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/* Compare Prox Sensor Output to Potentiometer Position Dial
*-----------------------------------------------------
 *
 * Compares proximity sensor output voltage to potentiometer position
 * and sets digital output and LED indication HIGH (green) if object
 * is in range, and LOW (red) if out of range. (Pot voltage > sensor
 * voltage = LOW, pot voltage < sensor voltage = HIGH.)
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 *
 * April 2018
 * Pat Henry
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 */

int sensorPin = 2;   // analog input pin for sensor output
int potPin = 0;      // analog input pin for the potentiometer
int bncOut = 10;     // BNC digital output pin
int ledPinRed = 7;   // digital pin for the red LED
int ledPinGreen = 8; // digital pin for the green LED
int ledOnBoard = 13; // pin for built-in LED on the board
int valSensor = 0;   // variable to store the value coming from the sensor
int valPot = 0;      // variable to store the value coming from the pot
bool debug = false;  // 'false' Set to 'true' to see a serial port printout of
                     // the analog input values for sensor debugging purposes.

void setup() {
  pinMode(ledPinRed, OUTPUT);          // declare the ledPins as an OUTPUTs
  pinMode(ledPinGreen, OUTPUT);
  pinMode(ledOnBoard, OUTPUT);
  if(debug) {
    Serial.begin(9600);                // establish serial connection for debug
  }
}

void loop() {
  valPot = analogRead(potPin);         // read the value from the pot
  valSensor = analogRead(sensorPin);   // read the value from the sensor
  if(valPot > valSensor) {
    digitalWrite(bncOut, LOW);         // set BNC output low
    digitalWrite(ledOnBoard, LOW);     // set on-board led low
    digitalWrite(ledPinRed, HIGH);     // turn the Red ledPin on
    digitalWrite(ledPinGreen, LOW);    // turn the Green ledPin off
  }
  if(valPot < valSensor) {
    digitalWrite(bncOut, HIGH);        // set BNC output high
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    digitalWrite(ledOnBoard, HIGH);     // set on-board led high
    digitalWrite(ledPinRed, LOW);       // turn the Red ledPin off
    digitalWrite(ledPinGreen, HIGH);    // turn the Green ledPin on
  }
  if(debug) {                           // When in debug mode print
    Serial.print("valPot = ");          // valPot and valSensor over
    Serial.println(valPot);             // serial port.
    Serial.print("valSensor = ");
   Serial.println(valSensor);
    Serial.println(" ");
    delay(500);
  }
}
```