

Etilotest

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Introduction

This alcohol tester provides a convenient and portable solution for individuals to monitor their alcohol consumption levels. It can be used for personal use or in situations where alcohol testing is required, such as safety checkpoints or professional settings.

General Description

The alcohol tester made with an Arduino Uno board, an MQ-3 sensor, a button, a buzzer, and an LCD display is a device designed to measure alcohol concentration levels. It provides a simple and convenient way to determine if an individual is sober, within legal limits, or drunk. The MQ-3 sensor is used to detect the presence of alcohol in the surrounding environment. When the button is pressed, the device initiates a 5-second countdown. A buzzer produces a sound every second to signal the measurement period. The sensor readings taken during this time are then processed to calculate the average alcohol concentration. Instead of displaying the results on the serial monitor, an LCD display is used to provide a user-friendly output. The LCD screen is connected to the Arduino Uno board via an I2C module, which simplifies the connection and communication between the two. Once the sensor reading is complete, the calculated alcohol concentration value is displayed on the LCD. The display provides different messages based on the concentration level. If the concentration is below a predefined sober threshold, the LCD displays "Sober" along with the measured value. If the concentration is within the legal limit, it shows "Have been drinking" And if the concentration exceeds a predefined drunk threshold, it displays "Drunk" as an indication of intoxication.

Electrical diagram



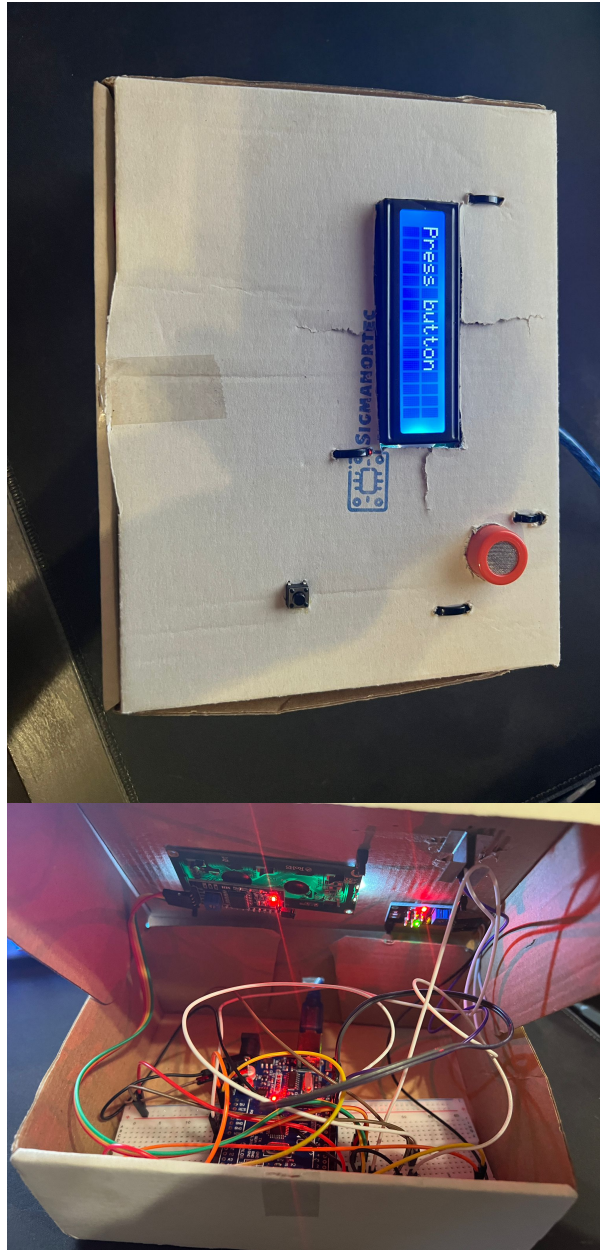
Hardware Design

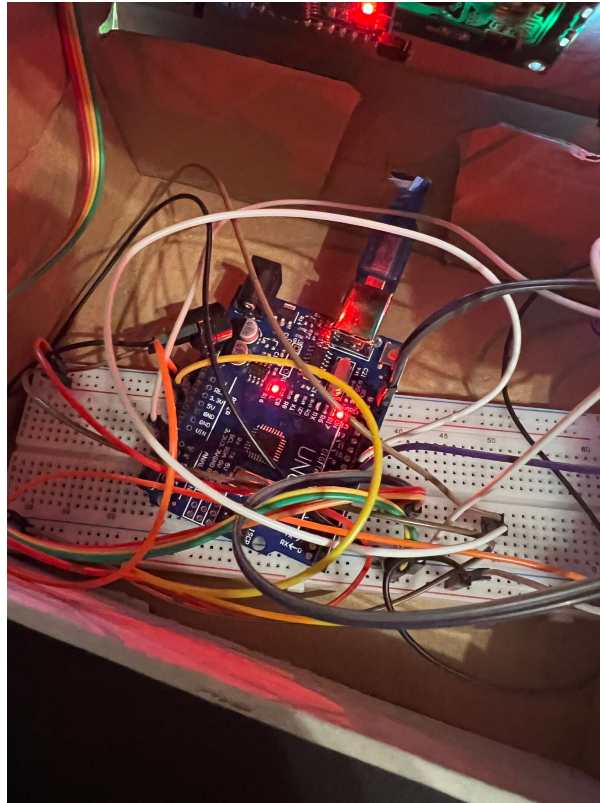


Components

- MQ-3 sensor
- Arduino UNO board
- Buzzer
- Button
- LCD display with I2C module
- Breadboard

Physical Project





Software Design
Libraries used

- <Wire.h>
- <LiquidCrystal_I2C.h>

Funcții implementate:

- **void setup():**
 - Declare the pins
 - Initialize the LCD display
 - Display the initial text ("Press the button")
- **void loop():**
 - Verify if the button has been pressed
 - If the button has been pressed the Buzzer starts and makes a noise every second for 5 seconds
 - The LCD displays that the sensor is reading
 - After 5 seconds the buzzer stops
 - The code computes the average value read by the sensor
 - The condition blocks inside the code verify the value and display the appropriate message

Code for the project

[etilotest.rar](#)

Conclusions

It has been a fun experience learning how to create an Alcohol tester. I believe that this device can be later used if needed. My knowledge regarding the Arduino technology has definitely improved.

Journal

- 01.05.2023 - Initial Documentation

- 03.05.2023 - Ordered the needed parts
- 10.05.2023 - Started testing the sensor
- 28.05.2023 - Finished the project

Resources

- Hardware diagram <https://www.circuito.io/>
- Arduino IDE <https://www.arduino.cc/en/software>
- Site for components: <https://www.sigmanortec.ro/>

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