Project Proposal
Of
Electronic Drives and Instruments

Semester: 5th

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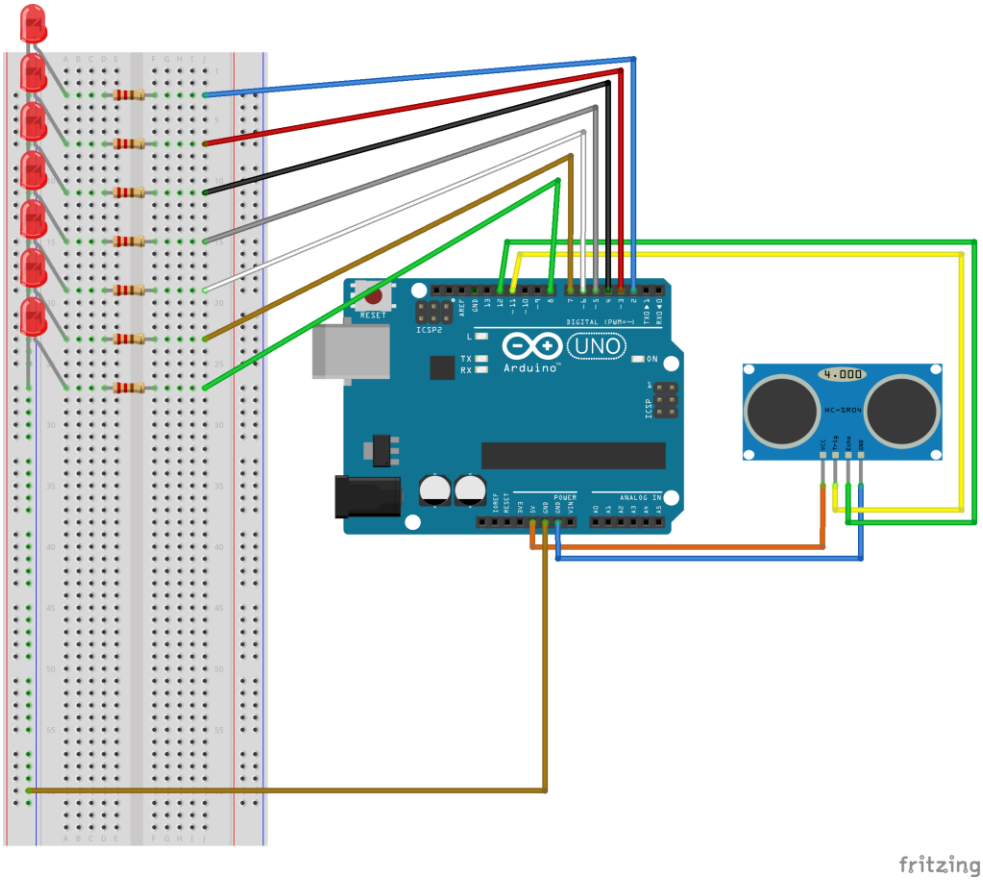
Project Proposal-01

Name: Design and Construction of LED Distance Meter.

Component Requirement:

1. Arduino UNO
2. Breadboard
3. Ultrasonic sensor
4. Jumper Cables
5. 1k ohm Resistors
6. LED lights

Circuit Diagram:



Working Principle:

As the device is powered, the Arduino board loads the required libraries. The ultrasonic sensor will be the main component of our project in this experiment along with Arduino. An ultrasonic sensor is an electronic device that measures the distance of a target object by emitting ultrasonic sound waves, and converts the reflected sound into an electrical signal. Ultrasonic waves travel faster than the speed of audible sound (i.e. the sound that humans can hear). Ultrasonic sensors have two main components: the transmitter (which emits the sound using piezoelectric crystals) and the receiver (which encounters the sound after it has travelled to and from the target).The LEDs will indicate the distance and the distance in centimeters will be given through code. The resistors will control the flow of the current to LEDs. The code is uploaded on the board using the USB drive and then run.

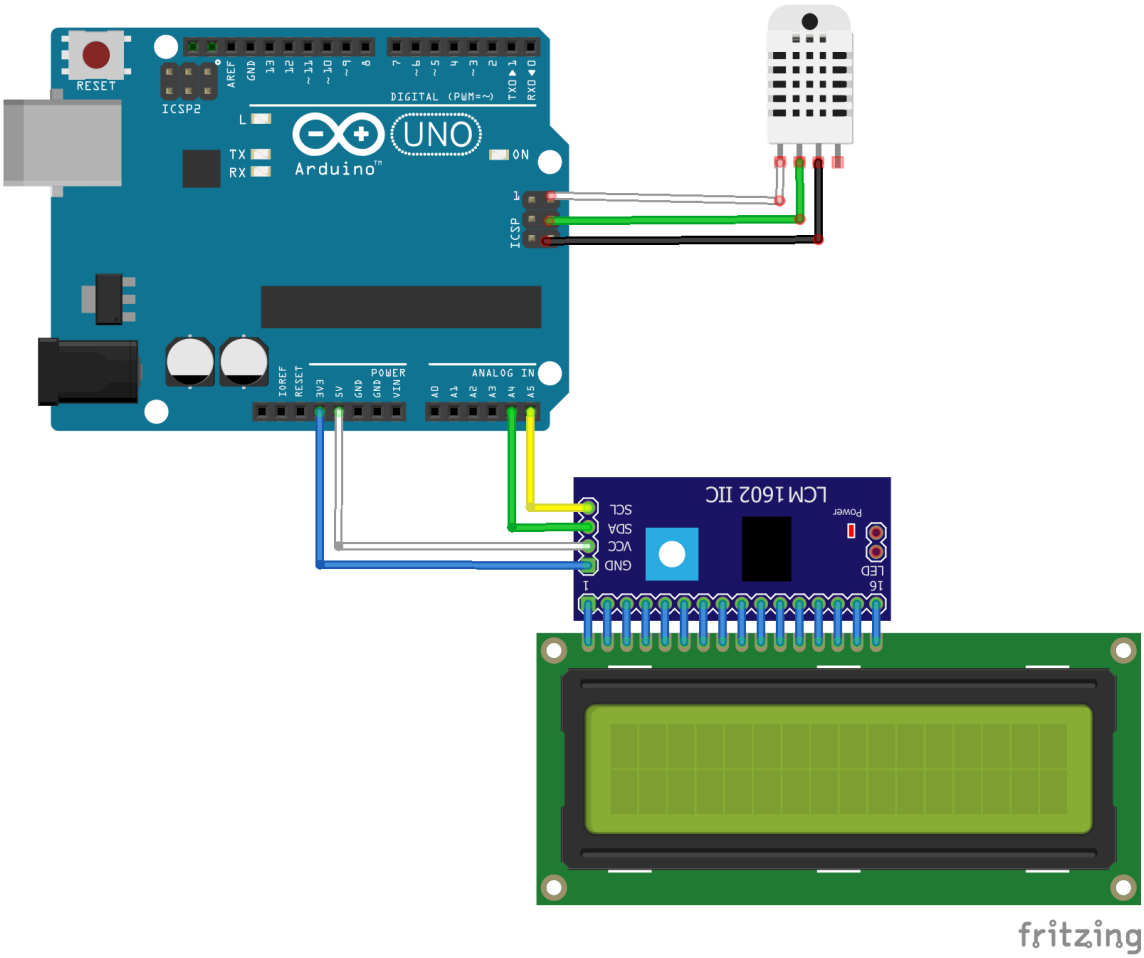
Project Proposal-2

Name: Design and Construction of Temperature and Humidity station.

Component Requirement:

1. Arduino UNO
2. Breadboard
3. DHT11 sensor
4. Jumper Cables
5. 16*2 LCD Display
6. I2c LCD Display Module

Circuit Diagram:



Working Principle:

As the device is powered, the Arduino board loads the required libraries. The main component is the DHT11. The DHT11 is a digital-output, relative humidity, and temperature sensor. It uses a capacitive humidity sensor and a thermistor to measure the surrounding air, and sends a digital signal on the data pin. A simple project is built using Arduino UNO and DHT11 Humidity and Temperature Sensor, where the Humidity and Temperature of the surroundings are displayed on an LCD display. After making the connections, we need not do anything as the program will take care of everything. The code is uploaded on the board using the USB drive and then run.

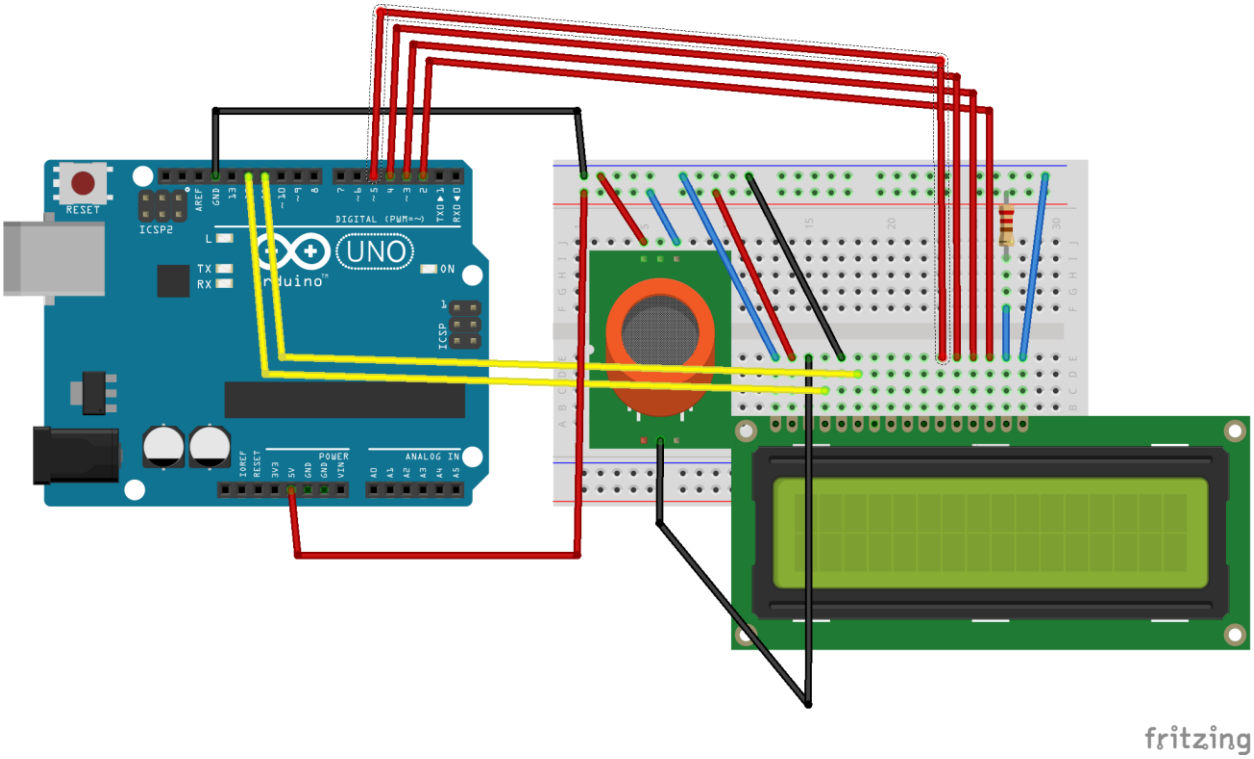
Project Proposal-3

Name: Design and Construction of Air Quality Monitor.

Component Requirement:

1. Arduino UNO
2. Breadboard
3. MQ135 sensor
4. Cables
5. 16*2 LCD Display

Circuit Diagram:



Working Principle:

As the device is powered, the Arduino board loads the required libraries. The analog voltage sensed at the pin A0 of the Arduino is converted to a digital value by using the in-built ADC channel of the Arduino. The Arduino board has 10-bit ADC channels, so the digitized value ranges from 0 to 1023. The digitized value can be assumed proportional to the concentration of gases in PPM. The code is uploaded on the board using the USB drive and then run. The output is observed on the serial monitor directly in PPM unit.