

UNIVERSITI TEKNOLOGI MARA

ENERGY SAVING HOME ALERT SYSTEM

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ABSTRACT

Home break-ins have been happening a lot since the old times especially during nighttime as there are fewer witnesses during the night or the homeowner is asleep, so the chances for robber of getting caught is low. In order to prevent the home break-ins, home alert systems have been around for a while with the purpose of ensuring the safety and security around the house. However, some of the home alert systems is using the outdated technologies which some of them are complicated, a bit expensive and require high energy consumption that eventually leads to high electricity bills. For this reason, the main objective of Energy Saving Home Alert System is to develop an energy-efficient home alert system that uses minimal energy consumption so it can reduce electricity bills for the user. Another objective of Energy Saving Home Alert System is to successfully connect it with the Internet of Things (IoT) using a microcontroller with integrated Wi-Fi, ESP32 so the user can receive a notification on their phone. The component that The Energy Saving Home Alert System will be use are Light Dependent Resistor (LDR) sensor, Passive Infrared (PIR) sensor, and IR Adjustable Proximity Sensor as an input and the output of this project are lamp, buzzer, and LED. This project will be automatically operating during nighttime due to the usage of Light Dependent Resistor (LDR) sensor and Passive Infrared (PIR) sensor to reduce the usage of energy consumption of lamp and the project itself. The programme for this project is being done and execute using Arduino Development Environment (IDE). However, for the Internet of Things (IoT), it uses Blynk to connect the microcontroller and the user smartphone via Wi-Fi.

Keywords— Home alert systems, energy, reduce, components, Internet of Things (IoT).

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CHAPTER 1

INTRODUCTION

1.1 Background of Study

Property crimes like burglaries, thefts, and home break-in have significantly increased in Malaysia over the last few years. These actions not only pose a threat to the safety and well-being of the homeowners, but it also can cause the victims to suffer significant financial losses. In 2021, based on the crime statistic in Malaysia, the total off property crime is 41,479 cases. House break-in, which belongs to property crime has 11,352 cases [1]. Moreover, these property crimes have been happening a lot especially during nighttime. This is because, during the nighttime, there are fewer witnesses during the nighttime, or the homeowner is asleep. Both of these factors cause the percentage for criminals to be caught is low during the nighttime [2]. Because of this, residents face the distressing reality of potential intrusions into their personal spaces, and the financial can be severe.

In order to prevent the threat of property crimes, such as home break-ins, happening to them, some of the homeowners have taken an early action by installing a home alert system. This home alert system aims to preventing potential threats like home break-ins, providing an additional layer of security and peace of mind. However, some of the the old system has certain weaknesses, among which it is frequently complicated, quite expensive and consumes a lot of energy. The higher energy consumption will lead to high electricity bills and bring a negative impact on the environment. This combination of frequently complicated, quite expensive, and energy-intensive raises concerns for homeowners and can cause them a problem in the future.

To solve the current issue that have been stated above, The Energy Saving Home Alert System was created with the purpose of developing an energy-efficient home alert system that