Test Documents for Sensors

Introduction :

- Overview of the project: The project is named Distance Motion Analyzer [DMA]. The software involved in the project is Arduino, the hardware part of the project involves different components like Arduino, Breadboard, LCDs, LEDs, Ultrasonic sensor, and PIR sensor.
- Objective of this document: This document is mainly a detailed explanation of the testing process, such as validating the functionality, reliability, performance, and integration of the hardware and software components. Each and every component is tested in this process.

Components:

The components that are being tested in this document are:

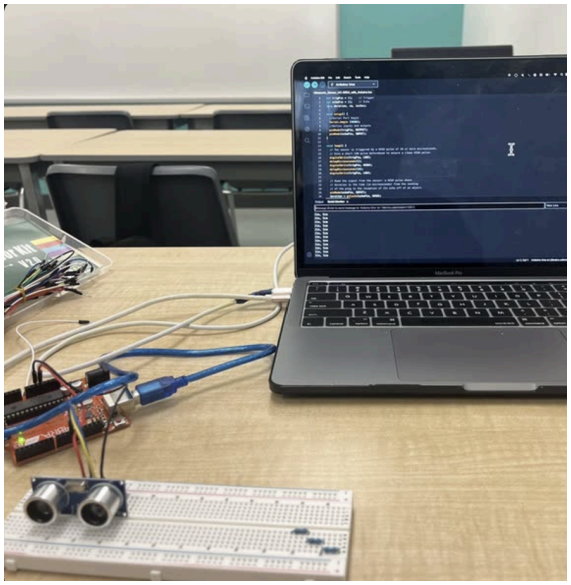
- Ultrasonic Sensor
- PIR Sensor
- Arduino
- Jumper cables
- Male-Female cable
- LEDs [Light Emitting Diode]
- LCDs [Liquid Crystal Display]
- I2C Adapter

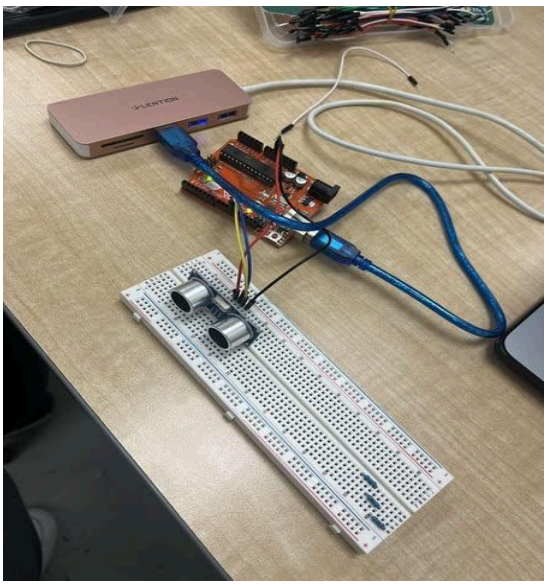
Ultrasonic Sensor

The Ultrasonic sensor was tested by connecting it to the breadboard and connecting the Arduino using jumper cables. The Ultrasonic sensor is working well, the serial monitor gives an output of the distance from the sensor to the object when an object is detected and it gives the distance value in inches.

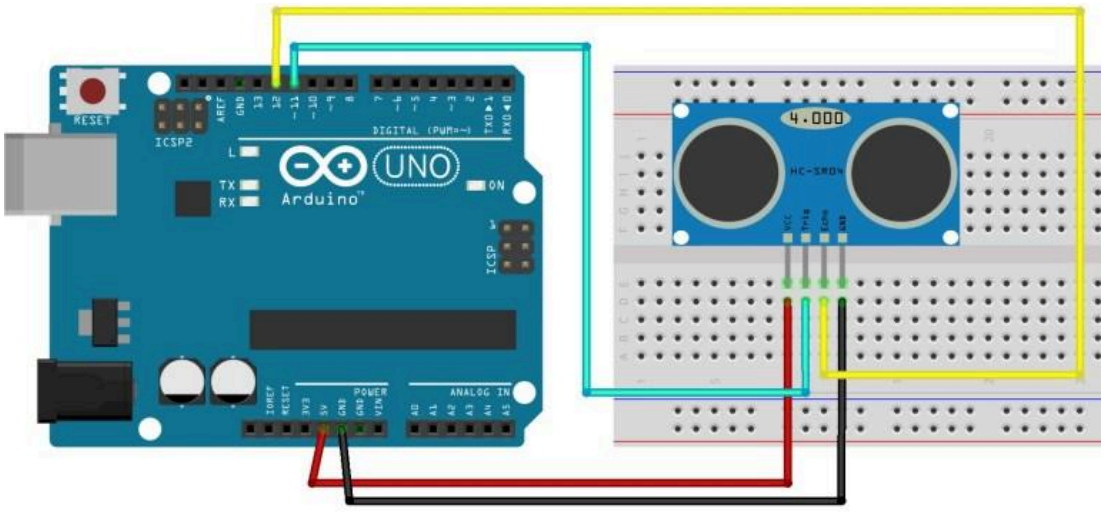
Jumper cables and Ultrasonic sensor Tested OK.

Images





Diagram

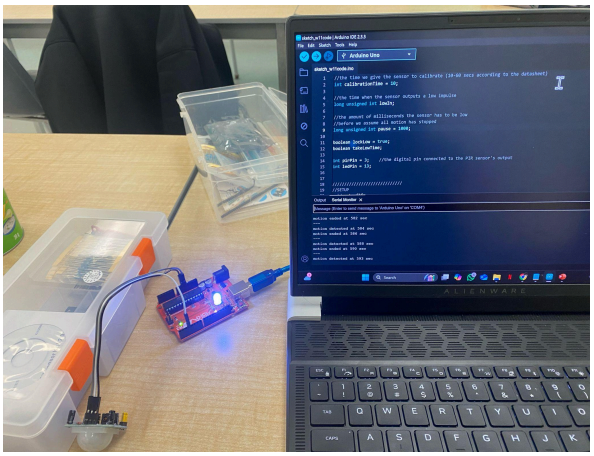


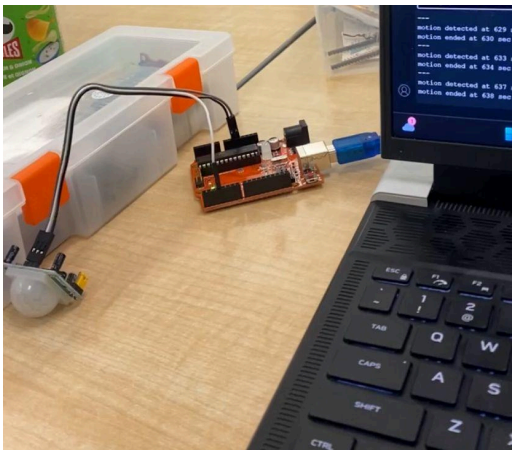
PIR Sensor

The PIR sensor was tested by connecting it directly to the Arduino using 3 male-female cables and one LED. The motion sensor is working well, the LED turns ON when motion is detected and it states the time in seconds as the motion was detected.

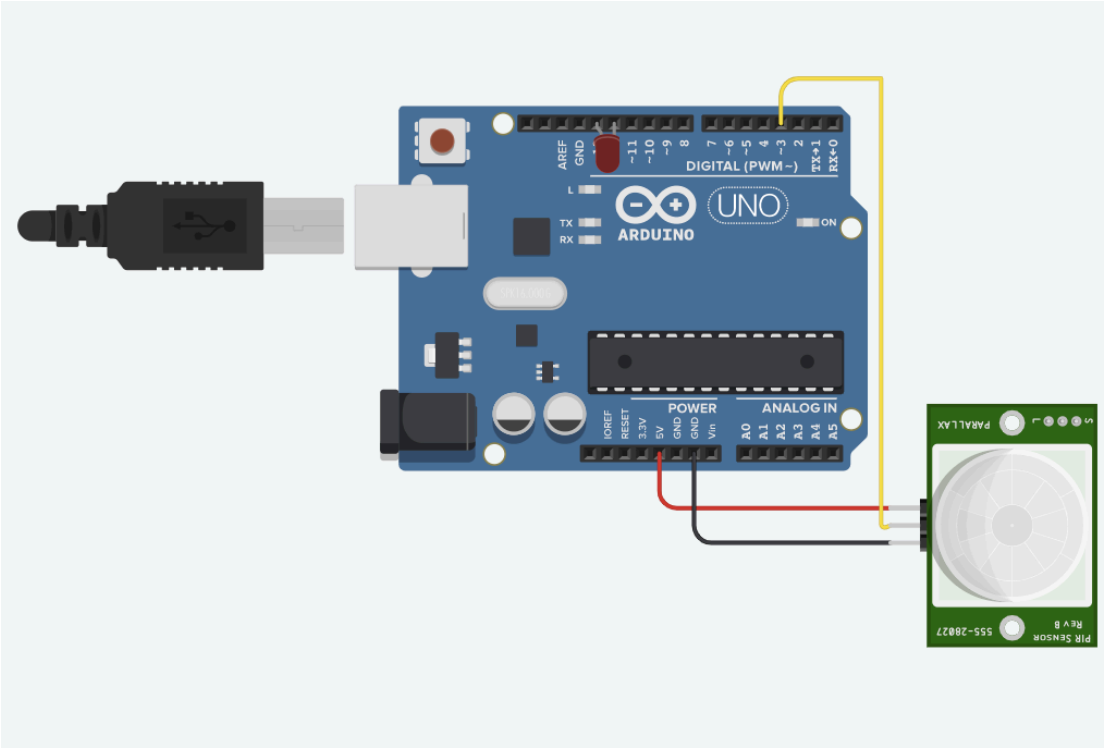
LED, male-female cables, and PIR sensor Tested OK.

Images





Diagram



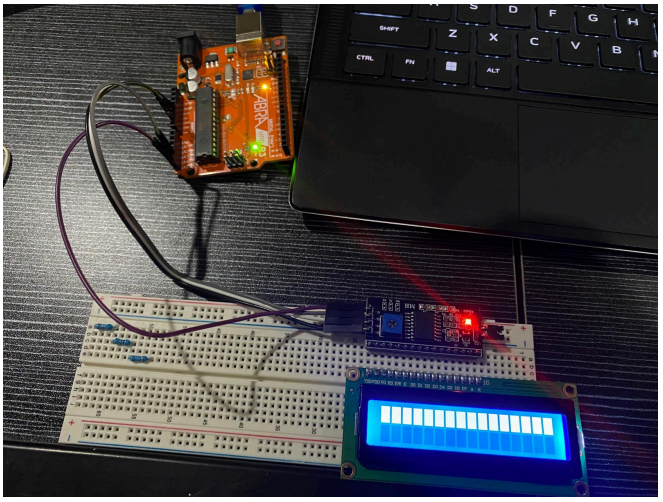
LCD Displays

The 2 LCD (16*2) Display was tested by connecting it to an I2C adapter on a breadboard which was wired to Arduino through male-female cables. LCDs are working and backlight of LCD is also working.

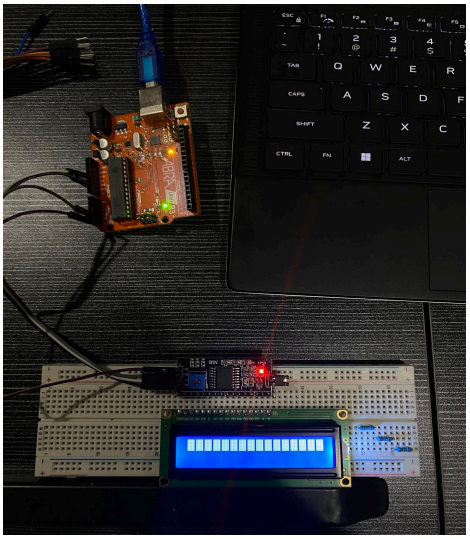
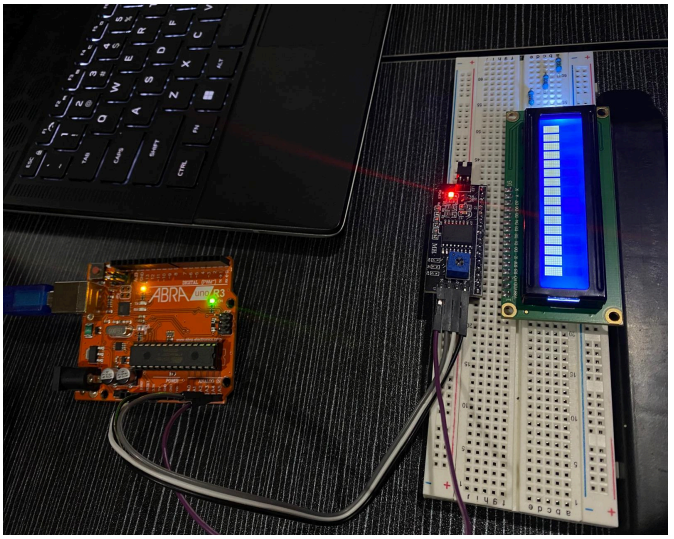
LCD, I2C Adapter Tested OK.

Images:

LCD 1

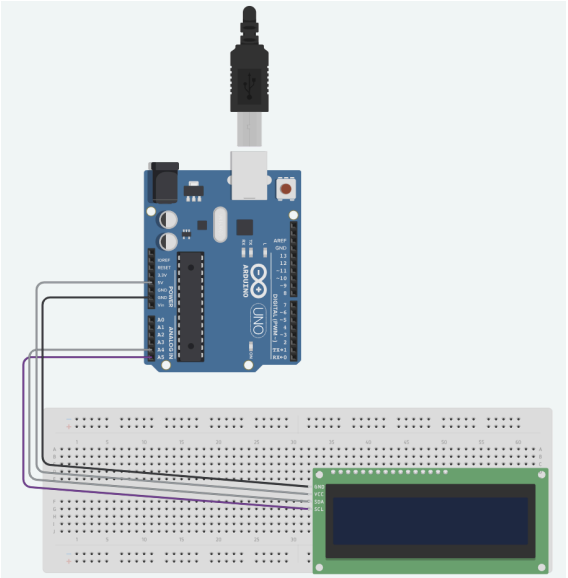



LCD 2

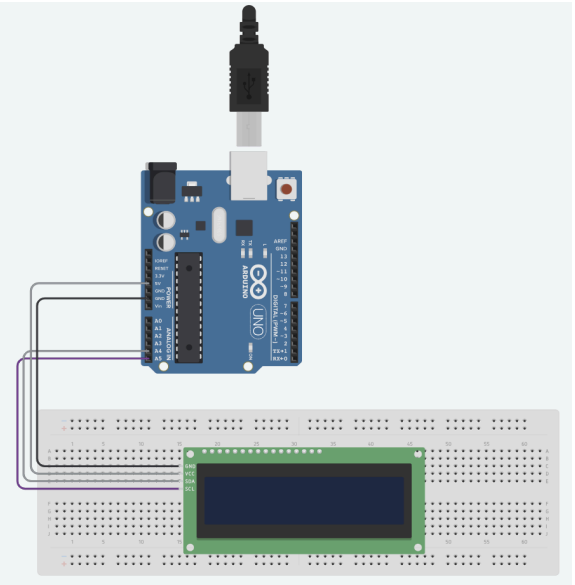



Diagrams:

LCD 1



LCD 2



Test Report

COMPONENTS	PASS/FAIL
Ultrasonic Sensor	Pass
PIR Sensor	Pass
Arduino	Pass
Jumper cables	Pass
Male-Female cable	Pass
LEDs	Pass
LCDs	Pass
I2C Adapters	Pass

Conclusion

Based on the test results, the sensors and components of the project "Distance Motion Analyzer [DMA]" have been verified for functionality. All tests have been conducted successfully, confirming that the system performs as expected.

Moving forward, the project is ready for assembly.