Analog Sensors

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RBT173 – Introduction to Microcontrollers

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This assignment had me stumped in places. I’m not sure I understand everything fully yet but I’m sure I’ll need this for some other class in the future. Phase 4 had me really stumped for a while until I found a youtube video that seemed to explain it pretty good. I know the code for Phase 4 is long and drawn out but it works. We are somewhat strapped for time and I have other projects to get to so I’ll have to adjust the code some other time. I have had fun while learning. I may not understand it all right now but I just need to keep doing little projects to help me remember. I learn something new every time I do one of these projects. I would have to say that Phase 4 was the hardest for me. I can’t wait for the next class.

Video Links:

<https://youtu.be/epoiH9Y39_k> - analogWrite

<https://youtu.be/REJZkkX4gGk> - analogRead

<https://youtu.be/TvwCtbK5-cI> - map function

<https://youtu.be/Uxwmazx71kY> - Sensors Phase 4

Reference:

<https://www.youtube.com/watch?v=JghpLbCtnUU> – Arduino – control 4 LEDs with a potentiometer(Phase 4)

analogWrite code(Phase 1):

int val = 0;

void setup()

{

pinMode(3, OUTPUT);

Serial.begin(9600);

}

void loop()

{

val = analogRead(A0);

Serial.println(val);

analogWrite(3, val/4);

delay(1000); // Wait for 1000 millisecond(s)

analogWrite(3, 0);

for(int i = 0; i <256; i++){

analogWrite(3, i);

delay(10);

}

for(int i = 255; i >= 0; i--){

analogWrite(3, i);

delay(10);

}

}

analogRead code(Phase 2):

int val = 0;

void setup()

{

pinMode(3, OUTPUT);

Serial.begin(9600);

}

void loop()

{

val = analogRead(A0);

Serial.println(val);

delay(100);

}

Map analogRead code(Phase 3):

/\* Map an analog value to 8 bits (0 to 255) \*/

Serial.begin(9600);

void setup() {

}

void loop() {

int val = analogRead(A0);

val = map(val, 0, 1023, 0, 255);

analogWrite(9, val);

}

Analog Sensors (Phase 4)

/\*I found this site https://www.youtube.com/watch?v=JghpLbCtnUU to

help with the program and since I used most of the author's code

I felt obliged to give credit where credit is due. I have modified

his original code to add a few extra lights and I had to divide by a

different number, so I have added to the original code to suit my

purposes.\*/

//setting all of the pins

int potPin = A0;

int ledPin = 2;

int ledPin2 = 3;

int ledPin3 = 4;

int ledPin4 = 5;

int ledPin5 = 6;

int ledPin6 = 7;

int ledPin7 = 8;

//setting the pins to input or output

void setup() {

// put your setup code here, to run once:

pinMode(potPin, INPUT);

pinMode(ledPin, OUTPUT);

pinMode(ledPin2, OUTPUT);

pinMode(ledPin3, OUTPUT);

pinMode(ledPin4, OUTPUT);

pinMode(ledPin5, OUTPUT);

pinMode(ledPin6, OUTPUT);

pinMode(ledPin7, OUTPUT);

Serial.begin(9600);//turn on the serial monitor

}

//I have gone the long way around for now to make each LED

//light up when the potentiometer is reading a certain voltage

void loop() {

int potMeasure = analogRead(A0);

Serial.println(potMeasure);//send the data to the serial monitor

//When the potentiometer is less than 1 then no LEDs are on

if (potMeasure < 1){

digitalWrite(ledPin, LOW);

digitalWrite(ledPin2, LOW);

digitalWrite(ledPin3, LOW);

digitalWrite(ledPin4, LOW);

digitalWrite(ledPin5, LOW);

digitalWrite(ledPin6, LOW);

digitalWrite(ledPin7, LOW);

}

//When the potentiometer reads less than 146 volts one light turns on

else if (potMeasure < 146){

digitalWrite(ledPin, HIGH);

digitalWrite(ledPin2, LOW);

digitalWrite(ledPin3, LOW);

digitalWrite(ledPin4, LOW);

digitalWrite(ledPin5, LOW);

digitalWrite(ledPin6, LOW);

digitalWrite(ledPin7, LOW);

}

//When the potentiometer reads less than 292 volts two lights turns on

else if (potMeasure < 292){

digitalWrite(ledPin, HIGH);

digitalWrite(ledPin2, HIGH);

digitalWrite(ledPin3, LOW);

digitalWrite(ledPin4, LOW);

digitalWrite(ledPin5, LOW);

digitalWrite(ledPin6, LOW);

digitalWrite(ledPin7, LOW);

}

//When the potentiometer reads less than under 438 volts three lights turns on

else if (potMeasure < 438){

digitalWrite(ledPin, HIGH);

digitalWrite(ledPin2, HIGH);

digitalWrite(ledPin3, HIGH);

digitalWrite(ledPin4, LOW);

digitalWrite(ledPin5, LOW);

digitalWrite(ledPin6, LOW);

digitalWrite(ledPin7, LOW);

}

//When the potentiometer reads less than 584 volts four lights turns on

else if (potMeasure < 584){

digitalWrite(ledPin, HIGH);

digitalWrite(ledPin2, HIGH);

digitalWrite(ledPin3, HIGH);

digitalWrite(ledPin4, HIGH);

digitalWrite(ledPin5, LOW);

digitalWrite(ledPin6, LOW);

digitalWrite(ledPin7, LOW);

}

//When the potentiometer reads less than 730 volts five lights turns on

else if (potMeasure < 730){

digitalWrite(ledPin, HIGH);

digitalWrite(ledPin2, HIGH);

digitalWrite(ledPin3, HIGH);

digitalWrite(ledPin4, HIGH);

digitalWrite(ledPin5, HIGH);

digitalWrite(ledPin6, LOW);

digitalWrite(ledPin7, LOW);

}

//When the potentiometer reads less than 876 volts six lights turns on

else if (potMeasure < 876){

digitalWrite(ledPin, HIGH);

digitalWrite(ledPin2, HIGH);

digitalWrite(ledPin3, HIGH);

digitalWrite(ledPin4, HIGH);

digitalWrite(ledPin5, HIGH);

digitalWrite(ledPin6, HIGH);

digitalWrite(ledPin7, LOW);

}

//When the potentiometer reads less than 1024 volts all lights turns on

else if (potMeasure < 1024){

digitalWrite(ledPin, HIGH);

digitalWrite(ledPin2, HIGH);

digitalWrite(ledPin3, HIGH);

digitalWrite(ledPin4, HIGH);

digitalWrite(ledPin5, HIGH);

digitalWrite(ledPin6, HIGH);

digitalWrite(ledPin7, HIGH);

}

}