Thermometer

1. **Overview:**

In this lesson, you will use an LCD display to show the temperature.

2. **Component Required:**

(1) x Uno R3

(1) x LCD1602 Module

(1) x 10k ohm resistor

(1) x Thermistor

(1) x Potentiometer

(1) x 830 tie-points Breadboard

(18) x M-M wires (Male to Male jumper wires)

3. **Component Introduction:**
- **Thermistor**

A thermistor is a thermal resistor - a resistor that changes its resistance with temperature. Technically, all resistors are thermistors - their resistance changes slightly with temperature - but the change is usually very small and difficult to measure. Thermistors are made so that the resistance changes drastically with temperature so that it can be 100 ohms or more of change per degree!

There are two kinds of thermistors, NTC (negative temperature coefficient) and PTC (positive temperature coefficient). In general, you will see NTC sensors used for temperature measurement. PTC's are often used as resettable fuses - an increase in temperature increases the resistance which means that as more current passes thru them, they heat up and 'choke back' the current, quite handy for protecting circuits!

4. Connection:
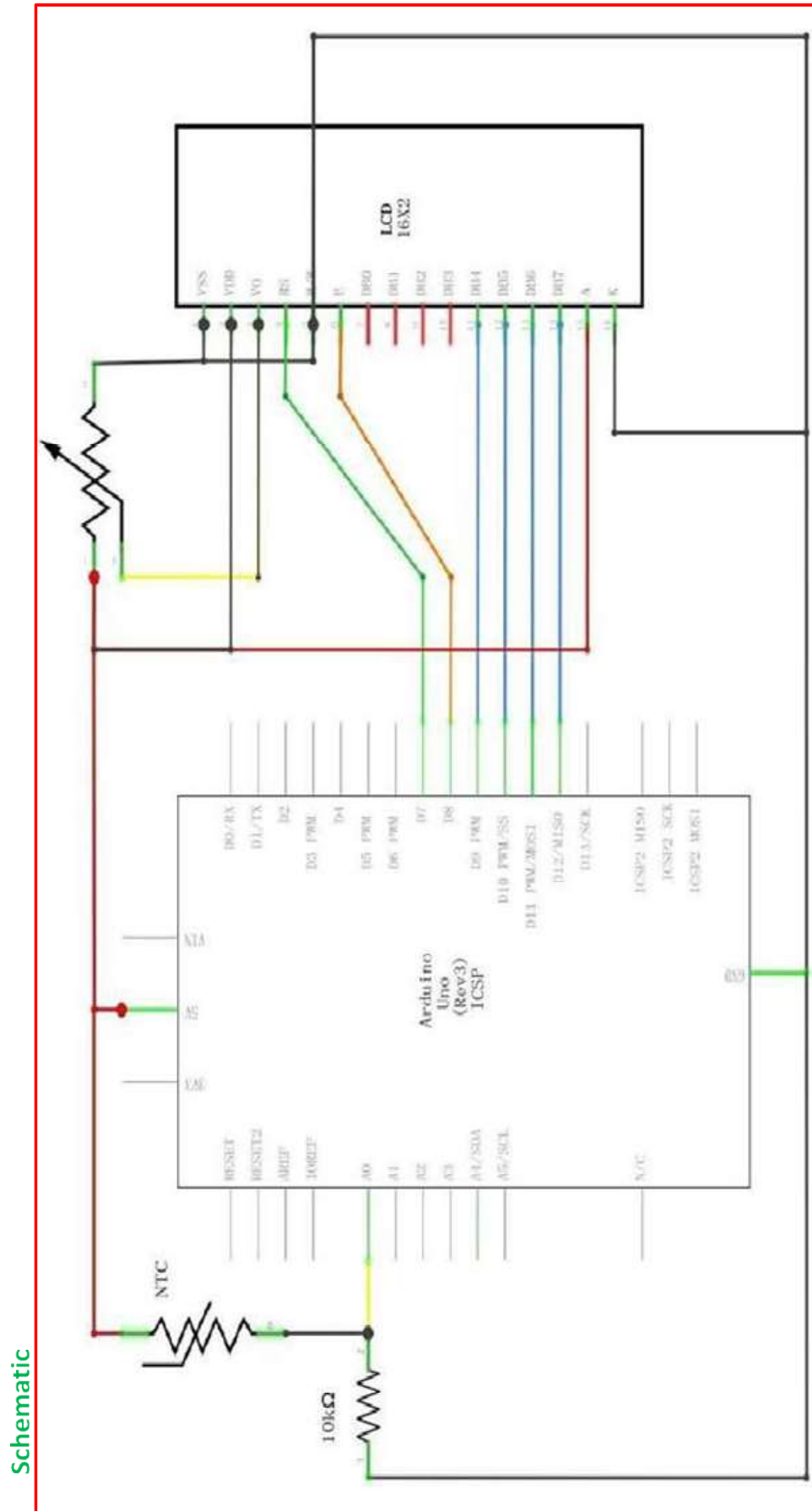
Schematic

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5. Wiring Diagram:
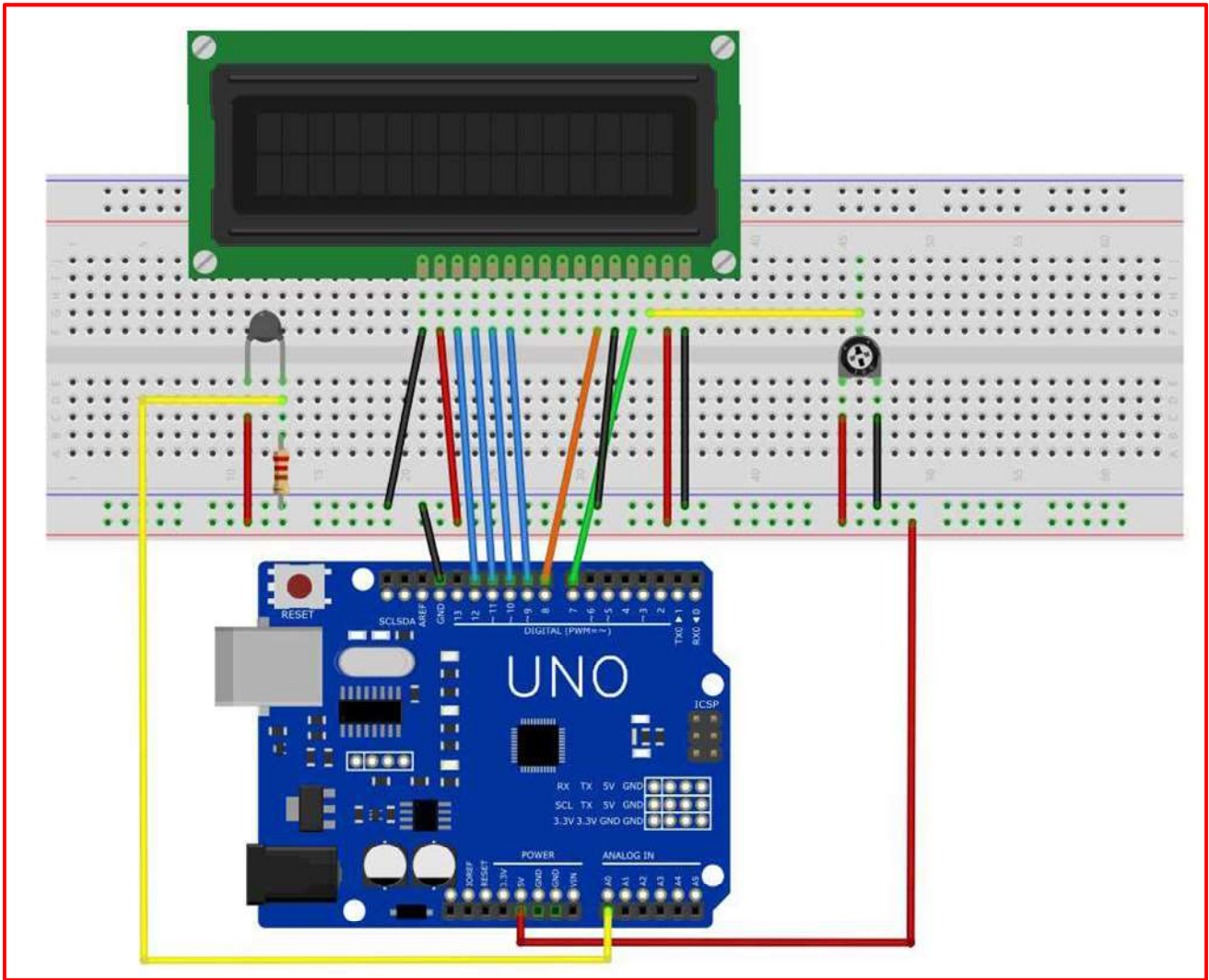
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The breadboard layout is based on the layout from Lesson 16, so it will simplify things if you still have this on the breadboard.

There are a few jumper wires near the pot that have been moved slightly on this layout.

The 10 kΩ resistor and thermistor are all new additions to the board.