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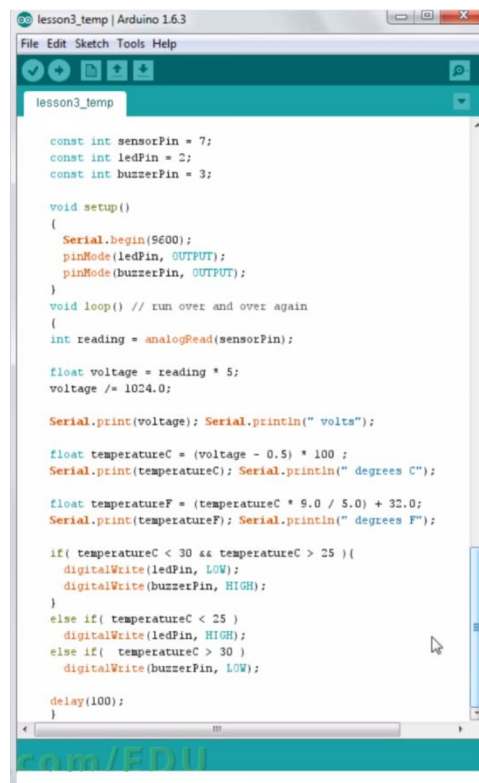
Introduction To Sensors – Lesson 3: Temperature Sensor

FORMULAS

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

LESSON 3 ARDUINO PROGRAM

Here is the program that we wrote for lesson 3. This is a more complicated program that sets a buzzer and led output depending upon the analog input value after it is run through our formula to convert it to degrees Celsius. In addition we use the Serial Begin, Print and Println functions to report temperature information back to our computer.



```
lesson3_temp | Arduino 1.6.3
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lesson3_temp

const int sensorPin = 7;
const int ledPin = 2;
const int buzzerPin = 3;

void setup()
{
  Serial.begin(9600);
  pinMode(ledPin, OUTPUT);
  pinMode(buzzerPin, OUTPUT);
}

void loop() // run over and over again
{
  int reading = analogRead(sensorPin);

  float voltage = reading * 5;
  voltage /= 1024.0;

  Serial.print(voltage); Serial.println(" volts");

  float temperatureC = (voltage - 0.5) * 100 ;
  Serial.print(temperatureC); Serial.println(" degrees C");

  float temperatureF = (temperatureC * 9.0 / 5.0) + 32.0;
  Serial.print(temperatureF); Serial.println(" degrees F");

  if( temperatureC < 30 && temperatureC > 25 ){
    digitalWrite(ledPin, LOW);
    digitalWrite(buzzerPin, HIGH);
  }
  else if( temperatureC < 25 )
    digitalWrite(ledPin, HIGH);
  else if( temperatureC > 30 )
    digitalWrite(buzzerPin, LOW);

  delay(100);
}
```

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>