



PyroElectro.com - PyroEDU

Introduction To Sensors – Lesson 5: Infrared Encoder

FORMULAS

The following formulas and information are meant to go with the online lesson found here:
http://www.pyroelectro.com/edu/sensors/infrared_encoder/

LESSON 5 ARDUINO PROGRAM

```
lesson5_encoder | Arduino 1.6.3
File Edit Sketch Tools Help
lesson5_encoder
const int led1Pin = 2;
const int led2Pin = 3;
const int led3Pin = 4;
const int led4Pin = 5;

const int sensorPin = 7;

const int threshold_value = 700; // (700/1024)*5v = 3.41v

int distance = 0;
int current_color = 0; //Black = 0, White = 1

void setup()
{
  Serial.begin(9600); //Start the serial connection with the c
  //to view the result open the serial monitor
  pinMode(led1Pin, OUTPUT);
  pinMode(led2Pin, OUTPUT);
  pinMode(led3Pin, OUTPUT);
  pinMode(led4Pin, OUTPUT);
}

void loop() {
  int reading = analogRead(sensorPin);

  Serial.print("Distance: ");
  Serial.print(distance);
  Serial.print('\n');

  Serial.print("Color: ");
  if(current_color == 0)
    Serial.print("White");
  else
    Serial.print("Black");
  Serial.print('\n');

  if(reading > threshold_value){
    //Did Color Change?
    if( current_color == 0 ){
      distance++;
      current_color = 1;
    }
  }
  else{
    //Did Color Change?
    if ( current_color == 1 ){
      distance++;
      current_color = 0;
    }
  }

  //update LEDS

  if(distance % 4 == 0)
    digitalWrite(led4Pin, HIGH);
  else
    digitalWrite(led4Pin, LOW);

  if(distance % 4 == 1)
    digitalWrite(led3Pin, HIGH);
  else
    digitalWrite(led3Pin, LOW);

  if(distance % 4 == 2)
    digitalWrite(led2Pin, HIGH);
  else
    digitalWrite(led2Pin, LOW);

  if(distance % 4 == 3)
    digitalWrite(led1Pin, HIGH);
  else
    digitalWrite(led1Pin, LOW);

  delay(5);
}

Done Saving.
38 Arduino Nano, ATmega328 on COM11
```

ADDITIONAL INFORMATION

If you have any questions about the formulas or information found in this document, please feel free to head on over to the forums and ask us some questions!

<http://www.pyroelectro.com/forums/viewforum.php?f=27>