STUDENT ATTENDANCE SYSTEM BASED ON RANDOM CODE (SAS)

SHAZA AKMALINA BT BADRUL KAMAL

Bachelor of Computer Science

UNIVERSITI MALAYSIA PAHANG

Universiti Malaysia PAHANG
Engineering • Technology • Creativity

SUPERVISOR'S DECLARATION

I hereby declare that I have checked this thesis and in my opinion, this thesis is adequate in terms of scope and quality for the award of the degree of Bachelor of Computer Science (Software Engineering).

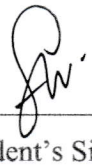
(Supervisor's Signature)

Full Name : ROSLINA BINTI ABD HAMID

Date : 4 January 2019

STUDENT'S DECLARATION

I hereby declare that the work in this thesis is based on my original work except for quotations and citations which have been duly acknowledged. I also declare that it has not been previously or concurrently submitted for any other degree at Universiti Malaysia Pahang or any other institutions.



(Student's Signature)

Full Name : SHAZA AKMALINA BINTI BADRUL KAMAL

ID Number : CB15024

Date : 4 JANUARY 2019

STUDENT ATTENDANCE SYSTEM BASED ON RANDOM CODE (SAS)

SHAZA AKMALINA BINTI BADRUL KAMAL

Report submitted in partial fulfillment of the requirements

for the award of the degree of

Bachelor of Computer Science (Software Engineering)

Faculty of Computer Systems & Software Engineering

UNIVERSITI MALAYSIA PAHANG

JANUARY 2019

ACKNOWLEDGEMENTS

I would like to express my gratitude and appreciation to all those who gave me the support to complete this report. Special thanks to my supervisor Roslina Binti Abd Hamid who give encouragement to me all the time during the completion of this report. Sincerely thanks for the time spent for reading and correction all the mistakes.

Secondly, I am highly thankful to my parents especially my father, Badrul Kamal bin Ismail for giving me ideas on how to improve my system and always giving me moral support every time I faced difficulties in completing this project.

Next, I am grateful to my colleague and friends who have helped me out with their abilities and keep supporting me though my upsides and down. To everyone who involved either direct or indirectly on finishing this project, thank you for always holding my back.

Last but not least, my thanks and appreciation to Universiti Malaysia Pahang for providing all the necessary facilities and gave me opportunity to gain my knowledge here.

ABSTRAK

Sistem Kehadiran Pelajar berdasarkan Random Code (SAS) adalah satu sistem yang akan membantu merakam kehadiran pelajar UMP dengan cara yang sistematik. Sistem semasa adalah agak baik, tetapi pensyarah masih perlu memasukkan kehadiran pelajar ke dalam sistem, secara manual dan ini akan memerlukan banyak masa dalam kelas. Selain itu, kadangkala, disebabkan permulaan kelas lewat, pensyarah terlupa untuk mengambil kehadiran pelajar . Oleh itu, sistem yang lebih baik dibuat dengan pendekatan baru iaitu Random Code (RC). Objektif sistem ini ialah mengkaji Random Code tentang cara ia berfungsi dalam Sistem Kehadiran Pelajar (SAS), untuk membangunkan Sistem Kehadiran Pelajar untuk UMP yang dapat memasukkan Random Code ke dalam sistem dan untuk menguji sama ada ini sistem boleh menyimpan data pelajar dengan betul. Pembangunan Aplikasi Rapid (RAD) adalah metodologi yang digunakan untuk membangunkan sistem ini. RAD terdiri daripada empat peringkat iaitu keperluan perancangan, reka bentuk pengguna, pembinaan dan pemotongan. Selepas pembangunan sistem, pelanggan diberi ujian penerimaan pengguna (UAT) untuk memastikan semua fungsi berfungsi mengikut kehendak tanpa sebarang kesilapan. Sistem ini memerlukan pelajar untuk mengakses SAS (Sistem Kehadiran Pelajar) melalui UMP WLAN dan proses rekod kehadiran bermula apabila pensyarah membuka sesi dalam sistem. Pelajar harus memasukkan RC dan menjawab soalan semakan keselamatan dalam tempoh tertentu untuk mengesahkan kehadiran mereka. Sesi akan ditutup secara automatik selepas masa habis. Di bahagian belakang, SAS juga merekodkan pelajar IP, subnet dan waktu untuk tujuan pengesahan. Dengan menggunakan SAS, pensyarah dan pelajar boleh menyemak dan melihat rekod kehadiran mengikut tarikh dan subjek. Ujian UAT memastikan sistem telah mencapai matlamat dan dapat menyelesaikan masalah yang berlaku sebelum ini.

ABSTRACT

Student Attendance System based on Random Code (SAS) is a system that will help to record the attendance of UMP students in a systematic way. The current system is quite good, but the lecturer still has to key-in the students' attendance into the system, manually and this will take a lot of time in class. Apart from that, sometimes, due to the late class start, the attendance marking will be forgot to be marked. Therefore, an improved system is made by the development of new approach that is Random Code (RC). The objective of this system is to study the Random Code on how it works in the Student Attendance System (SAS), to develop a Student Attendance System for UMP that able to input the Random Code (RC) into the system and to test whether this system can store the students' data correctly. Rapid Application Development (RAD) is the methodology used to develop this system. RAD consists of four stages which are requirement planning, user design, construction and cutover stage. After development of the system, client were given the user acceptance test (UAT) to ensure all function work according to the requirement without any error. This system required students to access SAS (Student Attendance System) through WLAN and the attendance record process begin when lecturer open the session in the system. Students have to key-in the RC and answer the security check question within a range of specific time to validate their attendance. Session will close automatically after time running out. At the backend, SAS also record student IP, subnet and timestamps for validation purposes. By using SAS, the lecturers and students can check and view the attendance record by date and section. The UAT testing ensure the system have achieve the objective and able to solve the problem that happen before.

TABLE OF CONTENT

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS

RC	Random Code
SAS	Student Attendance System
RFID	Radio Frequency Identification
UMP	University Malaysia Pahang
IMS	Integrated Management System
MYSQL	My Structured Query Language
GUI	Graphic User Interface

CHAPTER 1

INTRODUCTION

1.1 Background

Random Code (RC) is a new approach in kind of attendance marking to secure a system. RC contains a serial combination of alphabet and number. Based on Cumming (2013), good random numbers are fundamental to almost all secure computer systems. Without random numbers, all secure system will be in trouble. Furthermore, random numbers are useful for a variety of purposes, such as generating data encryption keys, simulating and modeling complex phenomena and for selecting random samples from larger data sets. (Haahr, n.d.).

Based on this project which is Student Attendance System based on Random Code (SAS), we use random code to verify the attendance into the system, combined with a few verification process at the backend. The data then will be saved automatically in the database accurately compared to manual key-in process that been practised during class. Nowadays, in UMP, only the lecturer can view the attendance of the students. But, with this SAS, not only the lecturer, all students has the privilege to check and view their own attendance. Random Code that will be applied in this project is not an ordinary random code. This project has upgrade a little bit of process in attendance system to have a secure system in future. Instead of displaying usual random code in the screen, this project also create timeout in all process of attendance session.

The process of using this system is easy which started from the student come to class. While the students log into SAS by using their smartphone, the lecturer has to log into SAS to validate and confirm the detail of class. After the confirmation, the lecturer can view the status online of the students whether they already open their SAS or not.

After clicking ‘START’ button, the random code will displayed at projector screen. The students need to enter the code to their attendance webpage. This system is unique because the students has to record their own attendance (self-service) and there will be specific time given to input the code and answering security quiz. The code will be disable from the screen and student attendance webpage will close after the specific time. Student ID, RC, smartphone IP, subnet, date and time will be saved in the database.

1.2 Problem Statement

Nowadays, there are many type of attendance system in Malaysia that has been practised. There are some place that are still using the manual process such as the attendance being taken on a piece of paper. There are also some place that use a system in recording their attendance such as key-in manual data or by punch card. All of them has one purpose, that is to record the attendance.

In University Malaysia Pahang (UMP), there is a sub module called ‘attendance system for students’ embed in Integrated Management System (IMS). The current system is quite good, but the lecturer still has to key-in the students’ attendance into the system, manually. This process required the lecturer to call the students’ name or student ID one by one and will take a lot of time in class. The lecturer has to analyse the attendance record to know who absent and the one who come to class. Sometimes, due to the late class start, the attendance marking will be forgot to be marked.

SAS is created as a sub module, based on the UMP attendance system that contain students’ information about all students from the section of their class. In addition, the lecturer and also the students can check and view the attendance record.

1.3 Objective

The main objective of this system are:

i. To study the Random Code on how it works in the Student Attendance System.

ii. To develop a Student Attendance System for UMP that able to input the Random Code (RC) into the system.

iii. To test whether this system can store the students' data correctly.

1.4 Scope

The main goal is to develop Student Attendance System for UMP is defined as below:

i. The target area for this proposed system is in education area which involve staffs, lecturers and students in university.

ii. The environment of this system is based on web-based application. The purpose is to ease the process of attendance system and the students can view their attendance.

iii. The system is going to be developed for FSKPP students.

REFERENCES

Tanpure, M. T., Sonawane, M. H. S., Sonawane, M. C. R., Ovhal, M. P., & Maral, B. (2013). Online student monitoring system using passive RFID. International Journal of Innovative Research on Computer and Communication Engineering, 1(2), 1021-1027.

Masalha, F., & Hirzallah, N. (2014). A students attendance system using QR code. International Journal of Advanced Computer Science and Applications, 5(3), 75-79.

Othman, M., Ismail, S. N., & Noradzan, H. (2012, October). An adaptation of the web-based system architecture in the development of the online attendance system. In Open Systems (ICOS), 2012 IEEE Conference on (pp. 1-6). IEEE.

Lim, T. S., Sim, S. C., & Mansor, M. M. (2009, October). RFID based attendance system. In Industrial Electronics & Applications, 2009. ISIEA 2009. IEEE Symposium on (Vol. 2, pp. 778-782). IEEE.

Sudha, K. L., Shinde, S., Thomas, T., & Abdugani, A. (2015). Barcode based student attendance system. International Journal of Computer Applications, 119(2).

Graham-Cumming, J. (2018). Why secure systems require random numbers. Retrieved from https://blog.cloudflare.com/why-randomness-matters/

Haahr, M. (2018). RANDOM.ORG - Introduction to Randomness and Random Numbers. Retrieved from https://www.random.org/randomness/

Mohammed, A. A., & Kameswari, J. (2013). Web-Server based Student Attendance System using RFIDTechnology. International Journal of Engineering Trends and Technology, 4(5), 1559-15563.