ONLINE UNDERGRADUATE PROJECT PROPOSAL SUBMISSION

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**A thesis submitted in partial fulfillment of the
requirement for the awarded of the Degree of Bachelor of Computer Science
(Computer Systems and Networking)**

**Faculty of Computer Systems & Software Engineering
University College of Engineering and Technology Malaysia**

NOVEMBER, 2005

ABSTRACT

In today's world, one of the fastest and most efficient ways to present information and help is the information super-highway which is Internet. Internet has become one of the largest sources of information worldwide; it facilitates the delivery of educational and training materials that supports education and training process which can be retrieved through the World Wide Web (WWW). Being a centre point for technological development for the past two decades, the Internet's facility for real-time interaction have made computer-based training, or web-based training become more viable for meeting the educational needs. As an aid to the above requirements, this thesis presents the development of On-line Undergraduate Project Proposal Submission for students under the Faculty of Computer Systems and Software Engineering to send their undergraduate project proposal (Projek Sarjana Muda 1) online and get their approval immediately via short message service (SMS) sending by project coordinator. Therefore, student and project coordinator can get the latest information about the selecting processes and result of the proposal directly from the system. This project will be divided into two interfaces, namely student and project coordinator interface.

ABSTRAK

Pada masa kini, salah satu cara terpantas dan efisyen untuk memperolehi informasi dan bantuan ialah melalui penggunaan info super-highway iaitu internet. Internet telah menjadi salah satu sumber maklumat yang terbesar di dunia. Ia banyak memberi kemudahan di dalam bidang pendidikan dimana kita boleh mendapatkan bahan-bahan latihan dengan cepat dan mudah dicapai melalui internet. Bagi memenuhi keperluan di atas, projek ini di bangunkan dengan tujuan untuk membantu pelajar tahun akhir di Fakulti Komputer Sistem dan Rangkaian, Kolej Universiti Kejuruteraan Teknologi Malaysia yang mengambil (Projek Sarjana Muda 1) untuk menghantar dan menulis cadangan tajuk projek mereka secara online. Sistem ini juga dapat membantu dan mendapatkan pengesahan daripada pihak penyelaras sama ada meluluskan permohonan bagi projek yang telah dicadangkan. Perkhidmatan Pesanan ringkas akan dihantar ke telefon bergerak pelajar berkenaan sebagai pemberitahuan bahawa cadangan beliau telah di luluskan. Oleh itu, pelajar dan penyelaras projek boleh memperolehi dan memproses semua maklumat serta menyemak keputusan permohonan secara terus melalui sistem. Perlaksanaan projek ini terbahagi kepada dua fasa, iaitu antaramuka untuk pelajar dan antaramuka untuk penyelaras projek.

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ASP	Microsoft Active Pages
JSP	Java Server Pages
GSM	Global System for Mobile Communication
MT	Mobile Terminated
MO	Mobile Originated
MS	Mobile Station
NAMPS	Number Assignment Module Protocol Suite
PCN	Personal Communication Network
SMS	Short Message Service
SMSC	Short Message Service Center
SQL	Structured Query Language
SDLC	System Development Life Cycle

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CHAPTER 1

INTRODUCTION

1.1 Introduction

In today's ever changing world, one of the most significant entities that are constantly changing is, 'information' and one of the largest information resources is the Internet [1]. Therefore, in order to manage for such constant change of such domain area, there needs to be a mechanism whereby this changing information can be easily and efficiently conveyed and updated to the information. The solution can be situated within database-driven and dynamic-web-content management systems.

As part of the bachelor's degree, students under the Faculty of Computer Systems and Software Engineering must successfully complete the Undergraduate Project, (Projek Sarjana Muda 1 [BCC3012]) and (Projek Sarjana Muda 2 [BCC3024]). As a result, students will need to select a project in fifth semester in the year prior to starting the first project in semester 5, and must complete a written thesis by the end of the second project in semester 6.

As an aid to the above requirements, this proposal presents the development of an online undergraduate project proposal submission for approval, where it can be used by final year student as a first requirement to send their proposal. This project will give more benefit and guideline for student in process of submitting their proposal in a right format.

1.2 Problem Statement

As a compulsory requirement for graduation in the Faculty of Computer Systems and Software Engineering, students must undertake an undergraduate project of their choice, either proposed by the school project coordinator or self proposed, in their final year of study. Afterwards, all the project proposals will be selected and approved by the faculty and while completing the project, all project proposal report must then be written and compiled as theses in order to present the results and findings of the project. These theses are then submitted to the faculty for assessment.

Although such tasks may sound simple enough, it does give problems for both the students and the faculty. Firstly, one of the important things is final year students should take and propose their project title. But, students, who have still didn't propose a title and submit their proposal after the due date will cause them in trouble. So, this system can aid students to make online title submission and quickly get an approval from project coordinator. Sometimes, student did not follow the standard format of writing proposal. Because of some information which is not included in their proposal, project coordinator cannot understand what the student tries to explain and going to do in their project.

Secondly, it is a usage for the project offer presentation. If all project coordinators were to submit their project offers in a standard and consistent format and all at the same time, it can be sameness with student viewing or either when student self proposed their project. To avoid this happen, project coordinator could updated the latest information and change the manually selected approval to online process.

Therefore, it would be very beneficial if there is a centralized service available, whereby project coordinator could submit information to a common resource pool, fast, save the time and avoid the redundancy of the project title.

1.3 Objectives

The main aim of this project was to design, develop and create web-based application which would assist students and project coordinator in the units related to the final year undergraduate projects. The overall objectives of the project are:

(i)   To develop web-based application for students and project coordinator for online proposal submission and proposal approval for final year undergraduate project.

(ii)   To develop an application for making verification via short Message Service (SMS) for sending an approval or disapproval status of project proposal from the project coordinator.

1.4 Scopes

The scopes of the project that have been identified are:

(i)   The system is focused on online undergraduate project proposal submission for students in the Faculty of Computer Systems and Software Engineering, KUKTEM.

(ii)   The system has student interface and project coordinator interface where student can send the proposal and then receive the proposal for approval by project coordinator

(iii) The system uses Short Message Service (SMS) provided by all telecommunication providers in Malaysia by using data cable to send notification messages to students.

CHAPTER 2

LITERATURE REVIEW

2.1 Problem Of The Current System

Currently, the existing system for the announcement of project offers to the students in the faculty is shown on the notice board manually. Students have to come, in order to view and select a project that is offered and have to come again to the office to check whether their proposals are accepted or not. Although this system 'works', there can be a number of issues that can be raised:

(i) There is no standard format in which project offers are presented and it could create confusion among student.

(ii) Although the Notice board occupies a large area, the project offers are displayed in very 'scattered' and unorganized way, making it difficult to locate certain project preferences.

(iii) If in a semester there are 'more' projects offered than expected, the problem of 'insufficient notice board space' will be encountered. The existing solution for this is to split the project offers over more than one notice board. Students may not be aware of the existence of more than one Notice board, therefore this will limit their own choices from the project offers available.

(iv)   If they proposed the same topic, the title redundancy may be occurred, there is no system in place for the project coordinator to detect this problem. So, the project coordinator needs to update the information from the project offers that are available.

2.1.1   Research from the Current Undergraduate Project Web-Based

Nowadays, the current system which is available about the undergraduate project web-based in every university in the world, only show the information about the flow of the project, selected title and the description of the project. All students can get the information about the project offer at their university website itself. Below is the example of University of Northumbria at Newcastle web-site that shows the information about the undergraduate project [10].

Selected Projects of My Undergraduate Students

BEng(Hons) Projects

1. Artificial Reverberator
2. Speech Signal Analyzer
3. 3-D Sound Based on Head-Related Transfer Function (Work for Microsoft IE only)

BScIT(Hons) Projects

1. Internet Phone
2. Voice over IP Gateway
3. Voice mixing for Internet Telephony

Proposed Undergraduate Projects for 2003/04

Project 1: An Interactive Voice Response System Based on VoiceXML and Microsoft .NET Speech SDK

Large-vocabulary continuous speech recognition (LVCSR) has a wide range of applications. With the recent advance in speech and computer tec building an LVCSR system on personnel computer has become possible. In this project, you will develop a three-tier interactive voice respon (IVRS) based on VoiceXML and Microsoft .NET Speech SDK. The software should allow its users to reserve movie tickets over the telephone.

Pre-requisite: Strong in programming
What will you learn: XML, VoiceXML, ASP.NET, .NET, speech recognition
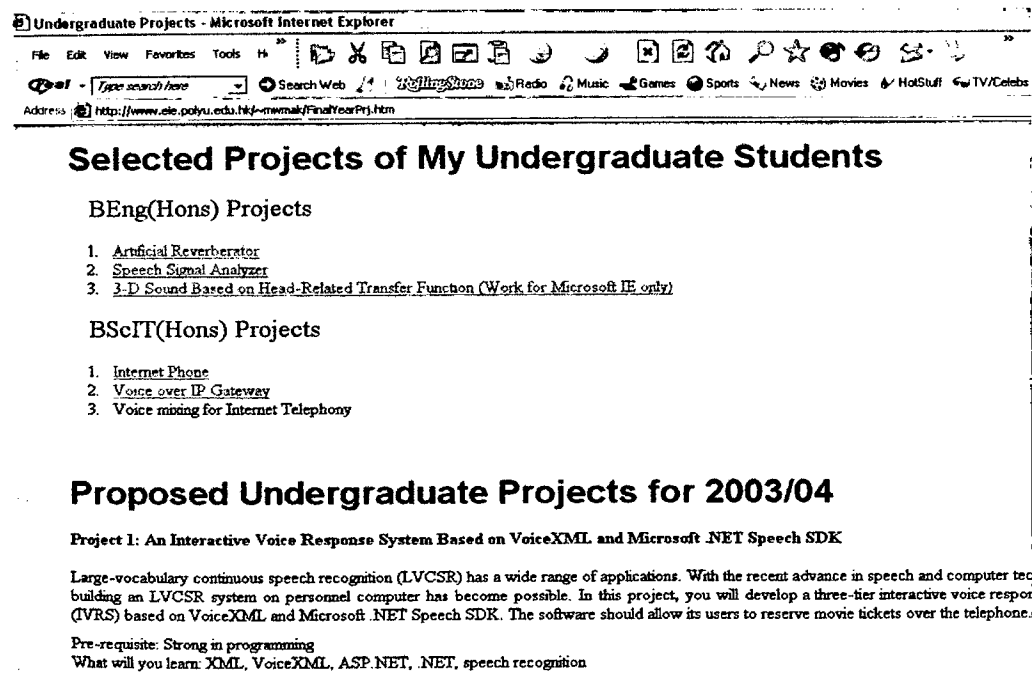
Figure 2.1: Example of web-based for undergraduate project

2.1.2 Improvements Addressed by This Project

Upon review of the existing system within the faculty, a better understanding of what was required and what improvements needed to be developed in order to make the services more valuable to gain and it can be seen from a student's and coordinator's point of view. The improvements that need to be developed can be summarized as follows:

(a)   There needs to be a centralized system, so that if the information needs to be updated, this can be achieved in an efficient and user-friendly way.

(b)   A standard format for project offer presentation needs to be created, therefore making each individual project offer more easily distinguishable and readable.

(c)   This system needs to be virtually 'unlimited' in terms of resources, so that it can accommodate the addition and updating information without any severe problems.

2.2   SMS Overview

The Short Message Service (SMS) allows text-based messages to be sent to and from mobile telephones on a GSM network [2]. Each message has a maximum length of 160 characters. The SMS service is provided by the Global System for Mobile Communications (GSM). SMS messages are divided into two categories [3]:

(i)   Mobile Terminate (MT)

The SMS message originates from the network provider.

(ii)   Mobile Originate (MO)

The consumer can send messages to other consumers.

In the context of MO and MT messages, the consumer refers to the end-user, the person with a cell phone. This is as opposed to the network provider, who provides the consumer with such services. An SMSC is identified by a Global Switched Telephone Network (GSTN) number, which has to be known to the sender of a mobile originated message [4]. The availability of the SMS service over different mobile networks depends on roaming agreements of the networks, as well as on a mechanism to deliver the messages. It is the network operator's responsibility to inform the user about the success or failure of the message delivered. Messages can be sent either through a GSM modem using a dial-up SMS center, through the internet using an account with an internet SMS center and through a GSM mobile phone by attached to the computer (IE attached to the IR port).

Typically, SMS messages are sent and received by cellular consumers using cellular telephone handsets. Cell phones are not the only devices that have this capability though. Anything that is capable of talking to a GSM network, in theory, has the ability to send and receive SMS messages. Since we are trying to interface a computer with the GSM network, it makes sense to use a device designed to do so, in other words a GSM phone or modem [5].

Almost all GSM phone or modems (and this includes many cell phone hand sets) use RS-232 as a transport protocol. On top of this, they use a protocol called the AT+ command set to communicate with their controlling devices. AT+ was defined by the European Telecommunication Standards Institute [5], and was designed to be a backward compatible set of extensions to the Hayes AT command set [6]. The coding scheme the time of storage of a short message in the SMSC and a lot of more will be set with the command AT+CSMP. Device manufacturers are free to add their own extensions to this command set, and such extensions usually have an identifying prefix. This prefixes are not equal by the different GSM operators in the world.

To use the Short Message Service, users need the relevant subscriptions and hardware, user should subscribe mobile telephone network that supports SMS. SMS must be enabled for that user (automatic access to the SMS is given by some mobile

network operators, others charge a monthly subscription and require a specific opt-in to use the service. Then, buy a mobile phone or GSM modem that supports SMS and user should know how to send or read a short message using their specific model of mobile phone or GSM modem. The implementation is not equal by every unit. Not all GSM phones, PCMIA modem cards or GSM modems offers all the features that are describe in the ETSI.

2.2.1 SMS Service on the WEB

WorldXS.net Telecommunications [7] is the one of the first company provide the SMS service on the web. Many web designers have been looking for good solutions for sending SMS messages from web site. Until now this has been very difficult due to many different solutions from GSM network providers to access their SMSC servers. Some providers use XML, others use X.25 and other specific SMSC protocols: HERMES, UCP, CIMD, and SMPP. This problem has been a severe obstacle for easy integration of Internet based services to communicate with GSM phone

According to Worldxs.net[7] mentions that " We are very proud being one of the first to provide easy to use, easy to integrate, solutions for all web designers wanting to have an SMS (Short Message Service) sending facility on their web sites. Even if you are a web design novice, it takes only minutes to have an SMS service up and running from your web site using out tools. Including cross network sending solutions, we make it possible to send SMS messages to most countries in the world"

For SMS solution WorldXS.net reduced the technological gap by developing a one-to-one interface solution. With inter connectivity between the SMSC Gateway (Short Message Service Centre) and the web tool, that user achieve instant delivery of SMS messages. This implies that user only need the web tool to achieve reliable access to hundreds of millions of mobile phone users in close to 300-GSM/CDMA/TDMA & Paging network providers covering a hundred countries.

2.2.2 How SMS Works

SMS could accesses through users modem, the internet or the mobile phone a SMSC (Short Message Service Center) and submits the message users wish to send. Then the SMSC transmits this message to the desired mobile phone.

(i)   **Sending directly through the mobile phone**

Sending will work the same as when sending messages from phone, except type the message on the computer. Not all phone manufactures implement however a link to the computer (IR port or serial cable link). User could send text, pictures and ring tones. Having the mobile phone connected to the computer and back. IE you can synchronize your phone book and archive received SMS on the user's computer [8].

(ii)   **Sending through the modem**

Sending the message through a modem will connect to a SMSC (SMS center) that relays users' message to its destination. There are several mobile phone providers that offer this modem dial-up. The connection is to a local server (not to the internet), hence users need to choose a SMSC that is within your region. Alternatively users may select to dial a server abroad, but the communication cost will be expensive [8]

(iii)   **Sending through the Internet**

SMS can send messages through a number of commercial gateways (IE www.clickatell.com). Those sites allow setting up an account and buying blocks of SMS. Users can then send the messages either through their web site or through our SMS [8].
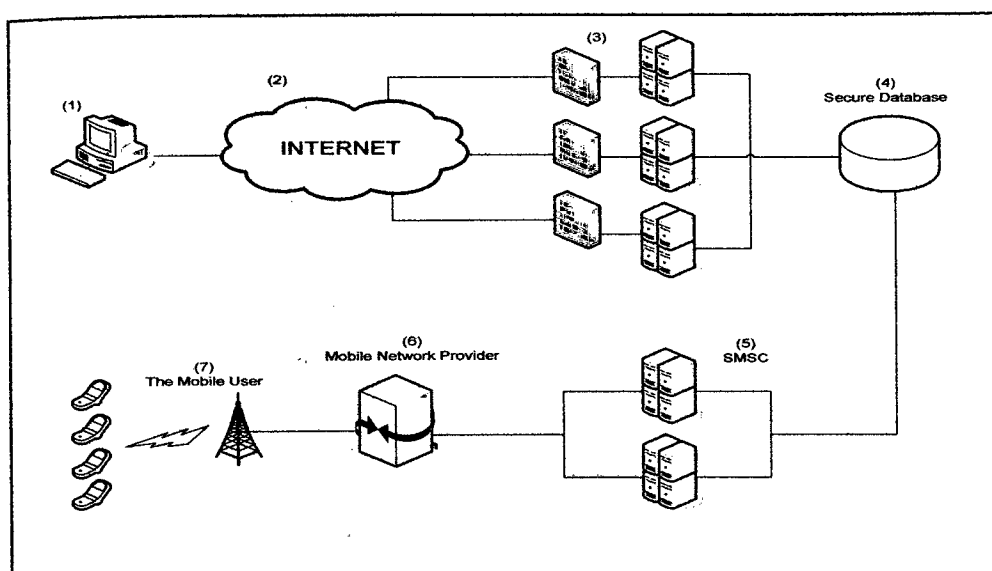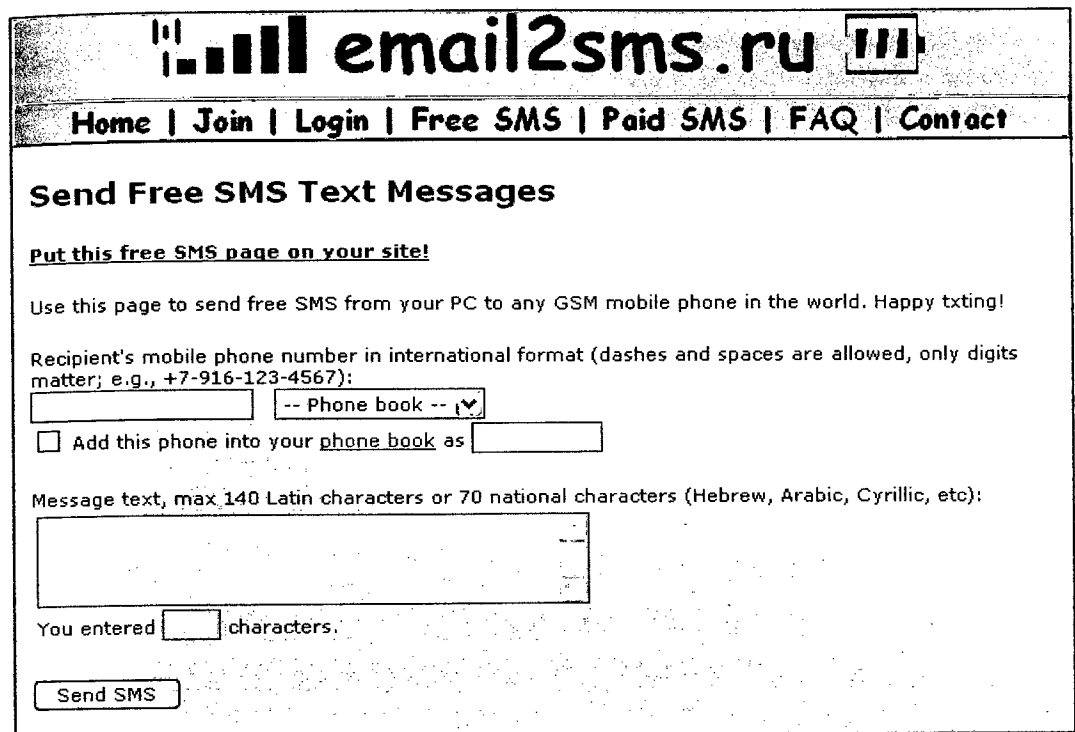
2.2.3 E-Mail To SMS: How It Work

Figure 2.2: Schematic of Internet based http-to- SMS relaying

From figure 2.2: Messages are sent from the PC or application (1), via email across the internet (2), through our firewalls and to our email servers. Our email servers are based in 3 different physical locations to ensure reliability and redundancy. If mail cannot be processed by one of the servers, your mail will be routed to a different server for processing.

The message is then parsed and inserted into a secure database cluster (the database is backed up every hour and stored behind 2 separate firewall systems). The messages are then extracted by our messaging engine (5) and relayed to the relevant network and on to the handset. Delivery receipts simply follow the same path, but in reverse [9].

2.2.4 Research on the Current System for SMS Services

Figure 2.3: Email2sms.ru sends Free SMS text messages

From figure 2.3 it shows one example of send Free SMS text messages from PC to any GSM mobile phone in the world. User could send message to someone by type in the receiver phone number and write the messages [11]. The recipient's mobile phone number should write in correct format, and the format is different for every country in the world.

For example, at Malaysia, the format is start with + and followed by country code and then phone number (e.g., +60124106177). Every message has limited character to write. For message text, max 140 Latin characters or 70 national characters can be typed. The max characters that can be type are depends on the system.

2.3 Development Tools

For completing this system development, there are three main tools to use:

(i)	Tools (Software)	– Macromedia Dreamweaver MX
(ii)	Application (Script Language)	– PHP 4.0, HTML, Java Scripts
(iii)	Database	– MySQL version 4.0.18

2.3.1 Tools (Software) – Macromedia Dreamweaver MX

Dreamweaver is a seriously big application with advanced development tools for Web site design and maintenance. The web site was developing with the front-end created using Macromedia Dreamweaver MX (2004). Macromedia Dreamweaver MX (2004) is the professional choice for building Web sites and applications [15]. It provides a powerful combination of visual layout tools, application development features, and code editing support, and quite a bit of handholding in the form of automatic code generation and provides an excellent interface for directly accessing HTML code

Dreamweaver has several coding tools and features such as HTML, CSS, and JavaScript reference, a JavaScript debugger, and code editors which allow user to edit Javascript, XML, and other text documents directly in Dreamweaver [15]. Its layout is similar to the version 4 layout, however, in this version, each HTML element has a tab that user can click on to make inserting these elements into the webpage a smoother process.

A very important concept about HTML is that it was designed to be a universal method of setting up documents on the internet so that the authors do not have to worry about what computer systems the viewers are using.

2.3.2 Script Languages – PHP 4.0, HTML, Java Scripts

PHP or PHP Hypertext Preprocessor is quickly becoming one of the most popular server-side scripting languages for creating dynamic web pages [16]. PHP is designed to do something only after an event occurs. The most popular example of a scripting language is JavaScript, which commonly handles events that occur within the Web browser. Within a HTML page, PHP code is embedded directly into HTML documents [16]. This allows the document to write HTML in a clear, concise manner, and execute in each time the page is visited.

The PHP code is interpreted at the Web server and generates HTML or other output that the visitor will see. Therefore, programming with PHP can be only slightly more complicated than hand-coding HTML. PHP is an Open-Source Technology that is supported by a large community of users and developers [16]. This platform independent; implementations exist for all major UNIX, Linux and Windows Operating Systems. PHP also provides support for a large number of databases, including MySQL.

2.3.2.1 Some Of PHP Benefits

Some of PHP's main competitors are Perl, Microsoft Active Pages (ASP), Java Server Pages (JSP), and Allaire Cold Fusion. In comparison to these products, PHP has many benefits including the following:

(i)   **Low Cost**

PHP is free and readily available[17]. Queries to the PHP mailing lists are often answered within minutes. Anyone may visit the numerous PHP Web site such as www.phpbuilder.com, www.php.net and www.zend.com for download the complete source code that available