Project V

Digital Systems and Microprocessors

Grade in Biomedical Engineering

Objetive

The overall objective of this project is to demonstrate the use and skill using the Arduino System, and the handling of an ultrasonic sensor to measure distances.

Description:

In this project, an RGB LED, a buzzer and the HC-SR04 ultrasonic sensor will be used as elements for the assembly of an electronic distance measurement system. Connect the components to the following pins on the Arduino development board as follows:

- RGB LEDs with respective resistors to 22, 23 and 24.
- Buzzer, connected to pins 26 and GND.
- HC-SR04, connected to pins 36(Echo pin) and 37 (Trigger pin).

Exercise 1.

Write a code in which the distance of an obstacle in front of the ultrasonic sensor is measured. The distance ranges to be measured and the actions to be taken are as follows:

- Distance between 20 and 100 mm, range 0, red LED on, other LEDs off, buzzer off.
- Distance greater than 100 mm and less than or equal to 200 mm, range 1, blue led on, other leds off, buzzer of.
- Distance greater than 200 mm and less than or equal to 300 mm, range 2, green led on, other leds off, buzzer off
- Distance over 300 mm, range 3, LEDs off, buzzer on and frequency to generate 440 Hz.

Both the measured distance and the range should also be displayed on the computer.

- **The project has a maximum score of 10. 10% of the course grade**
- **The project must be developed by 2 students**
- **For the delivery of the project, a document. ZIP must be done and it should contain:**
  - ✓ **Files .ino with each corresponding code.**
  - ✓ **A pdf document for each program and it must contain:**
    - **Justifications and conclusions of the written code.**
    - **Representative flowchart of the program.**
- **The name of the file will be surname_name**