UNIVERSITI TEKNIKAL MALAYSIA MELAKA

DEVELOPMENT OF AUTOMATIC WASHROOM LIGHT AND PURIFIER CONTROLLER

This report is submitted in accordance with the requirement of the Universiti Teknikal Malaysia Melaka (UTeM) for the Bachelor of Computer Engineering Technology (Computer System) with Honours.

by

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I hereby, declared this report entitled Development of Automatic Washroom Light and Purifier Controller is the results of my own research except as cited in references.

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This report is submitted to the Faculty of Electrical and Electronic Engineering Technology of Universiti Teknikal Malaysia Melaka (UTeM) as a partial fulfilment of the requirements for the degree of Bachelor of Computer Engineering Technology (Computer System) with Honours. The member of the supervisory is as follow:

Signature: …….

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ABSTRAK

Penggunaan tenaga elektrik di bilik air mahupun di tandas awam semakin meningkat dan menyebabkan bil elektrik meningkat dengan mendadak. Selain itu, pewangi di bilik air awam sukar dapat dikesan jika cecair pewangi telah sampai ke tahap minimum oleh cleaner. Cara untuk menangani sistem yang telah tersedia ada iaitu lampu dinyala dan ditutup secara manual, juga pewangi tandas automatik berfungsi dengan masa yang ditetapkan, ialah dengan menukarkan sistem kepada automatik lampu menyala serta pewangi tandas yang menggunakan voltan rendah dan akan mengeluarkan wap yang lebih banyak jika suhu di dalam bilik air awam itu meningkat ke tahap maksimum. Dengan mewujudkan sistem sebegini, ianya dapat mengurangkan penggunaan elektrik dan lampu tidak menyala terlalu lama. Sistem ini menawarkan cara yang lengkap, kos yang rendah, berkesan dan mesra pengguna. Telefon mudah alih yang digunakan oleh cleaner juga dapat berhubung dengan modul Bluetooth supaya mereka mudah untuk mengesan jika cecair di dalam pewangi tandas telah mencapai tahap minimum, dan mereka akan menerima satu pesanan ringkas yang boleh dilihat di aplikasi yang telah dimuat naik.

ABSTRACT

The usage of electric source either at the public washroom or toilet increased day by day which cause the electric bill increased sharply. Besides, the liquid of air freshener which used in the public washroom or toilet hard to detect by the cleaner when it reach the minimum level. The way to deal with the system that have been provide which the light turn on and off manually and also the automatic air freshener function with set the timer is change the system to automatic washroom light and the used of low voltage to the air freshener and the voltage will convert automatically when the temperature in the public washroom increase to the maximum level. With the presence of this system, the used of electric source can be reduce and the light will not always turn on. This system offers a complete, low cost, prevailing and user friendly. Mobile phone that used by the cleaner will be connect to the Bluetooth module which they will detect if the liquid air freshener reach the minimum level and cleaner will received the notification that will display at the application that have been installed.

DEDICATION

This dedication especially to my parent. My father, Abdul Kadir bin Itam and my mother, Rosnani binti Haji Samad who always give me support and taught me that to believe in hard work and put trust in Allah. I also dedicate this report to my family member who always support and help me with their unconditional love that make me feel motivated and always in high spirit while doing this project. Lastly, this dedication is also dedicated to my supervisor who always surrounded me with positive vibes and never lets any sadness dominate into my heart.

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

LIST OF ABBREVIATIONS

GUI	Graphical User Interface
GPS	Global Positioning System
SMS	Short Message Service
GSM	Global System for Mobile Communication
LCD	Liquid Crystal Display
WiFi	Wireless Fidelity
MIT Application	Massachusetts Institute of Technology Application
PIR sensor	Passive Infrared Sensor
PWM	Pulse Width Modulation
USB	Universal Serial Bus
UART	Universal Asynchronous Receiver Transmitter

CHAPTER 1

INTRODUCTION

1.0 Introduction

This chapter explain about the overview of the study and the main purpose of the project. The chapter include background of the study, problem statement of the project that wanted to build, objectives goal at the end of the project and the scope of the study that will be conducted.

1.1 Background Study

Lighting control has the capacity to turns the light on, off or darkened the light in view of the control framework on the lighting control. Automatic light control will reduce the wastage of the energy and electric usage in public washroom which is more suitable on the area that has higher of the probabilities for the people left the light without switch off. It was a public washroom, thus, sometimes people have no responsibility to turn off the light after use. Hence, this system will decrease the cost of the electric bill and educate people to save the energy. The system of the project needs to recognize if there is any movement or motion occur in the washroom, so it means the presence of human movement which the sensor will detect the motion and the light will turn on while if there is no any movement occur, the light will automatically turn off.

Besides, from what can be seen the evolution of the present light control and past was very different. Usually, the light was control manually by switching the light on and off while nowadays, the system is improvised to the automatic light control which the light will turn on and off automatically with the detection of the sensor to the movement enter the washroom. There are some of the system developed using different features of automatic light control.

Based on the Bi(2014) the system used the Zigbee convention supply module as a principle microcontroller which the primary control catches specifically open to kill the lights and shower and day by day work on the latrine, the console intrudes on mode, I/O ports as a key information port. Remote control console embraces free to compose, when there is a catch press is caused by the console intrude, by filtering after judgment, send enlist spare and send, the fundamental program after the got flag is prepared in the console handler. Therefore, to make a system more simple and used a low cost, a famous microcontroller Arduino Uno will be used in the system and less demanding for individuals to apply in the system.

Nowadays, when people keep coming to the public washroom especially during school holidays or during the festive celebration, the highway will be jammed and some people wanted to take a rest or clean theirselves. Then, the function of air-freshener in the washroom was set manually which at any minute, the air-freshener will spray once only. Hence, the people in the washroom will more comfortable with the good and hygiene environment in the public washroom.

According to Bruce and Dennis(2016), the programmable device will spray at up to three modified circumstances in the day and in addition to client characterized time interim of hours or minutes. The framework will use a divider connector for usability at whatever point open to a standard room electrical outlet. A reset catch has been put in inside the gadget in the request to permit the client the capacity to reset the framework, without making it excessively straightforward, making it impossible to incidentally press in ordinary framework utilize. The IR sensor has been put in a reasonable area to guarantee ideal range.

The system will be improvised that combine both automatic washroom light control and air freshener which the air freshener will automatically spray more when the temperature in the washroom rise to the maximum limit. The use of temperature sensor LM35 in the system make the detection of temperature occur when there are many people in the washroom since from the research that has been done by reading the articles and journal, there is no one making the system used it with the air-freshener. The system makes less use of the button to reduce the confusing of the cleaner to control and take care of.

Next, the system detection of the liquid level of air-freshener in the bottle using the non-contact liquid sensor rather than the water level sensor. This is due water level sensor used in open channel which is makes it is not suitable to be used in the system. Based on the Roy et al. (2016), a water level pointer might be characterized as a framework by which we can get the data of water inside the supply. Water level marker frameworks are very helpful to less the wastage of water from any store. In this venture, we have composed the sensor to gauge water up to four levels. Four fragments that protect

the leading of wires are utilized and the stripped closures inside water are associated with carbon bars.

Therefore, these systems combine the previous of the system together which the system consists from the detection of movement so that the light will automatically turn on, then when there are many people in the washroom, the air-freshener will spray more than usual and lastly the detection of liquid level of air-freshener when it achieves the minimum level, the notification will be sent to cleaner through Bluetooth via the interface used.

From the previous article Chidgopkar and Phatale (2015), the saline bottle contains 500ml arrangement. At the point when the saline arrangement is over 70ml at that point green drove will squint and when the solution of water arrangement falls beneath 70ml or the basic level then red drove begins flickering and ringer will begin ringing with the goal that it will be simple for medical caretakers to comprehend the correct position of staying saline arrangement in the container.

However, in the present system not using the buzzer due to will make the visitor or people not comfortable with the noise. Thus, to make the system easy to conduct, the cleaner will receive a notification that the liquid level of air-freshener will be empty soon so that they will be ready to change to the new one.

1.2 Problem Statement

Light is an important thing to human especially when at night. However, nowadays there are loads of wastage of power utilization on lighting occur. Public washroom usually always turn on the light either in morning or evening and night. The user of public washroom as usual the citizen and cleaner. Thus, public washroom especially at RnR always pack with citizen which every weekend, during school holiday and public holiday. So, other than that it can be seen that light at the public washroom always turn on even there is no one.

The normal life expectancy for bright light is 50,000 hours, which with the presence of this system the life span for light will be increase. The longer the light turn on, the more source of electricity used. This will affect the electricity bill which actually when the light turn on and off automatically, it can cut cost for the bill. Cleaner who is on duty need to turn on and off the light manually which it is not efficient with the technology used nowadays. This problem can be solved if the system make the light automatic on and off when people enter and left the public washroom.

Besides, the other problem is the when the more people enter the public washroom with the differences of body odour and body temperature due to where the people came from, the washroom will become unhygiene and smelly. Thus, the people will feel uncomfortable. Then, the air freshener system used the manually set for timer to make the air freshener spray, which it can be a wastage when no one in the public washroom.

Furthermore, nowadays cleaner do not alert due to the warning of water level using indicator, some cleaner will forget to check the air-freshener and by giving the notification through Bluetooth will make the cleaner more remember and alert to the warning.