

Breathalyzer

Introduction

The project involves creating a breathalyzer using the MQ-3 alcohol and ethanol gas sensor, an UNO R3 development board, a breadboard, and an OLED IIC display. The MQ-3 sensor detects the presence of alcohol in the breath, and the UNO R3 board processes the sensor data and displays the alcohol level on the OLED IIC display. The breadboard is used to connect the sensor and display to the UNO R3 board. The breathalyzer can be useful for monitoring alcohol consumption and preventing drunk driving.

General Description

The Arduino breathalyzer project is designed to measure the amount of alcohol present in a person's breath. The device uses an alcohol sensor that is capable of detecting the presence of ethanol, which is the primary alcohol found in alcoholic beverages.

The sensor works by analyzing the chemical properties of the breath sample and producing a voltage output that is proportional to the concentration of ethanol. The Arduino microcontroller is programmed to read the sensor output and convert it into a blood alcohol content (BAC) reading.

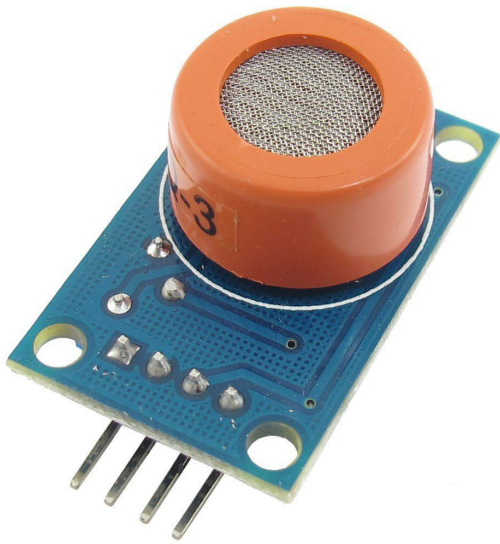
Once the BAC reading has been determined, the result is displayed on a LED screen, which can be easily read by the user. The LED screen typically displays the BAC reading in a numerical format, indicating the level of alcohol in the person's breath.



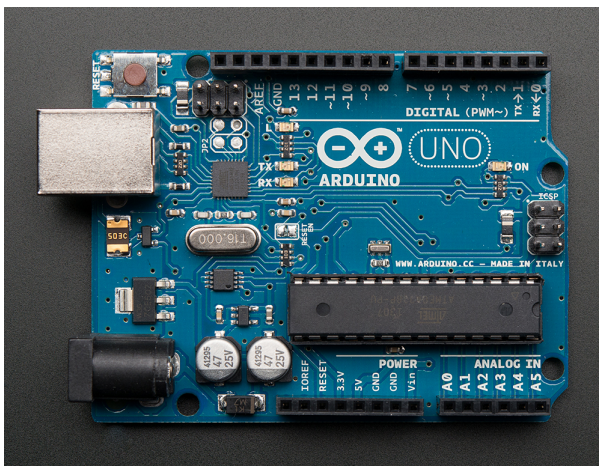
Hardware Design

Parts used:

- **MQ-3 Alcohol Ethanol sensor**



- **Arduino UNO R3**



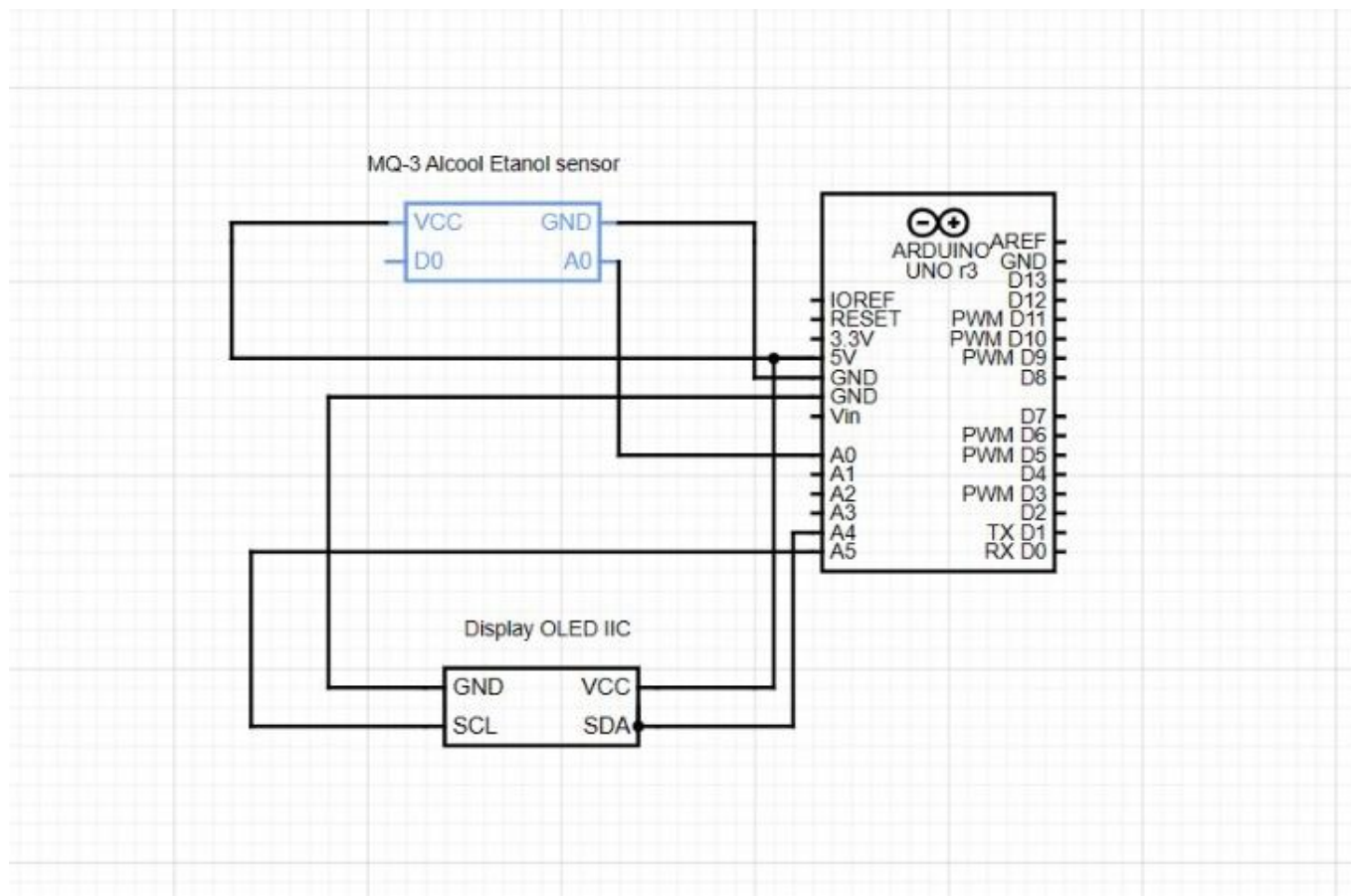
- **Display OLED IIC**



Additional components:

* Breadboard * USB Cable * Jump Wires

Electrical Schematic



Software Design

The software design of the breathalyzer project encompasses several crucial aspects to ensure its smooth operation. It incorporates the implementation of I2C communication protocol, which establishes a reliable connection between the project and the OLED display module. This enables efficient data transfer and display control, ensuring accurate and timely visualization of information.

Additionally, the project integrates the Analog-to-Digital Converter (ADC) interface of the Arduino UNO R3 board. This interface plays a vital role in reading the analog input from the MQ-3 alcohol and ethanol gas sensor. By converting the analog signals into digital values, it enables precise and reliable measurement of alcohol levels, which is a crucial aspect of breathalyzer functionality.

Furthermore, the software design focuses on the management and control of the OLED display. Through various functions, the project can effectively manipulate the display, including tasks such as initialization, clearing the display, setting the cursor position, and printing text. This ensures that the alcohol levels and ADC values are clearly presented to the user.

The code follows a modular approach, with distinct functions dedicated to specific tasks. This modular

design promotes code organization, readability, and reusability, making it easier to understand and maintain. Moreover, this design allows for potential future enhancements and modifications, as the code can be easily extended or modified without affecting the overall system.


Overall, the software design provides a comprehensive framework for the breathalyzer project, encompassing essential elements such as communication, data acquisition, and display control. It ensures accurate and user-friendly functionality, facilitating the effective analysis of alcohol levels.

Final results

DON'T DRINK AND DRIVE 

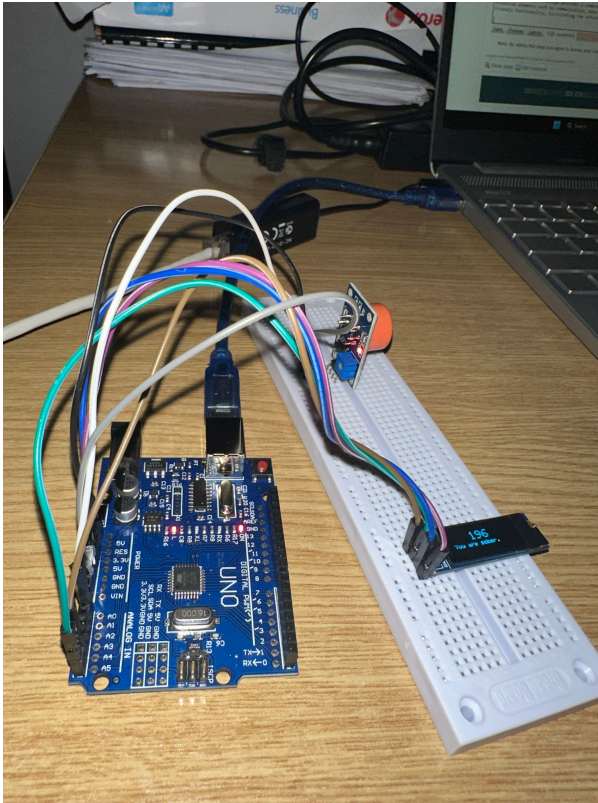
Concluzii

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O arhivă (sau mai multe dacă este cazul) cu fișierele obținute în urma realizării proiectului: surse, scheme, etc. Un fișier README, un ChangeLog, un script de compilare și copiere automată pe uC crează întotdeauna o impresie bună .

Fișierele se încarcă pe wiki folosind facilitatea **Add Images or other files**. Namespace-ul în care se încarcă fișierele este de tipul **:pm:prj20??:c?** sau **:pm:prj20??:c?:nume_student** (dacă este cazul).
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