SHORT MESSAGING SERVICE (SMS) - BASED GRADE INQUIRY SYSTEM

Rolando Real Codilan

Faculty, College of Computer Studies, Eastern Samar State University Main Campus, Borongan City,

Philippines

ABSTRACT

SMS Based Grade Inquiry System is focused on managing student grades, which will be encoded in a database system that can be easily accessed and managed by the user or administrator. The information about the grades can be easily converted into an SMS message ready to be sent to any inquiring student. This SMS Based Grade Inquiry System would help the students to know the grades they have garnered for the last semester without even leaving their homes and by just sending a text message request. Short Message Service (SMS) is the best way of communicating easy and fast. The students can be assured that the system is accurate and secured considering that only those who are inquiring with the proper combination of their ID number and passcode – (that will be generated through adding students to the system), will be catered. Only the administrator authorized by the university can access the system.

KEYWORDS – *Short Message Service (SMS), Grade Inquiry, students*

I. INTRODUCTION

In today's world, almost all businesses and individuals are dependent on software. Also, processing record systems such as the creation of data records, storing, filing and retrieval of data have become much easier because of innovations. Hence, it eases the difficulties of manually doing things, particularly in terms of calculations and disseminating information.

On the other hand, grades reflect and measure the performance of a student. They also help educators guide and facilitate the students' learning development. Thus, students' grades must be accurately calculated, stored properly in a database and must be well distributed to the students.

At present, inquiring about one's grades is very difficult. Every end of the semester students needs to visit the school registrar where they line-up and make a request for their grades. It takes a lot of effort and consumes too much time just to know if one has passed all his subjects or not.

Therefore, this study would like to develop an SMS-Based Grade Inquiry System that will lessen the burden of the students. Most of the students now are relying heavily on gadgets like mobile phones and tablets, which have Short Messaging Service capabilities. This system will present the academic performance of the students through their grades in a much more efficient way, by simply sending an SMS request to the system. The response will also be via SMS to the students with its requested grades in a specific semester and school year.

Objectives of the study

This study aims to develop a system which will allow students to access their grades via SMS. Thus, this will also provide a much more efficient way of connecting to a student's academic performance even without lining in a long queue in the registrar. Specifically, the study aspires to achieve the following objectives:

1. To design and develop a grade evaluation system that will:
   1.1 Disseminate the grades of the students faster using SMS.
   1.2 Allow the students to view their grades in a more convenient and time-saving way.
2. To evaluate the system in terms of:

2.1 Functionality
2.2 Usability
2.3 Efficiency
2.4 Maintainability
2.5 Portability

II METHODOLOGY
Software Architecture

The way modeling was used in this project was called Unified Modelling Language (UML) that is a standard language for specifying, visualizing, constructing, and documenting the artifacts of systems, as well as for business modeling and other non-software systems. The UML represents a collection of best practices that have proven successful in the modeling of large and complex systems. The UML uses mostly graphical notations to express the design of projects, it helps project teams communicate, explore potential designs, and validate the architectural design of the system.

The primary goals in the design of this UML are:

1. To provide users with a ready-to-use, expressive visual modeling language so they can develop and exchange meaningful models.

2. To provide extensibility and specialization mechanisms to extend the core concepts.
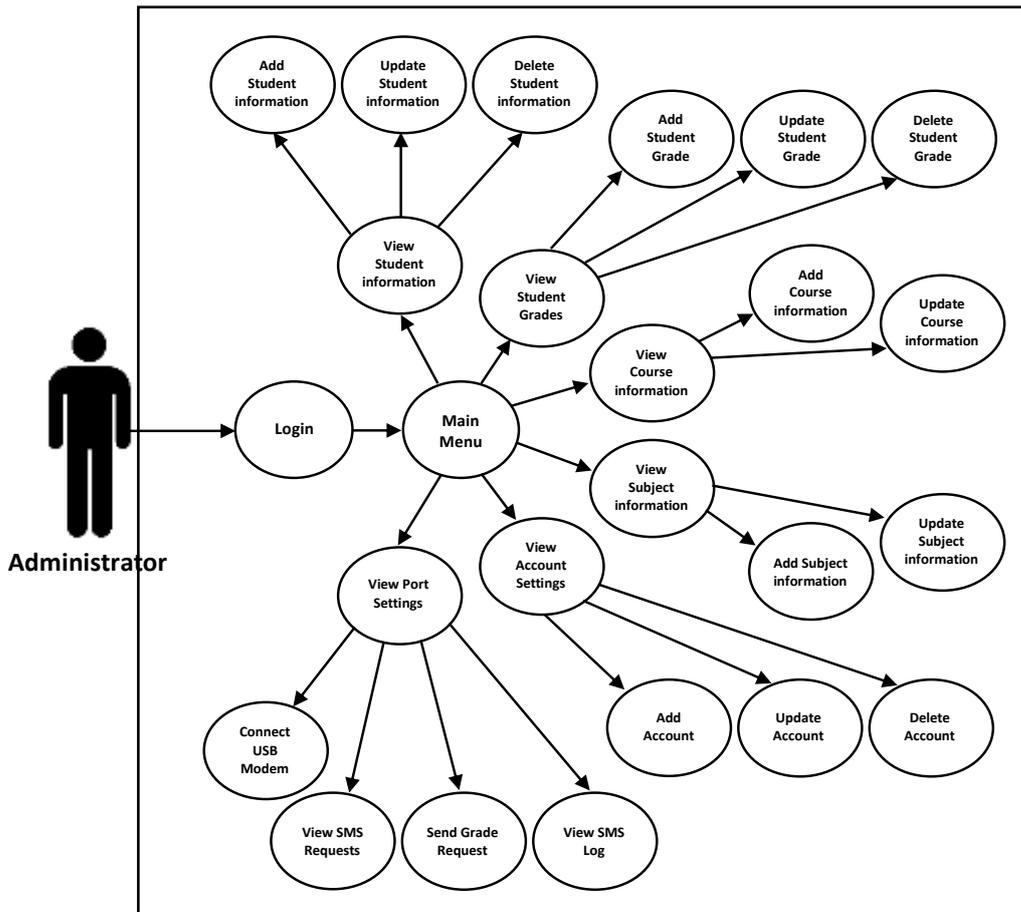
Figure 1 Use Case Diagram for Administrator
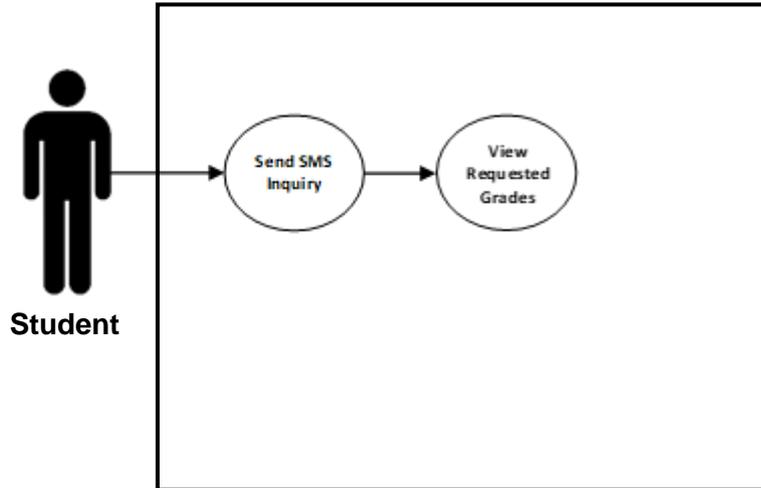
Figure 2 Use Case Diagram for Students

Use Case Diagram Figure 1 and Figure 2 above shows that only the admin can manage the students' information and grades. The admin has also the responsibility to send the grades through SMS to the inquiring students. The students will only send their request for grades in a specific semester and school year then they will receive an SMS of their requested grades.
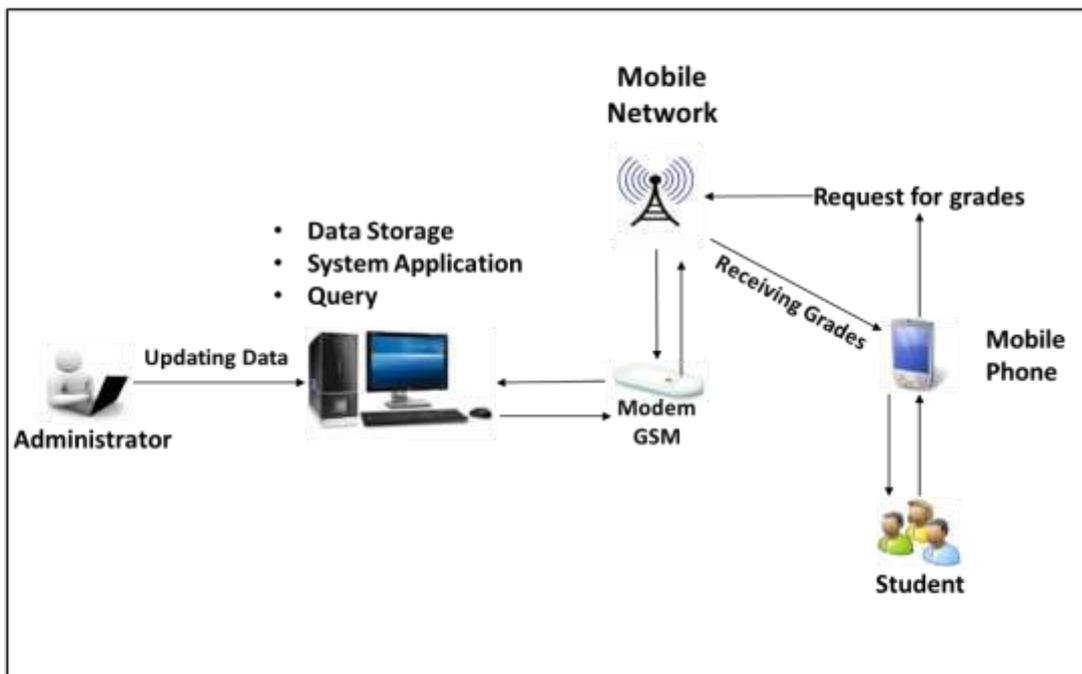
Figure 3 Software Architecture

The figure above shows the system architecture. The administrator manages the grades and the student's information in the database. Students requesting for their grades via SMS request will send a specific keyword to the system. The keyword will be received by the system with the help of a GSM Modem, then the system automatically verifies the keywords and look for the corresponding grades the student's requesting. Then, the grades will be sent back to the students who are requesting via GSM Modem.

Research Design

Developmental Research was used in conducting this study, According to Richey, R. (1994) as a systematic study of designing, developing and evaluating instructional programs, processes, and products that must meet criteria of internal consistency and effectiveness. In which the product-development process is analyzed and describe, and in the final product is evaluated.

Instrument and Data Gathering Procedure

To gather as much informative and relative evaluation, the questionnaire is used as a data-gathering instrument for this study. The questionnaire used to evaluate the system was adapted from the questionnaire used by Mashod, N. B. (2004) with a few modifications and revisions, and is based on ISO 9126 standards. ISO/IEC 9126 is an international standard intended to ensure the quality of all software-intensive products Al-Kilidar H. et al. (2005).

The questions were structured as the Likert format, and then five choices are provided for every question or statement. The choices represent the degree of agreement of each respondent has on a given statement.

Table 1 Likert Scale System

Scale	Range	Interpretation
5	4.6 – 5.0	Excellent
4	3.7 – 4.5	Very Good
3	2.8 – 3.6	Good
2	1.9 – 2.7	Fair
1	1.0 – 1.8	Poor

Data Analysis

The descriptive method was used. The weighted mean was also used to measure the general response of the survey samples, whether they agree or not. This also includes the scaling system which was used in this study as a method to monitor the respondent's interpretation of facts.

III. RESULT AND DISCUSSION
System Development
Output and User Interface

Under Output and User Interface will show the GUI of the system.
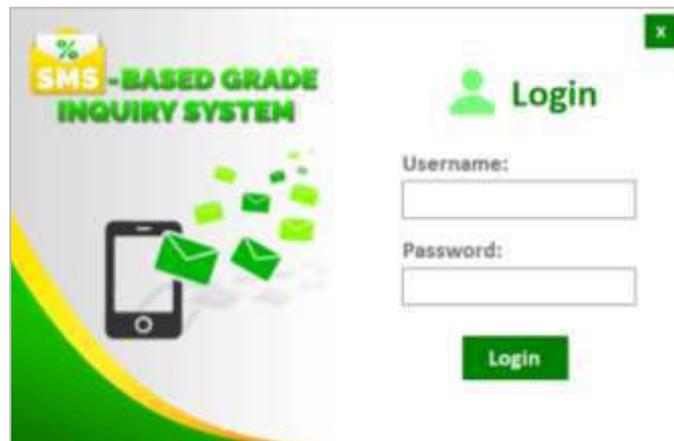
Figure 4 Login Form
The figure shows the log-in form of the system.

Figure 5 Menu form

The figure shows the Menu form of the system. The menu buttons are located at the center part of the form.
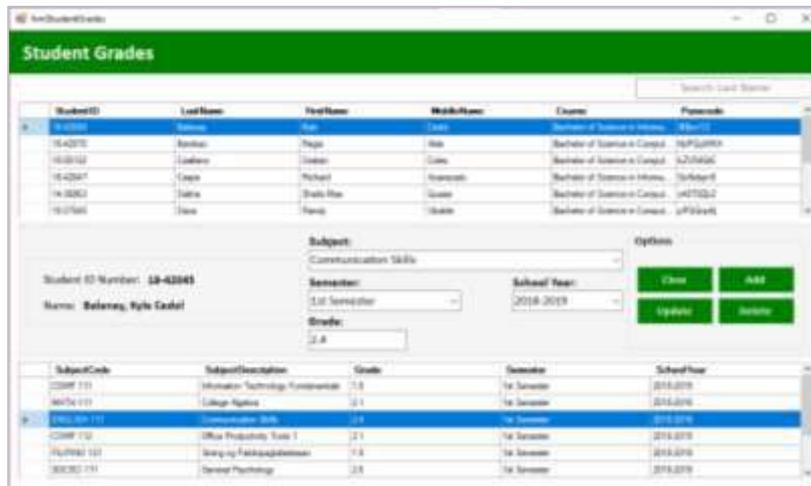
Figure 6 Student Grades form

The figure shows the student grades form of the system. It contains all the students' grades. In this form, the administrator can add, edit and delete student grade in a specific subject, semester and school year.
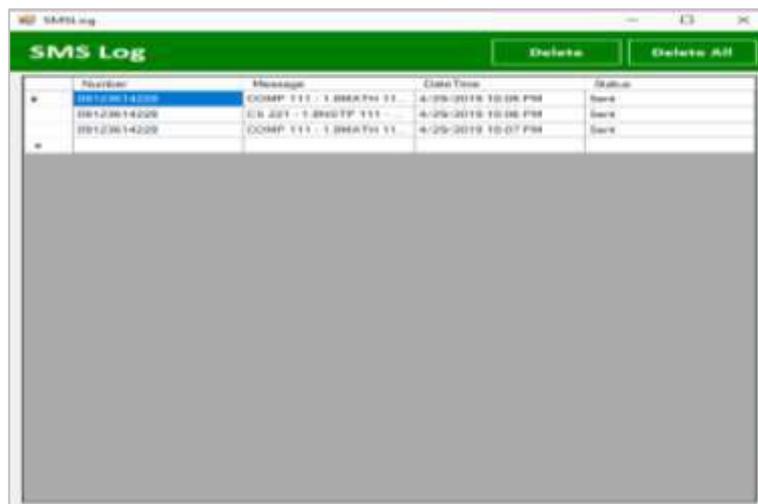

Figure 7 SMS Log form

Figure 7 shows the SMS Log form of the system. It contains all the SMS log history and indicates whether the message is sent or failed. In this form, the administrator can delete a selected row and delete all SMS log data.

System Evaluation

Table 4 Functionality

Functionality	5	4	3	2	1	Total	mean
How does the system perform the task required?	4 (23.5%)	13 (76.5%)	0	0	0	17 (100%)	4.23
Is the result as expected?	6 (35.3%)	11 (64.7%)	0	0	0	17 (100%)	4.35
Does the system prevent unauthorized access?	3 (17.6%)	11 (64.7%)	3 (17.6%)	0	0	17 (100%)	4.0
Average mean							4.19

In the Functionality category as shown in Table the first question has a weighted mean of 4.23 interpreted as Very Good. The second question has a weighted mean of 4.35 also interpreted as Very Good. The third question has a weighted mean of 4.0 and also interpreted as Very Good. With an average mean of 4.19, the overall Functionality category has the interpretation of Very Good. This means that the system can perform the task required, deliver the expected results, and can prevent unauthorized access.

Table 5 Usability

Usability	5	4	3	2	1	Total	mean
How does the user comprehend how to use the system easily?	5 (29.4%)	11 (64.7%)	1 (5.8%)	0	0	17 (100%)	4.24
How does the user use the system without much effort?	6 (35.2%)	10 (58.8%)	1 (5.8%)	0	0	17 (100%)	4.29
How does the interface look like?	8 (47.1%)	9 (52.9%)	0	0	0	17 (100%)	4.47
Average mean							4.33

In the usability category as shown in Table 11.1, the first question has a weighted mean of 4.24 interpreted as Very Good. The second question has a weighted mean of 4.29 also interpreted as Very Good. And the third question has a weighted mean of 4.47 which is also interpreted as Very Good. With an average mean of 4.33, the overall usability category of the system is interpreted as Very Good. Which was the user can comprehend the system easily, use the system without much effort, and design, graphics, and interface of the system were attractive and appealing to the eyes of the user

Table 2 Efficiency

Maintainability	5	4	3	2	1	Total	mean
How does the system be easily modified?	2 (11.8%)	8 (47.1%)	7 (41.2%)	0	0	17 (100%)	3.71
How does the system continue functioning if changes are made?	3 (17.6%)	8 (47.1%)	6 (35.3%)	0	0	17 (100 %)	3.82
How does the system be tested easily?	5 (29.4%)	10 (58.8%)	2 (11.8%)	0	0	17 (100 %)	4.18
Average mean							3.9

As for the efficiency, as stated in Table 2, the first question has a weighted mean of 4.05 which leaves a Very Good impression to the respondents. And for the second question which has a weighted mean of 3.76 also has a Very Good impression from the respondents. With a total average mean of 3.91, the overall efficiency category was interpreted as Very Good by the respondents. This means that the efficiency for the system capability in sending grades, the provision of an appropriate response, processing time and throughput rates when performing its function has a Very Good interpretation from the respondents.

Table 3 Maintainability

Portability	5	4	3	2	1	Total	mean
Can the system be moved to another environment?	1 (5.8%)	11 (64.7%)	6 (35.3%)	0	0	17 (100%)	3.94
How does the system comply with the portability standards?	2 (11.8%)	13 (76.5%)	2 (11.8%)	0	0	17 (100 %)	4.0
Average mean							3.97

As for the maintainability, Table above shows that the first question has a weighted mean of 3.71 which interpreted as Very Good. The second question which has a weighted mean of 3.82 also interpreted as Very Good. The same for the third question, which has a weighted mean of 3.82 that interpreted also as Very Good. With the overall rating for the maintainability category of an average mean of 3.9, it leaves a Very Good impression to the respondents. the system's adaptability and the correction of faults of the system have also left a Very Good impression to the respondents.

Table 4 Portability

Efficiency	5	4	3	2	1	Total	mean
How quickly the system response?	4 (23.5%)	10 (58.8%)	3 (17.6%)	0	0	17 (100%)	4.05
How does the system utilize the resources efficiently?	2 (11.8%)	9 (52.9%)	6 (35.2%)	0	0	17 (100 %)	3.76
Average mean							4.33

As for the portability, it can be gleaned in Table 4, the first question has a weighted mean of 3.94 which interpreted as a Very Good. And for the second question which has a weighted mean of 4.0 also interpreted as a Very Good. With a total average mean of 3.97, the overall portability category is also interpreted as Very Good. This means that the portability standards and adaptability of the system have interpreted as Very Good by the respondents.

IV. CONCLUSION

This study concluded that the Short Messaging Service (SMS) – Based Grade Inquiry System can:

1. Through the help of SMS technology, the students will have a convenient and efficient inquiry of grades.

2. By the use of the system, the students can inquire about their grades upon request using SMS Technology.

3. It is also concluded that the grades are secured, that only the students can view their grades because of the combination of the student ID number, and passcode.

REFERENCES

1. *Al-Kilidar, H.; Cox, K.; Kitchenham, B. (2005). The use and usefulness of the ISO/IEC 9126 quality standard.*

2. *Mashod, N. B. (2004). SMS Based Grade Inquiry System for Holy Trinity College of General Santos City*

3. *Ritchey, R. (1994). Developmental Research: The Definition and Scope.*