ALARMA DE SEGURIDAD

Daniel Camilo Amaya Rodriguez, Oscar Rojas Caicedo
Facultad de ingeniería, programa de ingeniería electrónica, Universidad de Ibagué
Ibagué, Colombia
2420191010@estudiantesunibague.edu.co
2420191009@estudiantesunibague.edu.co

ABSTRACT

The PIC16F15244 was used which is 8 bits and recommended for low cost applications. Insecurity has increased and that is why we have designed an alternative to solve it, it is a security alarm which detects movement through a PIR sensor, to enter the password is through push buttons and the led is what makes us see if the sensor detects or not a person.

https://github.com/DanielCamiloAmaya/AlarmaDeSeguridad.git

I. INTRODUCTION

A microcontroller is a small computer that contains inside a processor, a support (clock and reset), memory and input-output ports, all within a chip that we can program with total flexibility and relatively easily.

The 8-bit PIC16F15244 is made by the microchip company, includes independent main peripherals and is particularly suitable for low-power applications.

The increase in insecurity in Colombia has made us look for a way to protect private property, so a solution to insecurity was designed, for this the knowledge acquired was implemented and the necessary requirements for the realization of the security system were investigated.

II. METHODOLOGY

The process to carry out the project is through the programming language C. The PIC16F15244 was used, which is used for low-cost applications, a 5v source, three buttons, an LED, five pull-up resistors were used to protect the PIC, a 16-wire 4x20 LCD, jumpers and finally an I2C module connected to the LCD to reduce the pins, working on 2 wires (SDA and SCL) and the other two for power (VCC and GND).

The first thing that was done was to investigate what materials we will have to use and thus choose the best alternative based on price and quality, an example of this was the use of a matrix keyboard but it was discarded because it occupied many pins and the price rose considerably. of the project, so we decided to replace it with push buttons, which compared to the keyboard are easier to use and much cheaper, after that we decided which materials were worth ordering online.

While the materials arrived we consulted and investigated about libraries to use, in this case we only used the lcd libraries, but this PIC being new made it difficult to find it. Then, through examples and external help, we implemented the libraries and then made the creation of the code through advice from external people who helped us with the organization of the code.

III. RESULTS

Fig 1. LCD after correctly setting the password for the first time

Fig 2. The security alarm senses an intruder and he makes a mistake when entering the password.

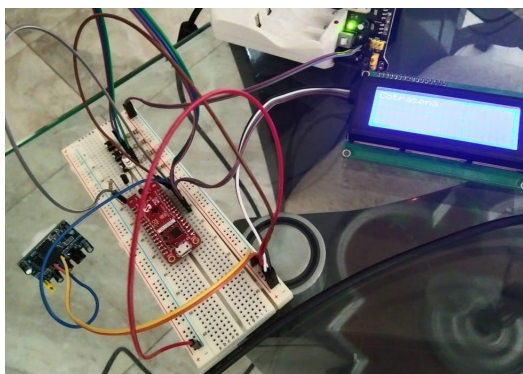**Fig 3. LCD after 2 failed attempts to disable the alarm.**

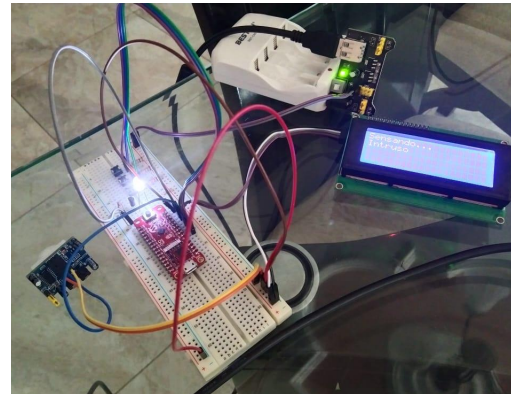**Fig 4. Physical assembly when an alarm requests password.**

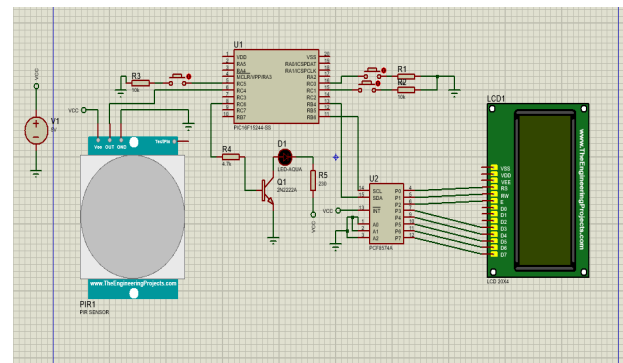**Fig 5. Physical assembly after detecting an intruder.**

Fig 6. Schematic.

IV. CONCLUSIONS

- An alternative basic security alarm and low cost is implemented.
- Through the knowledge already acquired in previous subjects and including this one and adding this to the independent study, the development of the security alarm was achieved.

V. REFERENCES

[1]MICROCHIP [Microchip Technology] ,PIC16F15213/14/23/24/43/44 Full-Featured 8/14/20-Pin Microcontrollers.Recuperado de https://pdf1.alldatasheet.com/datasheet-pdf

/view/1249929/MICROCHIP/PIC16F1524
4.html

[2]Sensor infrarrojo de movimiento PIR
HC-SR501.Recuperado de
https://puntoflotante.net/MANUAL-DEL-
USUARIO-SENSOR-DE-MOVIMIENTO
-PIR-HC-SR501.pdf

[3]Sensor infrarrojo de movimiento PIR
HC-SR501.Recuperado de
https://puntoflotante.net/MANUAL-DEL-
USUARIO-SENSOR-DE-MOVIMIENTO
-PIR-HC-SR501.pdf

[4]Components101(2017), HC-SR501 PIR
Sensor. Recuperado de
https://components101.com/sensors/hc-sr5
01-pir-sensor