1. **Introduction**

* 1. **Background of the Study**

Home security system is the best burglar deterrent you can have. Many people don't think about security at home until it is too late and they have become victims. The prime concern of this project is to provide total security. This microcontroller based home security with password door lock system feature can also perform day and night detection, laser beam monitoring system for windows, and magnetic monitoring for doors. Aside of providing total security, this project aims to utilize the homemade circuitry and build a low cost integrated home security system.

The system includes alarm system. Hence the security system will sound an alert when there is an attempt of break-in. The system is digital. It also incorporated a 7 segment display with a 4x3 keypad.

* 1. **Statement of the Problem**

Commercial available security system is too expensive. Thus, this project aims to develop the same functionality with affordability and accuracy in terms of security monitoring.

**1.3 Objectives of The Study**

**1.2.1 General Objective**

The proponents aim to implement the following:

* To provide total security in home environment as well as business environment
* To reduce burglary rate.
* To develop homemade and low cost security system
  1. **Scope, Limitations and recommendations**

This project incorporates the use of 8051 microcontroller as central processing unit. Specifically the prototype make used of the 20pin At89c2051 microcontroller. This home security system burnt a program inside the microcontroller to perform these following capabilities.

The user is required to enter 5 digit pin to activate or deactivate the door lock security. The **“ # ”** serves as an enter key and The backspace by pressing **“ \* ”** is implemented so that when the user enters a wrong password, this keys can be used to delete the previous entered pin. Windows and doors are monitored by laser beam and magnetic door sensor. If the beam and the magnetic door sensor get interrupted for a possible break-in, hence an alarm will sound and an array of light will blink.

This project is capable of light sensing using Light dependent resistor (LDR) and uses digital input output logic and analog information process. The LDR is attached to a voltage divider circuitry. By using Kirchhoff’s law the voltage obtained and which we can use to measure the level of light. As result the system will automatically trigger the lights on during night and off during day time.

Some modifications, enhancements and additions must be made to the prototype home security system in order to develop it into a general security system that would enhance its ultimate impact. The 7segment display must be replaced with any LCD to have a custom display and some additional sensors must be added like fire/smoke detector and biometric scanner.

The password system of this project is fixed and the user cannot create a custom password. A little modification to this system will do. These include such necessary modifications as providing a backup power to the system and auto reset function in case of power failure.

1. **Research and Methodology**

The researchers gathered information from different sources which give appropriate ideas or what parts to be used in every circuitry involved in this project. Keypad interfacing to microcontroller using embedded C was the hardest part ever encountered during the development stage. From a step by step process, researchers started from writing simple code to more complex. After everything is fixed and tested in virtual simulation, the researchers soldered everything for implementation stage. Researchers faced many problems on hardware such as fine tuning every sensor to work simultaneously with the burnt program inside the microcontroller. By eliminating those problems gives good and accurate anticipated result.

1. **Results and Discussion**

With regards to the main purpose of this project which is home security system, the researchers’ goal has been achieved.

The prototype home security system developed in this project did well in achieving its original goals. In the beginning the system will boot up indicating a green LED status when security system is enabled.

The password door lock system has a default password of “12345” and the user is given only 3 attempts to enter the correct password. If not, the keypad will be disabled. If any of the sensors interrupted an alarm will sound and the lights will be flashing at 4 KHz. And lastly the day and night detector will function as it will intended to be.

It can monitor the surroundings to not only protect our properties but also lives. Besides, it can be highly customized to suit each one's need and preference.

The development of this technology for the field of security system is not only possible, but that it could even prove to be very useful.