ADVISORY CONTROL

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Abstract— **In the actually the teacher from the university of Ibegué, when are in the teacher's room they needs focus in they projects, but the logistic in the advisory is badly, but thanks to the PIC 16F15244 a interactor with some LEDS and LCD, the LED represent every teacher and with the LCD they can found the teacher that they are looking for.**
keywords: Advisory, teacher, LED, LCD, PIC16F15244

Link of repository:
https://github.com/Furruscar03092002/final-project

1. Introduction

A microcontroller is a chip or integrated circuit that contains all the elements of a CPU, these devices were born when integration techniques have progressed enough to allow its manufacture; very often, both in domestic and industrial applications, there is a need for "intelligent" systems orat least programmable

In the actually the teacher from the university of Ibegué, when are in the teacher's room they needs focus in they projects, but the logistic in the advisory is badly, the students knocking the door every moment looking for the teacher, but this, disconcentrate the teachers, so in this project we need how we can order the advisory, in a order where the teacher don't need up every moment to see if is he that must give advisory, with this solution both sides don't need interact. To resolve the problematic, we design a circuit of the prototype, we use some diode led, a LCD, the PIC 16F15244 and some push buttons, the idea is, when a student is looking for a teacher, everyone knows for what teacher is the student, so in front of the teacher's room is the LCD with some buttons, the student will looking for the teacher, select who is looking for, in the other side there is a table with the LEDS, every LED represents a teacher, when a student goes for a advisory, they found the LCD and they search for the teacher when they found, select and the teacher see the table, he knows that is for he because his LED is in on, so he goes for his student.

2. Methodology

The methodology used to carry out the project was programming through C language. The circuit was designed with the PIC16F15244, a 5V source, four buttons, four LEDs, eight pull-up resistors to protect the PIC, a 4x20 16-wires LCD board, jumpers and finally an I2C module connected to the LCD to reduce pins, working on 2 wires (SDA and SCL) and the other two for power supply (VCC and GND).

The first thing in order to carry out the project was to try to get the LCD libraries for the PIC 16F15244, we tried this through internet pages

and tutorial videos on YouTube but as the PIC is quite recent in the market we did not find enough information about it. When failing in this step, later with the help of the workshop assistant Kelly, we were recommended to modify the libraries of the pic PIC16F877A so that it is functional in our PIC. But since we are not so proficient in programming, we paid for a group consultation with some colleagues, so that a professor from another university could explain this to us and we could begin to program our project.

After arranging the libraries for the pins that we are going to use in our project and see the functions that we can use with the LCD board. Then we create several points C where we initialize the pins that we are going to use as the ansel, the LATS, PORTC and others. After organizing and compiling it to see that we have declared it well. We create the main C point where we are going to create all the methods we need for our project. Here we invoke the previously modified libraries of the LCD board and initialize the variables of type int, char and char * (the asterisk makes it act as String) that we will use for the project. First we create a method to clean the LCD, then we create a method that says initializing in row and column 1 with the variable point to make it look aesthetic, all this done through a for inside a void.

Second, we create a method (void) called menu with a variable type int called input, then we declare a while since within this we are going to use switch case for each condition. So in case 0 we place an if where if the LCD is at 0 it is cleaned and then it is set to 1 to be able to write, below we create a code where a list of teachers available for 5s appears. For case 1 we make a code with the intention that in each row appears the name of a teacher declared in the list that we initialize at the beginning of the

code and some ifs for when they press the respective button. For case 3 we program a code that says calling the teacher and automatically in row 2 the name of the teacher who pressed the button appears, also each one has a form so that instantly with the Toggle option the led starts flashing by 7.5 s and so the methods of our code were built.
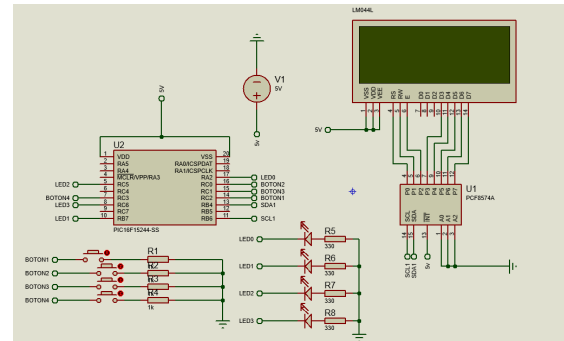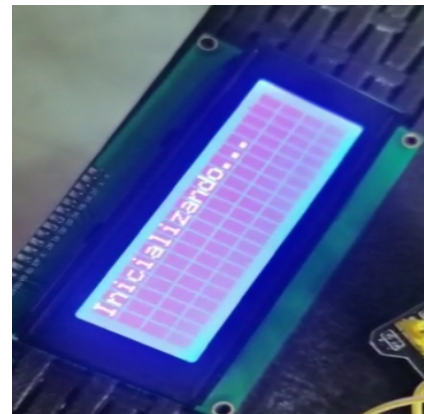

Figure 1: schematic

3. **Results**

Figure 2: First process of initializing

Figure 3: Second process of initializing
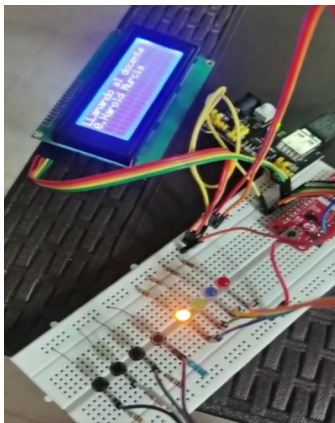

Figure 4: Mode of selection

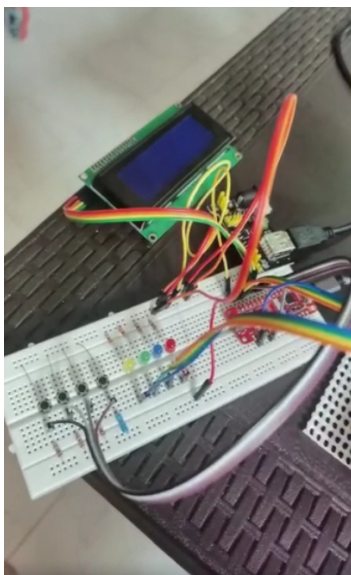**Figure 5: Connection with the other side of the room**

Figure 6: Circuit's final mounting

4. conclusions

- We can see the style to program depends on the programmer's style, as in this case we can use different styles to program, different ways but we can get the same result.
- to this project it was necessary to know the function of each one pin from the PIC.
- is necessary to investigate the Datasheets from each one object that we needed to use for example the LCD.

5. references

- **User guide from pin of PIC 16F15244.**
  http://ww1.microchip.com/downloads/en/DeviceDoc/PIC16F15244-Curiosity-Nano-Hardware-User-Guide-DS50003045A.pdf
- **Datasheet PIC 16F15244.**
  http://ww1.microchip.com/downloads/en/DeviceDoc/PIC16F15213-14-23-24-43-44-Data-Sheet-DS40002195B.pdf