

STUDENT ATTENDANCE SYSTEM USING
BLOCKCHAIN TECHNOLOGY

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I hereby declare that I have checked this project, and, in my opinion, this project is adequate in terms of scope and quality for the award of the Degree of Computer Science (Computer System & Networking) with Honours.



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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.

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Thesis submitted in fulfillment of the requirements
for the award of the Degree of
Computer Science (System Computer & Networking)

Faculty of Computer Systems & Software Engineering
UNIVERSITI MALAYSIA PAHANG

JANUARY 2019

ACKNOWLEDGEMENTS

First and foremost, I praise Allah S.W.T the Almighty for giving me a courage to finish my thesis. I would also like to take this opportunity to show my appreciation and concern towards my supervisor, En. Syahrulanuar Bin Ngah for his guidance, advice and his help. Big thanks to him for accepting me as his student, correcting my thesis with patience and sharing the knowledge to complete my Undergraduate Project.

A very special thanks to my family especially my beloved parents for the endless supports and always there for me through upside down. My sincere appreciation also extends to my friends and others who have provided me a help when I was in need and shared the information related to the project.

I am extremely thankful and indebted to them for sharing expertise, and sincere guidance for me.

ABSTRAK

Kehadiran sangat penting bagi setiap pelajar. Untuk memastikan data kehadiran pelajar dapat dilindungi oleh orang ketiga, sistem kehadiran pelajar menggunakan teknologi blockchain digunakan dalam kalangan pelajar FSKKP. Permasalahan pertama ialah masa yang diambil untuk mengambil kehadiran pelajar memakan masa yang lama jika kaedah manual digunakan. Permasalah kedua adalah kekurangan system keselamatan apabila kertas kehadiran lebih banyak kekurangan berbanding system elektronik. Data juga kemungkinan akan hilang disebabkan campurtangan pihak ketiga. System kehadiran juga boleh disalah gunakan. Masalah ketiga adalah kekurangan had ruang kerana record lama kertas kehadiran pelajar yang sudah tamat belajar atau akhir semester disimpan oleh pengsyarah. Beberapa objective telah dikenal pasti bagi menyelesaikan masalah ini. Yang pertamanya adalah untuk mengurangkan process penggunaan masa yang lama. Yang kedua, untuk membina teknologi blockchain dalam kehadiran pelajar. Yang terakhir adalah untuk menyediakan keselamatan yang baik untuk system ini.

ABSTRACT

Attendance is very important to every student. To make sure the student's attendance is secure from other third parties, student's attendance system using blockchain technology will be implement to FSKKP students. First problem statement of this system is Time-consuming process because traditional way of recording the attendance such as using attendance sheet will become a time-consuming process especially when there are more students. the second problem is Lack of security when attendance sheet can be less secure than electronic systems. The data is easy to lose because of the intervention of many parties. The attendance system also can be misused. The third problem statement is limitation of space because the old records of attendance sheet kept by the lecturer will take up space when the student has finished their studies or after the end of the semester. The of the objective has been identify in order to solve the problem statement issue. First one is, to prevent time consuming process for student's attendance. Second one is, to develop a system for student's attendance using blockchain technology. The last one is, to provided better security to this system

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LIST OF ABBREVIATIONS

2D	Two-dimensional
FSKKP	Faculty of Computer Systems & Software Engineering
HTML	Hypertext Markup Language
LMS	Learning Management System
MYSQL	My Structured Query Language
PHP	Personal Home Page
QR Code	Quick Response Code
RFID	Radio Frequency Identification
SDLC	System Development Life Cycle
UMP	Universiti Malaysia Pahang
URL	Universal Resource Locator

CHAPTER 1

INTRODUCTION

1.1 Introduction

Originally Blockchain technology was developed as part of the digital currency bitcoin. But this two are not the same. Blockchain can support multiple application, and it is already used for peer-to-peer payment services, supply chain tracking and more. A blockchain is a record of transaction that can be a movement like money, inventory or safe data. For this security block is designed to store information in a way that makes it almost impossible to add, remove or modify data without being detected by others user. Blockchain replace these centralized systems with decentralized people where authentication comes from multiple user consents.(wikipedia, 2018a)

Quick Response code (QR) is two-dimensional matrix that was develop by Denso Wave in 1994 in Japan. The QR code is organized in rows and columns of black and white that have been designed to be read by smartphone. It is 2D bar code type that used to provide easy access to information. QR code allows code over 4000 characters in two-dimensional bar code. QR code also can be used in many ways, such as providing information about products or services by encoding general text, URL, phone number, business card, and even provided Wi-Fi access. (wikipedia, 2018b)

Therefore, the combination of these two ideologies of these technologies will be applied in student's attendance in FSKKP. Where to record student's attendance by scanning the QR code of student's attendance so that the data stored in the ledger can be display. So, this way will reduce the technical error that hardly to prevent

when involving a lot of data. The data that save in the block chain very secure because it not involves the intervention of many parties.

1.2 Problem Statement

Table 1.1 Problem Statement

Problem	Description	Effect
Time-consuming process	<ul style="list-style-type: none"> - Most of the university still using the traditional way of recording the student attendance by using attendance sheet. The attendance sheet will pass to one by one student to sign their attendance. 	<ul style="list-style-type: none"> - It will become time-consuming process especially when there are more students in the class and it will disrupt learning process when the students pass the attendance sheet to another student.
Lack of security	<ul style="list-style-type: none"> - Attendance sheet that being used is less secure than the electronic system. The attendance sheet may be misused by the students. 	<ul style="list-style-type: none"> - The students can easily sign the attendance to their friends who are not attend the class.
Limitation of space	<ul style="list-style-type: none"> - The attendance sheet will be kept by the lecturer to key in the student's attendance to the system 	<ul style="list-style-type: none"> - It will take up the space in the lecturer's office to keep all the attendance sheet of the class that have been assign for them.

1.3 Objectives

- i. To study the security level of Blockchain technology work.
- ii. To develop a system for student's attendance using Blockchain technology.
- iii. To evaluate the Blockchain technology in student's attendance system

1.4 Scope of Project

- i. This system is developed for student in Computer System & Software Engineering.
- ii. This system uses QR Code and Blockchain Technology.
- iii. The students must scan the QR Code before or after the lecture.

1.5 Significance

- i. Can Improve system performance in system attendance.
- ii. Help lecturer to key in attendance in system automatically.

1.6 Thesis Organization

In this Chapter 1, it discusses about simple introduction to the QR code and Blockchain Technology. This Chapter also discuss about problem that have been face by current students and lecturer about the attendance in problem statement. This proposed system set the goal of the student's attendance that need to be improved by the current system and need to be achieve. The scope of the proposed system is the area that the system will be implemented. Meanwhile, the literature review about the proposed system and the differences on this proposed system with other existing

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