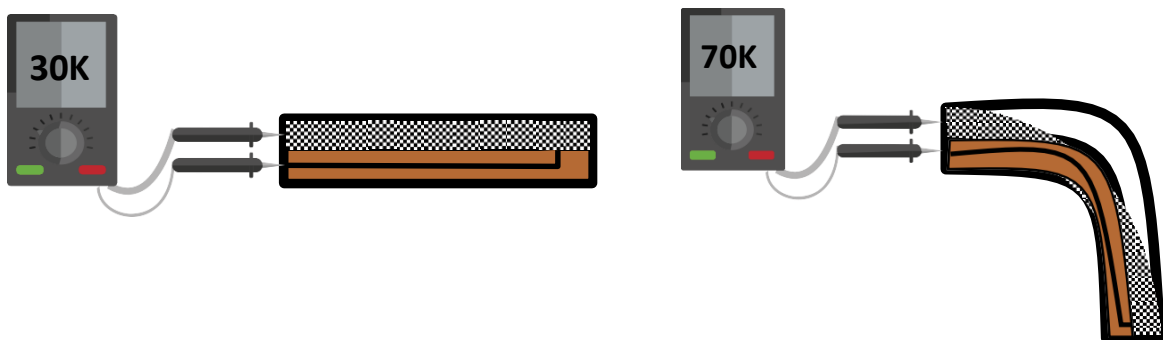


ACTIVITY CARD - 2

FLEX SENSOR

Introduction

Flex sensor is a passive resistive device that can be used to detect bending or flexing. Flex sensor is a bidirectional, that changes its resistance depending on amount it is bent in either direction. As shown in below figure, depending on the amount of bent, the resistance of flex sensor increases. This resistance can be measured by using multimeter.



Objective:

During this activity, you will help students to achieve following objectives:

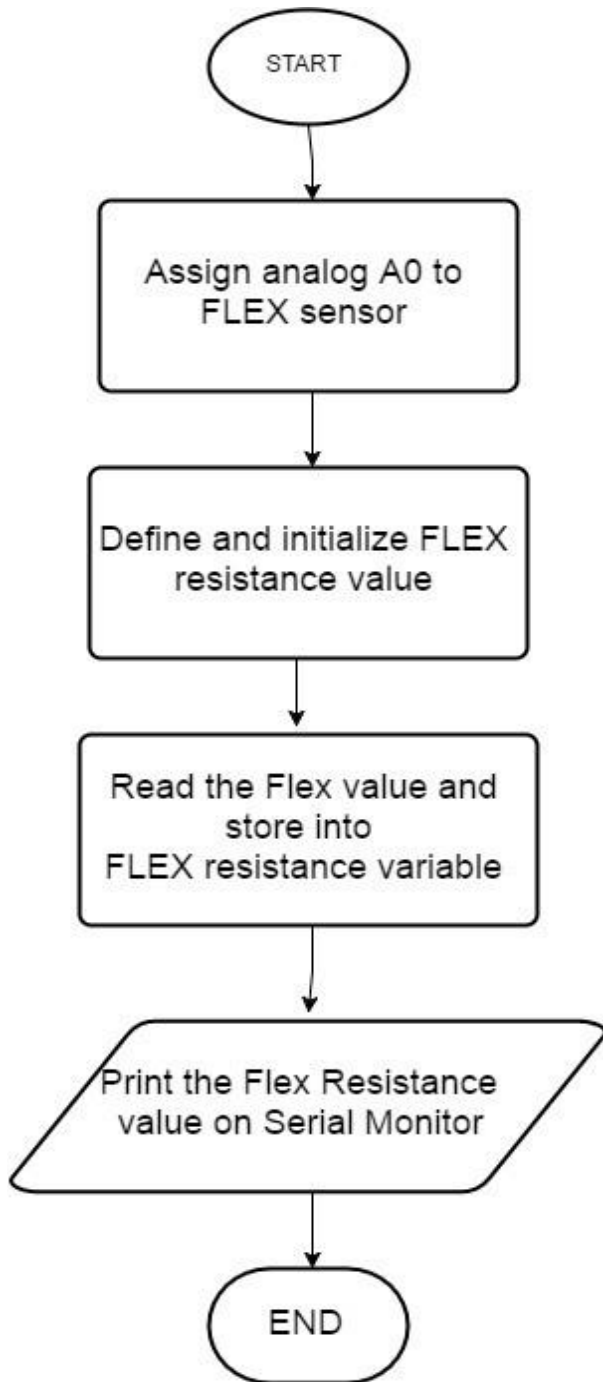
- Understanding principle and operations of Flex sensor.
- Design algorithm and flowchart to sense flexing or bending using Flex sensor.
- Programming Flex sensor using Arduino API for Arduino.
- Interfacing Flex sensor with Arduino using analog pin A0.

Algorithm

- Step 1 Assign analog pin A0 to FLEX Sensor
- Step 2 Define and initialize FLEX Resistance value
- Step 3 Read Flex Sensor Value and Store in Flex Resistance variable
- Step 4 Print Flex Resistance value on Serial monitor



Flowchart



Programming

```
int flexSensorPin = A0;           //analog pin 0

void setup(){
  Serial.begin(
    9600);
}

void loop()  {
  int flexSensorReading =
  analogRead(flexSensorPin);

  Serial.println(flexSensorReading);

  //In my tests I was getting a reading on the arduino between 512,
  and 614.
  //Using map(), you can convert that to a larger range like 0-100.

  int flex0to100 = map(flexSensorReading, 512, 614,
  0, 100); Serial.println(flex0to100);

  delay(250); //just here to slow down the output for easier
  reading
}
```



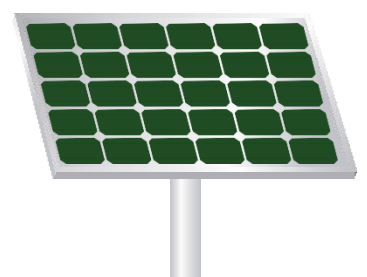
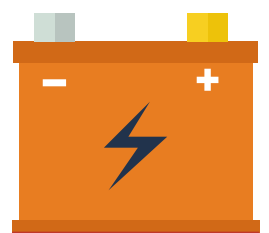
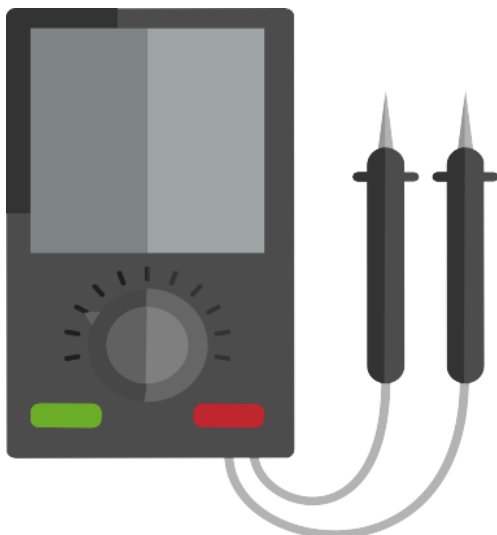
Hardware

Instructions:

- Connect any one pin of Flex sensor to one end of 10K ohm resistor
- Connect another pin of Flex sensor to GND on the Genuino board
- Connect another end of 10K ohm resistor to A0 on the Genuino board
- Connect power supply to the Genuino and USB to USB Client Port on the Genuino
- Open Arduino IDE under Tools → Board select Intel® Genuino
- Under Tools → Serial Port select the Com # where the Genuino is connected to
- Write the above code on Arduino IDE
- Upload to the Genuino by clicking the upload button
- Monitor the value of the flex sensor in the Serial Monitor

Hardware Connection

Genuino pin	Flex Sensor Pin
5V	Any one pin of the sensor via 10K ohm resistor
GND	Another pin of the sensor
Analog pin 0	Another end of the 10K ohm



Circuit Diagram:

