CHAPTER 1
INTRODUCTION

1.1 Background

The high number of unemployed and the pressure on the necessities of life, causing the crime that occurs continues to increase, especially for the crime of theft in the neighborhood. This incident does not only occur in big cities, but also in the countryside. Thefts often occur at night when the occupants are sleeping, but not infrequently the perpetrators carry out their actions during the day or when the house is quiet. With the continued occurrence of similar incidents, the condition of the house becomes uncomfortable and can cause property losses. If this continues, additional surveillance will be required, such as installing CCTV or hiring a home security guard, but this costs a lot of money.

In the current era, the mobility of human needs requires technology that is fast-paced and easy to access and does not interfere with activities, so the implementation of a home security system is designed based on IoT or Internet of things. The system design focuses on being able to carry out remote control and monitoring processes and can be connected to the telegram platform. The use of telegram for this research is quite appropriate because it is open source and compatible with the PIR sensor used.

Therefore, this research is designed to improve the existing security system with PIR sensors and IoT technology. This security system has the advantage of the previous system, namely the ability to be more responsive in detecting motion and can be monitored through an application. When sensors detect suspicious movement, an alarm sounds and sends a dangerous alert notification via the homeowner's telegram platform. It is hoped that with this home security system, security problems can be resolved soon. The perpetrators caught on camera can be seen clearly and easily recognized so that the identification process by the authorities can be carried out immediately so that the perpetrators are deterred from the actions that have been taken.

1.2 Problem Formulation

Based on this background, the formulation of the research problem is as follows:

1. How to design and build a security system with an ESP32-CAM microcontroller that can be integrated with the user's telegram application?
2. How are the result of system testing using the ESP32-CAM microcontroller?

1.3 Scope

There is a scope of problems in research, namely:

1. Application of this security system on the fence or front door of the house
2. ESP32 CAM works as a microcontroller and wifi module
3. When the sensor successfully detects motion, the camera will only capture the image
4. The system that has been designed can only be monitored with the Telegram application
5. Warning sound indicator using buzzer
6. The tool works optimally when the wifi signal is good
7. Testing the tool in a limited place, a maximum of only 4 meters

1.4 Objective

In the result of this study the objectives to be achieved are:

1. Designing a security system that can control and monitor the house in real time and responsively. This system uses a microcontroller and is connected to the homeowner's telegram, so it can provide a sense of security and comfort
2. With this research, it can be used as a basic reference for learning materials and further development of security system
3. Provide solutions in monitoring home security so that you can immediately report if a dangerous situation occurs to the authorities