

INTEGRATED BURGLAR ALARM SYSTEM

PROJECT INDEX PRJ 079

presented by

WAITHAKA STEPHEN WACHAIYU

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Supervisor: Dr. G. KAMUCHA

Examiner: MR. V.DHARMADHIKARY

OBJECTIVE

- The problem definition required an in-depth study regarding integrated burglar alarm systems.
- The alarm was designed to go on due to any of the following conditions which are monitored on PC: entry of burglar, door is opened and door handle is locked.

project scope

- To design a motion detector.
- To design a circuit to indicate whether the door is open or closed.
- To design a circuit to detect the touching of the door handle.
- To develop software for the PC which will indicate with the entry of burglar, door is opened and door handle is locked.

Introduction

- An integrated burglar alarm system is installed to monitor for any intrusion into unauthorized premise.
- . The desired output of your burglar alarm system causes a specified alarm output and quickly responds whenever the sensors identify valid conditions which have activated the alarm.
- The unit's ability in communicating back to its monitoring system is truly a crucial aspect for determining the efficiency of the alarm.

Types of motion sensors

- **Passive infrared sensors(PIR)**

Work by detecting heat emitted by people or objects

- **Ultrasonic detectors**

The active ultrasonic sensor is a motion detecting device that emits ultrasonic sound energy into a monitored area and reacts to a change in the reflected energy pattern.

- **Microwave sensors**

Sensors generate an electromagnetic (RF) field between transmitter and receiver, creating an invisible volumetric detection zone.

Types of motion sensors

- **Photoelectric sensors**

Photoelectric beam sensors transmit a beam of infrared light to a remote receiver creating an 'electronic fence'.

- **Dual technology detectors**

Dual technology uses a combination of both microwave and passive infrared technology in combination with AND logic to provide a lower false alarm rate (FAR) sensor than either of the sensor independently

- **Active infrared sensors**

Most infrared cells use cadmium sulphide or cds cells to detect infrared radiation.

Magnetic contacts

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- Magnetic contacts are used to sense when a door or window has been opened.
- Contacts can be surface mounted on a door or window or flush mounted so that they can be concealed when the door or window is closed

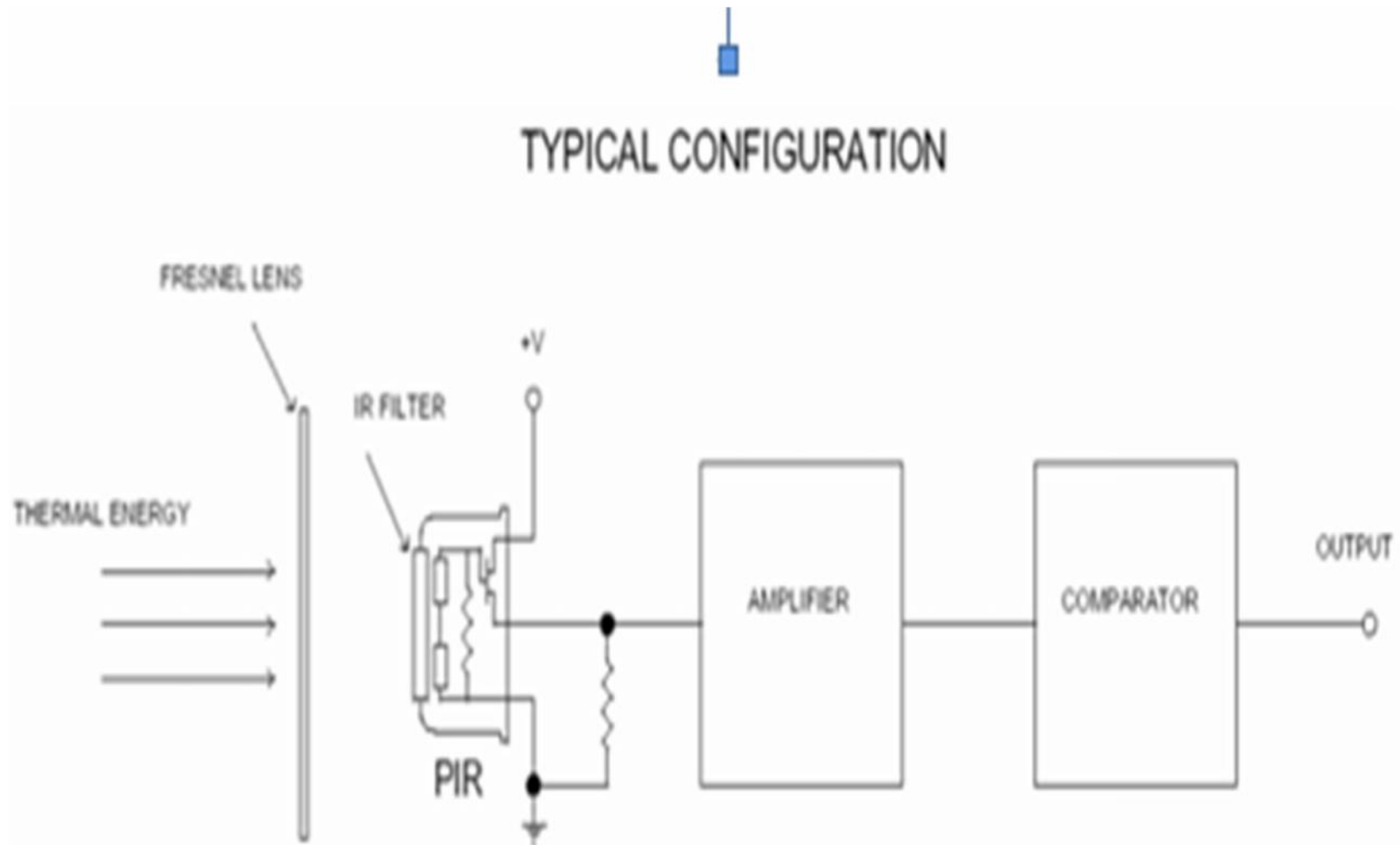
Mechanical switches

- Mechanical switches detect the opening of a protected door or window using mechanical contact switches, which are spring-loaded to trigger an alarm when a door or window is opened.

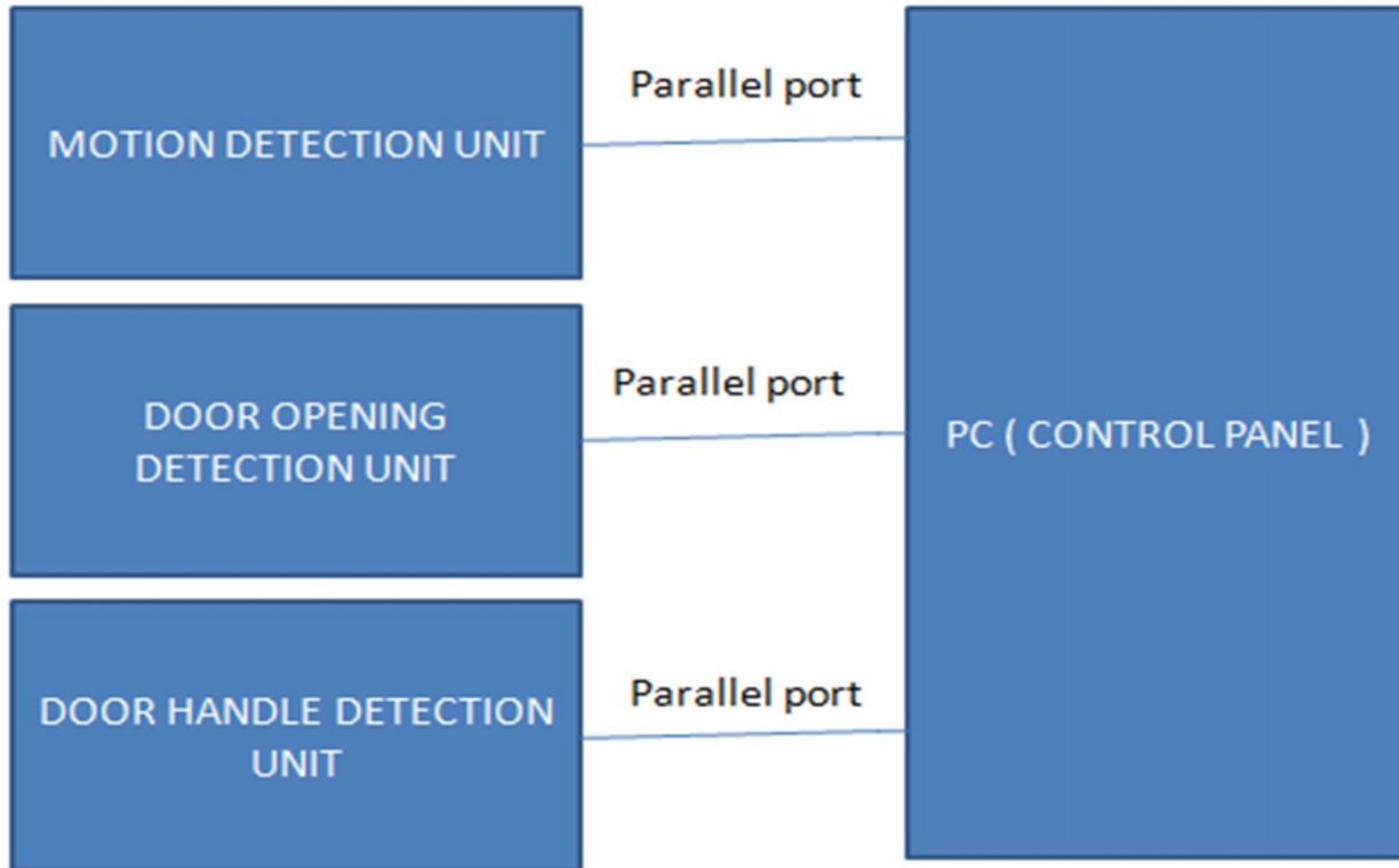
Design

- The programming language used visual basic.
- Passive infrared sensors(PIR) was chosen.
- The software used was visual studio.
- The mechanical switch used was pushbutton switch.

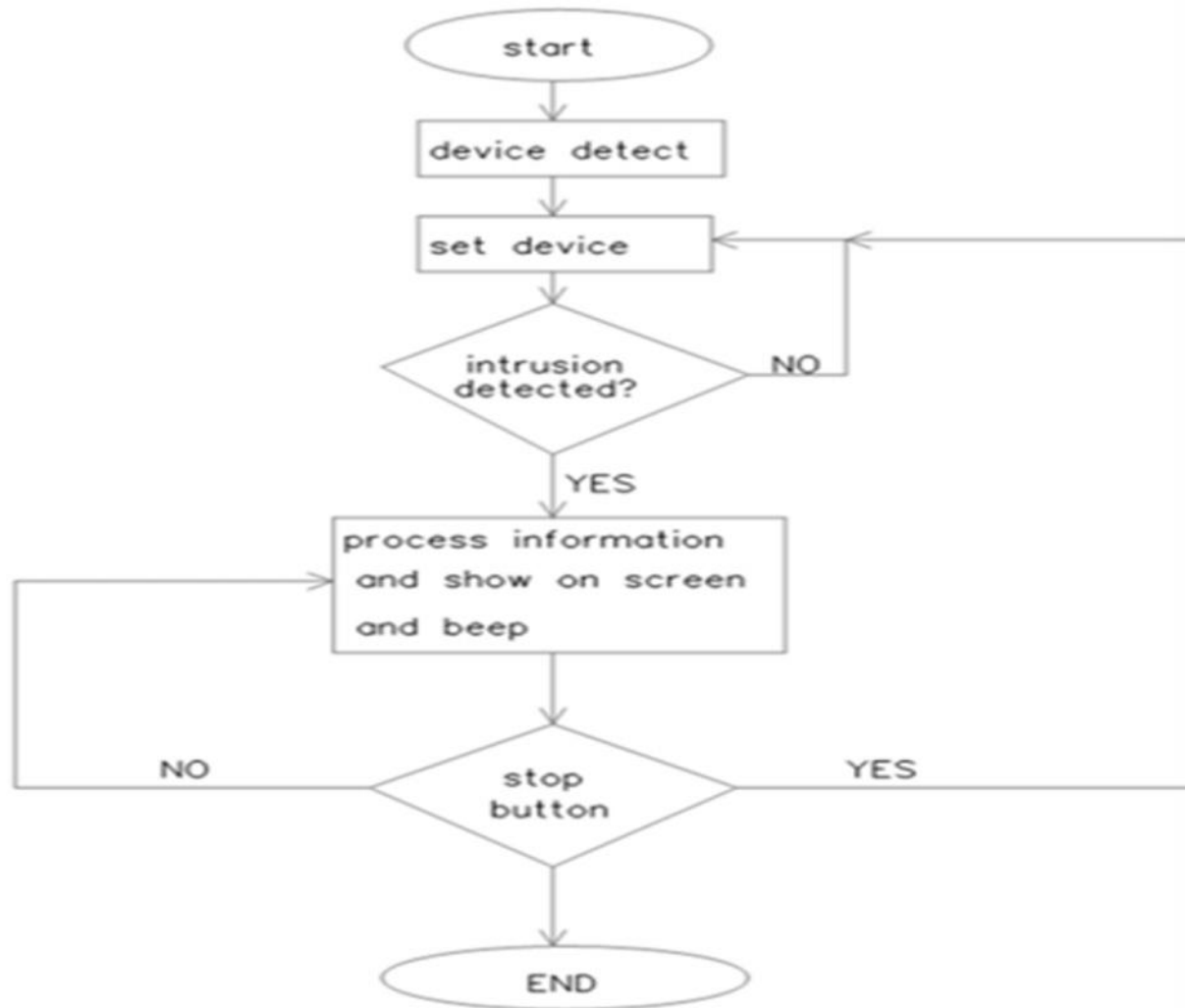
Passive infrared sensors (PIR)



CIRCUIT DESIGN



Software design



TEST AND RESULTS

WAITHAKA SECURITY SYSTEMS

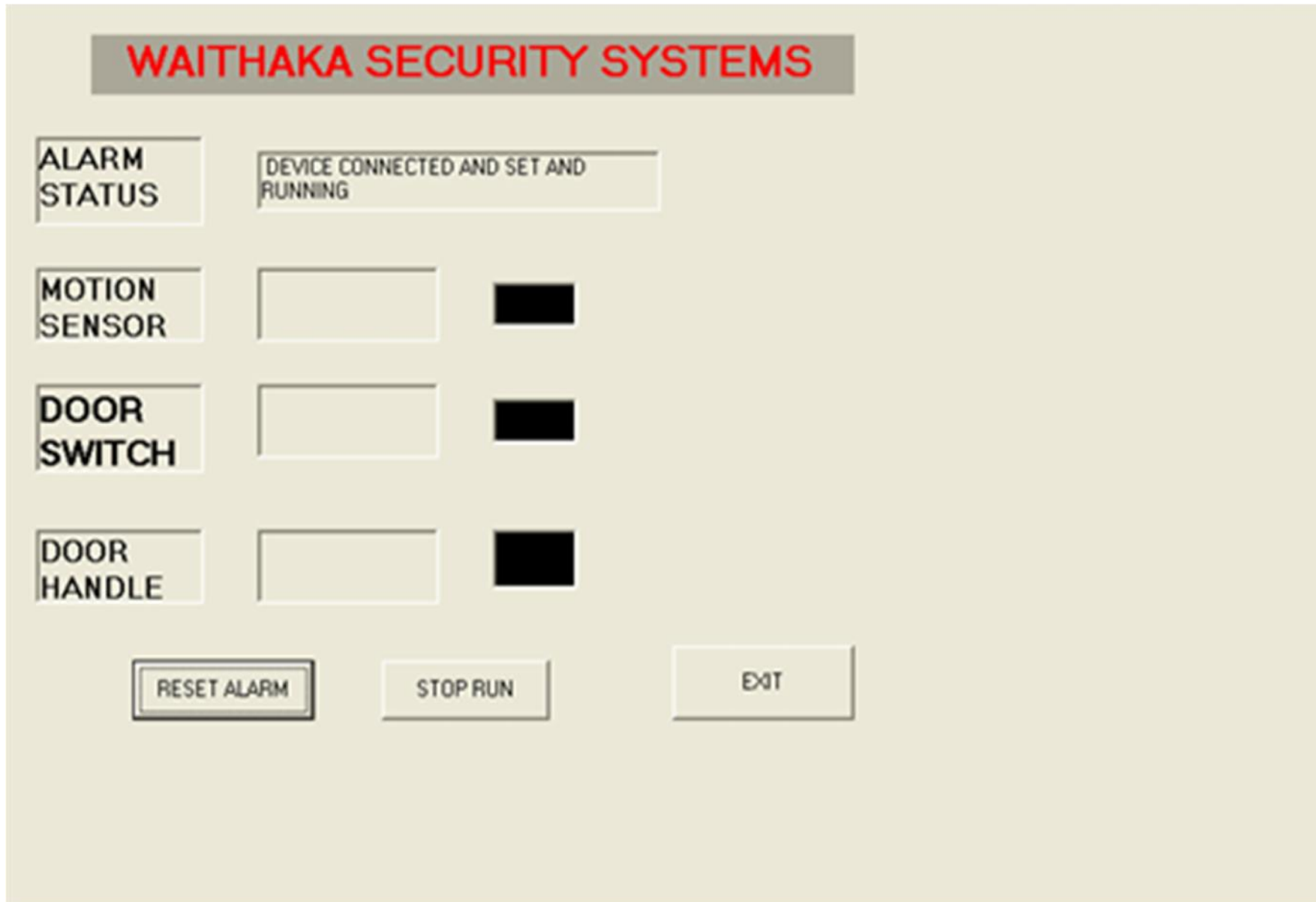
ALARM STATUS DEVICE CONNECTED AND SET AND RUNNING

MOTION SENSOR

DOOR SWITCH

DOOR HANDLE

RESET ALARM STOP RUN EXIT

The image shows a graphical user interface for a security system. At the top, a grey banner contains the text 'WAITHAKA SECURITY SYSTEMS' in red. Below this, there are several status indicators and control buttons. On the left, there are three labels: 'ALARM STATUS', 'MOTION SENSOR', 'DOOR SWITCH', and 'DOOR HANDLE'. To the right of 'ALARM STATUS' is a box containing the text 'DEVICE CONNECTED AND SET AND RUNNING'. Below 'MOTION SENSOR', 'DOOR SWITCH', and 'DOOR HANDLE' are three empty rectangular boxes, each followed by a black square. At the bottom, there are three buttons: 'RESET ALARM', 'STOP RUN', and 'EXIT'.

WAITHAKA SECURITY SYSTEMS

ALARM
STATUS

DEVICE CONNECTED AND SET AND
RUNNING

MOTION
SENSOR



DOOR
SWITCH



DOOR
HANDLE

INTRUSION
DETECTED



RESET ALARM

STOP RUN

EXIT

WAITHAKA SECURITY SYSTEMS

ALARM
STATUS

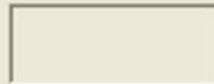
DEVICE CONNECTED AND SET AND
RUNNING

MOTION
SENSOR

INTRUSION
DETECTED



DOOR
SWITCH



DOOR
HANDLE

INTRUSION
DETECTED



RESET ALARM

STOP RUN

EXIT

WAITHAKA SECURITY SYSTEMS

ALARM
STATUS

DEVICE CONNECTED AND SET AND
RUNNING

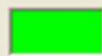
MOTION
SENSOR

INTRUSION
DETECTED



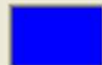
DOOR
SWITCH

INTRUSION
DETECTED



DOOR
HANDLE

INTRUSION
DETECTED



RESET ALARM

STOP RUN

EXIT

CONCLUSION

- This project was set out to realize an integrated burglar alarm system that could be monitored on PC.
- The project was implemented and determined to be functioning correctly for the monitoring of the three conditions as laid out in the objectives.

RECOMMENDATIONS AND FUTURE WORK

- Using wireless instead of hard-wired.
- Using a USB port instead of parallel port.
- Mobile phone can be used to monitor.

Q & A

THANK YOU!

ythaka2@yahoo.com