**TASK 2**

// named constant for the pin the sensor is connected to

const int SENSOR\_PIN = A0;

// room temperature in Celsius

const float BASELINE\_TEMP = 20.0;

void setup() {

// open a serial connection to display values

Serial.begin(9600);

// set the LED pins as outputs

// the for() loop saves some extra coding

for (int pinNumber = 2; pinNumber < 5; pinNumber++) {

pinMode(pinNumber, OUTPUT);

digitalWrite(pinNumber, LOW);

}

}

void loop() {

// read the value on AnalogIn pin 0 and store it in a variable

int sensorVal = analogRead(SENSOR\_PIN);

// send the 10-bit sensor value out the serial port

Serial.print("Sensor Value: ");

Serial.print(sensorVal);

// convert the ADC reading to voltage

float voltage = (sensorVal / 1023.0) \* 5.0;

// Send the voltage level out the Serial port

Serial.print(", Volts: ");

Serial.print(voltage);

// convert the voltage to temperature in degrees C

// the sensor changes 10 mV per degree

// the datasheet says there’s a 500 mV offset

// ((voltage - 500mV) times 100)

Serial.print(", Degrees C: ");

float temperature = (voltage - 0.5) \* 100;

Serial.print(temperature);

// if the current temperature is less than 2 degrees above the baseline

// turn off all LEDs

if (temperature < BASELINE\_TEMP + 2) {

digitalWrite(2, LOW);

digitalWrite(3, LOW);

digitalWrite(4, LOW);

} // if the temperature rises 2-4 degrees, turn an LED on

else if (temperature < BASELINE\_TEMP + 4) {

digitalWrite(2, HIGH);

digitalWrite(3, LOW);

digitalWrite(4, LOW);

} // if the temperature rises 4-6 degrees, turn a second LED on

else if (temperature < BASELINE\_TEMP + 6) {

digitalWrite(2, HIGH);

digitalWrite(3, HIGH);

digitalWrite(4, LOW);

} // if the temperature rises more than 6 degrees, turn all LEDs on

else {

digitalWrite(2, HIGH);

digitalWrite(3, HIGH);

digitalWrite(4, HIGH);

}

delay(1);

if (temperature > BASELINE\_TEMP) {

Serial.print(", ");

Serial.print(temperature - BASELINE\_TEMP);

Serial.println(" degrees above baseline");

}

else if (temperature < BASELINE\_TEMP) {

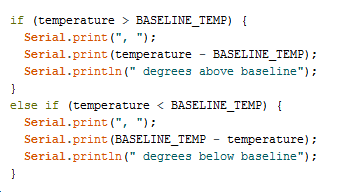
Serial.print(", ");

Serial.print(BASELINE\_TEMP - temperature);

Serial.println(" degrees below baseline");

}

}



**TASK 3**

// named constant for the pin the sensor is connected to

const int SENSOR\_PIN = A0;

int sensorVal;

float voltage, temperature, baselineTemp;

// room temperature in Celcius

const float BASELINE\_TEMP = 20.0;

void setup() {

// open a serial connection to display values

Serial.begin(9600);

// set the LED pins as outputs

// the for() loop saves some extra coding

for (int pinNumber = 2; pinNumber < 5; pinNumber++) {

pinMode(pinNumber, OUTPUT);

digitalWrite(pinNumber, LOW);

}

}

void loop() {

sensorVal = analogRead(SENSOR\_PIN);

// read the value on AnalogIn pin 0 and store it in a variable

// send the 10-bit sensor value out the serial port

Serial.print("Sensor Value: ");

Serial.print(sensorVal);

// convert the ADC reading to voltage

float voltage = (sensorVal / 1023.0) \* 5.0;

// Send the voltage level out the Serial port

Serial.print(", Volts: ");

Serial.print(voltage);

// convert the voltage to temperature in degrees C

// the sensor changes 10 mV per degree

// the datasheet says there’s a 500 mV offset

// ((voltage - 500mV) times 100)

Serial.print(", Degrees C: ");

float temperature = (voltage - 0.5) \* 100;

Serial.print(temperature);

// if the current temperature is less than 2 degrees above the baseline

// turn off all LEDs

if (temperature < BASELINE\_TEMP + 2) {

digitalWrite(2, LOW);

digitalWrite(3, LOW);

digitalWrite(4, LOW);

} // if the temperature rises 2-4 degrees, turn an LED on

else if (temperature < BASELINE\_TEMP + 4) {

digitalWrite(2, HIGH);

digitalWrite(3, LOW);

digitalWrite(4, LOW);

} // if the temperature rises 4-6 degrees, turn a second LED on

else if (temperature < BASELINE\_TEMP + 6) {

digitalWrite(2, HIGH);

digitalWrite(3, HIGH);

digitalWrite(4, LOW);

} // if the temperature rises more than 6 degrees, turn all LEDs on

else {

digitalWrite(2, HIGH);

digitalWrite(3, HIGH);

digitalWrite(4, HIGH);

}

delay(1);

if (temperature > BASELINE\_TEMP) {

Serial.print(", ");

Serial.print(temperature - BASELINE\_TEMP);

Serial.println(" degrees above baseline");

}

else if (temperature < BASELINE\_TEMP) {

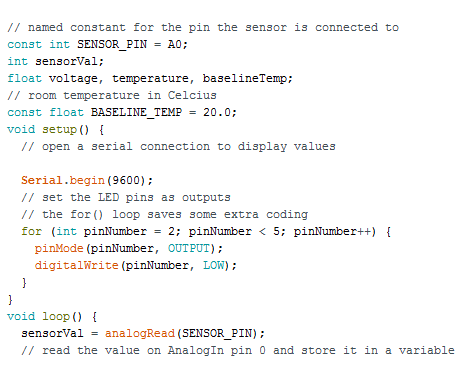
Serial.print(", ");

Serial.print(BASELINE\_TEMP - temperature);

Serial.println(" degrees below baseline");

}

}



**TASK 4**

// named constant for the pin the sensor is connected to

const int SENSOR\_PIN = A0;

int sensorVal;

float voltage, temperature, baselineTemp;

// room temperature in Celcius

const float BASELINE\_TEMP = 20.0;

void setup() {

// open a serial connection to display values

Serial.begin(9600);

// set the LED pins as outputs

// the for() loop saves some extra coding

for (int pinNumber = 2; pinNumber < 6; pinNumber++) {

pinMode(pinNumber, OUTPUT);

digitalWrite(pinNumber, LOW);

}

}

void loop() {

sensorVal = analogRead(SENSOR\_PIN);

// read the value on AnalogIn pin 0 and store it in a variable

// send the 10-bit sensor value out the serial port

Serial.print("Sensor Value: ");

Serial.print(sensorVal);

// convert the ADC reading to voltage

float voltage = (sensorVal / 1023.0) \* 5.0;

// Send the voltage level out the Serial port

Serial.print(", Volts: ");

Serial.print(voltage);

// convert the voltage to temperature in degrees C

// the sensor changes 10 mV per degree

// the datasheet says there’s a 500 mV offset

// ((voltage - 500mV) times 100)

Serial.print(", Degrees C: ");

float temperature = (voltage - 0.5) \* 100;

Serial.print(temperature);

// if the current temperature is less than 2 degrees above the baseline

// turn off all LEDs

if (temperature < BASELINE\_TEMP + 2) {

digitalWrite(2, LOW);

digitalWrite(3, LOW);

digitalWrite(4, LOW);

digitalWrite(5, LOW);

} // if the temperature rises 2-4 degrees, turn an LED on

else if (temperature < BASELINE\_TEMP + 4) {

digitalWrite(2, HIGH);

digitalWrite(3, LOW);

digitalWrite(4, LOW);

digitalWrite(5, LOW);

} // if the temperature rises 4-6 degrees, turn a second LED on

else if (temperature < BASELINE\_TEMP + 6) {

digitalWrite(2, HIGH);

digitalWrite(3, HIGH);

digitalWrite(4, LOW);

digitalWrite(5, LOW);

} // if the temperature rises more than 6 degrees, turn all LEDs on

else if (temperature < BASELINE\_TEMP + 8) {

digitalWrite(2, HIGH);

digitalWrite(3, HIGH);

digitalWrite(4, HIGH);

digitalWrite(5, LOW);

}

else {

digitalWrite(2, HIGH);

digitalWrite(3, HIGH);

digitalWrite(4, HIGH);

digitalWrite(5, LOW);

delay(500); // wait for a half second

}

delay(1);

if (temperature > BASELINE\_TEMP) {

Serial.print(", ");

Serial.print(temperature - BASELINE\_TEMP);

Serial.println(" degrees above baseline");

}

else if (temperature < BASELINE\_TEMP) {

Serial.print(", ");

Serial.print(BASELINE\_TEMP - temperature);

Serial.println(" degrees below baseline");

}

}