/\*PCE-18 Modified by Pat McMahon 12/10/2022.Uses Pat's 20 Plug & Code Examples.

  Calibration

   Connections-Potentiometer to +5V,A0 & Gnd. Piezo Sounder to D9 & Gnd.

  Demonstrates one technique for calibrating sensor input. The sensor readings

  during the first five seconds of the sketch execution define the minimum and

  maximum of expected values attached to the sensor pin.

  The sensor minimum and maximum initial values may seem backwards. Initially,

  you set the minimum high and listen for anything lower, saving it as the new

  minimum. Likewise, you set the maximum low and listen for anything higher as

  the new maximum.

  The circuit:

  - analog sensor (potentiometer will do) attached to analog input 0

  - LED attached from digital pin 9 to ground through 220 ohm resistor

  created 29 Oct 2008

  by David A Mellis

  modified 30 Aug 2011

  by Tom Igoe

  modified 07 Apr 2017

  by Zachary J. Fields

  This example code is in the public domain.

  https://www.arduino.cc/en/Tutorial/BuiltInExamples/Calibration

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// These constants won't change:

const int sensorPin = A0;    // pin that the sensor is attached to

const int ledPin = 9;        // pin that the LED is attached to

// variables:

int sensorValue = 0;         // the sensor value

int sensorMin = 1023;        // minimum sensor value

int sensorMax = 0;           // maximum sensor value

void setup() {

  // turn on LED to signal the start of the calibration period:

  pinMode(13, OUTPUT);

  digitalWrite(13, HIGH);

  // calibrate during the first five seconds

  while (millis() < 5000) {

    sensorValue = analogRead(sensorPin);

    // record the maximum sensor value

    if (sensorValue > sensorMax) {

      sensorMax = sensorValue;

    }

    // record the minimum sensor value

    if (sensorValue < sensorMin) {

      sensorMin = sensorValue;

    }

  }

  // signal the end of the calibration period

  digitalWrite(13, LOW);

}

void loop() {

  // read the sensor:

  sensorValue = analogRead(sensorPin);

  // in case the sensor value is outside the range seen during calibration

  sensorValue = constrain(sensorValue, sensorMin, sensorMax);

  // apply the calibration to the sensor reading

  sensorValue = map(sensorValue, sensorMin, sensorMax, 0, 255);

  // fade the LED using the calibrated value:

  analogWrite(ledPin, sensorValue);

}