site

- Automatically tracks number of registrants and switches to FULL or WAIT
- LIST when register is full
- Registered volunteer trainers sign up for an account and their registration information is filled out for them each time they visit.
- Administrator can see registration summaries at a glance from any computer
- Information can also be tracked on-line
- Database is accessible on-line

3.4 COMPARISON WITH OTHER METHODOLOGIES

This research is a design based project that follows methodologies situated in design science which prominently features research system development models of Nunamaker, Chen and Purdin (1991) and Vaishnavi & Kuechler (2007). The design science which is otherwise known as design research, seeks to develop artefacts through constructs, models, methods and instantiations, that attempt to solve specific problems (Cole, Purao, Rossi, & Sein, 2005; Hevner, March, Park, & Ram, 2004; March & Smith, 1995; Simon, 1996).

The selected system development methodology for this study follows similar methodologies adopted by numerous authors that place emphasis on systems development life cycle. These various authors created different system development models with similar design characteristics. Some of these models include the phased development model, spiral model, quick application development model. In this study two methodologies are considered and compared. Firstly, the Nunamaker et. al. (1991) model is structured into five phases as follows:

1. Construct a framework.
2. Develop a system architecture.
3. Analyse and design system.

4. Build the prototype systems.
5. Observe and analyse the system.

On the other hand Vaishnavi and Kuechler (2007) structured their model into five phases as follows;

1. Awareness of the problem.
2. Suggestion.
3. Development.
4. Evaluation.
5. Conclusion.

Although the two design systems are similar, the Vaishnavi and Kuechler system development model is considered the most appropriate for adaptation in this study.

This is mostly because it is user friendly, it is flexible, it enables quick and easy access to processing, it enables the utililisation of the entire registration module, and it facilitates look-up and master information repository as well as its amenability to security user administration and database management.

Additionally, the research process enshrined by the Vaishnavi and Kuechler (2007) system development model fits perfectly into our research issue which focuses attention on the design of a registration system requiring a simplified phase approach. Therefore, our OVTRS was designed from the Vaishnavi and Kuechler system. The Table 3.1 below shows a comparison between various methodologies.

Table 3.1: Methodology Comparisons (Nunamaker, Chen and Purdin (1991) and Vaishnavi and Kuechler (2007))

S/No.	***Our Methodology***	***Vaishnavi and Kuechler Methodology***	***Nunamaker, Chen and Turbin Methodology***
1	Problem identification phase	Awareness of the problem	Construct a framework
2	System design phase	Suggestion	Develop a system architecture
3	System development phase	Development	Analyse and design system
4	System evaluation phase	Evaluation	Build the prototype systems
5	System deployment phase	Conclusion	Observe and analyse the system

3.5 LIMITATIONS TO THE METHODOLOGY

The methodology may be limited by the scope of the study which limits the operation of the OVTRS to registration activity only. The methodology could also be limited because it is mainly describing a linear process steps. Data availability, cost and time constraints also served as a limitation to the methodology.

3.6 CONCLUSION

This chapter discussed the research design and methodology, the OVTRS Outlook, comparison with other methodologies and the limitations to the methodology. The chapter discussed the choice of methodology and the reason for selecting the adopted methodology.

The methodology adopted for this study is expected to provide the best possible opportunity for accurate volunteer registration for the ITU-UUM rural ICT development training programmes.

CHAPTER FOUR

ANALYSIS AND DESIGN

4.1 INTRODUCTION

This chapter discusses in details the system analysis and proposed system design for online volunteer trainer registration system for ITU-UUM. The system development requirements for the online trainer registration system will be outlined in details. Specifically, the chapter will discuss the system requirements which include both the functional and non-functional requirements of the proposed system. In addition, the chapter will demonstrate and describe the UML diagrams used to depicts the new system which includes class diagram, use case diagram, use case specification and sequence diagram.

4.2 SYSTEM REQUIREMENTS

The purpose of this section is to define requirements of the Trainer Volunteer Online Registration System. This section provides specification lists of the requirements that are not readily captured in the use cases of the use-case model. The requirements specification and the use-case model together capture a complete set of requirements on the system.

Therefore, this section will highlights the overall system requirements of the proposed the system. System requirements are considered the most important part in building proposed system. It represents the step-by-step components of the proposed system. System requirements are used to explain what tools and techniques the new system needs.

It also helps the designer to know exactly what is involves to develop the new system. System requirements are categorized into two main types:

1. The functional requirements.

2. The non-functional requirement.

4.2.1 Non-Functional Requirements

This section specification defines the non-functional requirements of the system; such as security, reliability, usability, understandability, performance, availability, functionality, design constraints and supportability. Table 4.1 represents the details of non-functional requirements of the proposed system.

Table 4.1: Non- Functional Requirements

List of Requirement	**Requirement Description**
Requirement1: Security	• Users must have a username and password to log in to the system. • The system must prevent trainers and trainees from viewing session not assigned to them. • Only Admin is allowed to change any user information • Only course manager is allowed to modify courses and sessions
Requirement2: Reliability	• The system shall be available to users anytime anywhere. • The system shall be access 24 hours a day 7 days a week, with less than 10% down time.
Requirement3: Usability	• The system user-interface shall be Windows compliant • The system must be easy to work with. • The system must provide clear information for the users. • The system must give simple instruction.
Requirement4: Understandability	• The system shall be easy to understand by the users.

Requirement5: Performance	• The system shall support up to 100 users concurrently against the local database at any given time, and up to 500 simultaneous users against the local servers at any one time. • The system shall provide access from the legacy database with no more than a 10 second latency. • The system must be able to complete 80% of all transactions within 2 minutes.
Requirement6: Availability	The system shall be available to all trainers, trainees and guest users as well.
Requirement7: Functionality	• Multiple users must be able to perform their work concurrently. • If a session created is full while a trainee is enrolling the trainee must be notified immediately. • The system shall allow the trainee to enroll into or change session.
Requirement8: Design Constraints	• The system shall integrate with an existing legacy system, the existing website and an RDBMS MySQL database. • The system shall provide a Windows-based desktop interface.
Requirement9: Supportability	• None

4.2.2 Functional Requirements

This section specification describes the functional requirements that are common across a number of use cases. (The functional requirements are defined in the Use Case Specifications). Table 4.2 represents the main functional requirements of the new system. The Table describes step-by-step the system operational procedure from the beginning till end.

Table 4.2: Functional Requirements

List of Requirement	**Requirement Description**
Requirement1: Login	The system should allow the administrators, course manager, trainers, and trainee to login into the user interface after validating user credentials.
Requirement2: Registration	The system should allow the trainers, trainees and guest to register
Requirement3: Create Session	The system should allow the trainers to create sessions
Requirement4: View session	The system should allow the trainers and trainees to view sessions
Requirement5: View Attendee	The system should allow the trainers to view attendee
Requirement6: View Courses	The system should allow the trainees to view courses offered
Requirement7: Session Enrollment	The system should allow the trainees to enroll in session
Requirement8: Enroll in Session	The system should allow the trainees to enroll into particular session
Requirement8: Manage User	The system should allow the administrator to manage Users (insert new trainer/trainee, modify information, or delete trainer/trainee)
Requirement9: Manage Role	The system should allow the administrator to manage role(add new role, modify role, or delete role)
Requirement10: Control User Access	The system should allow the administrator to

	manage control user access (set or deny user access)
Requirement11: Manage Menu	The system should allow the administrator to manage menu (add menu, modify menu, or delete menu)
Requirement12: Manage Venue	The system should allow the course manager to manage venue (add venue, modify venue, or delete venue)
Requirement13: Manage Courses	The system should allow the course manager to manage courses (add courses, modify courses, or delete courses)
Requirement14: Manage Session	The system should allow the course manager to manage session (add session, modify session or delete session)
Requirement15: User Logout	The system should allow users to logout after completing their task.

4.3 UNIFIED MODELING LANGUAGE (UML)

Unified Modeling Language (UML) is a software tool use to draw system design diagrams such as use case and sequence diagrams. UML is defined as a standardized visual specification language for object modeling. Is a general purpose modeling language that include a graphical notation used to create an abstract model of a system, referred to as a UML model. UML is a suitable formalism to improve the understanding by both users and developers (Silva & Paton, 2003). According to David, (2004) UML is industry standardization's graphic notation for specification, visualization, construction and documentation of item for software system. It is simplification of the complex process of

software's design by creation of visual's models. Standard UML defines large set of resources, they use for development of products and for this project the following was used:

1. Activity diagram represents:
    - Login-logout
    - Trainer Registration
    - Trainer Enrollment
2. Use case diagram represents:
    - The functionality of system
    - Relationship between actors and system
3. Collaboration diagram represent:
    - The dynamic structure of system
4. Sequence diagram represent:
    - The interaction between objects
5. Class diagram and package represent:
    - The static structure of system
    - Relationship between elements such as interfaces, classes and control

4.3.1 Login

This flow of events describes how a user logs in the Online Registration System. This activity diagram starts when the actor wishes to log into the Volunteer Trainer Online Registration System.

1. The actor launch the application
2. The actor enters his/her username and password
3. The system validates the entered information and logs the actor into the system by displaying the user interface.

4. If, the actor enters an invalid username and/or password, the system displays an error message. The actor can choose to return to either step 2 or cancel the logout, at which point the use case ends.

The system is in the login state and has the login screen displayed. If the use case was successful, the actor is now logged into the system. If not, the system state is unchanged. Figure 4.1 below displays the login process.

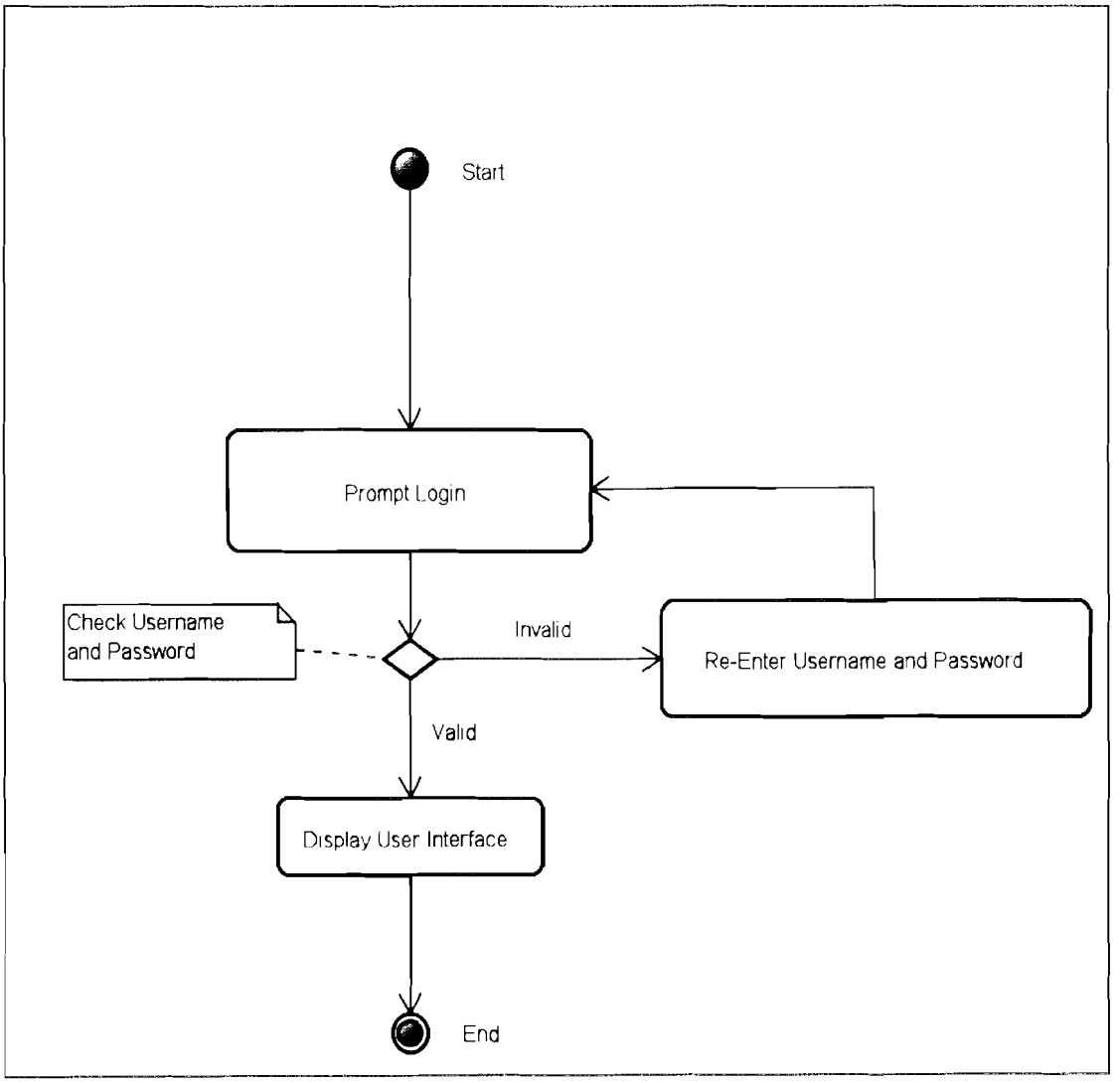

Figure 4.1: Login Activity Diagram

4.3.2 Trainer Registration

This activity diagram allows the trainer Administrator to maintain trainer information in the registration system. This includes adding, modifying, and deleting trainer from the system.

In this activity diagram, this use case starts when the trainer wishes to add his/her information in the system.

1. The system requests that the Trainer clicked on register button
2. Once the Trainer clicked the register button, one of the sub flows is executed. The trainer will be prompted with registration form. Then the trainer will enter his/her personal information.
3. The system will validates the trainer information and go ahead to create the trainer account. The account will then be saved in the database. Finally the system will display a message that registration completed.

4.3.2.1 Add a Trainer

The system requests that the Trainer enter his/her information. This includes - name – gender – address - post – skills etc.

1. Once the Trainer provides the requested information, the system generates and assigns a unique id number to the trainer. The trainer/trainee is added to the system.
2. The system provides the trainer with the new id: username and password.

4.3.2.2 Modify a Trainer

1. The system requests that the Administrator enter the trainer id.

2. The Administrator enters the trainer id. The system retrieves and displays the trainer information.

3. The Administrator makes the desired changes to the trainer information. This includes any of the information specified in the Add a Trainer sub-flow.

4. Once the Administrator updates the necessary information, the system updates the trainer record.

4.3.2.3 Delete a Trainer

1. The system requests that the Administrator enter the trainer id

2. The Administrator enters the trainer id. The system retrieves and displays the trainer information.

3. The system prompts the Administrator to confirm the deletion of the trainer.

4. The Administrator verifies the deletion.

5. The system deletes the trainer from the system.

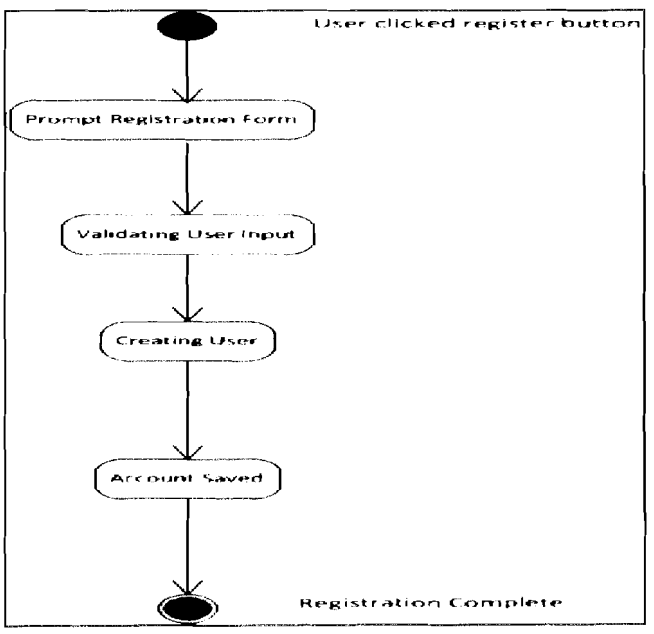

Figure 4.2: Trainer Registration

4.3.3 Trainee Registration

This activity diagram allows the trainee Administrator to maintain trainee information in the registration system. This includes adding, modifying, and deleting trainee from the system.

In this activity diagram, this use case starts when the trainee wishes to add his/her information in the system.

1. The system requests that the Trainee clicked on register button
2. Once the Trainee clicked the register button, one of the sub flows is executed. The trainee will be prompted with registration form. Then the trainee will enter his/her personal information.
3. The system will validates the trainee information and go ahead to create the trainee account. The account will then be saved in the database. Finally the system will display a message that registration completed.

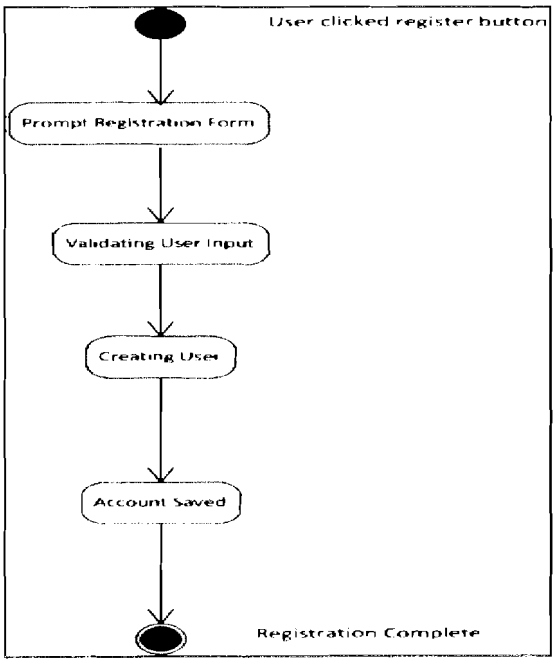

Figure 4.3: Trainee Registration

4.3.4 Trainers Enrollment

This activity diagram allows trainees to login the enrollment interface. Search for sessions available. Sessions available must have at least ten attendees in each course offered. The trainers are notified for number of attendees for their session. The admin and course managers control the major activities throughout the trainings. This flowchart starts when the trainee requests that the system to login for enrollment.

1. The system checks to see if enrollment option is clicked. If it is, then a message is displayed to the trainee, and the use case initiates. The start enrollment processing cannot be performed if enrollment session is not available.
2. For each session displayed, the system checks the enrollment if there is seat available and a trainer signed up to teach the session. If so, the system commits the trainee for that session as enrolled.
3. For each session, the system closes all course offerings. If the session's seats are no longer available, then the system cancels the current enrollment. The system cancels the enrollment for that session and allows the trainee to choose another session.
5. The trainee must be logged onto the system in order for this use case to begin. If the use case was successful, enrollment is now open. If not, the system state remains unchanged.

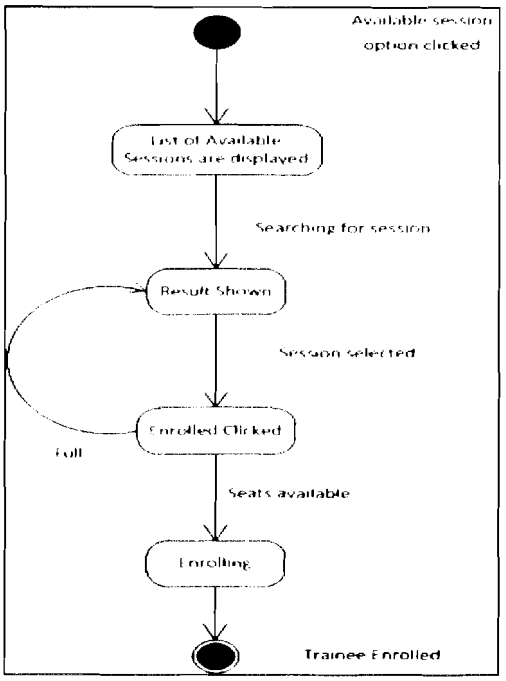

Figure 4.4: Trainer Enrollment

4.4 USE CASE MODEL

The use case model specifies the functionality the system has to offer from a user's perspective and we define what should take place inside the system. This model uses actors to represent roles the users can play, and use cases to represent what the users should be able to do with the system. Each use case is a complete course of events in the system, seen from a user perspective.

If appropriate, interface descriptions may also be developed. These will specify in detail what the user interface will look like when the use cases are performed. To give a conceptual picture and a better understanding of the system, we use objects that represent occurrences in the problem domain.

A use case is a specific way of using the system by performing some parts of the functionality. Each use case constitutes a complete course of events initiated by an actor and it specifies the interaction that takes place between an actor and the system. A use case is thus

a special sequence of related transactions performed by an actor and the system in a dialogue. The collected use cases specify all the existing ways of using the system. Use cases describe the behavior of the system when one of these actors sends one particular stimulus. This behavior is described textually. It describes the nature of the stimulus that triggers the use case; the inputs from and output to other actors, and the behavior that convert the inputs. The text of the use case also usually describes everything that can go wrong during the course of the specified behavior, and what remedial action the system will take.

4.4.1 Actors

Actor is person outside the boundary of the system but this person represents important part of the system environment, where the actor can represent other system or other devices such as printer. The actor is person who is expected to or had interact with computer system (Satzinger, Jackson and Burd, 2002). In order to develop the proposed system, the following actors are deemed necessary:

1. Administrator.
2. Course Manager.
3. Trainer.
4. Trainee.
5. Guest.

Therefore, in the main use case diagram represents the functionality of administrators, trainers, trainees, course managers, and guest users as the system actors. The administrator actor functionality is the ability to interact with the system by managing users, roles, access and menus. The second actor functionality is the course manager with the ability to add, modify or delete programme venue, courses offered as well as created sessions. The next actor is trainer, with the functionality of the creating session, viewing session, and viewing

users who register for that session. Another actor, is the trainee who is given the permission to view the available course and session, and then register for the desired session according to the courses offered. The last actor is the guest users who are given the permission to send their personal information for administrator's authorization and account creation as trainer or trainee depending on what the user request. Figure 4.5 below represents the new system use case diagram showing the five important actors.

- **Flow of Events**

  This use case starts when the admin requests that the system is open for registration.

  1. The system checks to see if registration is due. If it is, then a message is displayed to the Administrator, and the use case initiates. The Start Registration processing cannot be performed if registration time is not due depending on the management decision.
  2. For each session available, the system checks if a trainer has signed up to teach the course offering and at least ten trainees have registered. If so, the system commits the course offerings for each session that contains it.
  3. For each session, the system "levels" the session: if the session does not have the maximum number of courses selected, the system attempts to select alternates from the session's list of alternates. The first available alternate course offerings will be selected. If no alternates are available, then no substitution will be made.
  4. For each course offering, the system closes all course offerings. If the course offerings do not have at least ten trainees at this point, then the system cancels the course offering. The system cancels the course offerings for each session that contains it.

5. The Administrator must be logged onto the system in order for this use case to begin. If the use case was successful, registration is now open. If not, the system state remains unchanged.

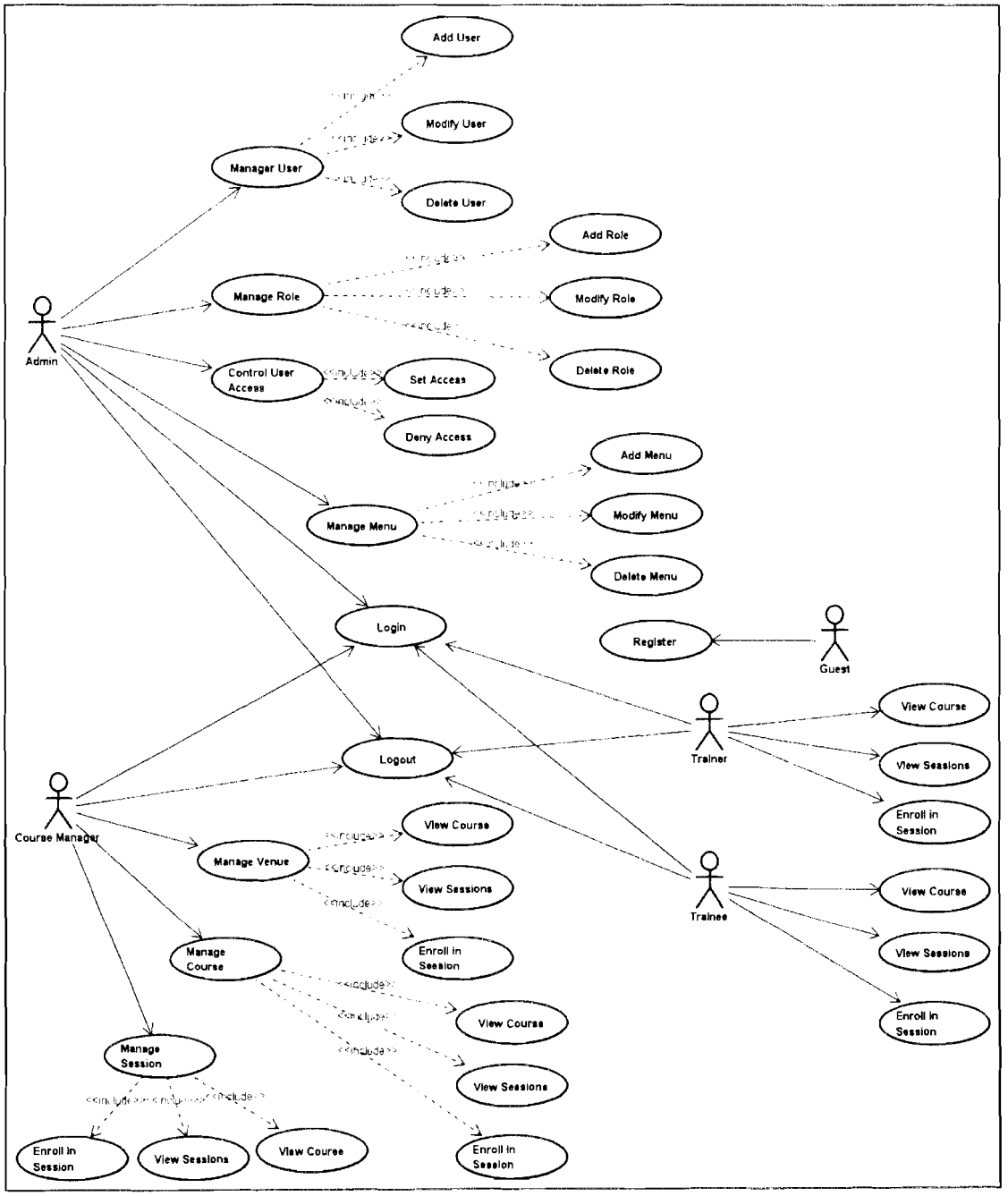

Figure 4.5: Use Case Diagram

4.4.2 Sequence Diagram

This section UML diagram shows the overall processes that execute in sequence, the sequence diagram shows the sequence of message, which are exchanged among roles that implement the behavior of the system, arranged in time, it shows the flow of control across many objects that collaborate in simple and complex scenario context.

However the sequence diagram (interaction) captures only the system behavior of a single use case showing the messages passed between objects of the that case and describe the sequence of operation in that use case. Figure 4.6 below describes login sequence diagram.

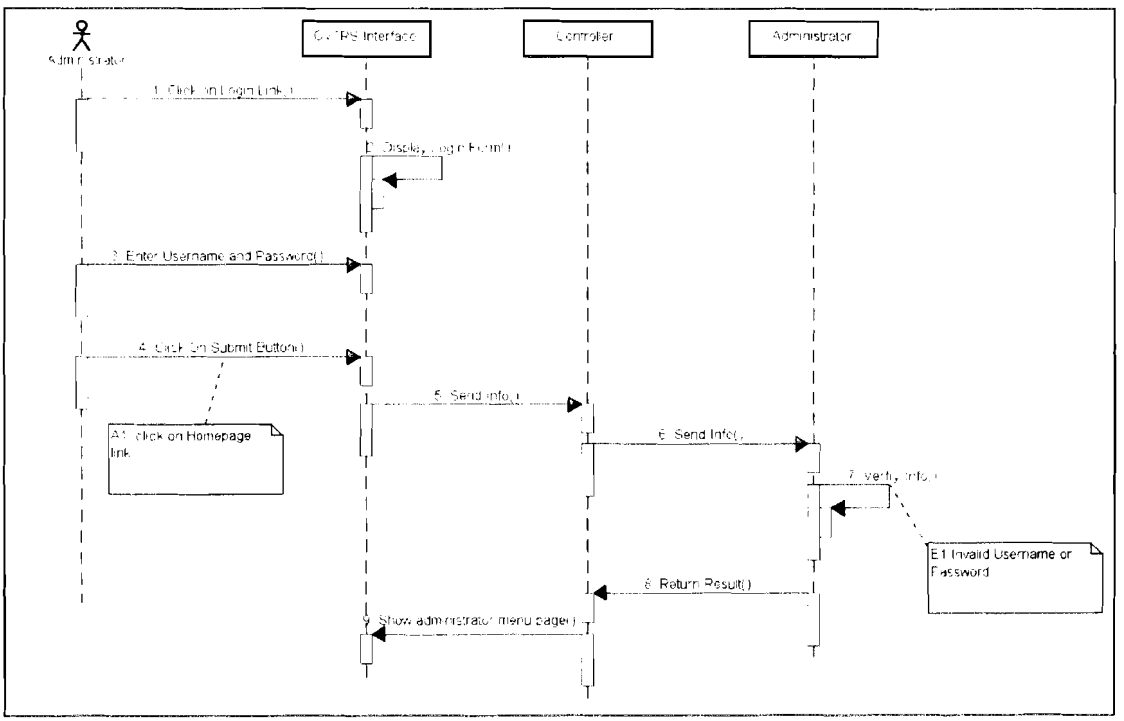

Figure 4.6: Login Sequence Diagram

4.4.3 Collaboration Diagram

Collaboration diagram is also called as Communication diagram. Actually, collaboration diagram has many similarities to sequence diagram and for the direct interactions they express the same information in a different format. The most significant difference between them is that a collaboration diagram clearly shows the link between the lifelines that

participates in collaboration. Figure 4.7 shows a collaboration diagram for administrator login.

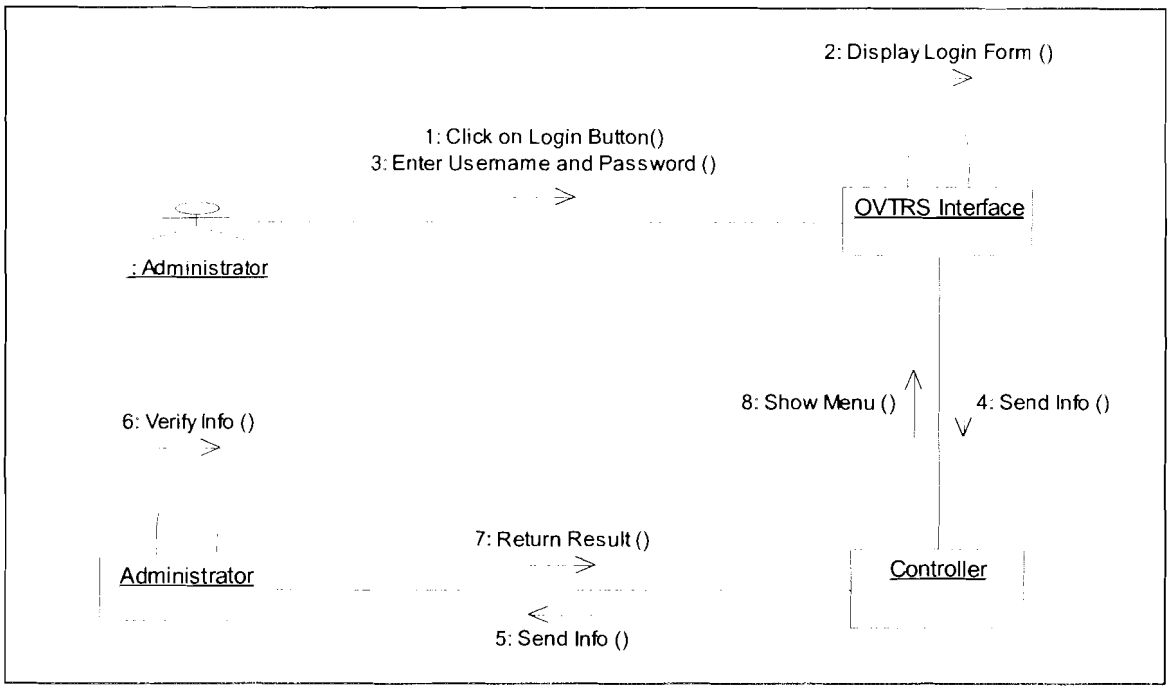

Figure 4.7: Login Collaboration Diagram

4.4.4 Class Diagram

This class object allows the Administrator to maintain user's information in the registration system. This includes adding, modifying, and deleting Users from the system.

- **Flow of Events**

This class starts when the Administrator wishes to add, modify, and/or delete user's information in the system.

1. The system requests that the Administrator specify the function he/she would like to perform (either Add a User, Modify a User, or Delete a User)
2. Once the Administrator provides the requested information, one of the sub flows is executed. If the Admin selected "Add a User", the **Add a User** sub-flow is executed. If the Admin selected "Modify a User", the **Modify a User** sub-flow is executed. If the Admin selected "Delete a User", the **Delete a User** sub-flow is executed.

- **Add a Users**

  1. The system requests that the Admin enter the Users information. This includes -- name, gender, address, city, state, post, phone, email etc.
  2. Once the Admin provides the requested information, the system generates and assigns a unique id number to the Users. The user is added to the system.
  3. The system provides the Admin with the new Users id. And registration completed.

- **Modify a User**

  1. The system requests that the Admin enter the user id.
  2. The Registrar enters the student id. The system retrieves and displays the student information.
  3. The Registrar makes the desired changes to the student information. This includes any of the information specified in the **Add a User** sub-flow.
  4. Once the Registrar updates the necessary information, the system updates the user information.

- **Delete a Users**

  1. The system requests that the Admin enter the user id
  2. The Admin enters the user id. The system retrieves and displays the user information.
  3. The system prompts the Admin to confirm the deletion of the user.
  4. The Admin verifies the deletion.
  5. The system deletes the user from the system.

- **User Not Found**

  If, in the **Modify a User** or **Delete a User** sub-flows, a user with the specified id number does not exist, the system displays an error message. The Admin can then enter a different id number or cancel the operation, at which point the use case ends.

- **Delete Cancelled**

If, in the **Delete A User** sub-flow, the Admin decides not to delete the user, the delete is cancelled and the **Basic Flow** is re-started at the beginning.

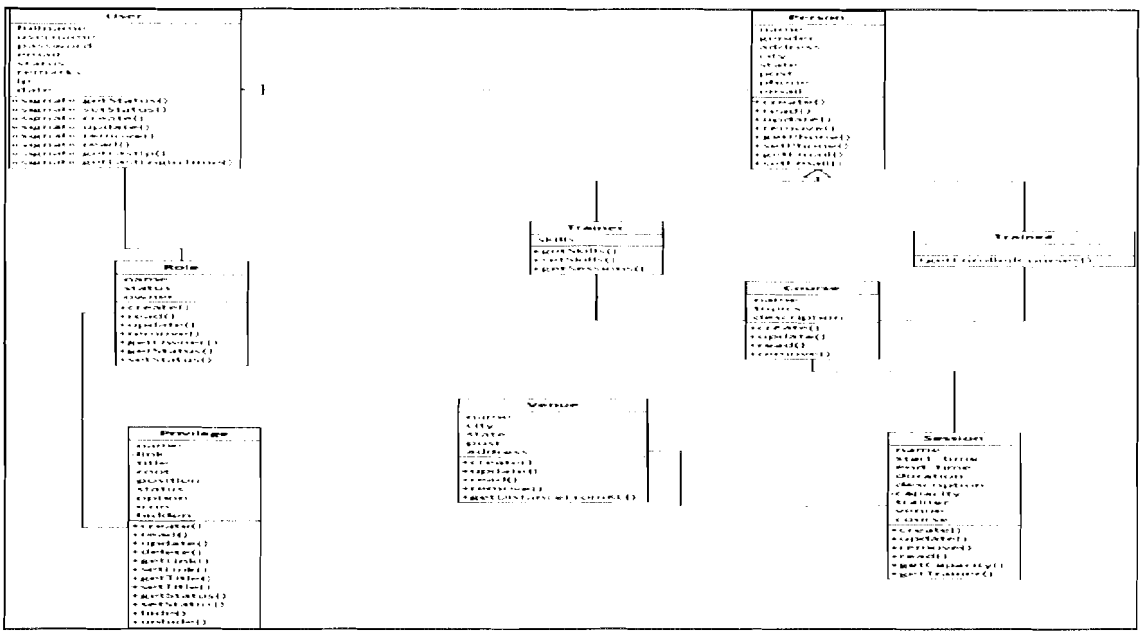

Figure 4.8: Class Diagram

4.4.5 Class Session Description

This class case allows a course manager to manage courses in the current session. The course manager can also modify or delete course selections if changes are made at the beginning of the session. The Course System provides a list of all the course offerings for the current session.

- **Flow of Events**

This class case starts when a trainer wishes to create session and course offerings, or to change his/her existing course session.

1. The Trainer provides the function to perform (one of the sub flows is executed): If the trainer selected "Create a Session", the **Create a Session** sub-flow is executed. If the trainer selected "Modify a Session", the

Modify a Session sub-flow is executed. If the trainer selected "Delete a Session", the **Delete a Session** sub-flow is executed.

- **Create a Session**

  1. The system retrieves a list of available sessions and displays the list to the trainer.
  2. The Select session sub-flow is executed.
  3. The Submit Session sub-flow is executed.

- **Modify a Session**

  1. The system retrieves and displays the trainer's current session
  2. The system retrieves a list of available sessions and displays the list to the trainer.
  3. The trainer may update the session selections on the current selection by deleting and adding new session. The trainer selects the session to add from the list of available sessions. The trainer also selects any session to delete from the existing schedule.
  4. Once the trainer has made his/her selections, the system updates the schedule for the trainer using the selected session.
  5. The Save Session sub-flow is executed.

- **Delete a Session**

  1. The system retrieves and displays the trainer's current session.
  2. The system prompts the trainer to confirm the deletion of the session schedule.
  3. The trainer verifies the deletion.
  4. The system deletes the session schedule. If the schedule contains "enrolled in" course offerings, the trainer must be removed from the course offering.

4.5 CONCLUSION

This study intends to develop an online volunteer registration system for ITU-UUM. The center would like a new registration system to replace its present manual system used to

train volunteers. The new system will allow trainers and trainees to search for sessions and enroll and view registration reports personal computers via ITU website. Trainers will be able to access the system to sign up to create and view attendee. Fortunately the system will use an open SQL interface that allows access to this database by the admin controller, course manager, trainers, trainee and guests. The new system will receive information from the users and guest to update the database. At the beginning of each training session, trainees may view course catalogue containing a list of course offerings for the session. Information about each course help trainees make informed decisions.

The new system will allow trainees to enroll for sessions offerings for the coming programme. In addition, each trainee will indicate two alternative choices in case the trainee cannot be assigned to a primary selection. Once the registration process is completed for a trainee, the registration system sends information to the course manager role so the trainees can be assigned a venue. At the end of the session registration, the admin will be able to control user access to the system to view attendee, session, and manage session. Since enrollment information are sensitive information, the system must employ extra security measures to prevent unauthorized access.

Trainers must be able to access the on-line system to indicate which courses they will be teaching at what session. They will also need to see which attendee signed up for their course sessions. In addition, the trainers will be able to record the create session for his/her class.

Finally, the new system allow the outside users to register as guest their personal information, and if giving access by the system administrator they can be able to view courses and enroll for desired sessions.

CHAPTER FIVE

PROTOTYPE DEVELOPMENT AND EVALUATION

5.1 INTRODUCTION

This chapter describes the development of prototype and the results that were gathered during the validation of prototype. Moreover, The usability guideline was adopted during the development of prototype.

5.2 PROTOTYPE DEVELOPMENT

5.2.1 Platform for Developement

This proposed system will be designed and tested for latest Windows operating system, although it can work with MAC systems. Below is the list of minimum system requirements.

5.2.1.1 *Hardware Requirement*

- Intel Pentium 4 CPU 2.8 GHz
- ASUS P4GE – MX Motherboard
- 1024MB Kingston DDR RAM
- 80GB Western Digital HardDisk
- BenQ CD Writer
- Samsung 17" Monitor
- Keyboard and Mouse

5.2.1.2 *Software Requirement*

Currently, open source is the main technology that has been widely used. Therefore, this proposed system used:

- **PHP**

  The PHP Hypertext Proprocessor is a programming language that allows web developers to create dynamic content that interacts with databases. PHP is basically used for developing web-based software applications.

- **MySQL**

  MySQL is an open source relational database management system (RDBMS) that uses Structure Query Language (SQL), the most popular language for adding, accessing and processing data in a database. MySQL is noted mainly for its speed, reliability, and flexibility.

- **Apache**

  Apache is a freely available Web server that is distributed under an "open source" license. Version 2.0 runs on most Unix-based operating systems (such as Linux, Solaris, Digital Unix, and AIX), on other UNIX/POSIX-derived systems (such as Rhapsody, BeOS, and BS2000/OSD, on AmigaOS, and Windows 2000, NT)

- **Micromedia Dreamweaver 8**

  Micromedia Dreamweaver is an HTML editor developed by Micromedia. It was originally targeted at professional web designers and offers an editing system that combines both the productivity of WYSIWYG design with the control of HTML code editing mode.

- **phpMyAdmin 2.6.1**

  phpMyAdmin 2.6.1 is used for database management.

- **Adobe Photoshop**

  Adobe Photoshop is graphic design.

- **Mozilla Firefox and Internet Explorer**

  Mozilla Firefox and Internet Explorer is a simple web browser

- **Microsoft Project**

  Microsoft Project is for drawing Ghantt chart

- **Microsoft Visio**

  Microsoft Visio is for drawing diagrams

Figure 5.1 depicts the Home page of Online Volunteer Trainer Registration System.

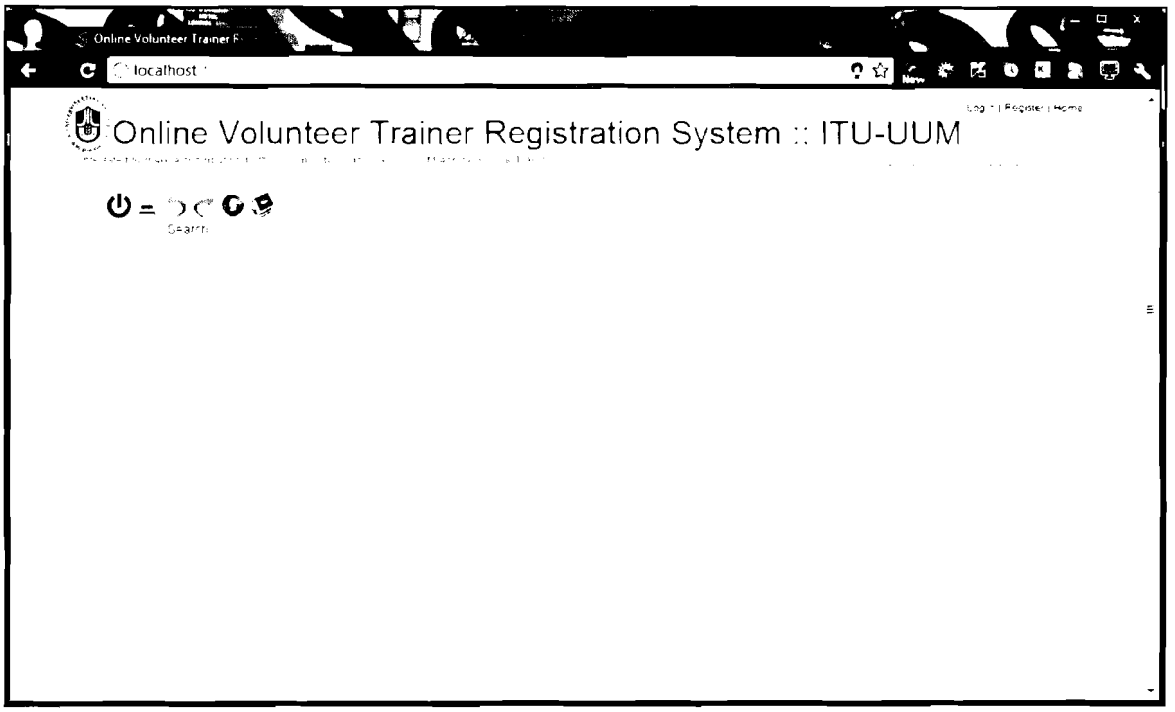

Figure 5.1: Home page of Online Volunteer Trainer Registration System

Figure 5.2 depicts the registration menu. It allows the user to register as trainer or trainee as well as it allow the user to log in into the system.

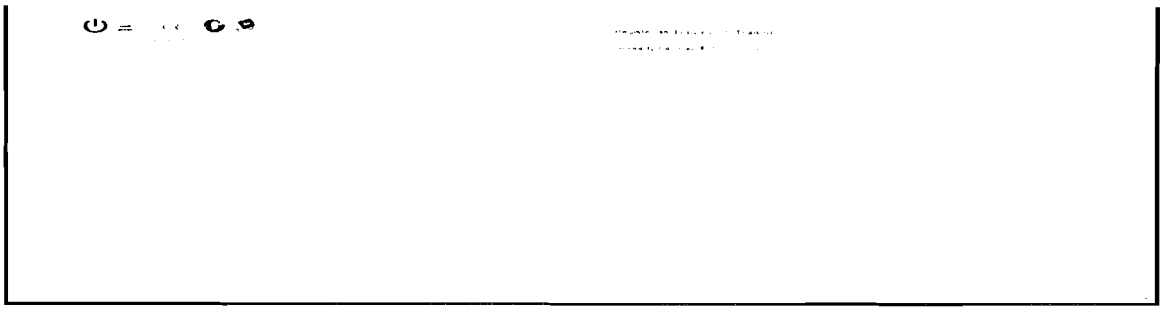

Figure 5.2: Registration Menu

Figure 5.3 depicts the registration form for trainer. It allows the trainer to fill up his/her information that would allow his/her to be registered and log in into system.

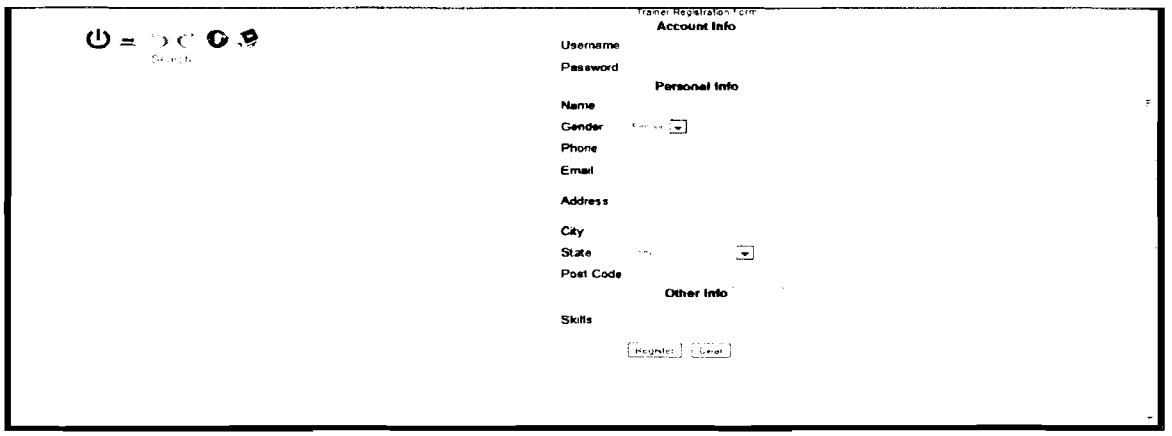

Figure 5.3: Trainer Registration Form

Figure 5.4 depicts the registration form for trainee. It allows the trainee to fill up his/her information that would allow his/her to be registered and log in into system.

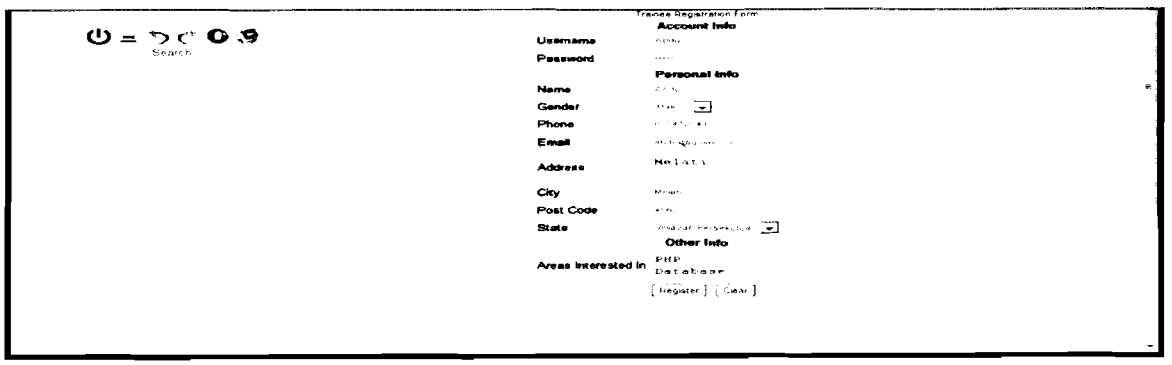

Figure 5.4: Trainee Registration Form

Figure 5.5 depicts the administrator homepage. It contains all the links that allows the admin to manage course, trainee, trainer, sessions etc.

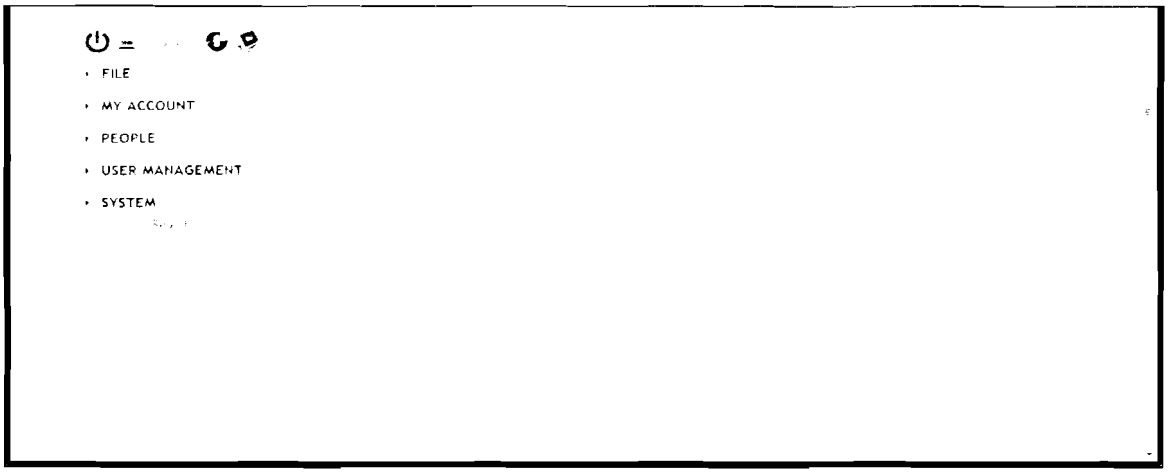

Figure 5.5: Administrator Home Page

Figure 5.6 depicts the venues home page. The administrator can add, edit, and delete the venues.

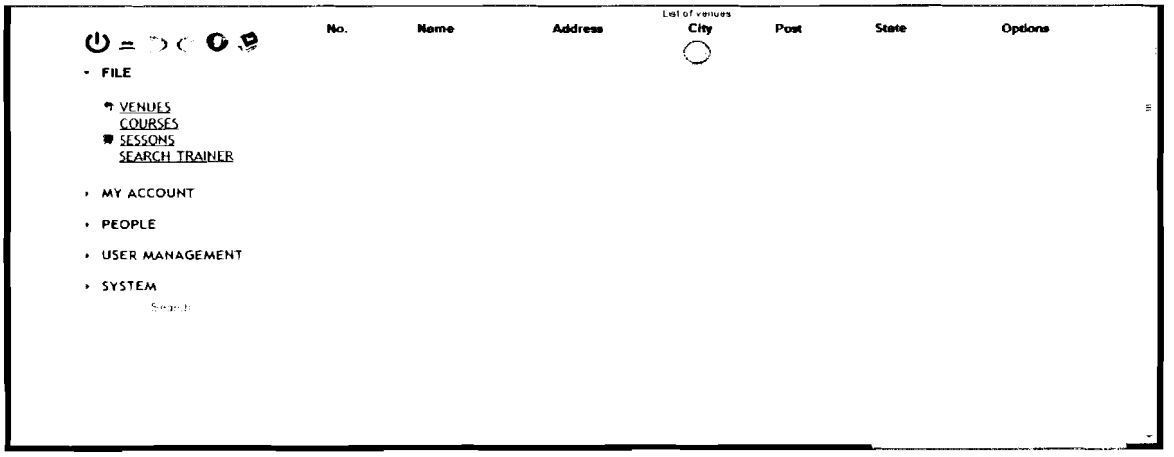

Figure 5.6: Venues Home Page

5.3 EVALUATION OF THE PROTOTYPE

5.3.1 Usability Test

Usability means the product must work quickly and easily in order to accomplish users tasks. Testing usability means that the users who work with the product's functions to meet their needs (Dumas & Redish, 1999). In other words, usability test is a research tools or a term that refers to a process that people are employed as testing participants in order to evaluate the degree of product by its functions (Rubin & Chisnell, 2008).

Therefore, the functionalities of the prototype were tested against the requirements list and Lund (2001) USE questionnaire was used to evaluate the usability of the prototype. The questionnaire is available in Appendix A.

5.3.2 Data Analysis

The process of data analysis can be explained as "*a sequence of steps that lead from planning to data collection to making informed conclusions based on the resulting data*"(Peck, Olsen, & Devore, 2011). This study relied on Statistical Package for the Social Sciences (SPSS) 19 software to conduct the data analysis. The total number of respondents was 30 persons.

In Table 5.1 gives an overview of the responses related to the systems aspects part. There was a mixed agreement found among the respondents wherein 53.3% of the sample consented with the fact that prototype helped them in being more effective. On the other hand, 63.3% of the sample agreed that prototype helped them in enhancing their productivities, whereas 53.3% of the sample showed strong agreement with the usefulness of the prototype. 66.7% of the sample expressed that the prototype rendered them increased control over the activities. 60% of the sample disclosed that the prototype enabled them to

carry out their work in an easier manner whereas 56.7% of the sample affirmed that prototype saved their time. 'Prototype met their needs' was strongly agreed by 53.3% of the sample whereas 60% of the sample consented with the fact that the prototype does everything they expect it to do.

The other findings can be summarized as such: 50% agreed with easy usability of the prototype; 56.7% strongly agreed with the user friendliness of the prototype; 56.7% said that prototype needed least steps to accomplish their jobs; 50% confirmed that the prototype was flexible; 56.7% agreed with the effortless usability feature of the prototype; 53.3% asserted they can use this prototype without any written instructions; 50% of the sample identified no inconsistencies in its functionality; 53.3% agreed that they can quickly recover from and rectify their mistakes; 60% asserted that they can use the prototype successfully every time; 53.3% of the sample said that they quickly learnt how to use the prototype; 50% showed strong agreement with their ability to remember how to use the prototype; 46.7% showed strong agreement with their quick gaining of the skills to use it; 53.3% of the sample was in strong agreement to have satisfaction with the prototype; and, 63.3% consented that the prototype actually worked in the way they expected it to.

Table 5.1: System Aspects Frequencies

			Strongly Agree	Agree	Natural	Disagree	Strongly Disagree	Total
Usefulness	Q1	Frequency	14	16	0	0	0	30
		Percent	46.7	53.3	0	0	0	100
	Q2	Frequency	11	19	0	0	0	30
		Percent	36.7	63.3	0	0	0	100
	Q3	Frequency	16	14	0	0	0	30
		Percent	53.3	46.7	0	0	0	100
	Q4	Frequency	10	20	0	0	0	30
		Percent	33.3	66.7	0	0	0	100
	Q5	Frequency	12	18	0	0	0	30
		Percent	40	60	0	0	0	100
	Q6	Frequency	13	17	0	0	0	30
		Percent	43.3	56.7	0	0	0	100
	Q7	Frequency	16	14	0	0	0	30
		Percent	53.3	46.7	0	0	0	100
	Q8	Frequency	10	18	2	0	0	30
		Percent	33.3	60	6.7	0	0	100
Easy to Use	Q9	Frequency	15	14	1	0	0	30
		Percent	50	46.7	3.3	0	0	100
	Q10	Frequency	17	10	3	0	0	30
		Percent	56.7	33.3	10	0	0	100
	Q11	Frequency	17	12	1	0	0	30
		Percent	56.7	40	3.3	0	0	100
	Q12	Frequency	13	15	2	0	0	30
		Percent	43.3	50	6.7	0	0	100
	Q13	Frequency	13	17	0	0	0	30
		Percent	43.3	56.7	0	0	0	100
	Q14	Frequency	14	16	0	0	0	30
		Percent	46.7	53.3	0	0	0	100
	Q15	Frequency	13	15	2	0	0	30
		Percent	43.3	50	6.7	0	0	100
	Q16	Frequency	14	16	0	0	0	30
		Percent	46.7	53.3	0	0	0	100
	Q17	Frequency	12	18	0	0	0	30
		Percent	40	60	0	0	0	100
Easy of Learning	Q18	Frequency	13	16	1	0	0	30
		Percent	43.3	53.3	3.3	0	0	100
	Q19	Frequency	15	15	0	0	0	30
		Percent	50	50	0	0	0	100
	Q20	Frequency	14	14	2	0	0	30
		Percent	46.7	46.7	6.7	0	0	100
Satisfaction	Q21	Frequency	16	14	0	0	0	30
		Percent	53.3	46.7	0	0	0	100
	Q22	Frequency	11	19	0	0	0	30
		Percent	36.7	63.3	0	0	0	100

From Table 5.2, it becomes evident that the range of the mean in this study varied between 1.4667 and 1.7333. It gives a clear snapshot of the descriptive statistics of the variables used in the prototype's evaluation.

Table 5.2: Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Q1	30	1.00	2.00	1.5333	.50742
Q2	30	1.00	2.00	1.6333	.49013
Q3	30	1.00	2.00	1.4667	.50742
Q4	30	1.00	2.00	1.6667	.47946
Q5	30	1.00	2.00	1.6000	.49827
Q6	30	1.00	2.00	1.5667	.50401
Q7	30	1.00	2.00	1.4667	.50742
Q8	30	1.00	3.00	1.7333	.58329
Q9	30	1.00	3.00	1.5333	.57135
Q10	30	1.00	3.00	1.5333	.68145
Q11	30	1.00	3.00	1.4667	.57135
Q12	30	1.00	3.00	1.6333	.61495
Q13	30	1.00	2.00	1.5667	.50401
Q14	30	1.00	2.00	1.5333	.50742
Q15	30	1.00	3.00	1.6333	.61495
Q16	30	1.00	2.00	1.5333	.50742
Q17	30	1.00	2.00	1.6000	.49827
Q18	30	1.00	3.00	1.6000	.56324
Q19	30	1.00	2.00	1.5000	.50855
Q20	30	1.00	3.00	1.6000	.62146
Q21	30	1.00	2.00	1.4667	.50742
Q22	30	1.00	2.00	1.6333	.49013
Valid N (listwise)	30				

Following table condenses the reliability test for the prototype. This test is conducted to ensure that the prototype functions properly all over its life without failure throughout its expected life and functionality.

Table 5.3: Summary of Reliability Test

Variables	Cronbach's Alpha	Cronbach's Alpha Average
Usefulness	0.843	0.785
Easy to Use	0.727	
Easy of Learning	0.729	
Satisfaction	0.831	

Table 5.3 shows an average alpha coefficient of 0.785 for the said four variables indicating a high internal consistency among them. The reliability coefficient should ideally be more than 0.7.

CHAPTER SIX

CONCLUSION AND RECOMMENDATION

6.1 INTRODUCTION

The aim for this study is to develop a OVTRS that allows ITU-UUM to conduct better and more effective trainings, specifically in the rural areas. This objective was achieved throughout three main stages starting from the analysis and design of the prototype and then the development of the prototype for Online Volunteer Trainer System. As a result of this study, the list of requirements that was formed in the analysis and design phase was validated through evaluating of the prototype. Also, the results of the prototype evaluation were discussed in detail in the fifth chapter. However, this study can be a reliable reference for any further enhancement that is planned to be conducted.

6.2 LIMITATIONS

During the prototype development process of the Web Based Online Volunteer Trainer System, there are some obstacles and limitations encountered. Some of these limitations are as stated below:

- Due to time constraint, this prototype is not fully functional. It only supports the basic functionalities of the prototype and it does not include the non-functional requirements such as security and performance.
- The number of respondents was limited due to time and scope constraint as well as it was so difficult to interview all possible trainers and staffs.

6.3 RECOMMENDATIONS AND FUTURE WORKS

The objectives of this study have been successfully achieved, yet some suggestions are listed below in order to enhance the body of knowledge in this area and to develop a full functional system that can carry or the training registration and management successfully. However, it is recommended that the future work should include the following suggestions:

- Inclusion of non- functional requirements such as security through supporting password expiration periods and disabling accounts to prevent additional attacks in case the system was hacked, platform issues, performance, and so on.
- Integration of this system model with the other departments in UUM beside ITU-UUM, as well as other universities in order to have a wider coverage and for more voluntaries availability.

6.4 SIGNIFICANCE AND CONTRIBUTION

The result of this study has successfully created a functional requirement model prototype for web based online volunteer Trainer system. The design and the prototype that were presented in this study can be used as a guide for developing a web based management system for different institutions in Malaysia. The outcome of this study is very important to the body of the knowledge. Furthermore, other universities that plan to implement web based online volunteer Trainer system system in future can use this model as a guideline.

REFERENCES

Ahmad, H., Udin, Z. M., Yusoff, R. Z. (2001, July). *Integrated process design for e-learning: a case study*, Presented at the Sixth International Conference on Computer Supported Cooperative Work in Design, London, Ontario, Canada

Ahn, T., Ryu, S. & Han, I. (2004). The Impact of the Online and Offline Features on the User Acceptance of Internet Shopping Mall. *Electronic Commerce Research*, 3(4), pp. 405-420.

Al-Shaikh, A. M. (2009). Online Registration System. *International Journal of Computer Science and Security (IJCSS)*, 4 (3), pp. 34-103

Boroson, E. (2003). Course Registration System. *The On-line Registrar*. Retrieved 04/03/2012, from http://www.cs.brown.edu/courses

Carat, G. (2002). *E-Payment Systems database – Trends and Analysis*, Electronic Payment Systems Observatory (ePSO), Institute for Prospective Technological / European Commission.

Chan, P. (2008, October). *Dynamic Web Service Composition: A New Approach in Building Reliable Web Service*. AINA '08 Proceedings of the 22nd International Conference on Advanced Information Networking and Applications, IEEE Computer Society Washington, DC, USA

Ciebiera, k., Mincer-Daszkiewicz, J., & Walen, T. (2004, August). *New Course Registration Module for the University Study-Oriented System*. Presented at the EUNIS' 2004, the 10th International Conference of European University Information Systems, Bled, Slovenia.

Cole, R., Purao, S., Rossi, M., & Sein, M. K. (2005, June). *Being proactive: Where action research meets design research*. In proceedings at the 26th international conference on information systems, Las Vegas, USA.

Cui, H. (2005). Digitized O A system construction of University based on web service technology. *Journal of Software*, 113(5), pp. 698 – 702.

Dennis, A., Wixom, B. H. & Tegarden, D. (2005). *System analysis and design with UML version 2.0: An object oriented approach*. United States of America: John Wiley & Sons Inc.

Dumas, J. S., & Redish, J. (1999). *A practical guide to usability testing*: Intellect Ltd.

Hevner, A. R, and S. March, and J. Park, and S. Ram. (2004). Design science in information systems research. *Management Information Systems Quarterly*, *28* (1), pp. 75-105.

Johnson, G., Scholes, K. and Whittington, R. (2008). *Exploring Corporate Strategy*. (8th ed.). Essex, UK: Pearson Education Limited - Prantice Hall.

Kerner, S. M. (2006). Is PHP The Cure For The 'Broken' Web?. In *internetnews.com.* Retrieved 16/05/2012, from http://www.internetnews.com/dev-news/article

Laudon, K. C. & Laudon, J. P. (2004). Management Information Systems - The Digital Firm. Retrieved 10/04/2012, from www.daimlerchrysler.com,

Lund, A. (2001). Measuring usability with the USE questionnaire. STC Usability SIG Newsletter, 8 (2).

March, S. T., & Smith, G. F. (1995). Design and natural science research on information technology. *Decision Support Systems*, *15*(4), pp. 251–266.

Naini, V., and Tanik, M. (2008, March). *A Web-based interactive Student Advising system using Java frameworks*. Presented in conference proceedings of Southeastcon, 2008 IEEE 172 - 177 at the University of Alabama Birmingham, USA.

Nunamaker, J., Chen, M. and Purdin, T. (1991), Systems Development in Information Systems Research. *Journal of Management Information Systems,* 7(3), pp. 89-106

Raghu Ramakrishnan and Johannes E. Gehrke (2003). *Database Management Systems*. (3rd ed.). New York: McGraw Hill.

Rubin, J., & Chisnell, D. (2008). *Handbook of usability testing: how to plan, design and conduct effective tests*: Wiley-India.

Schmitt, S. (2006). Engaging a Rich Web Experience. Greenwich: Manning Publications Co.

Shelly, B. G., Cashman, J. T. and Vermaat, M. E. (2006). *Discovering Computer : A Gateway to Information and Web Enhanced Complete.* USA: Thomson Course Technology.

Shklar, L. and Rosen, R. (2003). *Web Application Architecture: Principles, Protocols and practices.* London, England: John Wiley & Sons Ltd.

Simon, H. A. (1996). *The sciences of the artificial* (3rd ed.). Cambridge, MA, USA: MIT Press.

The International Telecommunications Union – Universiti Utara Malaysia (ITU-UUM). (2012). Asia Pacific Centre of Excellence for Rural ICT . *In About Us*. Retrieved 29/05/2012, from http://itu.uum.edu.my/index.

The Universiti Utara Malaysia (UUM). (2012). Background. In *About Us*. Accessed on 17/04/2012 from http://www.uum.org.my/index.php/en/about-uum

Treiber, M. (2007). Active Web Service Registries. *IEEE Computer Society*, 11(5), pp. 66 – 71.

Turner, J (2002). Mysql And Jsp Web Applications. *Data-driven Programming Using Tomcat and* Mysql. Retrieved on 12/04/2012, from http://www.biblio.com/isbn/9780672323096.html

Turban, E., Lee, J. K., King, D., and Michael, H. C., (2004). *Electronic Commerce and Update Package.* London, UK: Prentice-Hall

Vaishnavi, V. and Kuechler, W. (2007). Design Science Research Methods and Patterns: Innovating Information and Communication Technology. Boston, MA, USA: Auerbach Publications.

Yasuhiko, H., Tsutomu, A., and Syun, T. (2006). Construction and operation of a registration system in a university. *Systems and Computers in Japan,* 37(10), pp. 69 – 80.

Zainal, A., and Hasibuan, H. (2005, July). *The Use of E-Learning towards New Learning Paradigm: Case Study Student Centered E-Learning Environment.* Presented in a conference at the Faculty of Computer Science, University of Indonesia.

APPENDIX A

QUESTIONNAIRE

Questionnaire for Testing and Evaluating Web Based Online Volunteer Trainer System (OVTRS)

OVTRS is developed to manage the volunteers that register for training sessions, and to ensure that training sessions are conducted successfully. The aim of this questionnaire is to evaluate the system and to rate your satisfaction of using this system. Once you finished testing the system, a questionnaire will be given to you to answer all questions. The questionnaire consists of 22 questions.

The questions in this test varies, some are easy and some are more difficult, so do not worry if you faced difficulty understanding some of the questions. Once you find them, it will be clarified to you.

Please tick [✓] in appropriate blank field:

Usefulness					
	Strongly Agree	Agree	Natural	Disagree	Strongly Disagree
1. It helps me be more effective					
2. It helps me be more productive					
3. It is useful					
4. It gives me more control over the activities					
5. It makes the things I want to accomplish easier to get done					
6. It save me time when I use it					
7. It meets my needs					

8. It does everything I would expect it to do					
Easy to use					
	Strongly Agree	Agree	Natural	Disagree	Strongly Disagree
9. It is easy to use					
10. It is user friendly					
11. It requires the fewest steps possible to accomplish what I want to do with it					
12. It is flexible					
13. Using it is effortless					
14. I can use it without written instructions					
15. I don't note any inconsistencies as I use it					
16. I can recover from mistakes quickly and easily					
17. I can use it successfully every time					
Easy of Learning					
	Strongly Agree	Agree	Natural	Disagree	Strongly Disagree
18. I learned to use it quickly					
19. I easy remember how to use it					
20. I quickly became skillful with it					
Satisfaction					
	Strongly Agree	Agree	Natural	Disagree	Strongly Disagree

21. I am satisfied with it					
22. It works the way I want it to work					

Date:..... **Time:**..... **Signature:**.....

Thank you for your value time to participate with us, and make it achievable and possible.