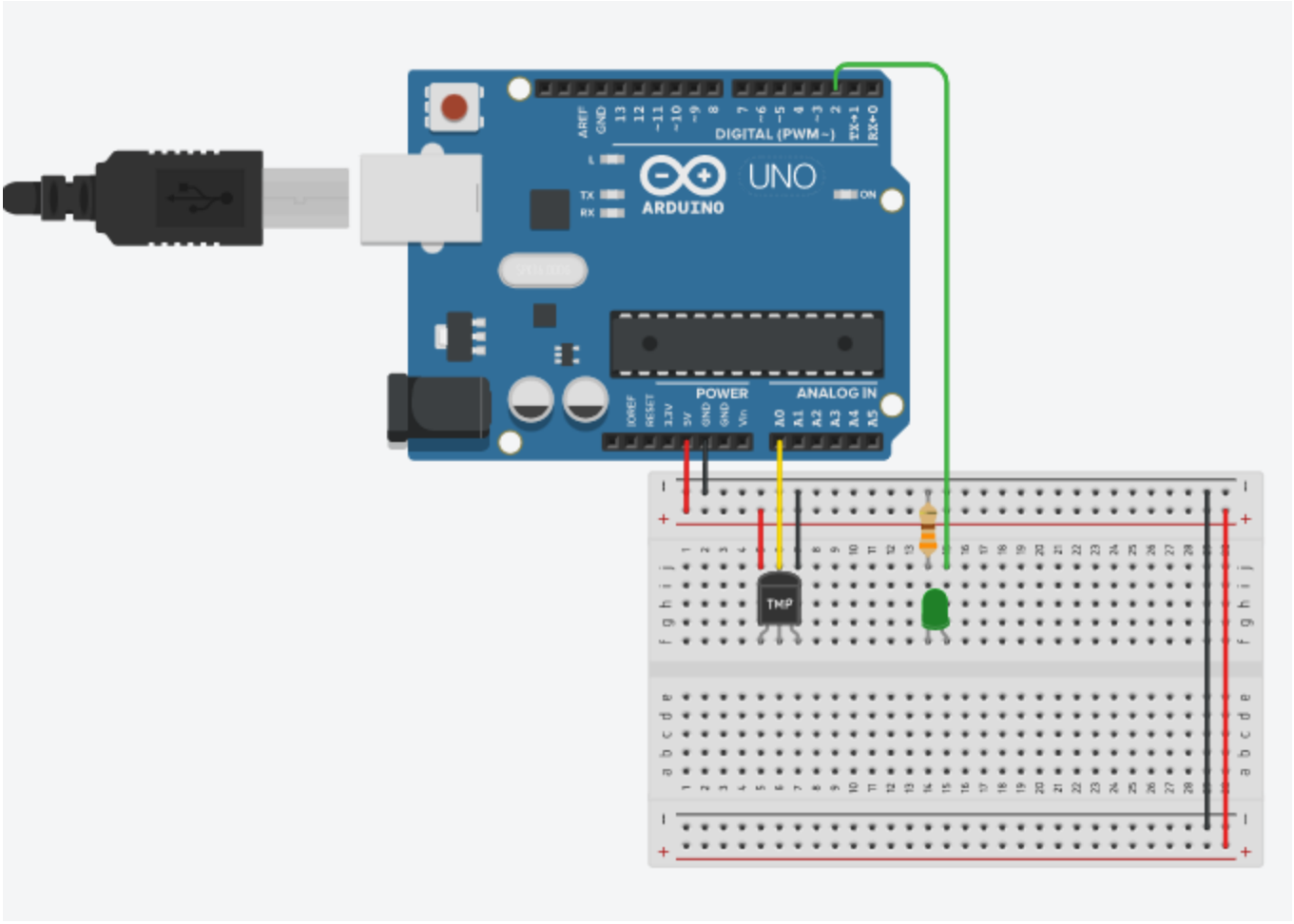
***Interfacing Lab 10*** ***/10*** *names:* ***Siddharth & Mostafa***

| LVL | Criteria |
|---|---|
| R | |
| 1 | |
| 2 | |
| 3 | |
| 4 | "build and wire"[3]<br>☐ circuit is correct, routed cleanly and easy to follow[1½]<br>☐ all full voltage wire red and all gnd wires black<br>☐ signal wire colours chosen to allow easier tracing of circuit[½]<br><br>tinkerCAD[2]<br>☐ all components mounted on breadboard and do not block view of other components[½]<br>☐ wires horizontal or vertical only with 90 degree bends[½]<br>☐ wires do not cross in front or behind other components or component terminals and do not run on top of one another[½]<br>☐ wires and component do not share the same hole on the breadboard and wires do not cross when possible[½]<br><br>in person[2]<br>☐ all full voltage and gnd wires are solid core, flat to breadboard, horizontal or vertical with 90 degree bends<br>☐ solid core wires stripped 6-8mm[½]<br>☐ no bare wire visible [½]<br><br>“programming”[3]<br>☐ final “test your understanding” complete and working correctly[1½]<br>☐ code commenting is accurate and complete (including title)[½]<br>☐ program structure and spacing is logical and demonstrates organization[½]<br>☐ code text submission is `courier new font` and is coloured to allow easier identification of comments[½]<br><br>“inspection questions”[1]<br>☐ demonstrates full understanding of circuit and interfacing concepts in conversation with teacher |
| 4+ | “enhancements”[1]<br>☐ minimized number and length of wires and wire crossings[½]<br>☐ circuit enhancement complete and working correctly[½] |

**Build image:**



**code:**

```
/*
Names: Siddarth & Mostafa
Dates: May 11, 2022
Description: Code for interfacing lab 10 - Temperature Sensor
*/



int temperaturePin = 0; // sets temp. sensor pin
int ledPin = 2; // sets led pin
float voltage; // initializes voltage reading variable
float degreesC; // initializes degrees in celsius variable
float degreesF; // initializes degrees in fahrenheit variable

void setup(){
  pinMode(ledPin, OUTPUT); // sets the led pin as an output
  pinMode(temperaturePin, INPUT); // sets the sensor's pin as an input
  Serial.begin(9600); // begins the serial monitor at a baud rate of 9600
}

void loop(){
  voltage = analogRead(temperaturePin) * 0.004882814; //converts sensor reading
//(0-1024) to voltage (0-5)
  degreesC = (voltage - 0.5) * 100.0; // conversion from voltage to celsius
  degreesF = degreesC * (9.0/5.0) + 32.0; // conversion from celsius to fahrenheit

  // prints a line in the serial monitor as follows:
  // "voltage: {voltage inserted}  deg C: {deg C inserted}  deg F: {deg F inserted}"
  Serial.print("voltage: ");
  Serial.print(voltage);
  Serial.print("  deg C: ");
  Serial.print(degreesC);
  Serial.print("  deg F: ");
  Serial.println(degreesF);

  // if the temperature in celsius is greater than 38
  if(degreesC > 38)
  {
```

```
    digitalWrite(ledPin, HIGH); //turn on the led
    Serial.println("LED is ON!"); // print that the led is on in the serial monitor
  }
  else // if the temperature is greater than or equal to 38
  {
    digitalWrite(ledPin, LOW); // turn off the led
    Serial.println("LED is OFF!"); // print that the led is off in serial monitor
  }
  delay(1000); // delay of 1 second between readings
}
```