

**COLLEGE OF INFORMATION TECHNOLOGY
UNIVERSITI TENAGA NASIONAL**

UNITEN e-ELECTION

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UNITEN e-ELECTION

by

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BUKU INI MENGANDUNGI CD-ROM
SILA HUBUNGI KAUNTER PERPUSTAKAAN

**A REPORT SUBMITTED IN PARTIAL FULFILLMENT OF
THE REQUIREMENTS FOR THE BACHELOR OF
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COLLEGE OF INFORMATION TECHNOLOGY
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ABSTRACT

UNITEN e-Election is being developed to change the environment of manual voting system to the online voting system. The system will introduce the students and other users to use the online voting system within campus. It is expected to increase the number of students voting for election. Despite of all that, this system is expected to make students involve into UNITEN activity rather than only having good education provided by UNITEN. The benefits that will be produced by the election result could help students to know that they have right as a student to defend their pride and in the meantime teach them how to be a truly professional in the future.

This project focusing on the way students need to vote and the integrity of data received from the election. Hence, this project focuses on the need of requirements even before any coding is done. Furthermore, since there are lots of data involved in this system, this project will target more at the database. A need for standard database is realized.

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ABBREVIATION

UNITEN – University Tenaga Nasional

DFD - Data Flow Diagram

ERD- Entity Relationship Diagram

SRC- Student's Representative Council

CHAPTER 1

INTRODUCTION

1.1 Background

This project is a web based system that applies the election process in UNITEN electronically. Currently, the election process is managed manually by the management of Student Affairs with cooperation by students. Every year the Students Representative Council (SRC) election will be conducted to select the new committee of SRC. Every UNITEN's student will be given the power to choose their future leader and each student can only vote for one candidate that competes in the election as their voice in the SRC. Every year the number of all votes that is received is very low and doesn't reflect the number of students in UNITEN. This happens as the result of a weak voting system.

1.2 Problem statement

The election process is important to all students in UNITEN. The election helps students to choose their future leader that can help them to represent for any matters related to studies or other activities. The total of all votes that is received on the past election doesn't reflect the number of UNITEN's student. The manual system that is having used now doesn't attract the students to come and vote for the candidates. Based on these problems, it is the time to decide of proposing an online election for the election in

UNITEN that is online election. Through the internet, student can log in and vote from their residence or anywhere. This can help election process increase the number of students who are voting.

The e-election has been applied in many universities now but not in UNITEN. This system is proposed to ease students to vote and attract students to try new approach of election method. This system is not just to make the election process easier but it is also makes students aware to choose their Student Representative Council.

1.3 Objectives

Every project must have their own objectives so then they can meet up all the ideas and the requirements. Just then, a successful project will developed. For the web based application development, some objectives have been listed and it is divided into two categories that are Project Objective and System Objective. Here are the lists of the objectives to ensure that this e-Election will be beneficial to its targeted UNITEN's students.

1.3.1 System Objectives

- To create a web based system to conduct the voting for students
- Students need not to go to the election centre to vote. Just browse the internet to vote the candidates
- To integrate the candidate's profile so it will help users to identify the candidate that they want to vote

1.3.2 Project Objectives

- Propose to ease the election system. Introduce the new approach of conducting the election
- Make the election more effective with the involvement of students. Involve the students more into University's program and hopefully will maximized the student's power on making their voice heard through their selected candidate.
Increase the number of students that vote for the election

1.4 Scope

The development for this system has two types of scopes which are System Scope and User Scope. The scope is important to acknowledge people what are the target for system and user.

1.4.1 System scope

- This development of the system is designed to upgrade the voting system in UNITEN
- This election system is using the database of UNITEN's students
- This system can be used once for a student. They need to enter the election website, after doing the vote, their username automatically being tracked by and can't do the vote anymore. Only registered student can use this system.

1.4.2 User scope

- Students need to log on to the system first. If the system can access their name in the database, so they can continue with the election process.
- Students need to open the link to the election's site so they can vote there
- Student must log on to the system before can proceed with voting
- Students can view the profile of the candidates

1.5 Expected benefits

With the development of this system, it is hoped that the system will reach the goals that is mentioned earlier. It is expected the system to function well without interruption. The interface will be created mere to the election environment so that students still can feel the election even just do it in front of computer. The system will be developed as simple as possible to help user use the system easily. This is a web based application that can be used to ease the students besides giving a better and more flexible way to execute the election program. Terms and conditions are applied in this system.

CHAPTER 2

RESEARCH AND LITERATURE REVIEW

2.1 Research Methodology

Research can be described as a process of inquiry aimed at discovering, interpreting and revising facts. The main objective of research is to represent a new knowledge to be known. Research or data gathering methodology will produce a better understanding of events, behaviors and theories of certain field of study. Information gathered through various methods and findings are analyzed to determine the result. There are a few methods that are implemented and discussed in this chapter.

2.1.1 Interview

Interview is a conversation between two or more people where questions are asked by the interviewer to obtain information from the interviewee. Usually the objective of the conversation is structured. The information from the interviewee will be collected as knowledge to proceed with other stages of development. There are interview for recruitment purpose and for research purpose.

2.1.2 Observation

Observation is an activity whereby a person watches carefully the way something happens or the way someone does something, especially in order to learn more. There are two types of observation and that would be direct and indirect observation. Direct observation is where a person or investigator is actually present during the task. On the other hand, for indirect the person view the task by watching video. The person is not present during the task is done. The method is useful early in user requirement specification for obtaining qualitative data for example to know how the voting system is done.

2.1.3 Questionnaire

A questionnaire is a research instrument consisting of a series of questions and other prompts for the purpose of gathering information from respondents. Although they are often designed for statistical analysis of the responses, this is not always the case. Questionnaires have advantages over some other types of surveys in that they are cheap, do not require as much effort from the questioner as verbal or telephone surveys, and often have standardized answers that make it simple to compile data. However, such standardized answers may frustrate users. Questionnaires are also sharply limited by the fact that respondents must be able to read the questions and respond to them. Thus, for some demographic groups conducting a survey by questionnaire may not be practical.

2.1.4 Other source of information

There many path and ways to find and dig the information. Nowadays, to find the common information or knowledge, there is no need to go to the library or bookshop anymore. People can use their fingers to browse the Internet.

2.1.1.1 Surfing the internet

Most of people in the world today use the Internet as a medium to do any transaction or anything that related to it. The students especially use the Internet regularly to be updated with their studies. The Internet is one of the main sources to find out any information. It is like a bank of information and it is also utilized for data collection. Data from the Internet is very informative and useful to everyone. Information from the Internet is very helpful in understanding the existing technology that has been used widely such as 3G. On top of that, browsing the Internet, gives knowledge in understanding on networking concepts, new features of development tools, new and existing security system and many more. Basically, there are many things that can be found in the Internet.

2.2 System Development Methodology

System Development Life Cycle (SDLC) is a common methodology for system development in many organizations; it features several phase that mark the progress of the system analysis and design effort. The SDLC is important for every project because it has the phases of creating a project from planning, analysis, design, implementation and maintenance. There are many models of SDLC such as [Figure 2.1]:-

- Waterfall model SDLC
- Evolutionary model SDLC
- Spiral Lifecycle Model
- Rapid Application Development
- Throwaway prototyping model
- Reusable Software Model

Between all the SDLC listed above, there are three SDLC that is famous used by most developers. So, in this report I choose to describe the three of the most popular SDLC. The following subtopics are the explanations about those three famous SDLC that are Waterfall Model, Evolutionary Prototyping Model and Spiral lifecycle Model.

2.2.1 Waterfall Model SDLC

A classic model of SDLC, with a linear and sequential method has goals for each development phase. The waterfall models simplify task scheduling because there are no iterative or overlap steps. One drawback of the waterfall model is that it does not allow for much revision. This model is well suited to projects that have low risks in the areas of user interface and performance requirements, but high risk in budget and schedule predictability and control.

The advantage of waterfall development:-

- Allows for departmentalization and managerial control.
- A schedule can be set with deadlines for each stage of development
- A product can proceed through the development process

- Theoretically it can be delivered on time.

2.2.2 Evolutionary Prototyping Model

Evolutionary Prototyping Model is used in projects that have low risk in such areas such as losing budget, schedule predictability and control, large system integration problems, or coping with information but high risk in user interface.

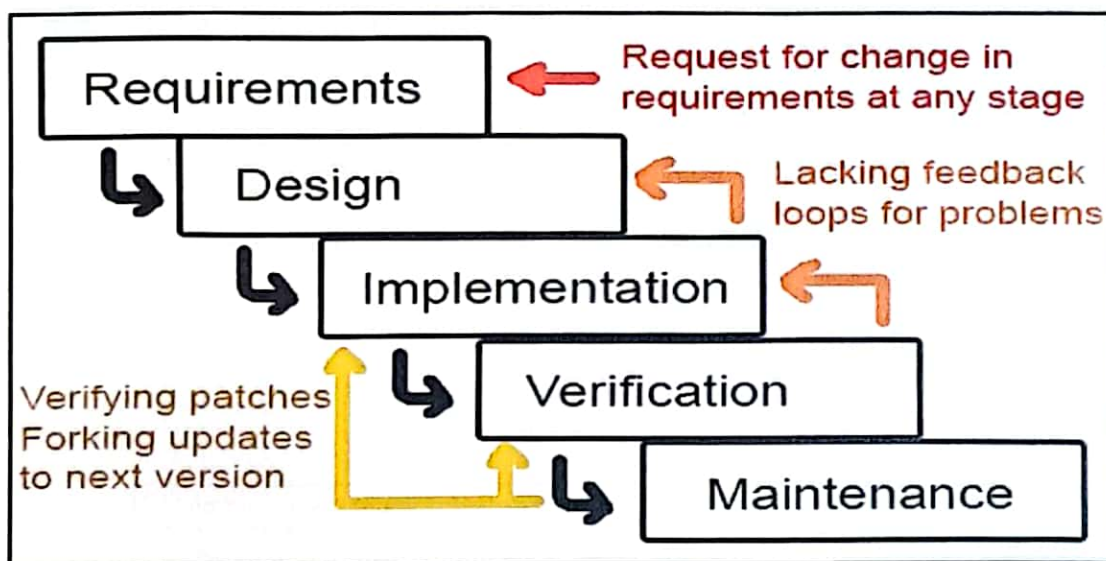


Figure 2.1: Waterfall Model

The advantage of Evolutionary Prototyping Model:- [Figure 2.2]

- Reduces development time
- Reduces development costs
- Requires user involvement

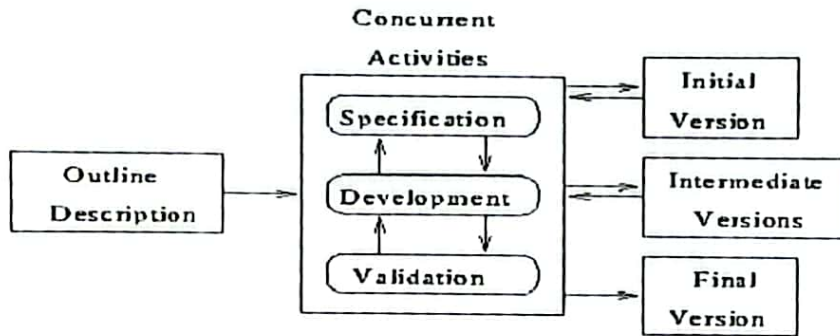


Figure 2.2: Evolutionary Prototyping Model

2.2.3 Spiral Lifecycle Model

The Spiral Lifecycle Model is the combination of the classic waterfall model and an element called risk analysis. The model consists of four main parts and the process is shown by a continuous loop going from the outside towards the inside [Figure 2.3]. This shows the progress of the project.

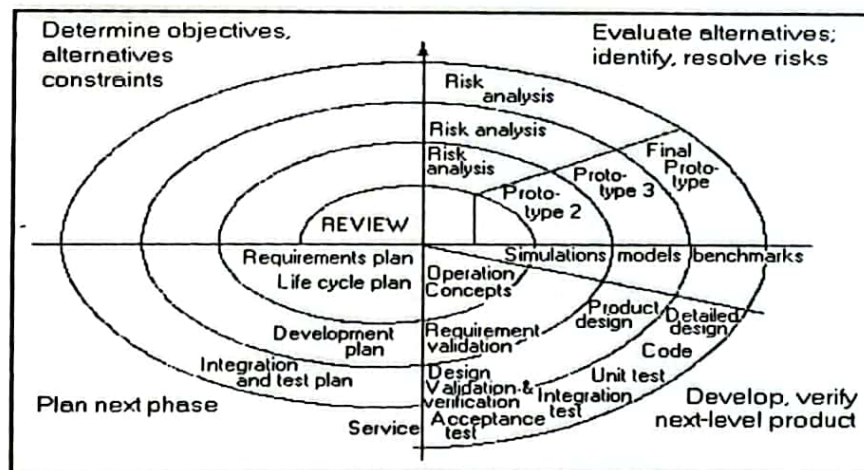


Figure 2.3: Spiral Development Model

The advantages of spiral lifecycle model are:-

- Good for large and complex projects
- Direct consideration of risks at all levels greatly reduces problems
- Estimates get more realistic as work progresses, because important issues are discovered earlier.
- It is more able to cope with the changes that software development generally entails.
- Focus on early error detection and design flaws.
- Can be used for hardware and software development

2.3 Literature reviews on topics related to the project

2.3.1 Online system (web based)

The World Wide Web commonly shortened to the Web is a system of interlinked, hypertext documents accessed via the Internet. With a web browser, a user views web page that may contain text, images, videos, and other multimedia and navigates between them is using hyperlinks. It is usually written with html (hyper text markup language), more advance language is PHP, JavaScript, and ASP.net. A website is hosted on a computer system known as a web server, also called an HTTP server, and these terms can also refer to the software likes Apache or Microsoft Internet Information Server (IIS) that runs on these systems and that retrieves and delivers the Web pages in response to requests from the website users. Web-based application supporting business-to-business

and business-to-consumer electronic commerce, data management, customer relations, supply chain management, and enterprise are but a few of the many examples in which these systems are in operation. Majority of existing industries today are taking advantage of the growth in e-business.

2.3.2 Voting in manual

2.3.2.1 General of voting

One of the fundamentals rights as a citizen of a democracy country is the right to vote for the ruling government. As a student that lives in the university or college environment, there is also the right for them to vote for the people that will represent them to express their views and needs to the Student's Affair Department. Voting is the way for student to state the satisfaction or dissatisfaction to the management part that ruling the institution. There are many types of voting that have been applied.

2.3.2.1.1 The secrecy issue

The secrecy is an important issue in voting. It is important so as to protect voter from undue influence, persuasion, coercion and bribery during voting. It is also important to protect the voter's right to express their opinion. This system need to be logged on as valid user to enter the voting system.

2.3.2.1.2 The accuracy issue

The procedure for conducting a democratic election process is generally the same for any voting system. Normally, this procedure involves certain tasks like registering the eligible

voters, validating the voters' credential, voting ballots and tallying ballots. In addition to the task above, there are several tasks that need to be carried out prior to the Election Day by the election authority. This is including the determination of the boundary of each precinct, duration for voters' registration, election date for voting and duration for nomination of candidates. In order for an individual to be eligible to vote on the election date, he or she must register themselves to the election authority.

2.3.2.1.3 Registration

During the registration, eligibility criteria set by the authority, for instance age and citizenship will be verified for each voter before their name can be recorded in the registration list. This list of registered voting can be viewed to public if there are some problems or invalid data so that it can be challenged.

2.3.2.1.4 Election Day

On the Election Day, voters will be verified before there are allowed to cast their vote. During this task, voters' credential will be validated by the registration list. At the same time, it will keep track of who has voted to prevent from multiple casting of vote by a single voter. After that, the voter can cast their vote. The election authority will then collect the votes and then tallied. Once the election is certified, then it will be announced to public.

2.3.3 Voting in UNITEN

As a student in University, election is an important event to for students to take part to select the new committee of SRC. The procedural of the voting system in UNITEN will be elaborated below. It will touch all the necessary things such as requirement for voting, the election process and others.

2.3.3.1 Requirement for the election

During the Election Day, student who want to do the voting need to fulfill certain criteria to make sure their votes are validated. Student's ID need to being brought and they must check their name in the list at the election centre. If the process is validated, then they can continue with the vote process.

They must mark the voting with the symbol 'X' within the given area of the ticket. The mark can't be less or over the mark area. If it happens, voter will be given one more chance to vote. There are only two trials for a voter to vote in case the first trial is failed. The vote's ticket can't be writing or draw anything and must be marked exactly in the given area. It will be rejected if something like that happened.

The can view the candidate's list at the centre before do the voting. After done the voting process, the voter is declared as finished voting and can leave the election centre.

2.4 Reviews on the similar system

To achieve the understandings and to generate ideas on development process, the similar system can be used as a guide to design the internal and external of your project. It can be compared to produce the pros and cons of the system.

2.4.1 Review on www.rockthevote.com

The rockthevote.com website is a medium to vote for American. The US people can vote for their election through this site. When entering this site for the first time, the sites offer to sign up with the system. There are also other features than can be chosen such as enter the site to see what the site is all about, register to vote, check their blog and join their group. If not register as a voter or as a member, user also can enter the site. There are also search engine at the main page to search with the Google or search within the rockthevote website.

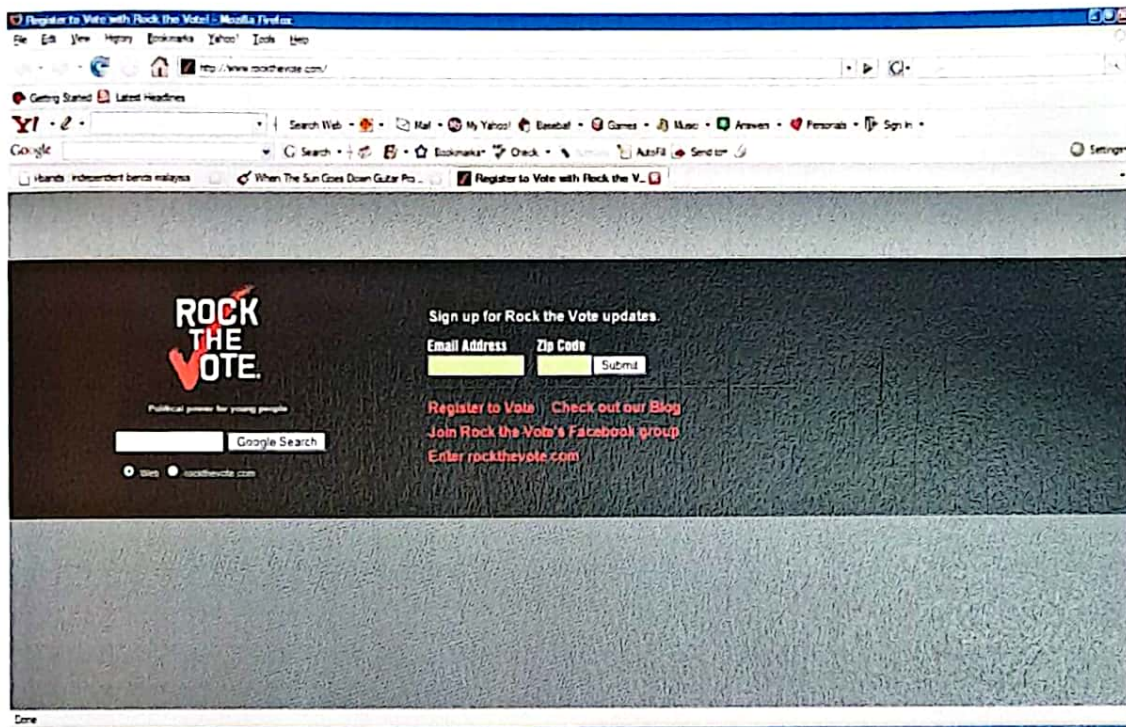


Figure 2.4: Main Page of www.rockthevote.com

In the website, there are containing few features for example the reason of vote, info of the voters, action of vote and many more. To register as a voter, user needs to fill out the given form. It will ask user to enter the personal details. After finish with the registration process, user can start vote using the rockthevote.com website. The result will be displayed after the election end.

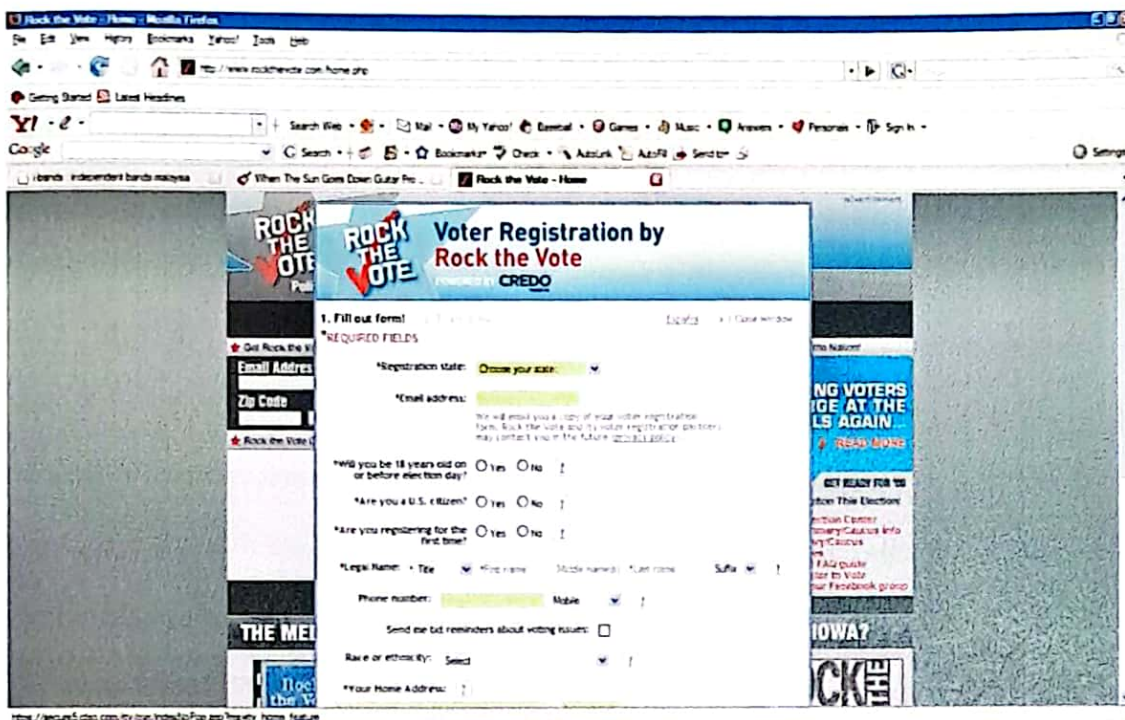


Figure 2.5: Register with the www.rockthevote.com

2.5 Review of Possible Development Tools and Software

2.5.1 PHP

PHP stands for PHP: Hypertext Processor or also known as Personal Home Page tools. It generally runs on a web server and it creates web pages, command line scripting and client side GUI applications as a part of three primary uses of PHP. It is also very useful for adding simple interactivity or communicating with database. It is widely used open source software and because of that, it will be constantly evolved. More importantly, bug fixes are being regularly implemented to the core libraries, which are freely available. PHP is originally designed as a high level scripting language for producing dynamic web pages. It does not require rigorous training and a long time of practice to create anything

useful of publicly displayable because of its resemblance to C programming. On top of that, it supports cross platform technologies which allow it to run in many different machines.

2.5.2 MySQL

MySQL is a free relational database, which communicate using SQL code. MySQL can be used it to store content for your website, and can accessed directly using PHP. Its popularity as a web application is closely tied to the popularity of PHP, which is often combined with MySQL and nicknamed as the 'Dynamic Duo'. MySQL can be certified as the most used database in the world. MySQL is also key part of Linux, Apache, PHP, Perl and Python. As fast growing open source enterprise software stack. More and more companies are using Linux, Apache, PHP, Perl and Python as an alternative to expensive proprietary software stacks because of its lower cost and freedom from lock-in. The claim made in many books that are MySQL easier to learn and more used other than many database applications. It also constantly evolved and improved while remaining its fast and safety capability.

2.5.4 Java script

JavaScript is a scripting language that is a system based on programming codes, created by Netscape that can be embedded into the HTML of a web page to add some more functionality. JavaScript should not be confused with the Java programming language. In

general, scripting languages such as JavaScript are easier and faster to code than more structured languages such as Java and C++. It adds interactive functions to HTML pages, which are otherwise static, since HTML is a display language, not a programming language. JavaScript is easier to use than Java, but not as powerful and deals mainly with the elements on the Web page. On the client side, JavaScript is maintained as source code embedded into an HTML page. On the server side, it is compiled into intermediate language called "byte code", similar to Java programs. JavaScript evolved from Netscape's Live Script language. The source code of a Java program is compiled into byte code which can reside on any hardware platform. In order to run the byte code, it must be compiled into machine code either ahead of time like a C/C++ program, just before it is needed or via a Java Virtual Machine (JVM), which is a line-at-a-time interpreter. JavaScript source code is not compiled into byte code. It is embedded within an HTML page and is primarily used to manipulate elements on the page itself. For example, JavaScript is widely used to provide drop-down menus and other interactive events on the page. Java embodies the "write once-run anywhere" model.

2.5.6 Adobe Photoshop CS3®

Adobe Photoshop CS3® is a professional photo editing software. It is also one of the most popular graphics software programs available for creating Web images. It gives variety of features for users to use in order to edit images and create credible graphics easily. It contains variety of image editing features, one of the Adobe Photoshop CS3® most

powerful tools capabilities is layering, which allows images to be rearranged under and over each other for placement. Beside that, Adobe Photoshop CS3[®] also offers unlimited creative option such as the ability to apply multiple effects to the pictures making the pictures look more realistic. This can be done effortlessly because Adobe Photoshop CS3[®] provides a comprehensive toolset, enhanced precision and powerful creative options to help creating quality images.

The Adobe Illustrator CS3[®] offers the choice in the combination of creative tools you that can be used to design disciplines, the richness and scope of content you create. This new version has been release includes six editions, each of them combining tightly integrated, industry-leading components that enable you to handle virtually any creative task. Together these six editions of Creative Suite 3 address virtually every creative discipline and empower to work more efficiently with the creative idea, collaborating more closely to produce engaging experiences and creative vision more easily and effectively than ever before.

CHAPTER 3

ANALYSIS

3.1. The chosen methodology

In this chapter, the author had chosen the methodology of choice which is Waterfall model. The details of every phases related to the project is summarized in this chapter. The table of comparison of SDLC is also included in this chapter to give a clear perspective of why the author had chosen such method.

3.1.1 The Waterfall Model

In this project, the methodology that is going to be used is the waterfall model. It's basically separates and distinct phases of specification and the development of the project. The waterfall model is chosen to assist the development of this project because it is flowing steadily downwards through each phase and the developer can go back to the previous phase if there is any changes should be made. By using this model, the development flow of this project will be more accurate and easy to manage from time to time

Criteria / methodology	Waterfall Model	Evolutionary prototyping model	Spiral lifecycle model
Specification	<ul style="list-style-type: none"> • Simplify task scheduling because there are no iterative or overlap steps. • well suited to projects that have low risks in the areas of user interface and performance requirements 	<ul style="list-style-type: none"> • used in projects that have low risk in such areas 	<ul style="list-style-type: none"> • combination of the classic waterfall model and an element called risk analysis • consists of four main parts and the process is shown by a continuous loop going from the outside towards the inside
Advantages	<ul style="list-style-type: none"> • Allows for departmental ization and managerial control • A product can proceed through the development process • A schedule can be set with deadlines for each stage of development • Theoretically it can be delivered on time 	<ul style="list-style-type: none"> • Reduces development time • Reduces development costs • Requires user involvement 	<ul style="list-style-type: none"> • Good for large and complex projects • Direct consideration of risks at all levels greatly reduces problems • Focus on early error detection and design flaws

Disadvantages	<ul style="list-style-type: none"> • high risk in budget and schedule predictability and control 	<ul style="list-style-type: none"> • need to implement the prototype many time before get the perfect one 	<ul style="list-style-type: none"> • high risk in budget and schedule predictability and control
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Table 3.1 Table of comparison SDLC methodology

3.1 .2 Description of using the methodology

3.1.2.1 Requirement specification phase

This phase produces a list of information which is related to the project and the requirement needed to develop the project. This involves describing the functions needed, possible extensions to it, the documentation needed and performance requirements. This phase will create an overview of the project and a great requirements specification will produce a great product. The result of this phase is a requirements specification document which will describes what is needed.

3.1.2.2 Analysis phase

During this crucial phase, the source of the problem is identified, the entire problem will be defined and the possible solution is determined. The phase may include specific research techniques such as analysis on needs and task analysis. The outputs of this phase often include the instructional goals and list of tasks to be instructed. These outputs will be the inputs for design phase. The contents of the project are identified. All information gathered in previous phase is converted into useful knowledge.

3.1.2.3 Design phase

In this phase, inputs from previous phase are studied and a system design is prepared. System design help specifying hardware and system requirements and also helps in defining overall system architecture. It involves defining the hardware and software architecture, designing data storage containers and constraints, choosing the programming language and come out with strategies to handle the possible upcoming issues. This is also the stage at which user interface design is addressed, including issues relating to navigation and accessibility. It will act as a draft of what the interface should look like when the real application is developed. The output of this stage is one or more design specifications, which will be used in the next phase of model.

3.1.2.4 Development phase

This step consists of actually constructing of the product as mentioned in the design specifications developed in the previous phase. On receiving system design documents, the work is divided in modules/units and actual development is started. The system is first developed in small programs called units and will be tested for its functionality. This is referred to as unit testing. Unit testing is mainly verifies if the modules/units satisfy the user requirements. Each unit are integrated into a complete system during this phase and tested to check if all modules/units coordinate between each other and the system as whole behaves as the specifications. The actual project will be completed in this development phase.

3.1.2.5 Implementation and maintenance phase

The implementation phase refers to the actual delivery of the instruction. The materials from the development phase are delivered to the user. Delivery will take place via the Internet. It involves preparing or uploading the product for the internet users and potential members.

These phases in the waterfall model are virtually a never ending phase. Generally, problems with the product developed which are not found during the development life cycle come up after its practical use starts, so it will need future enhancement or improvement of the product. It involves making modification to the system or an individual component to alter attributes to alter attributes or improve performance. Not all the problems come in the picture directly but they arise time to time and needs to be solved. Here, this process is referred as maintenance.

3.2 Survey and results

To gather the requirements from the user, the survey related to the system has been done. This survey involves thirty students that is randomly picked. It is because to make sure the information will be found from different places of accommodation and colleges. This will satisfy the consistency of the data received. So, the thirty students are represented as the voice or opinion of others. Below is shown the statistics and summary of the survey result.

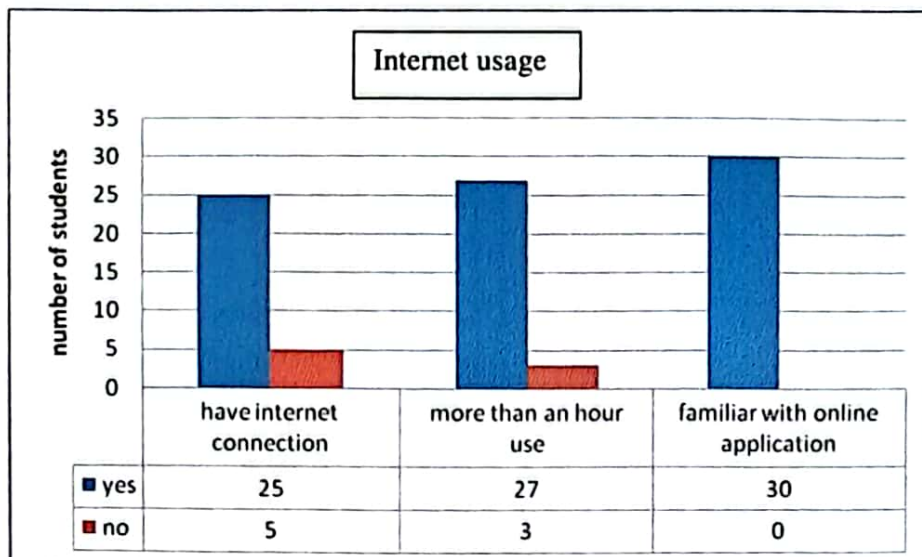


Figure 3.1 Chart of the internet usage

Base on the chart above, most of students have the internet connection ay their apartment or home. It shows that the internet connection is like a normal utility that students should have. Majority of them use the internet more than an hour per day. They use internet to do research, surfing for entertainment and others things related to it. As a student in UNITEN, they have to register their subject every end or early semester by using online system registration subject provided by the management of UNITEN. So, they have no difficulties or in other words they are familiar with the online application system.

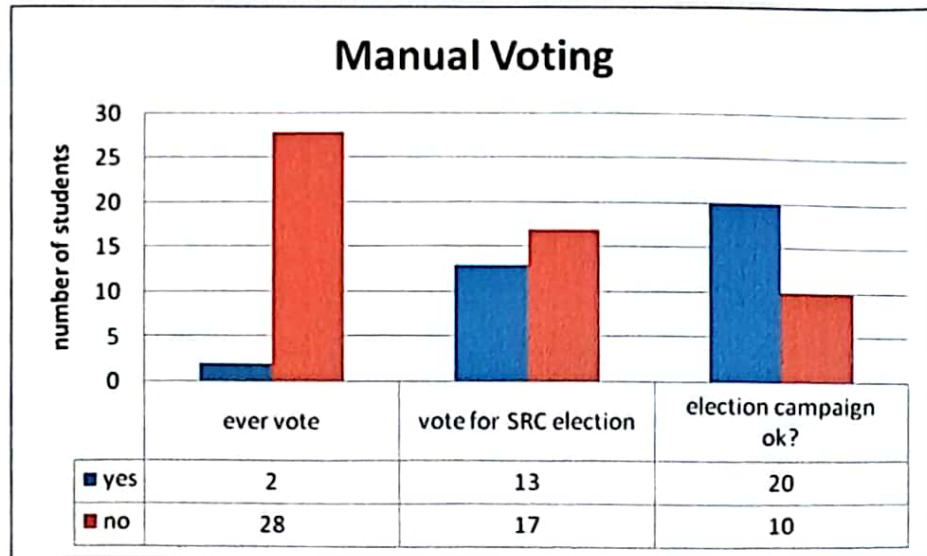


Figure 3.2 Chart of the manual voting

In this part of questionnaires, I have concluded the manual voting style to be implemented as online voting. Large numbers of student never go for voting outside campus. Some of them not yet reach the mature age for voting and that is why they do not know much about the voting system and the environment for voting itself. Meanwhile in the campus election, over than half of students never vote during the SRC election. Here, the weaknesses of the manual voting of SRC election are revealed. Too much procedural and obstacle face by students to attend and vote during the election. The campaign already attracts the students to come and vote for the candidates. But the style of the attracting students may be the cases of students do not want to involve. Some said that the promotion only has been done near the election date.

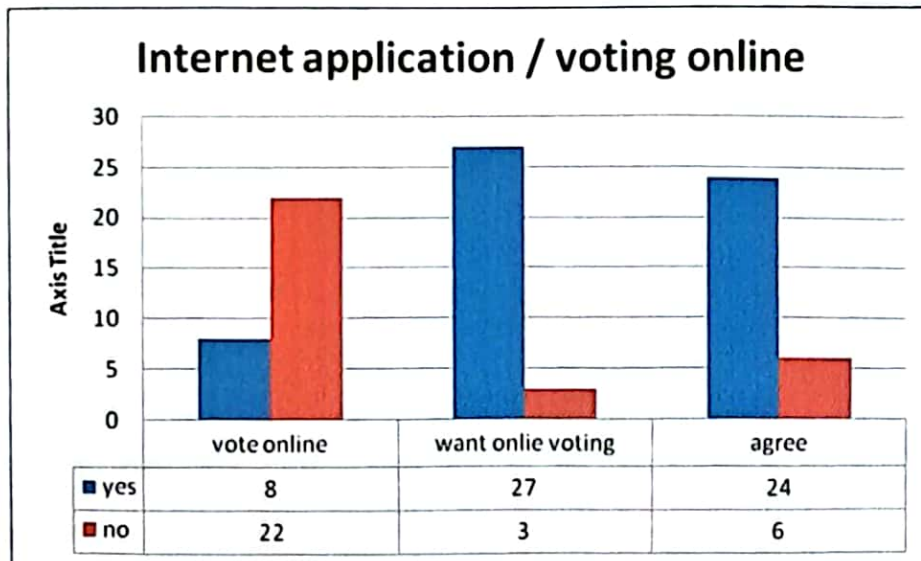


Figure 3.3 Chart of Internet applications / voting online







The last part of the questionnaires is asking students about the voting online. Only some of the students that have been surveyed have the experience of voting online. Many voices shouted that they want to try the online voting system in UNITEN. They agree that if the new system of election is implemented, the number of students going for voting will achieve the number of the UNITEN's students.

3.3 System functionalities

The functionalities of a system represent the way of the system works. It can be divided into several elements of functions that are going to be used in a system. To get the better functionalities implementing in the system, a comparison of functional systems that are used in a number of websites are made up to ease the process of selecting the ideas.

Table 3.2 Table of comparison of functional system used by the three websites

Element	www.i-bands.net	www.ultimate-guitar.com	www.rockthevote.com
Security measure			
• Username	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
• Password	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
• Validation key	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
• Registration	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Application			
• Download	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
• Upload	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
• Streaming	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
• Forum	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
• Contacts user and admin	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
• Chart	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
• Newsletter	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
• Links	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
• Guest book	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
• Private Search engine	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

<ul style="list-style-type: none"> • General search engine 			<input checked="" type="checkbox"/>
Page style <ul style="list-style-type: none"> • User friendly • Icon / button • Theme • Picture • Multimedia and animation • Colorful 	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
Voting features <ul style="list-style-type: none"> • Login to vote • View the choices to vote • Current result shown • Vote more than one time for a user 	 <input checked="" type="checkbox"/>  <input checked="" type="checkbox"/>	 <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>  

3.3.1 Chosen functional system

After making a selection of the functionalities of the system, the element of the functionalities is elaborated and the functionalities that met the requirements will be chosen.

3.3.1.1 Security measure

A trusted online system should have good security manner to convince their end users. It is important to protect their account or data in the system from threats or any malicious program. Registration process is always needed to verify the users. The system should provide the secret key to the registered user to access the system and it can make others cannot enter the system easily. The key validation process that is used to prevent the system from being hacked can make the measurement of the security become higher and tougher.

3.3.1.2 Application

Applications on an online system are the things that will make end users love to use it. The applications should work properly so that users would not regret to use the systems. End users like to use the interactive system that is mean the system will reflect with whatever things or action that we have done and deliver the result or something to us. For instance, when we download something from certain site, we will get the data to be saved to our computer. The application such as forum also is the main attraction to the end users so they can interact with each other through the system.

3.3.1.3 Page style

The style of the page could ruin the interest of the users to use the systems. Most of developers always simply take the easy way when decorate a page. So some page or website will look dull and not interesting. The page represents the environment to suit the user with the system. If the page is crowded with unnecessary things, it will difficult the users to use and would bring the users to fail using the system. The arrangement of the icons and buttons for instance, should be the right way to ease the users does the transactions or anything is representing it. In other ways, a user friendly page will become more attractive and help users to do transaction without having difficulties.

3.3.1.4 Voting features

For developing this system, there are some criteria that have been chosen to be implemented in the system. Registration for the users is important to get the valid and maintain the fairness of the election. To ease user doing the election, the list of candidates will be displayed with the profile and it can help user to choose the correct person that they want to vote. User can only vote once and can't have two votes for a user. The rate features is similar with the vote features just a few things is different. The rate features will show the current result after the process is done. Unlike voting system, the privacy for the result is concerned so it will not be displayed until finish the election.

3.4 Development tools and software to be used

A fundamental decision is which development tool should be used to develop this project efficiently. There are hundreds of development tools and software on the market to choose from, which need to be reduced to only the necessary ones. These are the criteria that can be used when choosing the right development tools and software.

3.4.1 Expertise of developer

The degree of technical expertise possessed, or which can realistically be acquired, by the developer. If the developer has used particular tools in the past time may be saved by using them again, even if they are not as technically suitable for the job as other tools.

3.4.2 Suitability

Does the tool possess the features necessary to implement the courseware is one of the things that we should consider. Some tool is great in certain things but weak in another area. Tools which is the most suitable to do the job should be given the opportunity to do so.

3.4.3 Ease of interface design

The majority of modern development tools are developed for graphical environments such as Microsoft Windows and the Macintosh, where the application interface is crucial importance. Most modern development environments allow the developer to draw and manipulate objects such as buttons, dialogues, and others on a screen without having to write code for them. This makes the process of interface design, interface editing, and

prototyping significantly easier, at the possible cost of hidden code, where internal code of the object is hidden from the developer.

3.4.4 Future of the environment

Many proprietary development environments have become extinct over the years, either because the firm went bankrupt or simply ceased to support future development of the tool. This consideration will help to choose tools which have large installed bases against newer authoring environments.

3.4.5 Technical support

The availability of the technical support from the tool supplier or elsewhere is also a factor when choosing a development tools. This should be an important factor in tool selection as significant time and money costs can be incurred if the developer is unable to access expertise on the tool when problems arise, and the developer cannot find the best ways to implement features.

3.4.6 The chosen development tools and software

Every possible development tools and software descriptions has been given in previous chapter. These tools and software are selected because they are most suitable tools to execute the specific tasks required by the project. They also fulfill the criteria when choosing the right development tool. Below are the lists of the chosen tools which will be used in the development of this project.

3.4.6 .1 To develop a web portal:

Microsoft Front Page, PHP, Java Script, Aranae, Notepad

3.4.6.2 To create images and photo editing:

Adobe Photoshop CS3®

3.4.6.3 Database & Web Server:

MySQL, Wamp Server 2.0 (Apache Server, phpmyadmin,php)

CHAPTER 4

DESIGN

4.1 Explanation of the proposed system

Through the analysis process, requirements are gathered by surveying the users. The methodology and functional system have been chosen base on the requirement that is compatible with the system. This system provides a login phase fore user. User need to be logged on before using this system. The entire requirement from the users will be verified during login process. Once user has the right to log on to the system, the user can either view the candidates first or can go straight do the voting. User can only vote once to a candidate.

The vote will be added to the candidate's data and can't be viewed by user until the end of the election period because of the fairness and security reason. Before the election starts, candidate need to upload their details in their profiles allocated in the system. It is used to be viewed by user during Election Day, so user knows what are the manifestos and details about the candidate. Administrator of this system will monitor the election process to prevent data redundancy and to make sure everything run smoothly. On the next subchapter, the design of the database, DFD and ERD of the system will be shown following by the interface design and the algorithm and flowchart of the system.

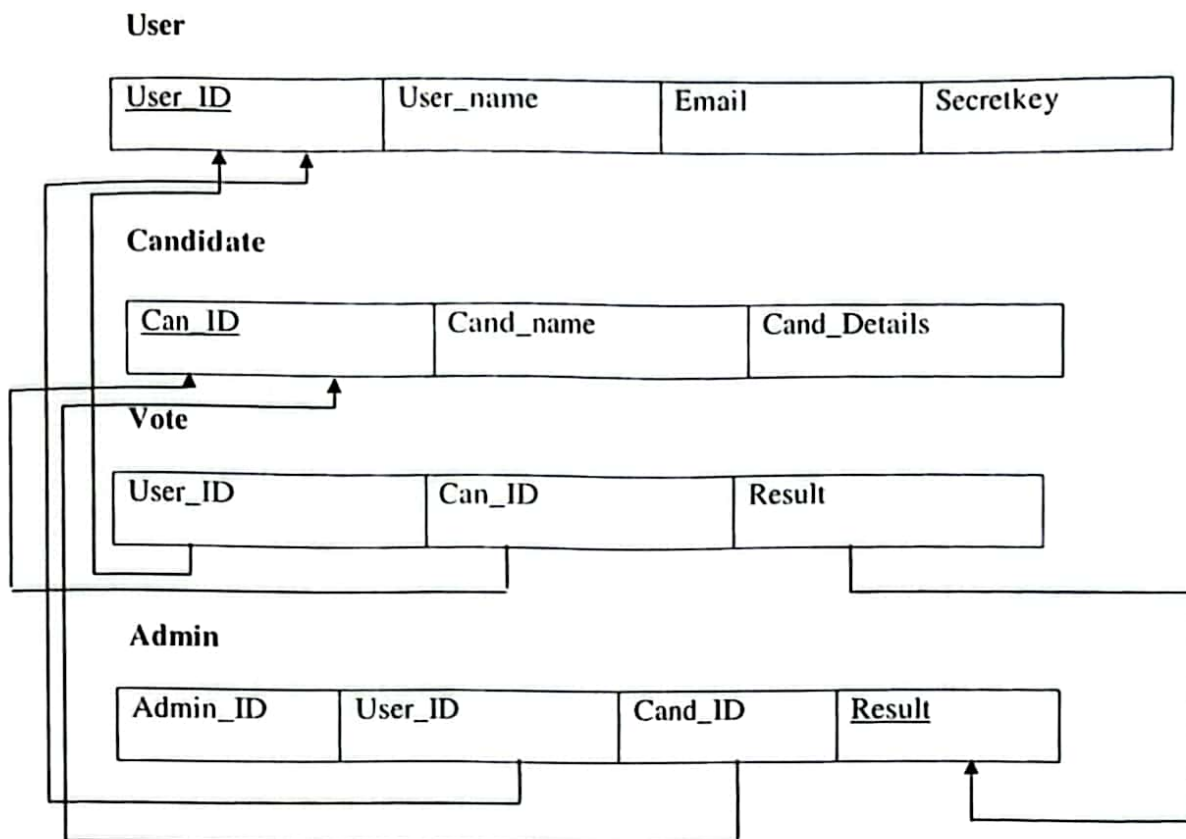


Figure 4.1 Database schemas for UNITEN e-ELECTION system

4.2 Entity relationship diagram (ERD)

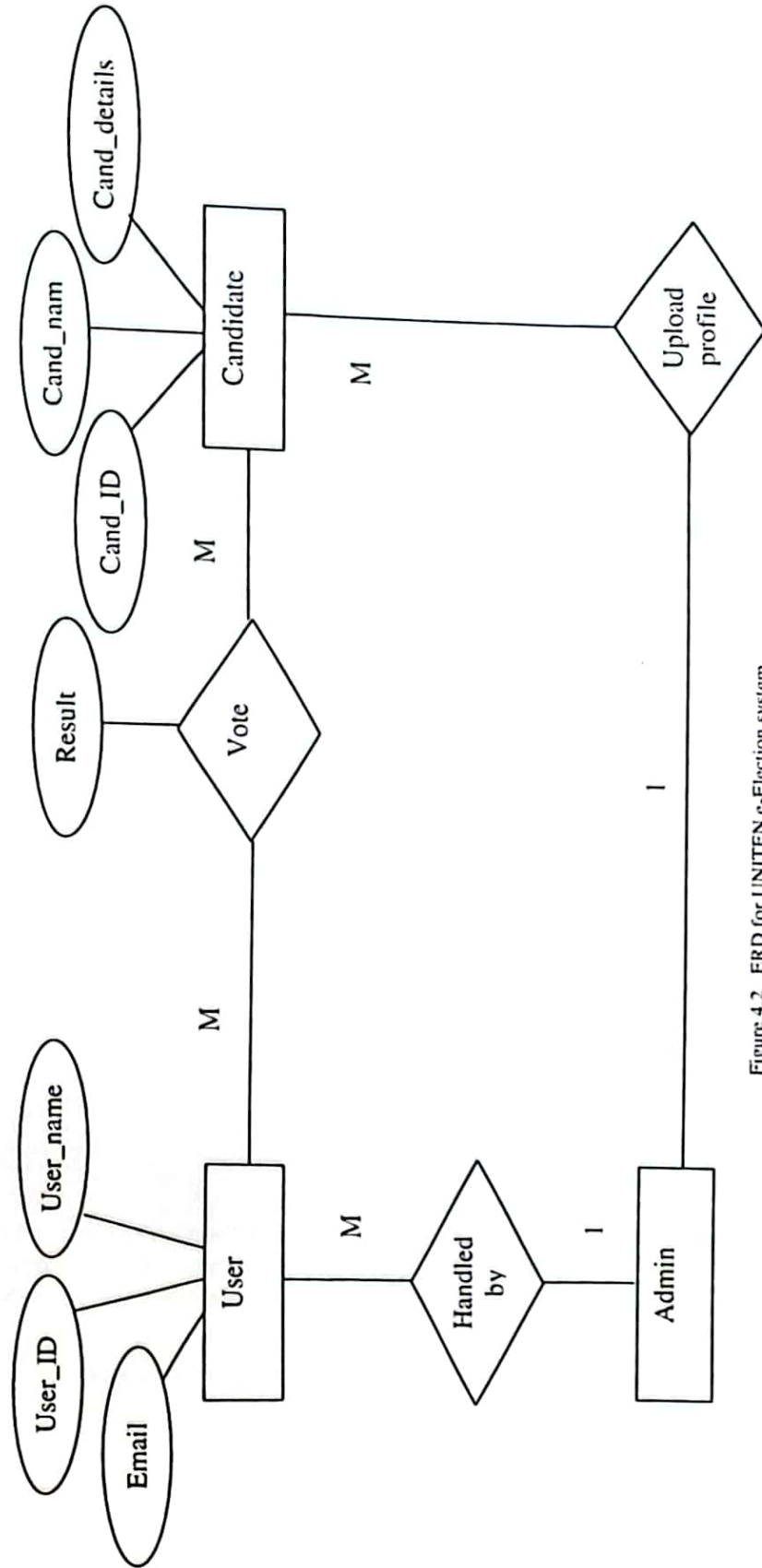
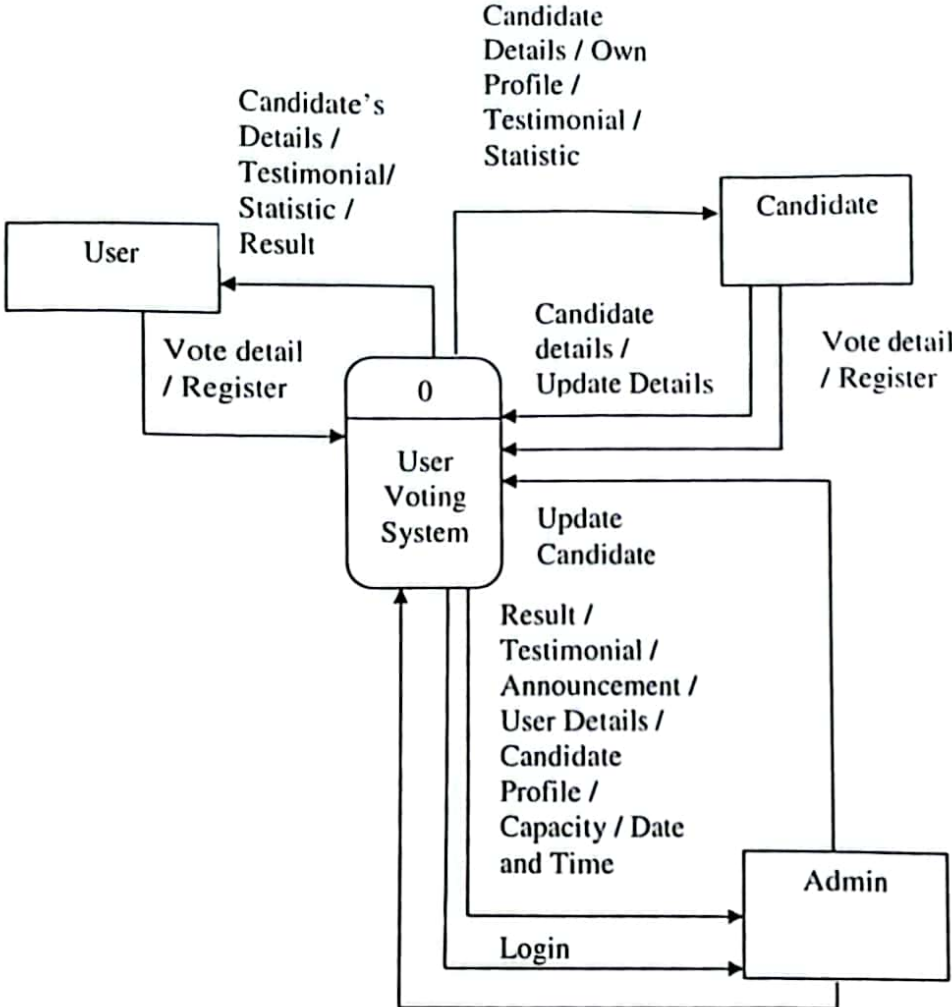


Figure 4.2 ERD for UNITEN e-Election system

4.3 Data Flow Diagram (DFD)

4.3.1 Context level diagram



User Details / Approve Testimonials / Set Date and Time / Approved Announcement / Delete User / Update Candidate / Publish Result / Calculate and display Statistic / Set Capacity

Figure 4.3 Context level diagrams for UNITEN e-Election system

4.3.3 DFD Level 1

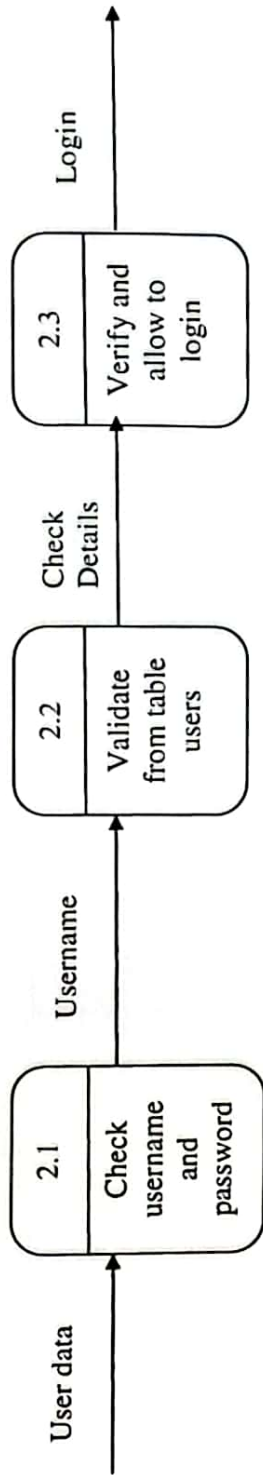


Figure 4.5 Excerpt from fully decomposed DFD level 1

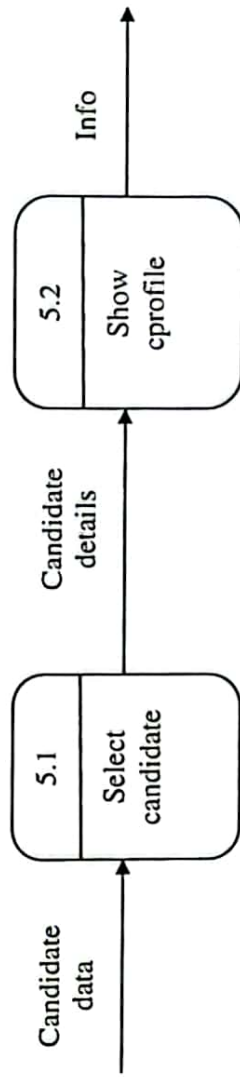


Figure 4.6 Excerpt from fully decomposed DFD level 1

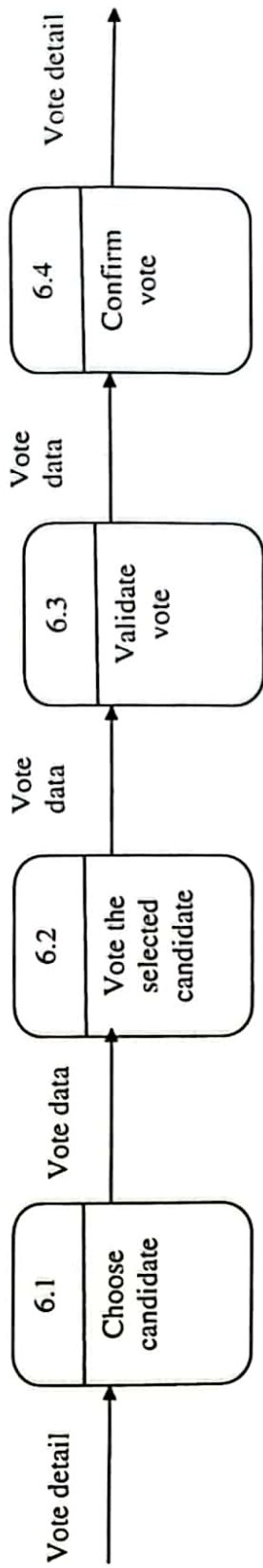


Figure 4.7 Excerpt from fully decomposed DFD level 1

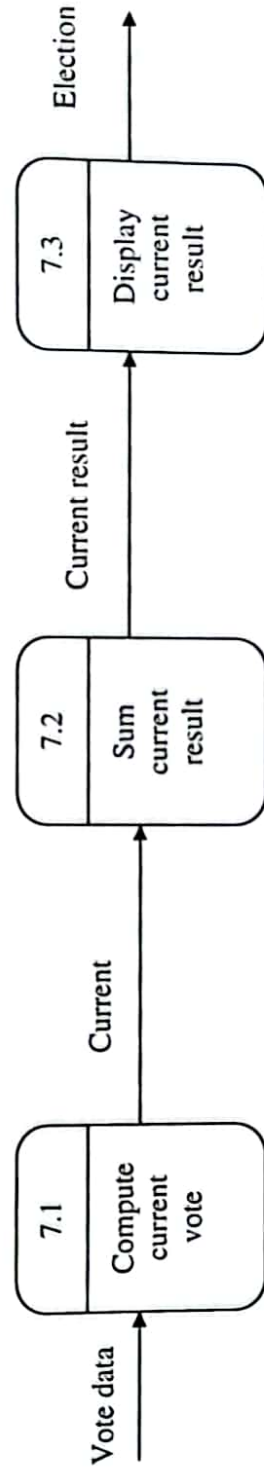
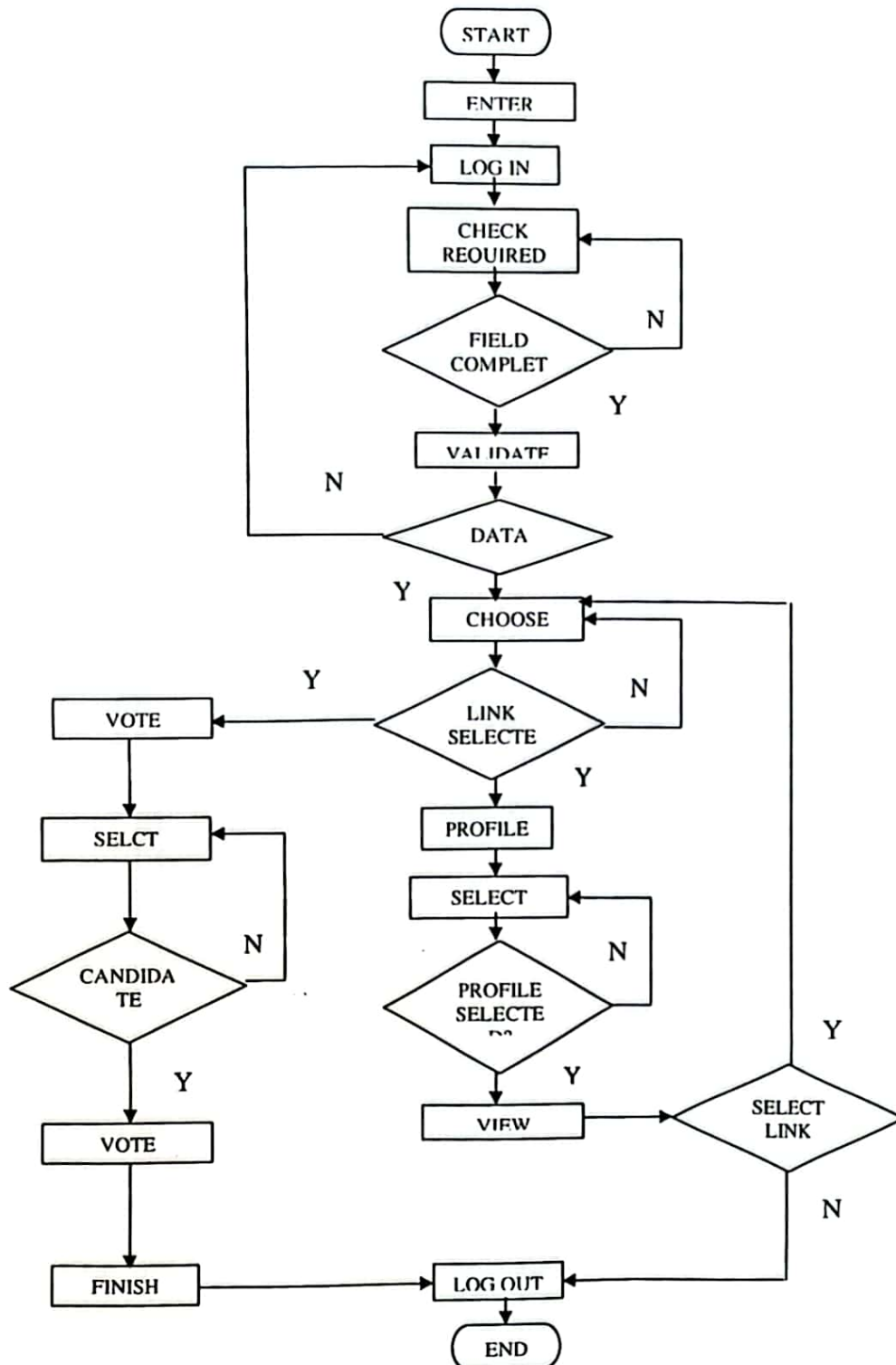


Figure 4.8 Excerpt from fully decomposed DFD level 1

4.4 System flowchart

Figure 4.9 System flowchart



4.5 Interface design

4.5.1 Main page

This is the main page of the UNITEN e-ELECTION system. User must log in to the system before use it.

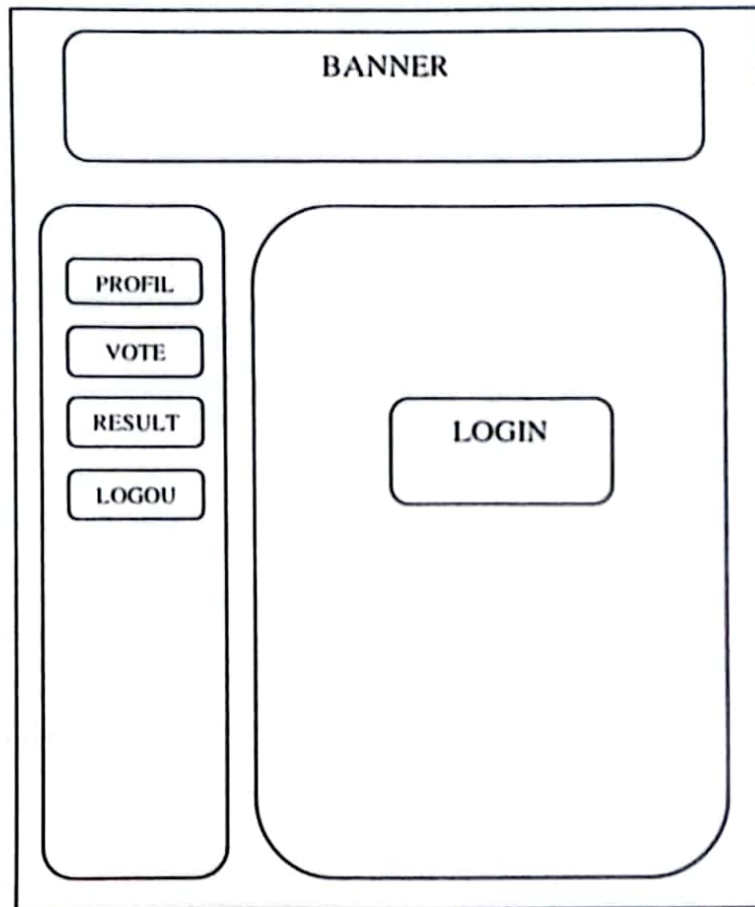
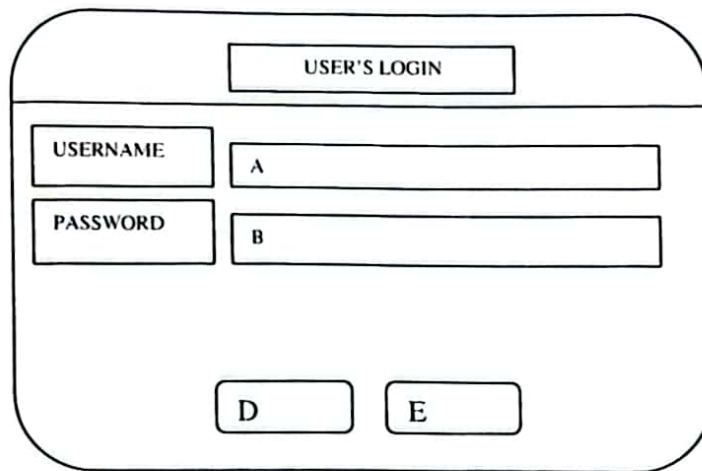


Figure 4.10 Main page

4.5.2 Login process

This interface will appear when user enters to the system. They have to login as valid user. So then they can use the system after login process is successful. Below is the description for this interface.



The diagram shows a login interface with a rounded rectangular border. At the top center is a rectangular box labeled "USER'S LOGIN". Below this, there are two rows of input fields. The first row has a label "USERNAME" on the left and a text input field containing the letter "A" on the right. The second row has a label "PASSWORD" on the left and a text input field containing the letter "B" on the right. At the bottom of the interface, there are two buttons: "D" on the left and "E" on the right.

Figure 4.11 User's Login Interface

A: User needs to fill the field with their username (Student ID)

B: Password for user's account

D: OK button. When finish fill up the fields, this button must be entered to proceed the with login process. If the student is log in the wrong time slot, it will count as invalid.

E: CANCEL button. If the users change his/her mind not to log in the system, then it will terminate the attempt to login.

4.5.3 Main menu

After successful with the log in process, user will face this interface. This is the main menu page where user can choose the link that they want to go. The description about this page is elaborated as below.

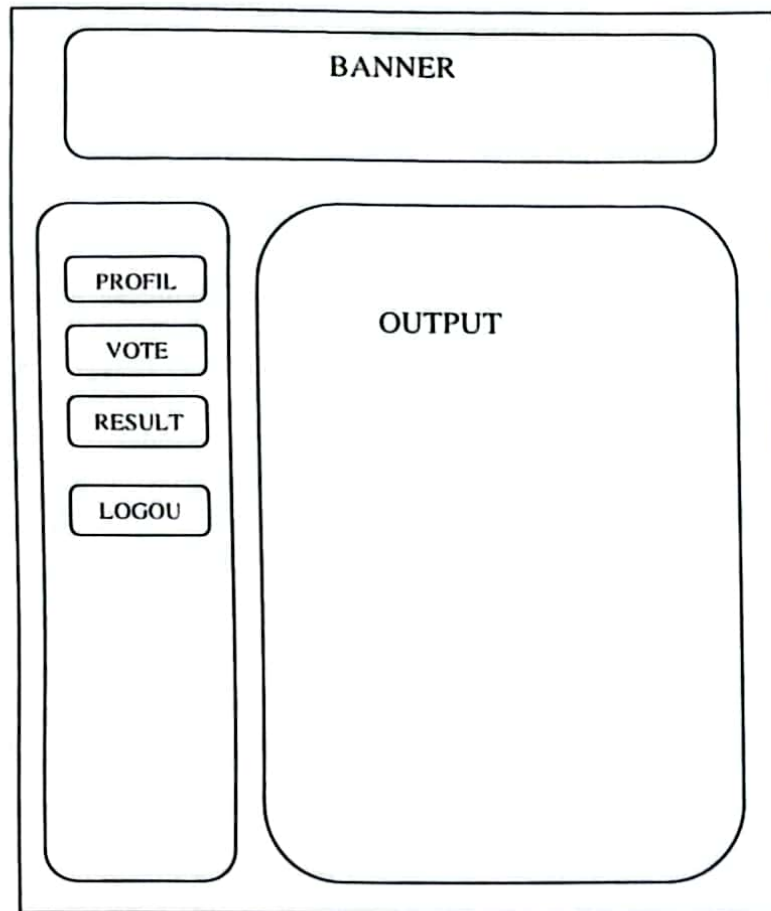


Figure 4.12 Interface of main menu

- **Banner.** It will display as something to be presented as the decoration of the page
- **Output for the chosen link.** This area will display the result for the link. Any transaction for the link will be in this area.
- **Vote button.** When users press this button, it will display the voting page at the C area. The transaction will be done by some requirements to be fulfilled
- **Profile button.** This button is linked to the candidate's profile. It will display the profile of each candidate that is requested by users

- Result button. It will display result after the election is end.

4.5.4 Candidate's page

This page is shown the candidate's profile. User will see this page when click to the button profile. It will appear in the output area. The details about this page are described below.

- Candidate's picture. Users will know better the candidates by their picture.
- Details for the candidates. This site includes the background of the candidates and the manifestos of the candidates.

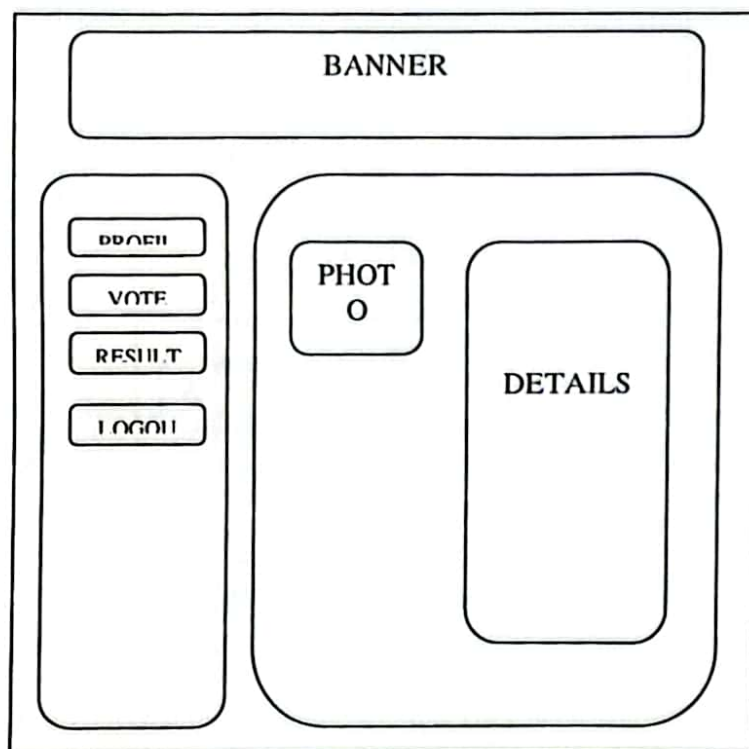


Figure 4.13 Candidates' page

4.5.5 Vote page

If the user clicks on the vote button, this page will appear. This is the page where user used to vote the candidates. The description for this page is described as below.

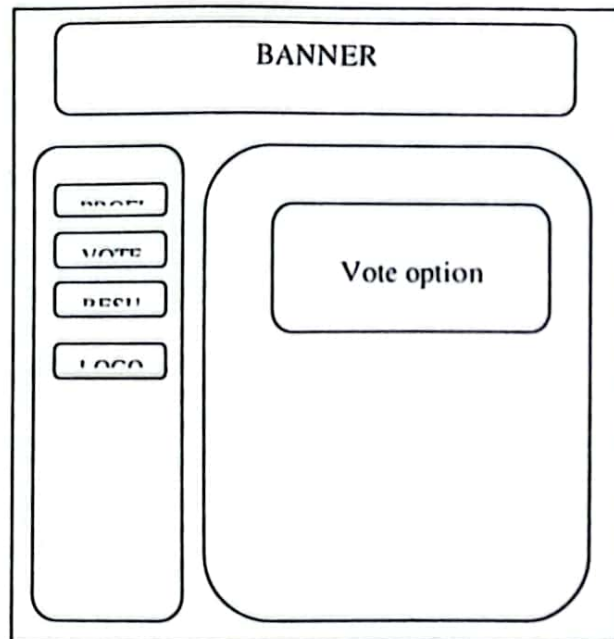


Figure 4.14 Vote page

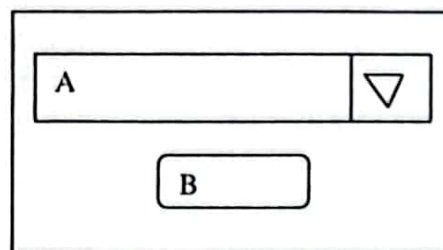


Figure 4.15 Name of candidate to vote

A: This scroll bar used to list the candidate's name. User need to choose the candidate's name to vote. If the name is not chosen, then there will no vote transaction has been done. Voters will be asked to choose the name if they want to vote.

B: The vote button. If the name is selected, then the voting process is done

4.5.6 Admin page

Admin page is used by the administrator to monitor and control the system. Normal user is not authorized to use this page without permission. And this page is not being publish to public. Anything related to the system will be referred here. Below is the description for this page.\

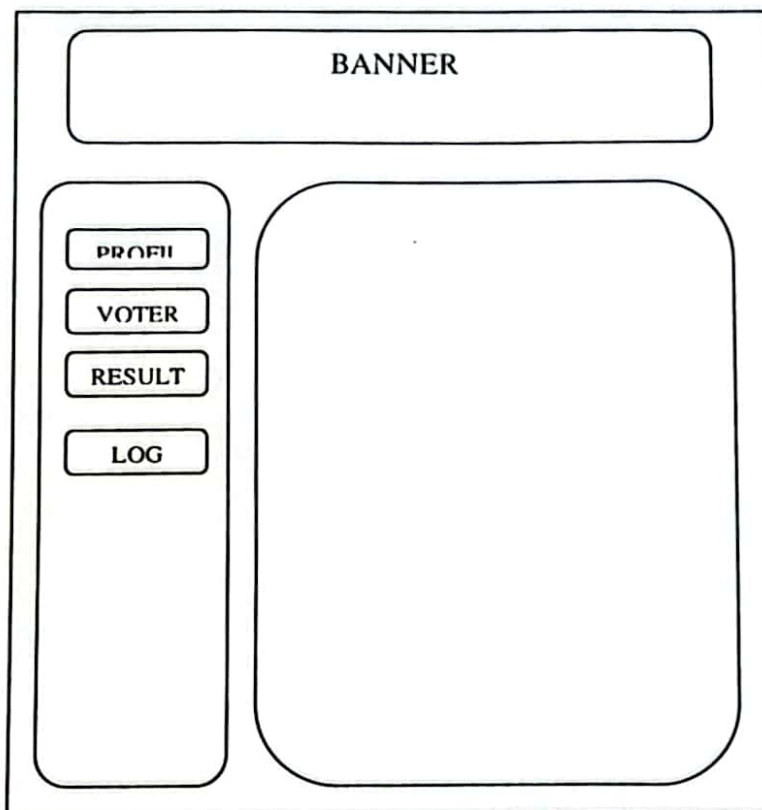


Figure 4.16 Admin page interface

- Banner. It will display as something to be presented as the decoration of the page

- **User/voter button.** The page will display everything about the user/voter include the name of the student, and any transaction that have been done by them.
- **Profile button.** The details of the candidates are uploaded here by the administrator. Anything regarding the candidates' vote and profile can be monitored here.
- **Log button.** Used to check the log of the user
- **Profile button.** The details of the candidates are uploaded here by the administrator. Anything regarding the candidates' vote and profile can be monitored here.
- **Log button.** Used to check the log of the user

CHAPTER 5

IMPLEMENTATION

5.1 Description of developed system

UNITEN e-Election system is built to enhance and automate the voting system from manual voting to electronic style or via online. The system has three type users that are going to use the system. They are System Administrator, Candidate, and Normal Voter. The details of each user will be explained in the sub topic below. The system includes some necessary part of election campaign and voting procedure that has been translated their procedures from manual to electronic system. For instance, the system has the candidate profile that can be viewed by the students or voter. So that, voter will get close to their candidate through their profile and will judge their manifesto that has been updated online. In the meantime, user (either candidate or normal voter) also can view the statistic of the election and can give the feedback through testimonial slot about the election that will be held soon. Overall, the developed system is ready to took place manual system for more than half election events and activity. The target of getting more

voters and to attract students to involve in the election will be achieved by good cooperation and introduction by University Management and students.

5.2 Technical details of implementation

The system basically applies the same procedure with the manual election. It be more sophisticated with dividing user into numbers of level of the authentication. Here, in the system, three level of authentication is being used to differentiate between normal voter, candidate and system administrator.

5.2.1 Voter

As normal voter level, user has authority to vote in the election and use some more function in the systems. For the first time login, user needs to register as a voter at the system registration part. The user then will be verified to see whether the status is active as a student or having problems with UNITEN or something that could not make them eligible to vote for the election. After finish with the registration, user now can login into the system using the same id and password. If students had register before the Election Day, they only can send testimonial, view statistic and view the profile of the competed candidates only. The voter deserves to vote three persons in the election once they are log in into the system. After finish vote, the user will be headed into page where the list of candidate that they are chose is displayed. If the student or voter logout, they are not allowed to vote anymore and will head voter to the expired session. Refer to the Figure 5.1.

5.2.2 Candidate

The same way of registration is been applied to Candidate level as they are also a voter to vote in the election. The differences between candidate level and normal voter are they can edit their profile and upload manifestos. For those who are not submitting the form and pay the fees, the system will bring them to normal voter page and cant login as candidate. Candidate is allowed to edit their profile and upload their manifestos one week before the Election Day. In case anything happen and need to be changed somewhere in their manifestos or profile, candidate need to tell the system administrator to close the issue.

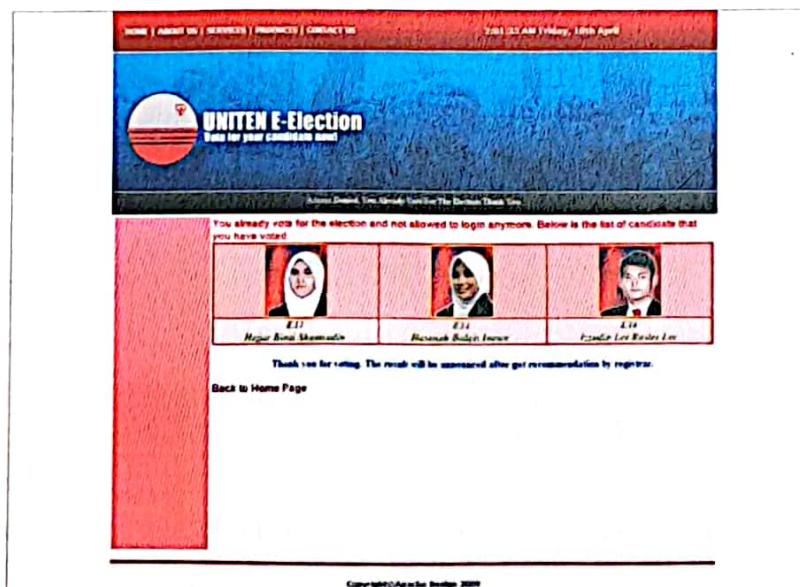


Figure 5.1 Finish Voting Page

5.2.1 System Administrator

Unlike Voter and Candidate, both of the level must register and login at the main page of the system, System Administrator need to type the address at the browser and enter

through the back end of the system. The System Administrator has right to update, delete and view the profile of candidate. He also has authority to view the activity done by user and log it into database. System Administrator can delete any user that is disobey or have duplication or trying to ruin the process of the election. The time and date of the election can be set by the system administrator. So, the system will read the time and date and will block all the functions that will be only appear on the Election Day and allow the functions that can be used before the election start. Besides, System Administrator also responsible to manage the announcements and testimonials posted by user. System administrator need to verify the posted testimonials before approve and display at the front page of the system. It goes the same with the announcements where system administrator need to confirm which advertisement should be advertized and which should be deleted. The current result can be viewed by system administrator and it will be publish to public or university once the election is done.

5.3 Screenshots of developed systems

5.3.1 Main page

This is the main page of the UNITEN e-ELECTION system. User must register first to validate them and then the user can precede with the log in into the system before use it.

Figure 5.2 show the physical of the main page.



Figure 5.2 System Main Pages

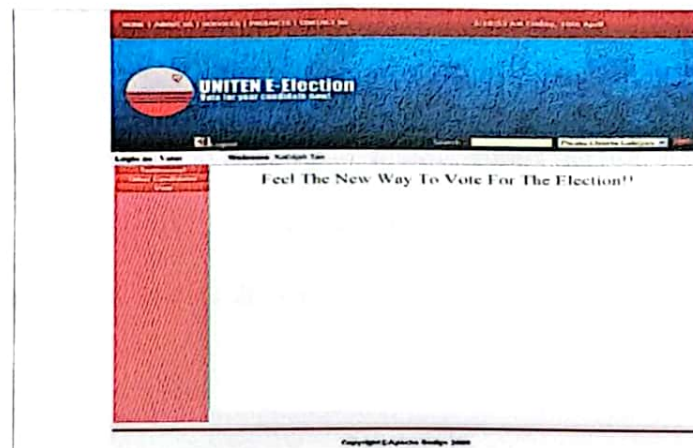


Figure 5.5 Voter Main Pages

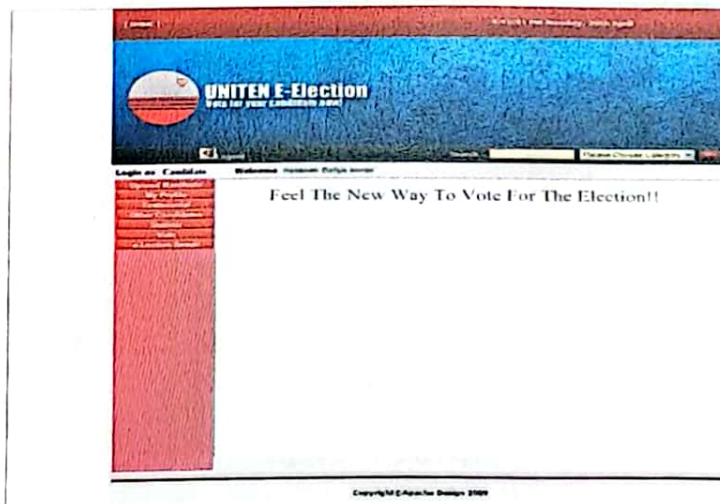


Figure 5.6 Candidate Main Pages

5.3.1.1 Main menu for System Administrator, Voter and Candidate

After successful with the log in process, user will face this interface. If they are normal voter, they will be assigned into Voter Page and if they are Candidate they will be logged on into Candidate page. This is the main menu page where user can choose the link that they want to go. The description about this page is elaborated as below.

- Output for the chosen link. This area will display the result for the link. Any transaction for the link will be in this area.
- Vote button. When users press this button, it will display the voting page at the output area. After finish the voting, user is not allowed to vote again and if the user try to click the button once again, it will redirect the user into other page and will tell that the user already done with voting together with voted candidate that the user have voted. Unless the voter vote less than capacity that are allowed.

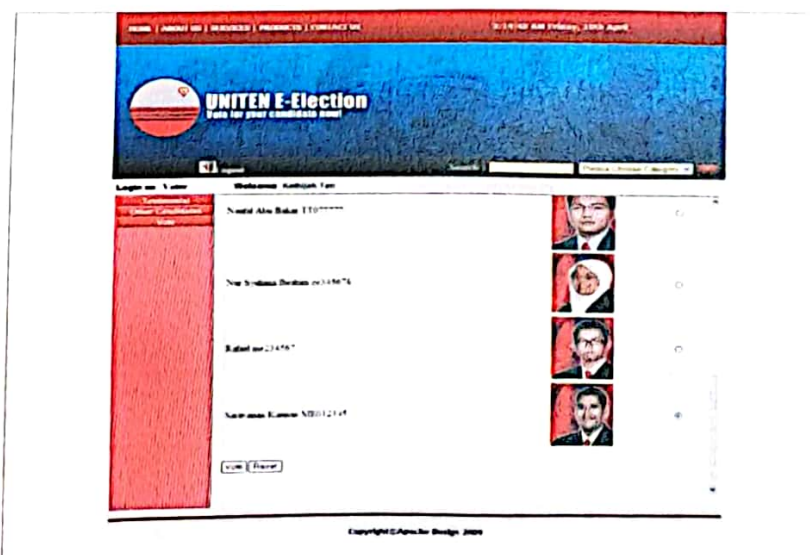


Figure 5.7 Voting Page

HOME | ABOUT US | SERVICES | PRODUCTS | CONTACT US 9:18:14 AM Friday, 18th April

UNITEN E-Election
Vote for your candidate now!

Log in as Candidate | Mahasiswa | Pemilih | Daftar Pemilih

Updated Registration
My Profile
Candidate
Other Candidates

Hassanah Ridha Isman > Profile



Name	Hassanah Ridha Isman
Course	Mechanics of Engineering
Semester	2 2020/21
Election Code	E14
Nationality	Malaysian
Place of Birth	Cebu
Date of Birth	Day: Month: Year:
Race	Malay
Gender	Female
Manifesto	Belasungkrah

Update

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Figure 5.8 Candidate Update profile

HOME | ABOUT US | SERVICES | PRODUCTS | CONTACT US 9:18:14 AM Friday, 18th April

UNITEN E-Election
Vote for your candidate now!

Log in as Candidate | Mahasiswa | Pemilih | Daftar Pemilih

Updated Registration
My Profile
Candidate
Other Candidates

Hassanah Ridha Isman > Profile

 E14

Name	Hassanah Ridha Isman
Course	Mechanics of Engineering
Semester	2 2020/21
Election Code	E14
Nationality	Malaysian
Place of Birth	Cebu
Date of Birth	Day: Month: Year:
Race	Malay
Gender	Female
Manifesto	Belasungkrah

Update

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Figure 5.9 Candidate own Profile

- Profile button. This button is linked to the candidate's profile. It will display the profile of each candidate.
- Update Profile button. The page is linking to the candidate who wants to edit and update their profile. It also can be used to view own profile.
- Result button. It will display result after the election is finish.
- Testimonial. User can log in into the system to send testimonial for the lection system or for the candidates. The testimonial will require approval from administrator before being published at main page.
- Statistic button. Used to view the statistic of the election. The statistic divides into the voter, total of voter, total candidates, and participation from college.

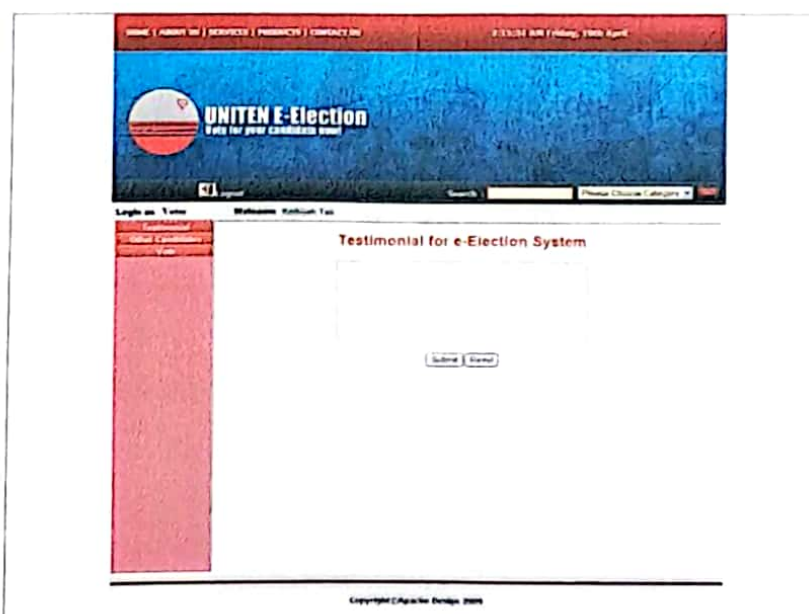


Figure 5.10 Send Testimonial Page

Figure 5.11 Candidate Profile Upload Form

Name	Nurulhikmah Yusoff
Course	Information Technology
Semester	1 2008/09
Nationality	Malaysian
Place of Birth	Pahang Darul Makmur
Date of Birth	21 Month 0
Race	Malay
Gender	Male
Biography	Pelejar Utiken Perlukan Anjakan Paradigma. Jika Tidak Berani Dengan Perubahan, Usaha Dicara Saja Perjuangan ok? " Takkan Belayu Hilang Di Dunia" - senarai dan ucapan

Figure 5.12 Candidate Profile

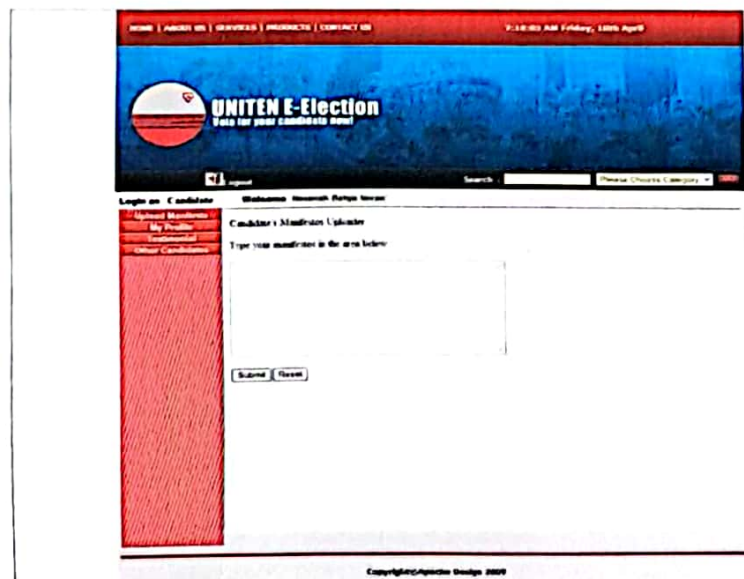


Figure 5.13 Upload Manifesto

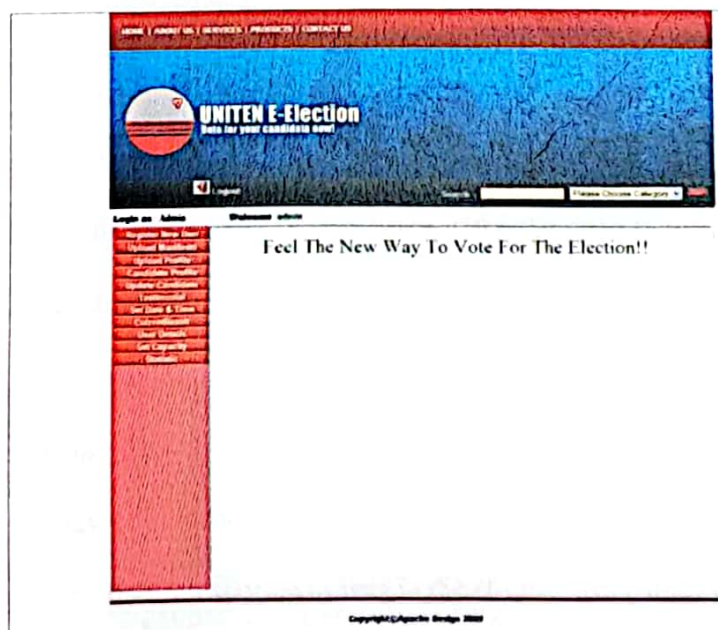


Figure 5.14 Candidate Edit Profile

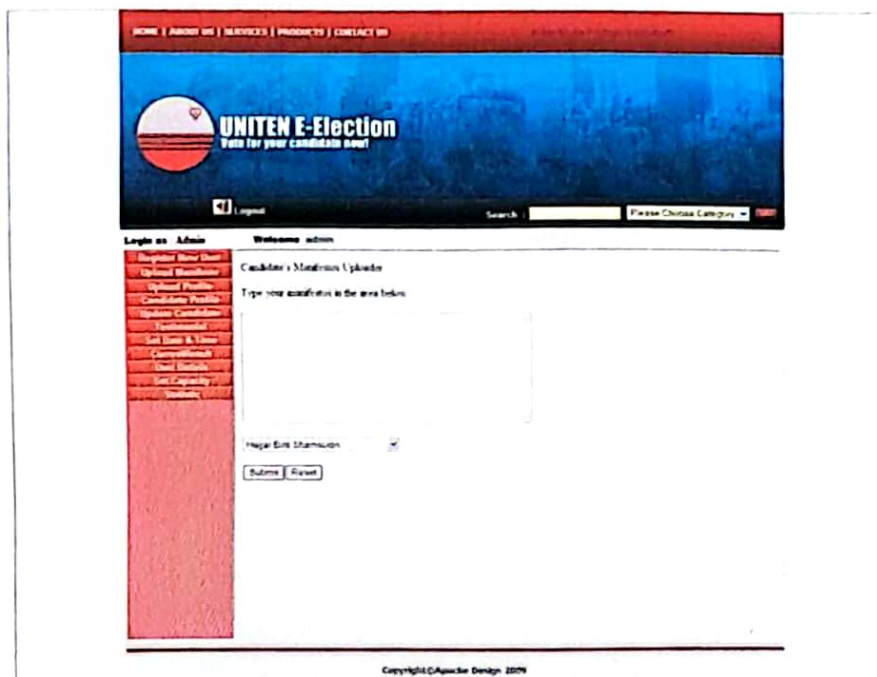


Figure 5.15 Admin Upload Manifestos

- **Upload Manifestos (Administrator):** System Administrator is authorized to upload the manifestos for candidate if in case there is any problem regarding uploading the manifesto. The new manifesto will eliminate the old manifesto.
- **New User Registration.** The function is to register new user to this system. All the data is made up to construct a dummy data for student. All the details of student is included and it important to match the correct data during user registration to vote in the election using this system.

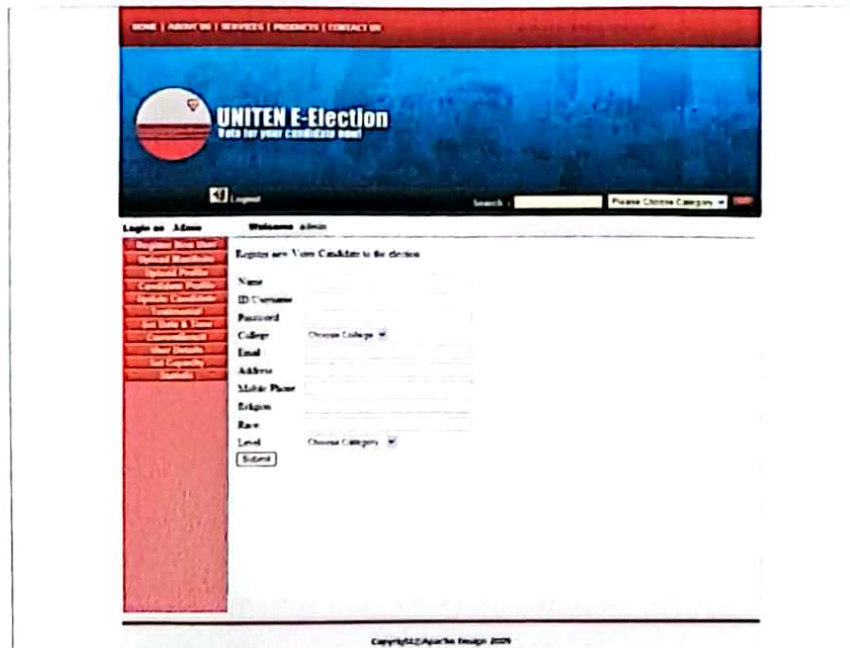


Figure 5.16 New User Registrations for Admin

- Time and date setting: Used to set the date of the election. Admin also need to declare the start time and end time for the election.

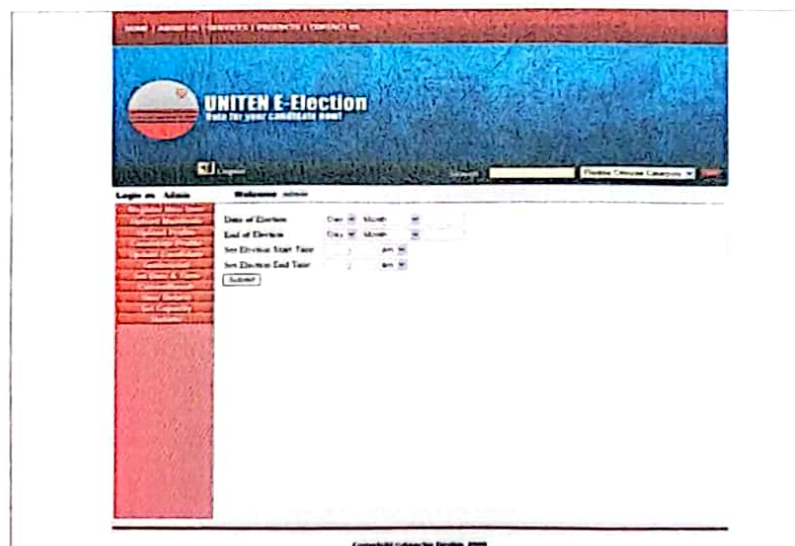


Figure 5.17 Time and date setting

- Statistic page: generate the report for the election such as number of voters, candidates and college students' participation.

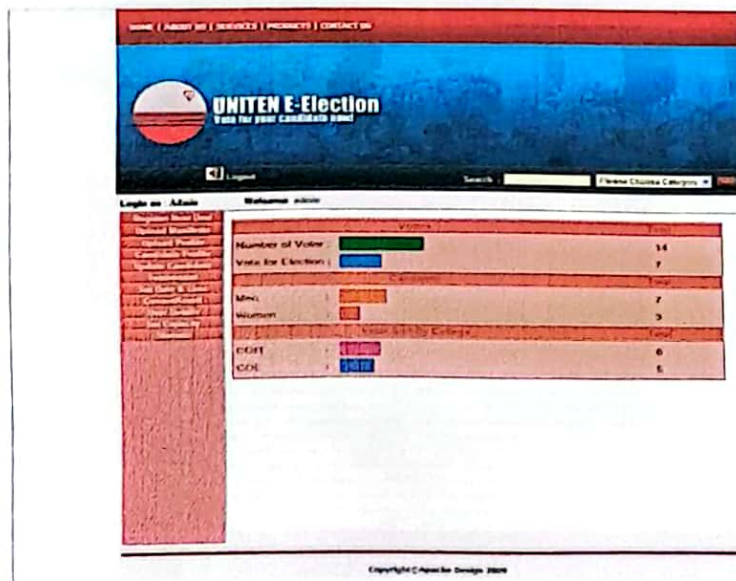


Figure 5.18 Election Statistic page



Figure 5.19 Election Result Page

- **Election result:** The result will be displayed after finish the election process and finish counting the vote. It will appear in bar chart graph and also a table listed the ranking of election.

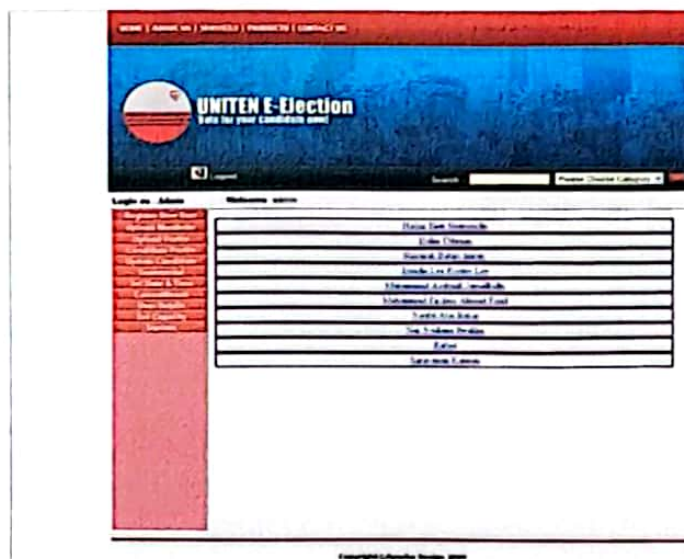


Figure 5.20 List of Candidates to be edited Page

- List of candidates that use by system administrator to update their profile in figure 5.19.
- Testimonial that has been sent require approval from administrator. The testimonial management is shown in the figure 5.20.
- User Activity: All the activity and visited page by user will be logged and kept in the user details page as figure 5.21.

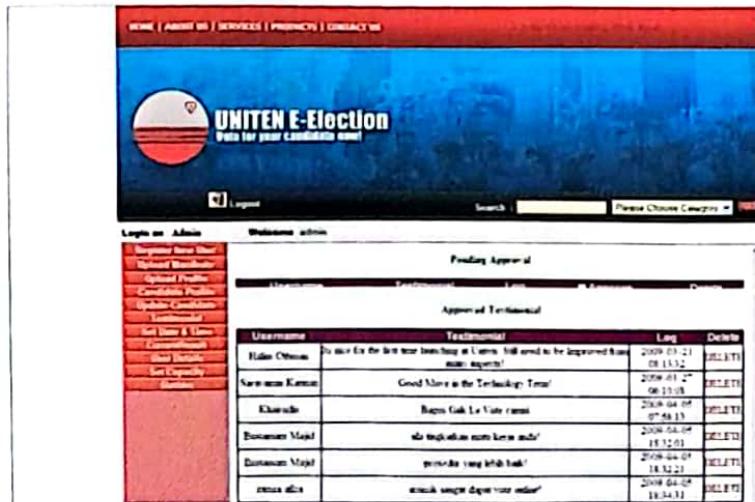


Figure 5.2 Testimonial Approval Page

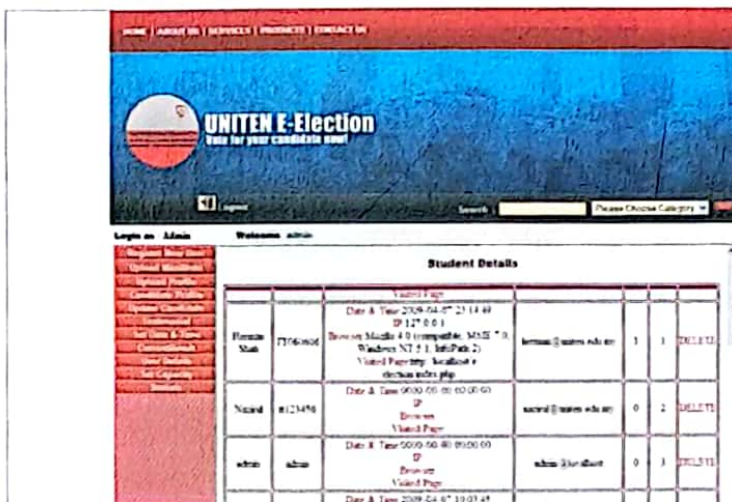


Figure 5.20 User Log for admin view

5.3.2 Registration page

The registration process needs to be done by user to validate them for the election. If the student ID doesn't exist, the Administrator will not allow them to log in to the system. User need to enter their ID at the form as figure 5.3.

5.3.3 Login process

After finish with the registration or already done with the registration, user can log in into the system using their own id and password. The password is the default password as they used to log in into other system like student info or others like subject registration. Figure 5.4 show the login page and login panel of the system.

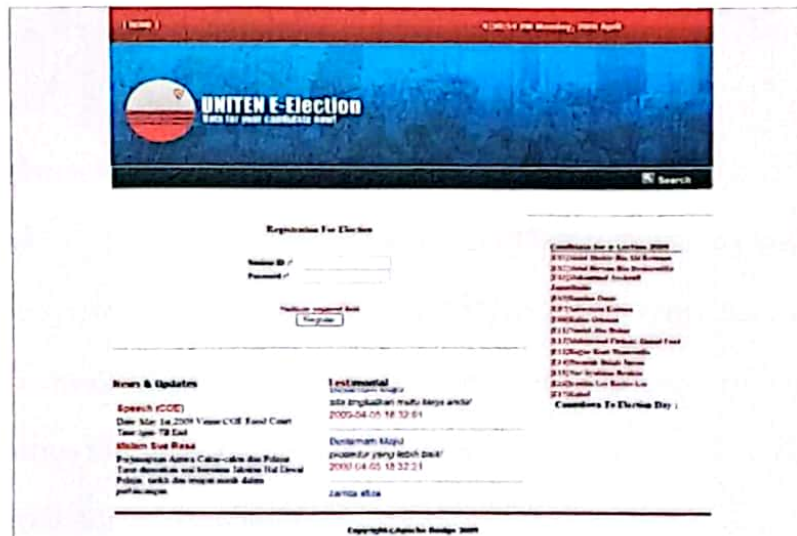


Figure 5.21 Registration page



Figure 5.22 Login Page

CHAPTER 6

TESTING AND VERIFICATION

6.1 User comments and feedback

After all done with the progress number currently pass 80% completeness, I have done testing using this system to a group of students in UNITEN. The user that has took part in this testing phase divided into two groups that are normal voter and candidate slot. They had given comments and feedbacks to be used for the systems. I have verified all the comments and feed that are listed below.

- Candidates want the same features as normal voter plus with their authentication to edit their profile and upload their manifestos by themselves. I have decided to put the vote button for candidate as they have right to vote and don't want to complicate candidate to log in using vary id and password.
- Voter wants to view their chosen candidates after finish voting. So, I have made user cant log on into the systems anymore after done with voting and will redirect voter to the page that will display their chosen candidates.

- Voter wants to give feedback on either way of actions in 1 election to filter and approve or believe in being published. It depends from how someone handles and the terms and words that are used for publication.
- User to view the progress result of the election. It cannot be fulfilled since the privacy of the result has to be kept until the election is finish.

CHAPTER 7

CONCLUSION

7.1 Result

The UNITEN e-Election system is done with the development and is expected to become a system that will be used during election soon. Now voter can view the news and updates for election just by click their mouse into the browser and don't have to walk around to approach their candidates. Voter also can vote from anywhere that has internet connection and no need to go to the election station. Candidate's site, they can upload their manifestos and they can edit their profile so that user can know them closer than manual election.

7.2 Problems encountered and Limitation

During the development process, several problems occurred to implement and make use several things in this system. Find the list of problems faced by development process below:

- Some of students are not willing to give the cooperation such as to do the survey to get the requirement from user
- The flow of program is not well arrange because can't find the similar system that apply the same method as this system.
- Take long time to implement this system because it will involve many people and require feedback to maintain this system. Need students' cooperation more.
- The flow of the system, the way on how user can log on into the systems. Either by register or by sending emails verification. Students don't want the complicated things just to vote candidate. The easiest way the system does is verify student's id and allow them to enter the system. Same goes with candidate process where the system doesn't send the verification through email, candidate just needs to validate their id by register to the system.
- Many manual procedures can't be automate since it's hard to switch their process and seems there are no other suitable choices to replace those things and make the e-lection more cheerful as it one of the ways to make students participate more in the UNITEN activity.
- Compatibility of using script to make the time slot for the system.

7.3 Future Work

UNITEN e-Election system is ready to rock UNITEN students and the management people. But then, a few things need to do the enhancement process and few things also need to be clarified to suit the environment and make the election via online not a thing that will make the tradition of election will be disappear in the heart of students. Future planning for the system is listed below:

- Make use of the form submission process automatically from manually.
- The flow of the systems will be changed suitable and compatible besides reliable with the election.
- The systems also will be implemented to be used by many other elections, not only the election for SRC.

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[3] URL: <http://cspc07.cs.usm.my/content/Prof%20Dr%20Zaharin%20-%20Thesis%20Writing.pdf>

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[12] URL: www.ultimate-guitar.com

Last date of extraction: 27/08/2007

[14] Person: **MOHD FAIRUZ AL FATAH BIN BADARUDIN**

(Vice President of SRC 06/07)

Date of interviewed: 01/11/07

APPENDICES

Appendix No

[1] Questionnaires

I am doing a web based application that is e-Election for UNITEN for my final year project. These questionnaires are made up to get the requirements from the user. As I am doing the project for my final year, the requirements are important to get better understanding what user do and don't want for the system that they will be going to be used. These questions will help me to figure out the needs from user and I need your help to answer these questions as a user.

Internet Usage

1. Do you have Internet connection at your house/hostel?

(YES / NO)

2. How long usually you spend time for using the Internet per day?

< 1 hour

1hour

3. Do you familiar with the online application system?

(YES / NO)

4. Is there any transaction you have done through the Internet for example online banking or others?

(YES / NO)

Manual Voting

5. Do you know what is voting?

(YES / NO)

6. Have you ever been for voting?

(YES / NO)

7. Are there any difficulties in doing voting? If yes state the difficulties.

(YES / NO)

8. Are there too many procedurals need to be followed during the election?

(YES / NO)

9. Is there any requirement need to be settled before voting? State if any

(YES / NO)

10. Do you think the secrecy is an important thing in voting?

(YES / NO)

11. Have you ever been to Student's Representative Council (SRC) election in UNITEN?

(YES / NO)

12. Do you vote for the candidates in the SRC election?

(YES / NO)

13. What are the requirements for student to vote in the election? (Thick the required things)

Registered as Student in UNITEN

Student ID

Picture

Ticket

Identity Card (IC)

14. Do you know those candidates that compete and their details for the election?

(YES / NO)

15. How do you find out details of the candidates that compete in the election?

Internet

Intranet

Administration Office

Notice Board

Lecturer

Poster

Banner

16. Is the election is advertised weeks before Election Day?

(YES / NO)

17. Do you know when and where the election is held?

(YES / NO)

18. Is there any campaign about the election done by candidates?

(YES / NO)

Internet application / voting online

19. Do you ever vote for anything via Internet?

(YES / NO)

20. If given a chance to vote the SRC via Internet, would you happy with that?

(YES / NO)

21. Do you think vote via Internet is easy and can courage students to vote for the election?

(YES / NO)