CHECK KO BAYAD KO: A WEB BASED APPLICATION FOR TRACKING STUDENT FINANCIAL TRANSACTION WITH SMS SCHEDULED NOTIFICATION USING CRON JOB

[1]EXANDER T. BARRIOS, [2]EDZEL KIM LOWIE A. ABLITER, [3]SHERRYLLE M. CAPIÑA, [4]JOHN KEVIN D. MURILLO, [5]SHEERA MAE T. PEÑARANDA

Jose Maria College – College of Information Technology Education, Davao City, Philippines
E-mail: [1]exander_barrios@yahoo.com, [2]edzel.abliter@jmc.edu.ph, [3]sherrylle.capina@jmc.edu.ph, [4]JohnKevinzz69@gmail.com, [5]sheera.penaranda@jmc.edu.ph

Abstract- In any school business, the financial transaction is vital because it is the fuel of the institution for giving quality education and services to their stakeholders. Unfortunately, the school experienced delayed payments due to the discrepancies of their financial data. In this study, the researchers introduced a we b-based application that would track students' financial transaction and received a scheduled SMS notification for the students and parents of the Jose Maria College. The researchers used the Constructive Method and Iterative Process Model as a research and technical development methodologies. The researchers also used fuel PHP framework for the web-based application and Cron job that serves as a time-based job scheduler for sending scheduled SMS notification. For the testing the application, the White Box testing was used by the researchers to review the smaller chunk of the application and decide if it is discarded or kept as a starting point. In user acceptance testing, the black box testing was utilized to critique the functionalities of the application. Thirty-five(35) students, seven(7) parents, three (3)Program Heads, two (2) Deans of Colleges, one (1) School Administrators' Secretary, one (1) Principal, one (1) Vice President for Academic Affairs, one (1) Cashier, and one (1) Accountant with a total of 52 respondents tested the web-based application and received scheduled SMS notification. Among the 52 respondents, 52 or 100% of the respondents commented that the application was very useful in the financial information.

Index Terms- CheckKoBayadKo, Constructive Research, Cron Job, Financial Transaction

I. INTRODUCTION

According to Jonathan Lister of Demand Media, accounting of business financial data from start to payment completion is a crucial element in a small business's accounting strategy. Detecting a bottleneck in the payment process can help streamline bill payments and improve company reliability with other businesses. It keeps the relationships within the supply chain healthy and maintains the company's credit rating. Financial data of this kind can also provide a means to track the company's profitability and control costs. Hence, a business that does not track its financial data runs the risk of operating blind with regard to available cash and ability to pay financial dues. [1]Richard Kajumbula from Makerere University explains that SMS or Short Message Service communication is applicable where students' mobile telephone numbers are available. Having phone numbers of the students are vital because the department can communicate to them and provide feedback on whatever they need to know. [2]

According to the school accountant and cashier of Jose Maria College, they stated that they are experiencing difficult times in collecting students' payment. An estimated 70% of the total population cannot pay on time and about 10% who are unable to pay other school fees at all. If the school cannot collect student fees, salaries of the personnel and the school operations are at stake.

With the existing problems of the school regarding student payments, the researchers further interviewed the respondents about the reasons why they cannot pay on time. Based on the data gathered from the fifty (50) college students of the said academic institution and eleven (11) interviewed parents, they stated that they have encountered common problems in their financial payment such as, inconsistency of information of the remaining balances, late information with regards to additional payments and lack of information for the breakdown of payments from the cashier.

The mentioned problems result in students to not have an examination permit due to inconsistent information of the breakdown of payments or in students not being able to take examinations on the scheduled dates due to non-payment, financial dues or non-payment. Late information with regards to additional payments also causes confusion among parents resulting in budgeting problems.

With these mentioned problems, the researchers have been motivated to create a web based application that monitors and tracks students' financial transactions and can send notifications via Short Message Service (SMS) using Cron Job to parents and students.

II. RELATED WORKS

CheckKoBayadKo: A Web Based Application For Tracking Students' Financial with Scheduled SMS Notification Using Cron has been researched for years to achieve an effective alternative way; they gathered some studies related to the proposed application.

According to the University of North Carolina at Charlotte, "Financial Services was established to provide central accounting and budgeting services for the university and its financial affiliates, including its foundations and related entities. It provides quality account management service to the students, parents and alumni by proactively assisting the clients in meeting their financial responsibilities for attendance it also provides essential, facility and administrative support services to the University of North Carolina.

According to Moses O. Onyesolu, McChester O. Odoh and Obiajulu E. Ositanwosu (2013), the deployment of mobile technologies allows the possibility for mobile information applications. With these applications, information can be delivered and accessed via various types of mobile devices. SMS, the common application in mobile devices provides mobile users to communicate efficiently. It has come to be a handy tool in communication. The reduced time and cost of sending and receiving SMS has made it to be widely accepted as the cheapest and fastest means of communication. The researchers in this work took advantage of this by developing an SMS user interface to complement the services offered by the University portal. The system is client-server architecture deployed using a modified independent service.[3]

Another related literature, according to hostgator.com (2002),"Cron is a linux utility which schedules a command or script on your server to run automatically at a specified time and date. A Cron Job is the scheduled task itself. It can be very useful to automate repetitive tasks. For example, you can set a Cron Job to delete temporary files every week to conserve your disk space. Some programs, such as Drupal, may even require you to set up a Cron Job to perform certain functions. Scripts executed as a Cron Job are typically used to modify files or databases. However, they can perform other tasks that do not modify data on the server, like sending out email notifications. A working knowledge of Linux commands is required to use Cron Jobs effectively. Cron Job can be set to run by the minute, hour, and day of the week, day of the month, month or any combination of these."[4]

According to Sabal Financial Group Company, "Scivantage is the leading provider of web-based, front and middle-office technology solutions to the financial services industry. It provides flexible, secure solutions that meet the needs of the clients, and minimizes the implementation and overall maintenance costs. Scivantage ensures that customer, account and transaction data are all protected by the latest technology and infrastructure, including physical security, data encryption, user authentication, application security and more.[5]

According to Questware, LLC,"Studioware which contains a comprehensive accounts receivable system. With the accounts receivable system within Studioware, you are able to precisely track how much money students owe. Certain financial transactions are automatically added to the accounts when events occur in Studioware, it can also track your taxes and it also allows you to create global and local taxes (in case you have multiple locations with different tax rates). It allows you to create goods taxes (sales tax), service taxes, or a goods and service tax (for example, VAT or Harmony taxes).[6]

According to OSC," Online School Care system is a fully integrated web application for before and after school child care management. OSC allows school districts to manage extended day, summer, and student enrichment programs throughout the district at multiple sites with central program oversight from enrollment to billing.OSC has simple, user-friendly student based management features to manage parent and guardian information as well as tracking student balances, fees, and payments. Child care coordinators can manage groups, rosters, and tracks of students with enrollment, attendance, and sign in/out, as well as post fees to student accounts and collect payments from parents using a web browser from any location."[7]

III. OBJECTIVES

The main objective of this capstone is to create a web based application that tracks the student financial payments at the Jose Maria College. The said web based application is entitled "CheckKoBayadKo": A Web–Based Application for Tracking Students' Financial Transaction with Scheduled SMS Notification using Cron Job.

Specifically, the application is capable of allowing the following:
Accountant to

- add user to access the application.
- assign the level of users' accessibility to Students' Financial Information.
- set the date a week prior to the examination day using the scheduled examination date of the Basic Education unit and College department for the reminders of students' payment.

- view the numerical statistical report of the students who have paid and not paid with time and date of generation

School Administrator to

- view the numerical statistical report of the students who have paid and not paid using the web portal.

Cashier to

- encode the students' payment.
- notify the students' and parents after paying the Financial dues of the students through SMS notification

Vice President for Academic Affairs and Principal to

- view the numerical statistical reports with date and time of generation for the College department and Basic Education unit.

Dean of College and Program Head to

- allow the Dean of College and Program Head to view the list of students who have paid and not paid in his/her department/program.

Students and Parents to

- receive reminders of payment before examination day via SMS notification
- receive notification after payment transaction via SMS notification.
- view the financial assessment and history of payment transaction on the web portal.

IV. CONCEPTUAL FRAMEWORK

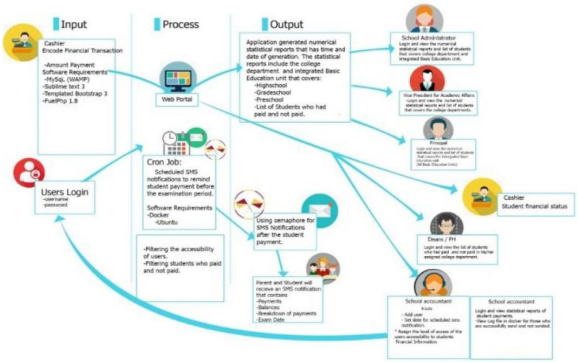


Figure 1. Conceptual Framework

Figure 1 shows the INPUT, PROCESS AND OUTPUT Model used in structuring and designing the application. The user will interact to the computer and mobile phone and the users access the application through web browser.

Integration of Cron to the CheckKoBayadKo Application

Cron is a Linux utility which schedules a command or script on your server to run automatically at a specified time and date. A Cron Job is the scheduled task itself, it is very useful in to automate repetitive tasks. It can be set to run by the minute, hour, day of the week, day of the month or any combination of these. In our application, we set a Cron job to notify the students and parents a week prior to the examination to conserve the time in reminding them.

In general, Windows is a more popular operating system when it comes to desktops or laptops than Linux. Since Cron Job runs only in Linux operating system, in our case, we use docker virtual machine and install Ubuntu operating system to run the Cron Job in windows.



Figure 2 CheckKoBayadKo User Login Page

Figure 2 shows that all users who access the CheckKoBayadKo application must first login to the web portal before viewing the financial information of the different set of users.

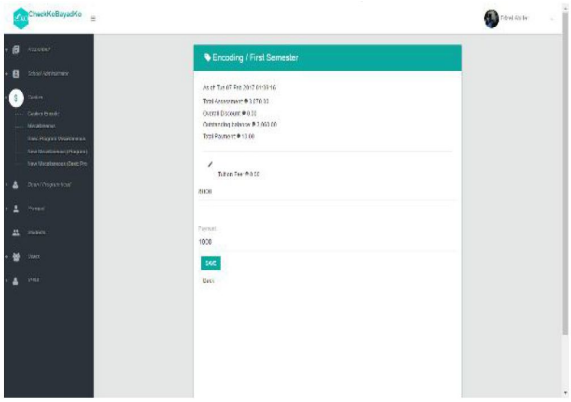


Figure 3 Cashier Encode Financial Payment

Figure 3 shows the cashier will be the one to input the total assessment of the student, initial amount paid and breakdown of payments. During the students' payments, the Cashier input the amount paid by the Students or the Parents. Then, the Cashier send SMS notification containing the name of the Students, year and department, date of the payment, amount paid and outstanding balances using the semaphore. They can receive the said information and view their updated Students' Financial Transaction.

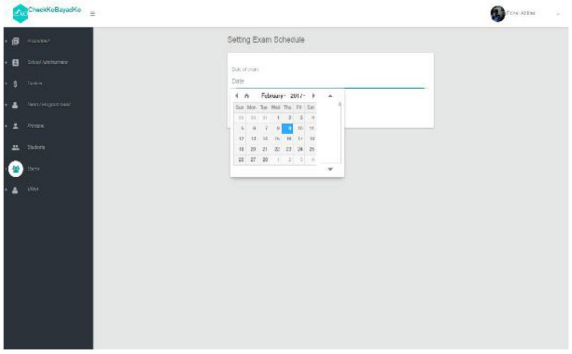


Figure 4. Accountant Set Date A Week Prior to Scheduled Examination Date

Figure 4 shows the Accountant to input the date, a week prior to the scheduled examination day for the reminders of students' payment through the Cron Job. This automates the SMS notification which sends information to the Parents and Students about their payment using the semaphore.

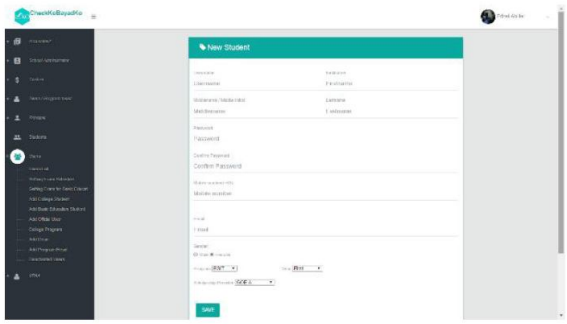


Figure 5. Accountant Assigns the Level of Access of the Users

Figure 5 shows the Accountant assigns the level of access of the users' Financial Information of the Students and adds users to access the application.

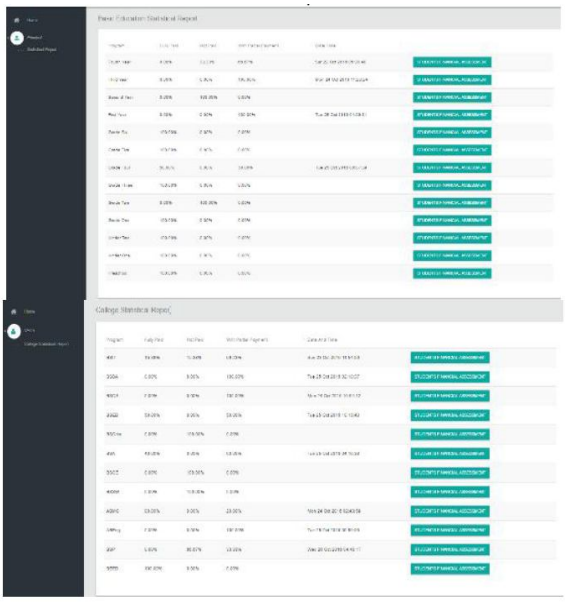


Figure 6. School Administrator, Accountant, VPAA, Dean of College and Program heads Financial Transaction Numerical Statistical reports

Figure 6 shows the School Administrator, School Accountant, Vice President for Academic affairs (VPAA), Principal, Dean of College and Program heads to monitor generated numerical statistical reports with date and time of generation of the list of Students who had paid and not paid in the application. This allows the said users of the application to track the Students' financial payments but depending to their level of access of the users to the application.

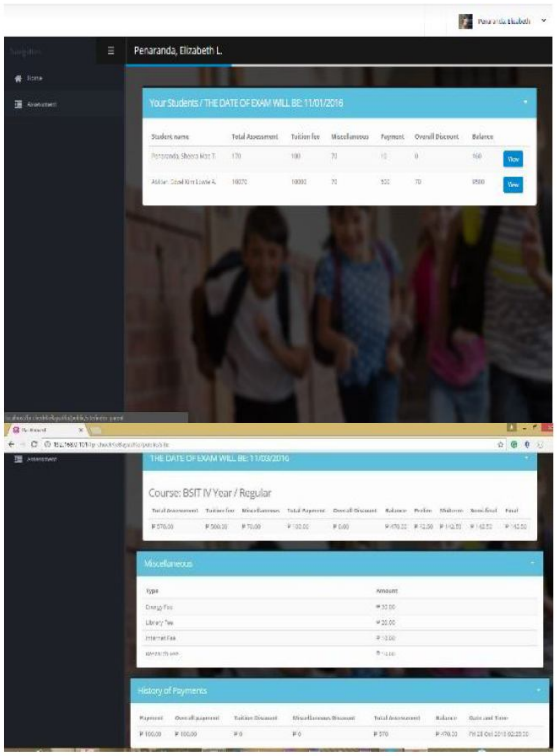


Figure 7. Students and Parents Financial Transaction on the Web Portal

Figure 7 shows application generates financial assessment and history of payment on the web portal for the parents and students. They receive reminders a week prior to the scheduled examination day and the account payable through SMS notification.

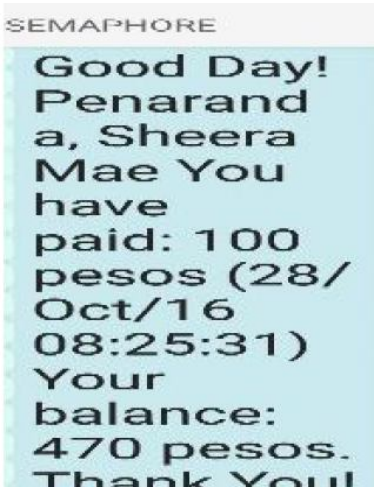


Figure 8. Students and Parents Receive SMS Notification

Figure 8 shows the results of students and Parents receive SMS notification after the payment transaction from the cashier.

CONCLUSION

The significant use of the Semaphore SMS gateway API and Cron job makes the application useful in sending the vital information of the student financial transactions. With this, the researchers concluded that CheckKoBayadKo: A Web Based Application for Tracking Student Financial Transaction with Scheduled SMS Notification using Cron Job is a tool in tracking student financial transaction. It reminds the parents and students of their financial transaction and having transparency in the details of financial information. Therefore, it eliminates inconsistency of the financial transaction of the students and parents, thus helps the institution in collecting fees from the students.

REFERENCES

[1] Small Business Chorn, Why Is Dependability Important for a Person to have in the Workplace? By Jonathan Lister, Demand Media. Accessed 22/3/16 *http://smallbusiness.chron.com/dependability-important-person- workplace-15463.html*

[2] PCF the Fourth Pan Commonwealth Forum on Open Learning. The effectiveness of mobile short messaging service (SMS) from Makerere University, Uganda. Presented by the Commonwealth of Learning and the Caribbean Consortium, Richard KajumbulaMakerere University. Accessed 22/3/16 *http://pcf4.dec.uwi.edu/viewpaper.php?id=98*

[3] Short Message Service (SMS) User Interface System to Support University by: Moses O. Onyesolu, McChester O. Odoh and Obiajulu E. Ositanwosu *https://www.scribd.com/doc/136945057/Short-Message-Service-SMS-User-Interface-System-to-Support-University-Portal-Services*

[4] Cron Job from Hostgator. Accessed 03/15/16 *http://support.hostgator.com/articles/cpanel/what-are-cron-jobs*

[5] SABAL financial, Entrepreneur magazine, Scivantage (web technology), Accessed 03/09/16 *http://sabalfin.com/4-basics-scaling-business-web-based-technology/*

[6] Studioware by Questware, LLC, Studio ware, Accessed 01/30/16*http://www.studioware-online.com/features*

[7] Online School Care (OSC), Accessed 02/15/16*http://www.osmsinc.com/osc.html*

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