TEACHER'S PANEL

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I. ABSTRACT

The following report explains in detail the designed project, its components and everything that had to be taken into account when bringing it to reality. In addition to the inconveniences when working the different existing libraries for Wi-Fi communication. A prototype of small size was created which represents the entry of the teacher's room and where the panel could be located, as well as each component that each teacher will have on their tables, which by cost issue only worked with two of them. Below is the block diagram of the designed project

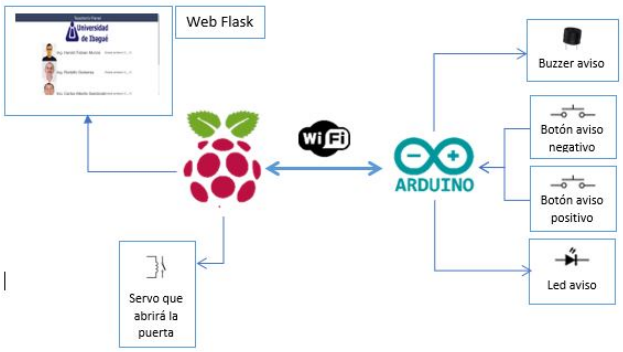

Figure 1. *DiaBlo Teacher's Panel.*

II. INTRODUCTION

A. FRAMEWORK AND COMPONENTS

For understand this project in a good way, we have to introduce some definitions, because the are some weird words included in the explanation. Let's begin with our main hardware:
Raspberry Pi: Is a low cost credit-card sized computer, which works as a regular computer but in a really low space, and is configured to work with the OS Raspbian, that is like Ubuntu.

Figure 2. *Raspberry 3b+.*
NodeMCU: Is an open source IoT platform. Is the hardware that works with Wi-Fi and supports the IDE of Arduino.

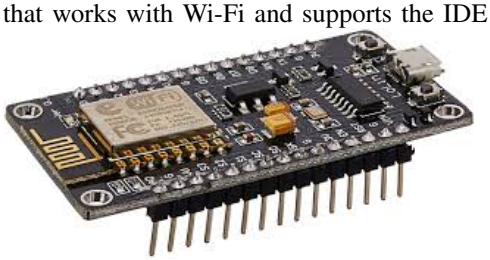

Figure 3. *NodeMCU.*
Flask: Is a framework written in Python, allows to create a web-page in a very easy way, using a few lines of code.
Buzzer:it allow to write tones of different frequencies, which allowed to establish different tones in case the teacher is available or busy

Figure 4. *Buzzer.*
vibration motor:they are within the module of each teacher, so that he realizes when it turn on lights and to add dynamism.

de vibracion.jpg

Figure 5. *Vibration motor.*

Switch:it allow to change of teacher with two options: avalible or busy

Figure 6. *Switch.*

B. INTRODUCTION

Usually in the teacher's room of the University of Ibague, a discomfort in advisory schedules between student and teachers communication, this problem is presented to both students and students-teachers, when a student needs a teacher even though it's time to counseling, this is totally unknown if the teacher is in the room and even so knock waiting for an answer. Also when they knock on the door, the teacher does not knows which teacher of they need so this leads to an interruption for the teacher who stands up to open the door. A bidirectional communication system was designed via Wi-Fi, in which it shows the student's request and the teacher's answers. It is a system innovative technology as it is a low cost system with very affordable prices in the market, very intuitive for the customer and easy to power supply. As main background related to our project, is the typical waiting system that make the restaurants of the malls, in which right after the order deliver a module that will notify by vibration and LEDs when the food be ready, i.e, when a button is pressed by the restaurant.

III. OBJECTIVES

Overall objetive: streamline communication between student and teacher during the advisory schedules in the teachers rooms implementing a smart doorbell system made with IOT tools.

Specific objective: -Know the problems that arise when it comes to consulting between students and teachers.

-Establish communication between two IOT tools through of an intranet or internet connection.

-Design a web system (Flask) to visualize the communication between IOT tools.

-Implement a panel outside the teachers room, where you will be to observe the names and through a website (Flask) availability of each teacher, so by means of a button make the personal call to the teacher, which will be communicated to a module via Wi-Fi, so the teacher can easily access the call or express that he is busy.

IV. PROBLEM SOLUTION

For the design and operation, the module was chosen as the main actuator called "NodeMCU" which can easily access the Wi-Fi network, and its programming is very versatile, since it can be compiled with different types of language, our group chose for programming it with the Arduino IDE, since it has already developed multiple libraries focused on this module, which allowed solving problems in a simpler and faster way. This module was adapted inputs and outputs that are directed directly through the Internet to a Broker, which will be responsible for leading (host) the system, in our case was used a Raspberry Pi 3b because it is small and powerful, enough to fit in a box and power supply it with a serial cable to the current. To facilitate communication between both devices, a web page was designed in a Flask environment, i.e, it communicates through an intranet network, where there, by means of buttons and messages, it redirects to the main code that will be responsible for executing the desired function.

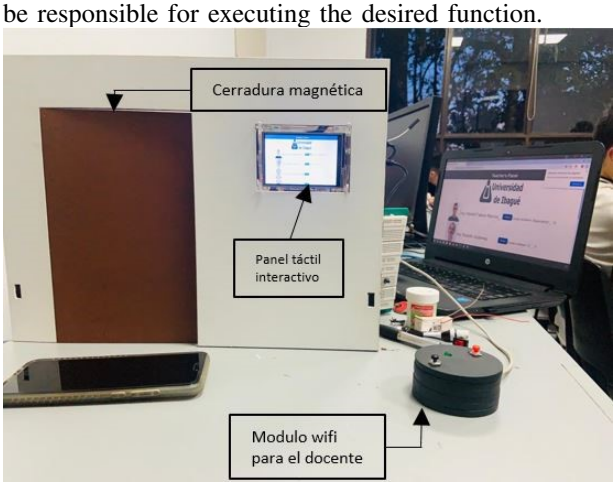

Figure 7. *Final project designed and created.*

V. CONCLUSIONS

Its main application is in a teacher's room, where the panel can be placed outside the room so that any student can access the system. However, it could be installed in another environment where you can not make much noise or interrupt people who are present.

- They had problems when making the module-host communication because the main library did not respond well to the environment designed in Flask.

-Although only two modules were designed, you can work

with many more, as would be usual in a regular teaching room, but to show the objectives, the work is enough.
-It is designed to work by means of an intranet network, that is, all systems must be connected to the same internet network.

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