Faculty of Electrical and Electronic Engineering Technology

DEVELOPMENT OF INTELLIGENCE SUBMISSION BOX WITH APPS NOTIFICATION THROUGH IOT TO THE RECIPIENT

NURIN FADLHLIN ADLINA BINTI AWANG TAGHIB

Bachelor of Computer Engineering Technology (Computer Systems) with Honours

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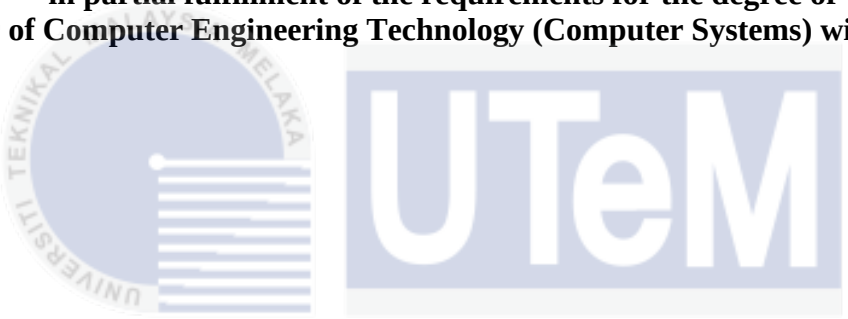
NURIN FADLHLIN ADLINA BINTI AWANG TAGHIB

A project report submitted
in partial fulfillment of the requirements for the degree of
Bachelor of Computer Engineering Technology (Computer Systems) with Honours



Faculty of Electrical and Electronic Engineering Technology

UNIVERSITI TEKNIKAL MALAYSIA MELAKA

2021

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I declare that this project report entitled "Development of Intelligence Submission Box with Apps Notification through IoT to the Recipient" is the result of my own research except as cited in the references. The project report has not been accepted for any degree and is not concurrently submitted in candidature of any other degree.

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APPROVAL

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DEDICATION

I dedicate this project to My Creator Allah S.W.T, my strong pillar, my source of inspiration, wisdom, knowledge and understanding. He has been the source of my strength throughout this project and on His wings only have I soared. I also dedicate this work to families; En. Awang Taghib bin Ali, my dad and Pn. Fatiah binti Mustaffa, my mom, who has encouraged me all the way and whose encouragement has made sure that I give it all it takes to finish that which I have started. To my sisters, Nurin Fakhira Alya binti Awang Taghib (Kakngah) and Nurin Farzana Arinah binti Awang Taghib (Bibi) who have been affected in every way possible by this quest. To my partner also, Muhammad Ashammil bin Abdullah who always give support. This project I also dedicate to my supervisor, Ts. Eliyana binti Ruslan and co-supervisor Pn. Dayanasari binti Abdul Hadi for their guidance in assisting me through the completion of my degree project. Thank you. My love for all of you all can never be quantified. Allah bless you.

ABSTRACT

Most higher education level still using the manual methods of submitting students' assignment. The students need to submit written assignment through a pigeonhole. After that, the assignment will leave there until the lecturer pickup the assignment. The assignment will remain in the pigeonhole if the lecturer forgets about the student's submission. By doing that, the lecturer will overlook the student assignment. Otherwise, the students might submit the written assignment overdue because the lecturer did not notify them about the student assignment submission. Some students may take for granted about their assignment also. An intelligence submission box with application notification through IoT to the recipient which known as Smart Box 2.0 will help to overcome those problems. This project will be using a mobile application and e-mail for the lecturer to get the notification. Following that, a RFID scanner was used to scan the ID card. After the submission has been properly completed, student's information will be automatically placed into the database to be recorded. This system will be using Blynk App as implementation of mobile application, database system, etc. This system serves as a medium for sending documents and generating a notification. Then, the lecturer can check the database. This project will help the lecturer remind the student to submit the assignment within the due date.

ABSTRAK

Sebilangan besar pendidikan peringkat tinggi masih menggunakan kaedah manual untuk menghantar tugasan. Pelajar perlu menghantar tugasan kedalam kotak surat . Selepas itu, tugasan tersebut akan kekal berada disitu sehingga pensyarah mengambilnya. Sekiranya pensyarah terlupa tentang penghantaran tugasan pelajar, tugasan tersebut akan tetap berada didalam petak surat. Dengan berbuat demikian, pensyarah akan terlepas pandang tentang tugasan pelajar tersebut. Di samping itu, pelajar akan menghantar tugasan lebih dari masa yang ditetapkan kerana pensyarah tidak akan mengetahui tentang penghantaran tugasan pelajar . Segelintir pelajar mungkin memandang ringan terhadap tugasan mereka. Kotak penyerahan pintar dengan pemberitahuan aplikasi melalui IoT kepada penerima atau dikenali sebgai Kotak Pintar 2.0 akan membantu untuk mencerahkan permasalahan ini. Projek ini akan menggunakan aplikasi mudah alih untuk pensyarah mendapatkan notifikasi. Seterusnya, pengimbas RFID digunakan untuk mengimbas ID kad tersebut. Kemudian, selepas penghantaran berjaya dilakukan, kesemua data pelajar akan automatik berada di pangkalan data untuk disimpan. Sistem ini akan menggunakan Blynk App untuk menghasilkan aplikasi telefon pintar, pangkalan data dan sebagainya. Sistem ini berfungsi sebagai ruang untuk menghantar dokumen dan menghasilkan sistem notifikasi. Pensyarah boleh mencari maklumat di pangkalan data. Sistem ini akan membantu pensyarah untuk mengingatkan pelajar untuk menghantar tugasan mengikut waktu yang ditetapkan.

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My utmost regard also goes to my parents, En. Awang Taghib bin Ali and Pn. Fatiah binti Mustaffa and my family members and friends. They always give me support and encourage me to finish this project and give my best for this project. They also supporting me either mentally or financially while completing this project. The gift of Allah, unforgettable, to bless me with infinite knowledge, experience and confidence to meet these amazing people in my lives. By going through this journey, I strongly believe this may be the breakthrough of my next journey of life. It was impossible for me to complete this project without their support.

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δ	-	Voltage angle
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LIST OF ABBREVIATIONS

V	-	Voltage
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CHAPTER 1

INTRODUCTION

1.1 Introduction

This section briefly describes the intelligence submission box with application notification through IoT to the recipient. It includes information on the project's background, problem statement, objective, and scope.

1.2 Background

The project at hand is a Development of Intelligence Submission Box with Apps Notification through IoT to the recipient, also known as Smart Box 2.0, where students can turn in their assignments. Currently, students will present their assignment into the standard box, which calls pigeonhole. However, sometimes lecturers forget to collect students' assignments inside the box through the conventional method. Therefore, it is difficult for the lecturer to notice the students' assignment submissions. To overcome the problem, this project will introduce a better solution. Besides, it can quickly remind the lecturer about student assignment submission; it can also help the lecturer mark the assignment on time and save time. An automatic identification system used in this project to identify the student is Radio Frequency Identification (RFID). RFID refers to the non-contact wireless data transmission using radiofrequency waves. Users may automatically and uniquely identify and track inventories and assets by tagging them with RFID tags [1]. RFID advances barcode technology by allowing tags to be read without requiring line of sight, with reading ranges ranging from a few centimetres to over 20 metres depending on the kind of RFID. RFID has gone a long way since

its original use in World War II when it was used to determine whether planes were friendly or hostile. Not only is technology improving year after year, but the cost of adopting and operating an RFID system is also decreasing, making RFID more cost-effective and efficient. Low, High and Ultra-High Frequency are the three basic frequency bands utilised for RFID transmissions within the electromagnetic spectrum [4].

Next, a sensor is an input device that converts from analog input signals to digital output signals that machines or humans can interpret. The main control system, such as a microcontroller, is the interface between the physical to the electrical device. There are many types of sensors and their implementation such as Light Dependent Resistor (LDR), Temperature Sensor, Smoke and Gas Sensors and Humidity Sensor. Hence, sensor widely used in the industry can boost the world through diagnostics in medical applications, boost energy sources such as solar power and batteries, boost security, health, and safety for humans [2]. On the other hand, the database collects numerous connected data for a certain task. The majority of businesses and organisations have a system to handle visitors' data to their premises. This invention has made it easier to manage and have instant access to a database system. This database system is restricted to a small number of users. It will be easier for students to submit their assignments and for the lecturer to notice the submission of the assignment if this comparison is used in the submission box design. This system will embed with a database to keep and collect all the data from time to time. This system will replace the manual submission box for student assignment submission.

1.3 Problem Statement

UTeM uses a manual approach for box assignment submission. The present manual submission box has many flaws. Students must submit their assignments in the usual manner, with the lecturer unaware of the submission. In addition, it also can cause the student will take

for granted by submitting the assignment over the due date. It will make the student feel irresponsible to submit their assignment because the lecturer cannot notify their submission. It also can cause the lecturer to overlook on student's assignment.

Furthermore, the assignment submission box is also effective for hybrid classes only because students will submit printed assignments directly instead of scanning all assignments and submit through e-mail. In addition, it will be easier for the lecturer to mark students' assignments by using printed assignments.

Next, suppose there is no notification system for the submission box. In that case, the lecturer will not know which student had submitted the assignment until the lecturer collects all assignments through a pigeonhole. Sometimes, students prefer to stay at college to finish their assignments until 7 pm. At that time, the lecturer was already going home. So, the assignment submission box's notification is effective for the lecturer to notify the student assignment submission.

1.4 Project Objective

The objectives were established after reviewing all of the issues. In order to construct an intelligence submission box with IoT notification to the receiver, some requirements must be met.

a) To develop an intelligence submission box with a sensor that detects the existence of an assignment and sends out an alert.

b) To help the lecturer in becoming more aware of the submission of the student's assignment

c) To complete an effective project that will address the problem and allow the lecturer to easily control the submission of the assignment into the submission box.

1.5 Scope of Project

This project's scope is as follows: This project aims to create an intelligence submission box with apps notification. This system will replace the manual submission box, which has no notification of submission. An RFID scanner will be used in this project, which will be built with a personal computer. This system's functions include allowing students to submit assignments and displaying and recording a database of each student's submission activities in real-time. Lecturers and students are the two user groups in this system. The data of students who submit assignments will be. Aside from that, the teacher has access to the student's information and submitted assignments.

The students need to scan the identity card and confirm the personal details. Once the scanning ID card is done, all the student’s details will display.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

This chapter discusses the literature review on an existing system with similar functionality and process to the proposed system. A comprehensive analysis will be discussed in depth regarding the system strengths, weaknesses, and features of those systems. The Intelligent Submission Box system is designed with several key points taken as a subject studied for this research. Several sources have been identified as resources for this literature review, such as books, thesis, journals, and websites.

2.2 Existing System Review

Eight systems have been chosen during this research. Sensor-based Mobile Pigeonhole Alert System, Smart Parcel Box with UV based sanitisation, A Novel Method to Monitor and Alert System for A Letter Box, I-Box (Intelligent Mailbox), Smart Electronic Pigeon Hole System, Pigeonhole Notification System Using Telegram Messenger Pigeon Hole Smart Box University Application, and Automation Of Parcel Delivery Collection Using IoT [5] [6]are some of the research projects that have been completed.

2.3 Related Research

2.3.1 Sensor-based Mobile Pigeonhole Alert System

This project is mainly concerned with business mail. This project was created due to experience with lost messages, late delivery, undetected incoming mails, and late feedback. Consequently, the suggested system has made office clerks' and pigeonhole users' jobs simpler by reducing the stress of daily pigeonhole check-in and providing instant feedback mechanisms for the smooth record and operation of important messages. A 6V battery powers the circuit. When the system is turned on, the Light Emitting Resistor (LER) emits a brilliant white light, which causes the Light Dependent Resistor (LDR) to detect new mail. When a signal is detected, the ATmega8 receives it and sends a signal to the GSM-Module to notify it of the arrival of mail. The LDR will not activate if the LER fails to turn on the light since new messages are not identified. After being tried in numerous locations, this project still has flaws due to unreceived SMS notifications after the messages were added. However, 92.5 per cent of e-mails were sent correctly by SMS [7].

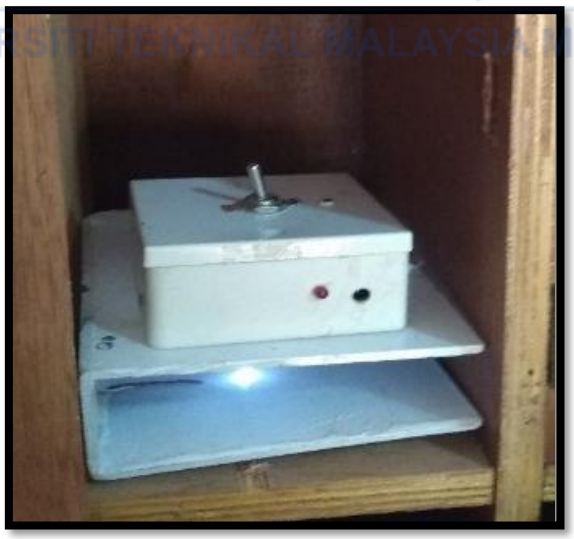

Figure 2.1 Wooden Pigeonhole Implementation

The model of a wooden pigeonhole implementation is shown in Figure 2.1. This project used LDR, LER, LDD, Atmega8, GSM-Module and SMS to trigger the staff because new mails arrived. However, this system lacks security because the wooden is disclosed, resulting in document loss. This project recommends that the method be enhanced by calculating the LER's resistance, frequency, wavelength, voltage, and power dissipation, increasing the LDR's detection output. This will surely enhance the coverage of the sensor-based system.

2.3.2 Smart Parcel Box with UV based sanitisation

Because of covid-19, Smart Package Box with UV Based Sanitisation creates a box that sanitises the parcel using Ultra-Violet radiation. This initiative was created to reduce the transmission of illness. This project is Wi-Fi enabled. UV rays will begin to sanitise the packet as soon as it is introduced. Once the item has been sanitised, consumers will get an SMS message to pick up the parcel. This project's additional features include a plethora of security cameras and alarms. The benefit of this project is that it is appropriate for individuals who live in bungalows, rent, factories, and high-security societies. By avoiding cargo delivery rescheduling, this innovative strategy will save time. Customers may securely click and get their cargo using their app, which includes live streaming. The most significant function of this product is that it can supply the consumer with a sanitised product. People will be less disinfected if this procedure is used. This project was created in three sizes: small (width 22 cm, dimension 18 cm, height 29 cm), medium (width 33 cm, dimension 27cm, height 39cm), and big (width 44 cm, dimension 35cm, height 58cm) [8].