ESSU CCS ATGG: Eastern Samar State University College of Computer Studies Automated Teacher's Grading Guide

Lourence R. Villaluz

Abstract: ***The study ESSU CCS ATTG (Eastern Samar State University College of Computer Studies Automated Teacher's Grading Guide) aims to develop a desktop application which will serve as locally networked examination tool for ESSU students. The software can be a repository of student grades in different classroom activities specifically quizzes, major exams, class participation and major exams. Another feature of the software is it is capable of computing student final grades and send the result to a mobile phone number registered in the system for each student. Also, the software is capable for retrieving, editing and deleting stored data and can store new data. The software was developed to lessen the time consumed by the ESSU teachers in computing the student's rating in the quizzes, activities, laboratories and final grades. In the entire development of the project, the researcher used extreme programming as the software development tool and the client-server as the System Architectural Style. IBM computer usability scale was the tool used by the researcher to evaluate the software. The software can be used by ESSU CCS teachers in creating examinations and producing final grades. It can also be used by the students in taking the examinations and checking their examination results after. Retrieving previous examination result can also be done by the students through the system.***

Index Terms: client-server, SMS, desktop application, electronic examination

I. INTRODUCTION

A. Background of the Study

Eastern Samar State University is the biggest university in the province. It is seen that many teachers in the university still prepare their examinations via the traditional way paper and pencil test. With the big number of students in the university, it is a burden for the teachers to compute and submit the Report of grades which is required to be submitted ten days before the final examination.

Most of the online examinations are web based where students login to a web site and start answers the questions in the examination. A database is responsible for storing the created questions by the teachers. Questions are shuffled and given to different students so that students do not communicate the answers to each other if they are taking the exam at the same time. [1]

Online Examination system will reduce a lot of physical exercise which is done by the teachers in universities and colleges in conducting and maintaining a repository for question papers and answer sheets of the students. [2]

Computer-based examination serves as a tool in providing fast and reliable examination and eliminate the traditional paper and pencil method. Also, it aimed to generate questions randomly in order to avoid students from cheating during the examination. It also provides a system that would automatically check the examination and develop an exam and generates item analysis that will identify which item got the most number of wrong answers. The Intranet Exam Generator (IEXGEN) provides a LAN based exam generator that allows the teachers to input questions which automatically generate a quiz or an exam for each student in a class. It supports types of examinations such multiple choice, true or false, identification, enumeration, and essay. The teacher can use archives for his/her future references. [3]

Ji-Hoon Lee conducted a study entitled "Internet-Based Exam Generator System for Review of the Fundamental of Engineering Exam" This system generates randomized questions on different topics in engineering. The system is using set of problem templates that when activated generates different variables for the same questions. The generator program randomly changes the problems' variables and the computation's order. This system also generate graphics. [4]

With the manual examination setting and assessment, the following problems may arise: 1) Processing of set of exams and quizzes every semester is tedious. 2) Preparation of test paper needs a lot of time, cost and resources. [5]

In the College of Computer Studies of Eastern Samar State University, the average ratio of student to faculty for each class is 1: 50. Because of this, following are the most encountered problems by the teachers. (1) It is a burden for the teacher checking each student during examination to avoid cheating. (2) Computation of grades for each quizzes and major examinations need a lot of time. (3) Processing of student's final grade needs a lot of time. Another problem of the college is it has a weak global internet connection which may also help those creating online examinations.

To cater these issues, here the researcher proposed a Local Area Network based desktop application software for examination. The teachers can log in to the system, enroll students so that the students are also capable for logging in and taking exams for a specific subject. After logging in, the teacher can create his/her test paper, review previous examination results and monitor student during examination. The system can be used in sending the

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students examination result ad final grade through SMS. With the use of the system, the teacher can save his time in computing the student's final grade for the system has an automatic generation of the final grades. Retrieving, editing, deleting and updating student and examination can also be done anytime through the system.

B. Objectives of the Study

1) Develop an electronic LAN-based desktop examination application.
2) Develop an examination software that can cater multiple choice, identification, True or False and Essay examination type.
3) Develop a software that can auto generate examination result and final grades and send it to students through SMS.
4) Develop a software that can generate questions randomly.
5) Evaluate using the expert and end users test based on IBM Computer System Usability Scale.

C. Significance of the Study

The successful development of the system will be beneficial to the ESSU CCS educators who wants to administer electronic examinations and produce immediate results and final grades. This will also benefit students who are more comfortable in taking computer based exams.

D. Scope and Limitations

The system only covered the adding, viewing, editing and deleting student data and test questions. The system only supports the multiple choice, True or False, Identification and Essay type of examinations. The grading system programmed in the system is based on the Eastern Samar State University grading System found in the University student Handbook. Changing of grading system needs updating and re programming of the software.

II. METHODOLOGY

A. System Development Model

The researcher used the Extreme Programming as the Software Development Model. This model allows the developer to test the software every time a feature is successfully made and this helps the researcher decide whether to improve or stick to the software feature created. The software may have several times of testing before the actual release. Simple codes are made by the researcher in the development of the software so that it can be improved at any time and any moment. A total of 6 versions were made by the researcher before the actual deployment of the system.

In Figure1, it is shown that there are five phases in the Extreme Programming model. In the development of the software, the researcher used its client which is the students for testing in every iteration through engaging the users in the system.

Planning

The initial planning was made through collecting sample test papers, grade reports and other forms related to creating final grade of students. Interviews to student and faculty of the Eastern Samar State University (ESSU) College of Computer Studies (CCS) were also conducted by the researcher. From the data collected, the researcher developed concrete plan for what would be the flow of the software and what are the objectives needed to be solved by the software.

Design

After the completion of the Planning Phase, the researcher created a design of the system including the Graphical User Interface (GUI), Database and Architecture. The design were both made for the client side software and server-side software. When the design was completed, the researcher presented the output to the CCS faculty and students for approval. Several changes has been made during the iteration procedure.

Coding

In this phase, the researcher started coding using Microsoft Visual Studio 2010 (VB.net) for the GUI and XAMPP as the local host server. Iteration also happened here.

Testing

In this phase, the researcher presented the system both to the CCS faculty and students for a system walkthrough. Issues met during the testing were solved by the researcher. This process was repeated until the desired output has been made.

Release

After all the phases has been completed, the researcher conducted an evaluation of the system. When the software was approved by the CCS Faculty and students, the researcher conducted a release of the software.

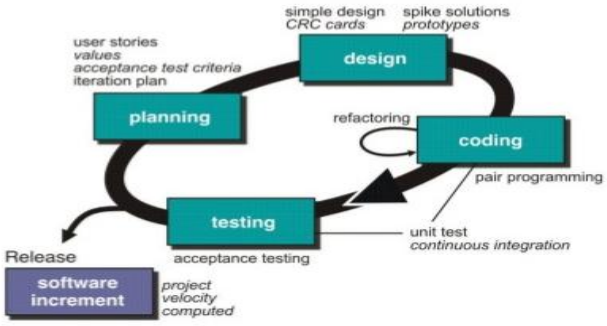

Fig. 1 Extreme Programming [6]

B. *Use Case Diagram*

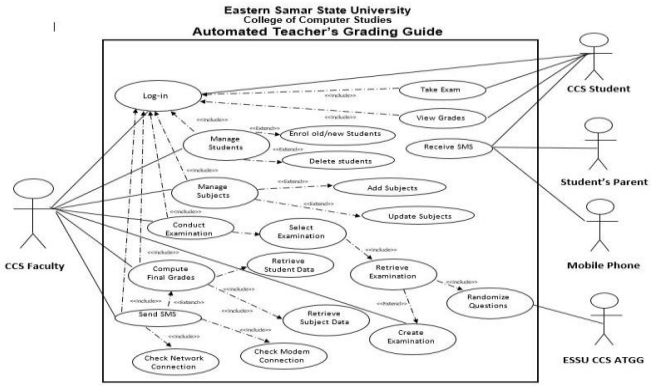

Fig. 2 Use Case Diagram

Figure 2 shows the actions of different steps in the transactions between the teacher/faculty, CCS students and student's parent

C. Architectural Style

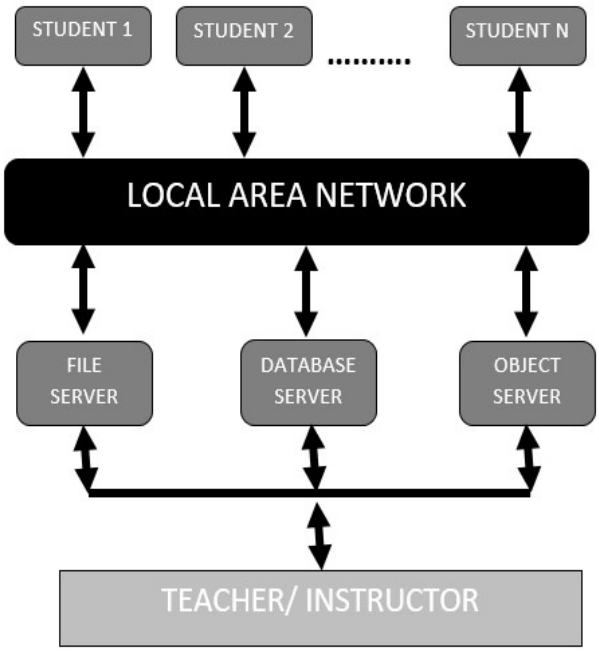

Fig. 3 Client-server Style

Figure 3 shows the architectural style of the developed system. The clients and the server shared the database, files and objects via local area network.

D. Output and User Interface

Fig. 4.1 Log in Form (Teacher's side)

Figure 4.1 is the form where the teacher enters his/her username and password which is to be validated by the system

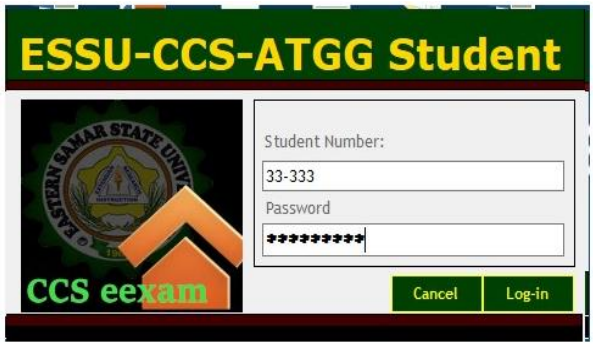

Fig. 4.2 Log in Form (Student's side)

Figure 4.2 is the form where the student enters his/her student number and password which is to be validated by the system

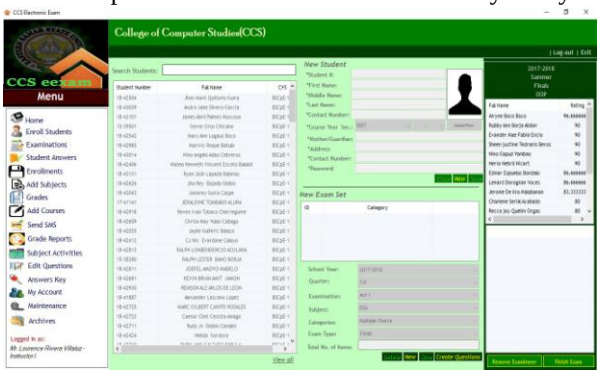

Fig. 5.1 Main Form (Teacher's side)

Figure 5.1 shows the form that will display after the teacher's input is validated. In this form, the teacher can do several tasks such as (1) adding new student, (2) creating new examination, (3)monitoring current examination results (4) monitoring active examinees (4) selecting other features from the dashboard.

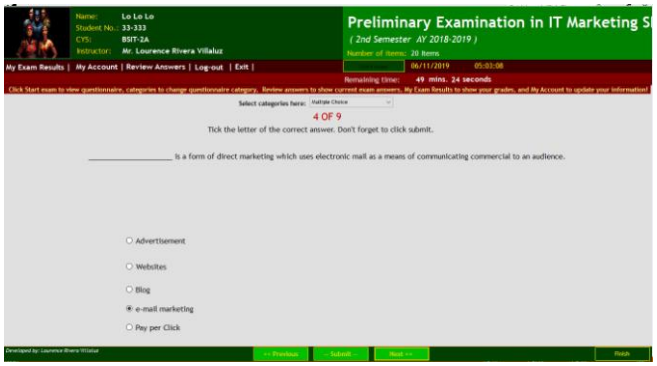

Fig. 5.1 Main Form (Student's side)

Figure 5.2 shows the form that will display after the student's input is validated. The student can click Start if he/she is enrolled in the current subject's examination otherwise the start button is disabled. Student's information, current examination, instructor handling the subject and examination type are displayed in this page. The dashboard is also located on this page.

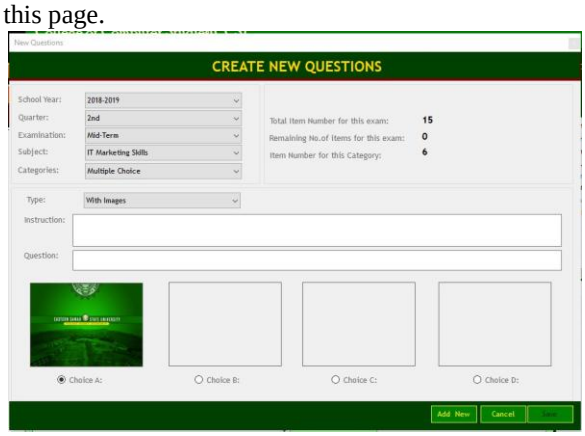

Fig. 6 Create New Questions Form (Teacher's side)

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Figure 6 shows the form where the teacher enter questions for the examination.

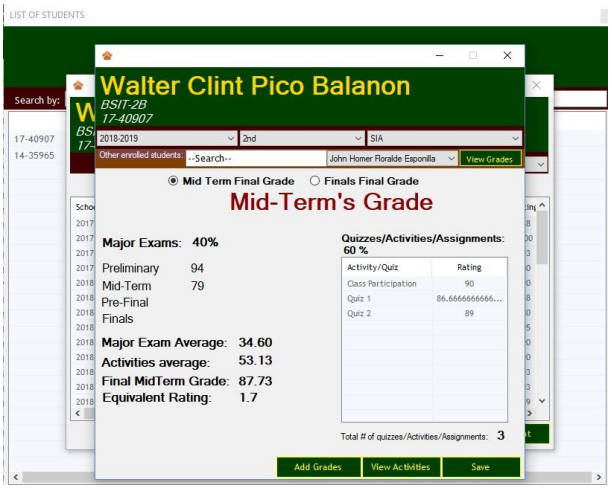

Fig. 7 Grade Computation Form (Teacher's side)

Figure 7 shows the form where the teacher can see the computation of student's grade.

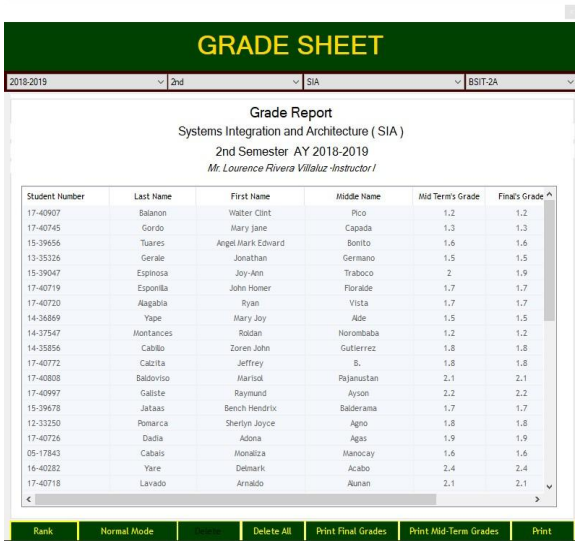

Fig. 8 Grade Report Form (Teacher's side)

Figure 8 shows the form where the summary report of student's grade in a specific school year, semester, subject and section are displayed.

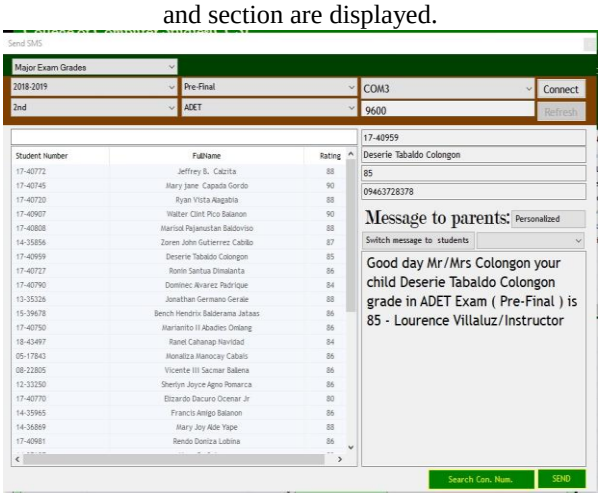

Fig. 9 Send SMS Form (Teacher's side)

Figure 9 shows the form that allows the teacher to send the result of individual student to their parents through SMS

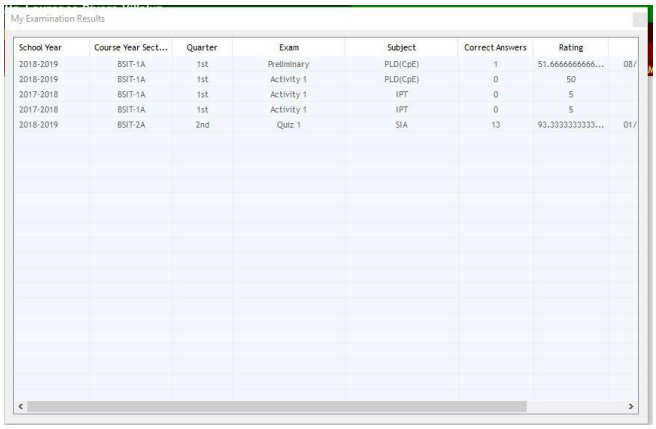

Fig. 10 Student's Examination Results (Student's side)

Figure 10 shows the form that allows the student to view all his/her examination results.

III. SYSTEM TESTING RESULT

The pool of experts who evaluated the developed desktop application is composed of 15 faculty members of the College of Computer Studies, 5 from the Department of Information Technology and 10 from the Department of Computer Science. These evaluators are chosen based on their expertise in system development. IBM Computer System Usability Scale was used by the evaluators in evaluating the desktop application.

Questions	Weighted Mean	Adjectival Interpretation
Overall, I am satisfied with how easy it is to use this system.	4.7	Highly Usable
It was simple to use this system.	4.8	Highly Usable
I could effectively complete the tasks and scenarios using this system.	4.9	Highly Usable
I was able to complete the tasks and scenarios quickly using this system.	4.9	Highly Usable
I was able to efficiently complete the tasks and scenarios using this system.	4.9	Highly Usable
I felt comfortable using this system.	4.8	Highly Usable
It was easy to learn to use this system.	4.9	Highly Usable
I believe I could become productive quickly using this system.	4.8	Highly Usable
The information (such as on-line help, on-screen messages and other documentation) provided with this system was clear.	4.7	Highly Usable
It was easy to find the information I needed.	4.8	Highly Usable
The information provided for the system was easy to understand.	4.8	Highly Usable
The information was effective in helping me complete the tasks and scenarios.	4.7	Highly Usable
The organization of information on the system screens was clear.	4.7	Highly Usable
The interface of this system was pleasant.	4.8	Highly Usable
I liked using the interface of this system.	4.8	Highly Usable
This system has all the functions and capabilities I expect it to have.	4.8	Highly Usable
Overall, I am satisfied with this system.	4.8	Highly Usable
Grand Mean	**4.80**	**Highly Usable**

Table 1. Weighted Mean for the Expert Test

Field of tests were conducted after the development of the software. Table 1 shows that the software developed got a total rating of 4.80 from the poll of experts who evaluated the software which is interpreted as highly usable. Three questions were rated lowest

with the average of 4.7 but still is interpreted as highly usable. The highest weighted mean is 4.8 which mostly of the question got and interpreted as highly usable. Overall, the result shows that the software corresponds to the IBM Computer System Usability Scale. The positive result of the conducted tests says that it is better to use automated examinations and grade computation in the Eastern Samar State University, College of Computer studies.

IV. CONCLUSION

Based on the result of the study, the following conclusions are drawn within the objectives of the study:

1) The developed software served as a tool in storing, retrieving, deleting, updating and computing examination results as well as final grades of the student of College of Computer Studies.
2) The developed software can be an alternative in updating and informing student's parent about the student's performance in a specific subject through sending SMS.
3) The developed software can be used as an alternative for student and teachers in taking examinations of a specific subject.
4) The software is capable for generating random questions which may help the teacher minimize cheating during examinations.
5) The developed software supports the multiple choice, identification, True or False, Essay types of examination.

Overall, the developed software can be used by the teachers of Eastern Samar state university, College of Computer Studies in administering student's quizzes, examinations, quizzes and computation of final grade for timely and accurate result which may help the teachers submit their final grade reports on time. Developing and using software can help institutions like Eastern Samar State University cope up with technology and it can be more effective and of great help for student's learning and development.

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