

STUDENT INFORMATION MANAGEMENT SYSTEM

**ELMERSON EMMANUEL P. ARTIAGA
JAYSICA MARIE CALATA
GLORIETA E. TAMAYO
LEA VITALES**

**A CAPSTONE PROJECT PRESENTED TO THE FACULTY OF THE
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Chapter I

INTRODUCTION

Project Context

In information technology, a student information management system is intended to provide motivation for accomplishments and a device to identify difficulties of students in an institution. It is commonly used in collecting, and adding the summarized performance, talent and skills of students.

A computer-based information system is an information system in which the computer plays a major role. Such system consists of the different elements namely hardware, software, data, procedure and people. Hardware refers to machinery. This category includes the computer itself, which is often referred to as the central processing unit (CPU), and all of its support equipment. Among the support equipment are input and output devices, storage devices and communication devices. Software refers to a computer programs and the manuals that support them. Computer programs are machine-readable instructions that direct the circuitry within the hardware parts of the Computer Based Information System to function in ways that produce useful information from data. Programs are generally stored on some inputs or output medium. Data are facts that are used by program to produce useful information. Like programs, data are generally stored in machine-readable from on disk or tape until the computer needs them. Procedures are the



policies that govern the operation of a computer system. Every Computer Based Information System (CBIS) needs people if it is to be useful. Often the most over-looked element of the CBIS is the people: probably the components that most influence the success or failure of information system (Business Information System Training, 2013).

As different technology arises, computer-based information system has seen a steady growth in diversity and complexity within the recent decades. As more computer applications and technologies of various types become available, information system become increasingly more important, automated and web enabled, thus, the evolution of web-based information systems (Varia, 2010).

Web-based information system is an information system that uses internet of intranet web technologies to deliver information and services to users or other information systems. It is a software system whose main purpose is to publish and maintain data by using hypertext-based principles. A web information system usually consists of one or more web applications, specific functionality- oriented components, together with information components and other non-web components. Web browser is typically used as front-end whereas database as back-end (Bodker, 2010).

One application of the computer-based information system is a computer-based grading system. A computer-based grading system is about bringing the traditional grading system into computer-based



information system. In this way, the collecting, viewing and printing of grade of students is solely implemented in single machine (Staton, 2010).

This project looked at the Enrollment System which will provide a faster, more convenient way of storing file of the student enrollees in a computer system that will lessen the effort of faculty and staff in storing files of each student every now and then. An enrollment system also serves as information especially for the freshmen, transferee, and teachers in able to get access in subject, teacher and student enrollees, but is designed for use by staff and other authorized user in the school office to enable them to easily produce information required by the different people in the school.

As emphasized by Degan (2009) in his article entitled Technical White Paper: Web-based applications vs. Traditional Software, many excellent reason to produce web-based applications include the following: first, the simplicity of deployment for the ICS Department; second, because the application is hosted on a web server and not installed on users computer, there is only one place to repair or upgrade should the need arise; third, once the application is deployed on the server, it is instantly available to the entire company on their network, that is when an individual in the company needs to use the application, they are given their access information and start working; fourth, there is no installation required to the users; fifth, if a user's computer breaks down, or they need to work off-site, there are no complications as long as they have access to



the network; and finally, a company's IT personnel are able to spend their time working on important system upgrade and regular maintenance rather than running around the building installing applications on peoples computers. This helps to keep a company's IT infrastructure running smoothly and efficiently which will no doubt affect the bottom line.

Indeed, web-based information system displays many benefits of technology, from web-based photo editor, web-based office productivity, web-based registration system and of course web-based grading system (Yao, 2009).

Web-based grading system, also called online grading systems, are newest technological advancement in computer grading options (Ghosh, 2010).

Information can be viewed in just a second without worrying that a single file is lost. The idea behind the enrollment system is not a new concept. As student enrollees increase every year, enrollment procedure becomes harder to deal. With this system problem about enrollment process become easier to handle.

Purpose and Description

The capstone project aimed to design and develop a Student Information Management System for ICS Department which provide a more accurate and faster way of retrieving and managing student's data. Specifically, this study benefits the following:



Administrator. Generally, through the implementation of the developed system, the Institution shall give more accurate, faster and better services to its clientele with regards to grading system. This shall also indicate that the Institution practices and benefits from current technology.

Faculty Members. The system will help them to access easily and retrieve information regarding the process of registration and will help them to minimize time and effort.

Students. The ICS students shall benefit from this study for they shall be given faster and prompt services. Upon implementation of the developed system, students shall no longer need to stand in long queues and await their turn.

Researchers and Future Researchers. The completion of this project had given the researchers the opportunity for better understanding of the different concepts of web-based information systems design and development. It also motivated the researchers to face difficulties and challenges that they had went through and experienced. Through this project, the researchers had enriched their writing skills, analytical thinking, interpersonal and communication skills. For future researchers may benefit from this project by considering this study as one of their references in writing their future research.



Literature

This chapter states the different literature and studies that were conducted for the research to gain familiarity that are relevant and similar to the study.

Computer is a general-purpose device that can be program and to carry out finite set arithmetic or local operation. Computer has a big role in our nation today because of technology. Wherever you go, computer still exist especially in business it makes the procedure easy and or memo of securing the manual system into a computerizing system. Technology is the marking, modification, usage, and knowledge of tools, machine techniques, crafts system method of organization in order to solve a problem, achieve a goal, or perform specific function. Everything now is becoming high technology, from manual to computerization. In computerizing system, it is easy document and secure data.

Enrollment is the process of entering and verifying data of students to register on a particular school. Different interrelated processes build up enrollment procedures called Enrollment System (ES). ES are used particularly in recording and retrieving student information is also one feature of ES, in which the school can trace the student. Verifying payment was also added to update or browse student billings (<http://www.scribd.com>).

Enrollment system is very essential in school. In the case of Nyogani School Inc. It is composed of manual system. Directress used manual



used system in recording and retrieving student information. It also contains information about student payment. Registrar department also used manual system, has a way of recording and retrieving student information. Another department is in accounting office; they also administer student payment manually. Based on the researcher's observation, human intervention will highly involve this type of system. As a result, this may involve errors and redundancy of data resulting troubles in organization.

This major concern affects the efficient enrollment system of students. Security of students' records were found to be at high risk. The current system may fail to protect some important documents. It has also untimely and inefficient report generation. A computerized system for DCNHS shall result to a significant increase in the number of enrollees.

In educational institution like Harvent School in Dagupan City, which composed of elementary and High School level, the school puts premium on its registration. The enrolment process is the initial stage in gathering bonafide and accurate student information necessary to establish student permanent records.

Information System (IS) is the study of complementary networks of hardware and software that people and organization used to collect, filter, process, create and distribute data.

The study bridges business and computer science using the theoretical foundations of information and computation to study virus



business model and related algorithmic process within a computer science discipline. Computer information system(s) (CIS) is a field studying algorithmic processes, including their principles, their software and hardware designs, their application and their impact on society while IS emphasized functionality design.

Any specific information system aims to support operations, management and decision making. In a broad sense, the term is used to refer not only to the information communication technology (ICT) that an organization uses, but also to the way in which people interact with this technology in support of business processes.

Some authors make a clear distinction between information system, computer system, and business processes. Information system typically include an ICT component but are not purely.

Objectives

The general objective of this study is to design and develop a Student Information Management System. Specifically, it aimed to achieve the following:

1. Identify the functional and nonfunctional requirements needed in the proposed system along the areas on:
2. To develop and design a Student Information Management System.
3. To test the usability of the developed system.



Time and Place of the Study

The proposed study focused on the design and development of a Student Information Management System. Design features of the proposed system focused on improving the processes and activities in managing the student's grades and information; it will incorporate in the existing processes and is in accordance with the school's policies and regulations.

The output was expected to generate reports to keep track of student progress that may be added as a reference for decision making purposes.

A prototype of the desired system was developed using PHP platform and Extreme Programming.

This study limits only for the Institute of Computing Studies and to the staff of registrar whom is skilled to manage the records of the students. Students can view their grades but they cannot print the grades. Only the administrator can print records within the semester only.



Chapter II

METHODOLOGY

Software Development Model

The development of the system followed the Extreme Programming model as shown in Figure 1.

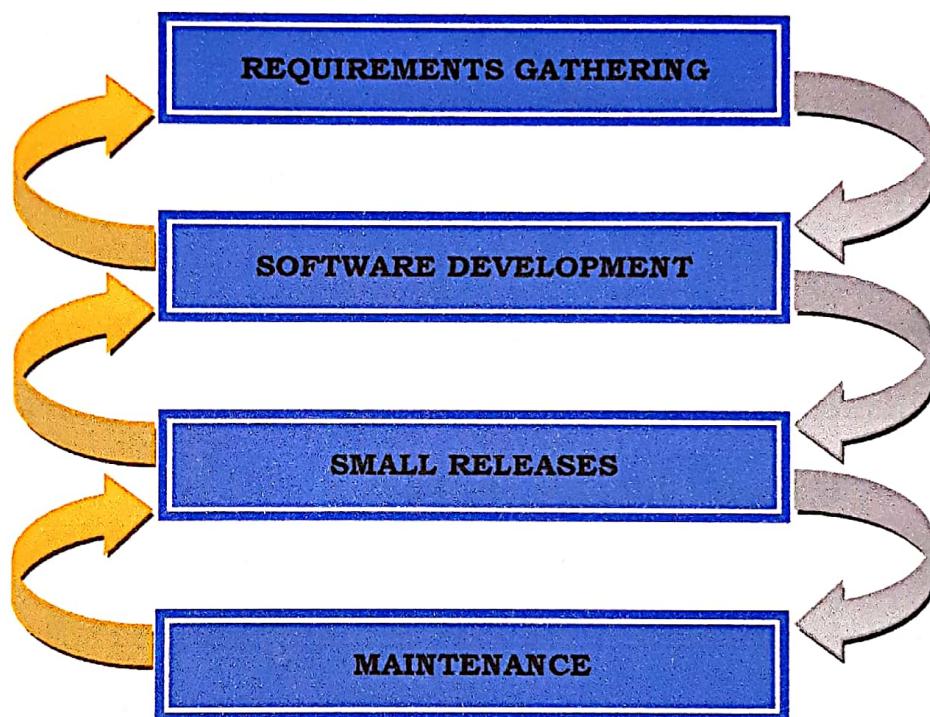


Figure 1: Extreme Programming

Extreme Programming methodology consists of four phases namely: requirements gathering, software development, small releases and maintenance.

Requirement Gathering. The purpose of data gathering is to collect sufficient, appropriate, and relevant data so that a set of stable



requirements will be produced. In this phase, the researchers gathered information from the students, instructors and the registrar. The researchers also observed the existing procedures being practiced in inquiring grades of the students in the college. Forms were collected such as the temporary reports of grade, the class cards and some curriculum revisions to serve as the bases in the design of the system. For the policies of the existing grade entry and inquiry system, the researchers used documentary analysis. For the procedures, an interview was conducted.

Software Development. It involved coding, testing and the complete design of the system. Coding constituted the most phases in the extreme programming life cycle. Extreme programming integrates testing with development phase rather than the end of the development phase. All codes have unit test to eliminate bugs and the code passes all such unit test before release. In this phase, the researchers used PHP and JavaScript as the scripting language, CSS as the graphical user interface design tool, and MySQL as the database for the development of the Student Information Management System.

Small Releases. Extreme Programming is a continuous mechanism of customer involvement through feedback during the development phase. The basis of feedback is the customer acceptance tests. Each feedback of the customer that specifies revised requirement becomes the basis of a new design, and process of software development-small release repeats itself. If the customer remains satisfied with the test results, the iteration



ends there, and the design for a new iteration starts, which again follows the software development-small release cycle. In this phase, the researchers released the developed Student Information Management System to the end users. The users were allowed to give their feedback for the desired function of the chosen system. Each feedback became the basis of a new design and functionality of the system. This process repeated until the system was completely developed.

Maintenance. Maintenance phase resembles the final task in the SDLC implementation phase, data conversation, testing and user training. In this phase, when the Student Information Management System is implemented, user training shall be conducted in order for the users to learn the flow of the system.

Project Plan

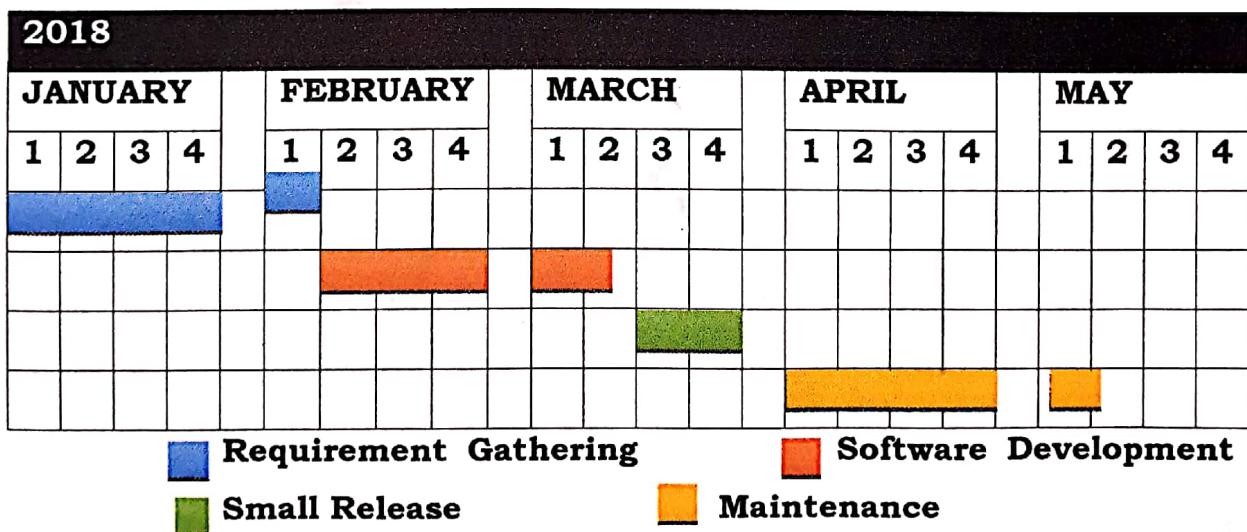


Figure 2: Gantt Chart



The activities undertaken and the week duration of each activity are shown in figure 2. The Project was done from January - May 2018 that include requirement gathering, software development, small release and maintenance.

Table 1. Project Team Assignment.

Project Roles	Lead Person	Assignments
Analyst	Elmerson Artiaga	System Analyst
	Jaysica Marie Calata	
	Glorieta Tamayo	
	Lea Vitales	
Developer	Elmerson Artiaga	System Developer
Documenter	Elmerson Artiaga	Researcher/Documenter
	Jaysica Marie Calata	
	Glorieta Tamayo	
	Lea Vitales	

Each member had their different tasks in the system project from the leader, the system analyst, system developer and researcher/documenter, that each member also had its own responsibility in the system project and have the skills in practicing their own task.

Project Role shows the respective activities of each member of the team. Each of them were designated as Analyst, Developer and Documenter. Each member worked together for the completion of the project. The analyst and developer worked with the development of the



project while the documenter is responsible in taking note of the progress of the project and responsible in the write-ups of the manuscript.

Data Gathering Procedure

Survey. The researchers gathered the necessary information to the faculty teachers, critic teachers, and system adviser to be able to know their opinion/feedbacks, for the researcher to gain another ideas or knowledge for the enhancement of the system.

Interview. The researchers conducted an interview to gather information in the system development of Student Information Management System. The researchers seek permission and an interview was conducted to know the processes of retrieving students' data and its existing and present problems when it comes to secure the grade of the students and information management. The registrar and department heads had given the researchers the appropriate information about their grade entry and inquiry process.

Observation. This method was used by the researchers as way of examining, describing and interpreting the occurrences of situations and conditions involving the subjects and settings. The researchers observed how the staff of the registrar's office distribute grades and how they encode the grades of the students.

Document Analysis. The researcher browsed and analyzed the contents of the documents and reports that were contained in the information management and also collecting of students' grades for the



purpose of designing the database, inputs, processes and outputs of the proposed Student Information Management System.

System Usability Scale Tool is a 10 item questionnaire and the items measure the following dimension as follows: Attractiveness, Controllability, Helpfulness, Efficiency and Learnability.

Extent of Usability

The extent of Usability of the System is discussed in this section.

To measure the extent of usability of the system, the researchers used to Systems Usability Scale tool as depicted in Figure 12.

Participant ID: _____ Site: _____ Date: ___ / ___ / ___

System Usability Scale

Instructions: For each of the following statements, mark one box that best describes your reactions to the website *today*.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. I think that I would like to use this website frequently.	<input type="checkbox"/>				
2. I found this website unnecessarily complex.	<input type="checkbox"/>				
3. I thought this website was easy to use.	<input type="checkbox"/>				
4. I think that I would need assistance to be able to use this website.	<input type="checkbox"/>				
5. I found the various functions in this website were well integrated.	<input type="checkbox"/>				
6. I thought there was too much inconsistency in this website.	<input type="checkbox"/>				
7. I would imagine that most people would learn to use this website very quickly.	<input type="checkbox"/>				
8. I found this website very cumbersome/awkward to use.	<input type="checkbox"/>				
9. I felt very confident using this website.	<input type="checkbox"/>				
10. I needed to learn a lot of things before I could get going with this website.	<input type="checkbox"/>				

Please provide any comments about this website:

Figure 3: System Usability Scale Tool



In the Institute of Computing Studies, there are 400 students' and three (3) faculty members and (1) dean, the researchers conducted a purposive sampling thus getting 89 as respondent of the study.

Systems Architecture

The system design and underpinning concept of the proposed ICS-SIMS are as follows:

Conceptual Design. The design of the research focuses on developing series of action that organizes ideas to create abstract representation and logical structure that guide the development of the study to achieve the research project goals.

The framework utilizes exploratory research to gain understanding and familiarity with the problem and to formulate solutions and insights concerning management of records, specifically on an educational environment focusing on grade management.

A systematic review of different related researches were done on the following: 1) grade management methods and strategies, identifying procedures and approaches that continues to change in recent years; 2) student information system (SIS), find studies that defines SIS as a tool that improves management and how it can help an organization grow; 3) management policies and regulations that must be considered to ensure that everything that will be conducted, executed and deployed are align with regulatory standards and to the organization's principles; and 4) technologies, adopting the right technology for the solution to identify



some from aspect of reality or results that these researches derived independent observations and tests.

The existing research topics were carefully evaluated for strengths and limitations, continually refining and narrowing down of each to identify issues and to develop a research purpose.

Planning and design techniques includes developing alternative methods and incorporating policies or even existing policies that promote efficiency and data integrity without tampering security.

Methods and strategies, business processes and models, security policies and data integrity features were carefully designed, aligned and reflective with the research activities to formulate an effective solution.

Data gathering procedures evaluated outcomes, information, captured evidences that support the study, and enabled other relevant questions to be answered.

Applying and testing defined methods and strategies that have been integrated with the solution – computer – based student grade information system, verified the completeness and effectiveness of the design.

Result of the study was based on the consolidated findings from gathered data: interviews and observations of business processes; analysis of related studies and testing of the system.

**Table 2. Statistical and Descriptive Rating**

Scale	Statistical Range	Descriptive Rating
1	1.00 – 1.66	Agree
2	1.67 – 2.33	Undecided
3	2.34 – 3.00	Disagree

The respondents giving rating from 1 until 3; where, 1 is the highest score and 3 is the lowest score. Based from this information gathered, the mean of the rating per item were calculated and described based on the table presented.



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