MERIT MANAGEMENT DESKTOP APPLICATION

KAUTHAM KRISHNAN

BACHELOR OF COMPUTER SCIENCE
UNIVERSITI MALAYSIA PAHANG

MERIT MANAGEMENT DESKTOP APPLICATION

KAUTHAM KRISHNAN

Thesis submitted in fulfilment 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

MAY 2019

STUDENT'S DECLARATION

I hereby declare that the work in this thesis is my own except for quotations and summaries which have been duly acknowledged.

Signature :

Name :

ID Number :

Date :

SUPERVISOR'S DECLARATION

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

Signature :
Supervisor's Name :
Date :

ACKNOWLEDGEMENTS

First and foremost, I would like to thank the God for he has shown me the ways to solve all kinds of problems regarding the thesis. God gave me the inner strength and motivation to push myself all day and night in completing the thesis. I would also like to express my true gratitude to the people who gave unbounded guidance to complete the thesis. A special thanks to my supervisor Dr. Noor Azida Binti Sahabudin who bared patiently with my late submission of chapters. She cleared my doubts on the thesis without any resentment. In this moment too, I wanted to give million thanks to my parents who understood my situation of working on the thesis day and night which in return gave me the workspace to do it. Besides that, I wanted to thank my friends for their support to correct my mistakes in the progress and without their direction I might have lost track of progress that could have caused big failures. Lastly, I thank myself for the will power I had and inner motivation I had to finish chapter by chapter within the deadline.

ABSTRACT

Merit Management Desktop Application (MMDA) is a system for staffs to manage the merit in an easy, fast and authentic way to any of the event conducted by Universiti Malaysia Pahang (UMP) for students. The main play of the system is using biometric of the students to authenticate their attendance in an event which is their fingerprint. In the past years, students have cheated in many ways to get merit from the event. This is an illegal act in the university. Students who absent to the events takes advantage of other person to input merit for them as the currently used system could not verify the person's identity before it could insert merit data into the database. MMWA breaks this chain of cheating by introducing biometrics into the cycle. Students could only input merit through their fingerprint and as fingerprint is unique to each person, the probability of cheating is near to impossible. Rapid Application Development (RAD) methodology is used to develop this system because it is a small project and only for prototype. The RAD makes the best fit for this type of criteria. The other functions consist of five which are registration, login, manage attendance, manage event and manage database. User Acceptance Test (UAT) is conducted after the system is completed to ensure that all the functions work properly to the requirement of the client. It verifies the objective of managing the merit for students are more secure and easier than before.

ABSTRAK

Aplikasi Desktop Pengurusan Merit (MMDA) adalah satu sistem untuk kakitangan menguruskan merit dengan cara yang mudah, pantas dan sahih untuk mana-mana acara yang dijalankan oleh Universiti Malaysia Pahang untuk pelajar. Tujuan utama system ialah menggunakan biometrik pelajar untuk mengesahkan kehadiran mereka dalam sesuatu aktiviti, iaitu cap jari mereka. Sebelum ini, pelajar telah menipu dalam pelbagai cara untuk mendapatkan merit daripada aktiviti tersebut. Ini adalah perbuatan haram di universiti. Pelajar yang tidak hadir mengambil kesempatan daripada orang lain untuk masuk merit mereka kerana sistem yang digunakan sekarang tidak dapat mengesahkan identiti orang sebelum ia boleh memasukkan data merit ke pangkalan data. MMWA memecahkan rantaian penipuan ini dengan memperkenalkan biometrik ke dalam kitarannya. Pelajar hanya boleh memasukkan merit melalui cap jari mereka dan kerana cap jari adalah unik untuk setiap orang, kebarangkalian penipuan adalah hampir mustahil. Metodologi Pembangunan Aplikasi Rapid (RAD) digunakan untuk membangunkan sistem ini kerana ia merupakan projek kecil dan hanya untuk prototaip. RAD menjadi yang terbaik untuk kriteria jenis ini. Fungsi lain terdiri daripada lima iaitu pendaftaran, log masuk, menguruskan kehadiran, menguruskan aktiviti dan menguruskan pangkalan data. Ujian Penerimaan Pengguna (UAT) akan digunakan selepas sistem selesai dibina untuk memastikan semua fungsi berfungsi dengan sempurna megikut keperluan klien. Ia mengesahkan objektif mengurus merit untuk pelajar lebih selamat dan lebih mudah daripada sebelumnya.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATION

MMDA	Merit Management Desktop Application
UMP	Universiti Malaysia Pahang
RAD	Rapid Application Development
UAT	User Acceptance Test
DOS	Direct Optical Scanner
HTML	Hypertext Markup Language
CSS	Cascading Style Sheets
IDE	Integrated Development Environment
GUI	Graphical User Interface
PTMK	Information and Communication Technology Centre
ID	Identity Document
SAffAD	Student Affairs & Alumni Department

CHAPTER 1

INTRODUCTION

1.1 PROJECT BACKGROUND

Universiti Malaysia Pahang (UMP) students must gather merit points to gain hostel room for their next year studies in the campus. UMP organizes many types of merit activities such as events related to health, religion, motivation and workshop to give the chance for students collect merit while also obtaining benefits from the event as well. The merit system is counted based on entrepreneurship skill, club involvement and volunteerism. Students who reach the adequate capacity of merit shall proceed to continue staying in hostel while others inevitably stay outside of the campus. This ensures that students who are very active in university's program can join it more easily while the inactive ones give space for the one who really deserves it.

The issues arise during the event starting and ending time. The students will queue up in a line to key in their matric number into the system. It will be under supervision of a staff to make sure that student only input one matric number into the system as cheating can occur when a student input merit for other students too, who are absence to the event (Zurazak, 2017). Student and staff of the event would be wasting a lot of time in the process to finish attendance. Some students may also get tired of standing in the queue for a long duration and kills the mood of the event for them. Besides that, you could not verify the identity of the person who input merit as matric number could be memorized by anyone and misuse the identity.

MMDA should be established to minus out the issues faced by the current system. Students can input their merit marks through their fingerprint. This system leads to more of biometric device. The students can be authenticated much faster and since the fingerprint for everyone is different, the students can be uniquely identified

without any cheat. Staff can use MMDA to manage the student's profile and the event. They can edit the database for the changes in the future.

1.2 PROBLEM STATEMENT

The first issue is the process of attendance of students wastes a lot of time which eventually frustrates the students and the staff. The students need to key in matric number one by one and they usually be very careful before hitting the enter button to avoid any mistakes which could result input merit for any other students.

The second issue is students can easily make cheat of the system by input for other students who absent for the event. Students with friends use them to input two matric numbers or multiple more at the time when lack of supervision from the staff. Staff only could monitor if they input only one matric number and they can't even verify the identity of the students.

Lastly, the current system demands so much from staff. It is too dependent on staff. They have to monitor all the time for the students as the system could be easily misused and integrity can be compromised.

1.3 OBJECTIVE

Objectives as shown below should be achieved to attain the aim of developing MMDA for UMP:

i. To study the limitation of merit system in UMP.
ii. To develop desktop prototype merit system with fingerprint for UMP.
iii. To evaluate the functionality of the merit system with fingerprint.

1.4 SCOPE

There are multiple boundaries for this project and users. They are as stated below:

i. The system's target user are students and staffs of UMP.
ii. Student must register to utilize the complete function of the system.
iii. The system requires fingerprint reader Digital Persona to detect the fingerprint of the student and verify them.
iv. It is a desktop system and needs server database for integration

1.5 THESIS ORGANIZATION

This thesis consists of five chapters which are introduction, literature review, methodology, result and discussion and conclusion. The first chapter includes about the introduction, problem statement, objective and scope for the system. The second chapter describes shortly about the literature review of the new system and the existing systems done by others. The chapter also explains about how the existing systems is conducted through various ways using simple diagrams and snapshots of the interface.

The third chapter explains about the methodology of technique and approach used to complete the proposed system. The fourth chapter contains the result based on the experiment that have been done. It also includes explanation of the discussion that shows objectives of the project is achieved. Lastly, conclusion of the project has been written in fifth chapter of the thesis.

REFERENCES

Abel, T. (2018, April 3). *6 DIFFERENT TYPES OF WEB APPLICATION DEVELOPMENT*. Retrieved from www.clustox.com: https://www.clustox.com/blog/6-different-types-of-web-application-development

Adobe. (2018). *Adobe PhoneGap*. Retrieved from Adobe: http://docs.phonegap.com/getting-started/1-install-phonegap/desktop/

Amazon. (2009). United States Federal Government Agency. *Requirements for a Web Content Management System*, 27.

Analysing Ada, continued. (n.d.). Retrieved from https://plus.maths.org/content/analysing-ada-continued

Baidya, J., Saha, T., Moyashir, R., & Palit, R. (2017, March 2). *Design and implementation of a fingerprint based lock system for shared access.* Retrieved from ieeexplore.ieee.org: https://ieeexplore.ieee.org/document/7868448

Bose, P. K., & Kabir, M. J. (2017). Fingerprint: A Unique and Reliable Method for Identification. *Journal of Enam Medical College*, 30.

Cambridge Dictionary. (n.d.). *English Dictionary*. Retrieved from dictionary.cambridge.org: https://dictionary.cambridge.org/dictionary/english/tool

cattim0208. (n.d.). *Henry Faulds*. Retrieved from Timetoast: https://www.timetoast.com/timelines/henry-faulds

DaassNet. (2015). *Software Design and Development*. Retrieved from www.daassnet.com: http://www.daassnet.com/new/index.php/en/professionalservices/d-d.html

Duggirala, S. (2015, 12 1). *None of my MATLAB variables from my function are appearing in my workspace? I don't want them to be output variables*. Retrieved from www.stackoverflow.com: https://stackoverflow.com/questions/34019689/none-of-my-matlab-variables-from-my-function-are-appearing-in-my-workspace-i-do

Elmblad, S. (2018, November 21). *How Is Desktop Software Different From an App?* Retrieved from The Balance: https://www.thebalance.com/what-is-desktop-software-1293673

Freiberger, M. (2015, December 7). *Analysing Ada, continued*. Retrieved from + Plus Magazine: https://plus.maths.org/content/analysing-ada-continued

Hiskey, D. (2011, February 25). *In 1842, Ada Lovelace Wrote The World's First Computer Program*. Retrieved from Today I Found Out: http://www.todayifoundout.com/index.php/2011/02/in-1842-ada-lovelace-wrote-the-worlds-first-computer-program/

IDEMIA. (n.d.). *IDEMIA*. Retrieved from Morpho: https://www.morpho.com/en/biometric-terminals/desktop-devices/fingerprint-devices/bto-500

Jarjis, M. B. (2018). Ketua Unit PTMK UMP Gambang. (K. Krishnan, Interviewer)

Jarjis, M. B. (2018). Ketua Unit PTMK UMP Gambang. (K. Krishnan, Interviewer)

jtower. (2014). *Undocking Parts of the Team Explorer in Visual Studio*. Retrieved from jtower.com: http://jtower.com/blog/undocking-parts-of-team-explorer-in-visual-studio

Kohan, B. (n.d.). *Guide to Web Application Development*. Retrieved from www.comentum.com: https://www.comentum.com/guide-to-web-application-development.html

Lumidigm. (2011). *Multispectral Imaging Technology*. Retrieved from Biometrics for the Real World: http://lumid1.hdev1.com/multispectral-imaging/

Macmillan Dictionary. (n.d.). *Existing*. Retrieved from www.macmillandictionary.com: https://www.macmillandictionary.com/dictionary/british/existing

Macmillan Dictionary. (n.d.). *Existing*. Retrieved from www.macmillandictionary.com: https://www.macmillandictionary.com/dictionary/british/existing

MathWorks. (n.d.). *Image Processing Toolbox*. Retrieved from www.mathworks.com: https://www.mathworks.com/help/images/

Mensvoort, M. v. (2017). *Hand Reading News & Reports*. Retrieved from Handresearch: http://www.handresearch.com/news/fingerprints.htm

NUERO technology. (n.d.). *Biometric Supply*. Retrieved from Biometric Supply: https://www.biometricsupply.com

Powell, A. (2016, November 23). *Rapid Application Development*. Retrieved from www.airbrake.io: https://airbrake.io/blog/sdlc/rapid-application-development

Programming. (2018, November 20). *9 Must Decisions in Desktop Application Development for Windows*. Retrieved from Michael's Coding Spot: https://michaelscodingspot.com/9-must-decisions-in-desktop-application-development-for-windows/

Python Software Foundation. (n.d.). *Modules*. Retrieved from docs.python.org: https://docs.python.org/3/tutorial/modules.html

Shontell, A. (2011, June 29). *FLASHBACK: This Is What The First Ever Website Looked Like*. Retrieved from www.businessinsider.com: https://www.businessinsider.com/flashback-this-is-what-the-first-website-ever-looked-like-2011-6/?IR=T

Techopedia. (n.d.). *Visual Studio .NET*. Retrieved from www.techopedia.com: https://www.techopedia.com/definition/15740/visual-studio-net

Tutorials Point. (n.d.). *Architecture Models*. Retrieved from www.tutorialspoint.com: https://www.tutorialspoint.com/software_architecture_design/architecture_models.htm

Undergraduate Thesis Writing Guide Book. (2016). In R. A. Hamid, *Gantt Chart* (p. 117). Gambang: Universiti Malaysia Pahang.

Wasserman, P. D. (2005, December 26). Solid-State Fingerprint Scanners. *A Survey of Technologies*, 1-11.

Weebly. (n.d.). *Fingerprinting's Origins*. Retrieved from Weebly: https://82141360.weebly.com/fingerprintings-origins.html

Wood, D. (n.d.). *What Is Technology? - Definition & Type*. Retrieved from Study: https://study.com/academy/lesson/what-is-technology-definition-types.html

Yeeply. (2016, April 26). *6 different kinds of web app development*. Retrieved from en.yeeply.com: https://en.yeeply.com/blog/6-different-kinds-web-app-development/

Zurazak, N. A. (2017). *QR Code Merit System.* Gambang: Universiti Malaysia Pahang.