<u>**PROJECT 1 Name:**</u> **Temperature and Humidity Display**

Description: We often need to learn or want to measure the temperature of air and the Humidity of air. Humidity is the amount of water vapor in the air and, expressed in percent, temperature is a measure of the warmth or coldness of an object and this project will show air temperature in C (Celcius) and % Humidity on an LCD display. The parts that build up this system are:

- An Arduino
- A DHT11 Humidity and Temperature Sensor
- A 16x2 LCD Display
- Wires and resistor
- A Potentiometer
- A Breadboard

DHT11 sensor is used to detect the temperature and humidity of environment. DHT11 has 3 pins, + pin connect to the 5V, - pin to GND, and Signal pin will output the temperature and humidity information. The sensor expects us to send it commands and it will return data as signal pulses of 1's and 0's.
After I build the circuit I wrote the code which will processes the measurement and then I connected it to the LCD for displaying the result. DHT11 sensor has its own library. When we communicate with sensor we have to use this library.

Goal of the project: In this project I wanted to understand the working principle of the DHT11 temperature and humidity sensor. DHT11 sensor is chosen because it is lab calibrated, accurate and stable and its signal output is digital. It ensures high reliability and excellent long term stability.

<u>**PROJECT 2 Name: LED Animation**</u>

Description: In this project I did an animation using different color LEDs.
The parts that make up this system are:
- An Arduino
- 8 different color LEDs
- A Potentiometer
- Resistors
- Wires
- A Breadboard

Goal of the Project: I wanted to control the LEDs with a software program. For this reason I wanted LEDs to turn on then off, and "breathe" (fade brightness up and down) with variable rhythms. These LED animations needed happen at the same time. This requires the LED software to multitask. I am also planning to extend the project to do a Christmas tree lights with much larger array of different LEDs.