

Universiti Teknologi MARA

Light Automation System in Classroom

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ABSTRACT

The classroom is where the teaching and learning process takes place between lecturer and students in educational institutions. The classroom lighting systems play an essential role in maintaining the nature teaching for visual pleasantness and concentration of the teacher and students. However, most of the facilities are controlled manually, which causes inconvenience to users. The problem faced by FSKM is the light in the classroom always turn on even though the class is unoccupied. Thus, it will contribute to electricity wastage and high electricity bills every month. With the emerging of Internet of Thing (IoT), the project proposes the Light Automation System to reduce electricity waste. The system consists of two main components which is Passive Infra-Red (PIR) sensor to detect human motion produced and Light Dependent Resistor (LDR) to measure the intensity of light in the surrounding. By installing the two components, the light will switch on only when PIR detects motion produced and LDR detects the amount of light intensity in the surrounding area. However, when the PIR detects human motion but the LDR detect enough light intensity, the light will switch “OFF”. The objectives of this project are to identify the user requirement, design and develop the Light Automation systems in the classroom. The project scope is concentrated in the classroom of FSKM only. Programs language that will be used is python since python widely used on the Internet of Thing (IoT) programming. The platform that will be used to develop the system is Arduino IDE. This project used the Agile as the methodology approach to the development of Light Automation System. The Agile methodology consists of 6 phases, but for this project, it only requires four phases which is requirement, design, development and testing phase. Based on the result of user testing, it shows positive feedback from the user. In conclusion, Light Automation System may able to help FSKM in reducing the electricity wastage.

Keywords: Classroom, IoT, Light Automation System, PIR, LDR, Agile

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CHAPTER 1

INTRODUCTION

The whole of this chapter covers the project background as well as the problem statement for the development of Light Automation for the Classroom. Apart from that, this chapter also discusses the project objectives, scopes, limitations, and significance of light automation for the classroom.

1.1 Background of Study

A classroom is a learning space and found in educational institutions of all kinds that need facilities such as lamps, air-conditioned, etc. To have a pleasant classroom environment, classroom management needs to be applied because it can ensure that the class is running smoothly without any distractions when delivering and instruction. According to Soleimani, et al. (2016), classroom management is one of the most contributing yet challenging issues in a teaching career as the classroom needs to maintain in a conducive environment to prevent the nature of teaching from vanished. The classroom lighting systems play an essential role in maintaining the nature teaching for visual pleasantness and concentration of the teacher and students. However, most of the facilities are controlled manually, which causes inconvenience to users. The problem that class management facing currently is the limitation of technology tools in education for learning the purpose, thus it will interrupt the learning process for the students (Jerez, et al., 2018).

Internet of Things (IoT) is a new world view that has made advances in the field of Information Technology. According to Patel, et al. (2016), the Internet of Things (IoT) is a type of network that connects anything through the internet or a system that linked with the computer devices, mechanical and digital machines, objects, or people through the information sensing equipment. The system can transfer and exchange the data without requiring human-to-human or human-to-computer interaction. Thus, IoT