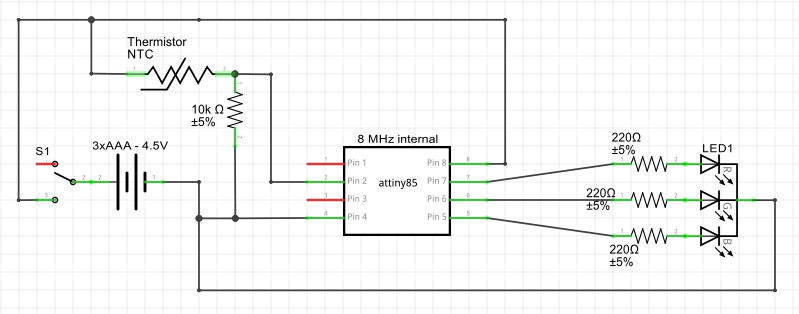
RGB LED Faucet – AtTiny85

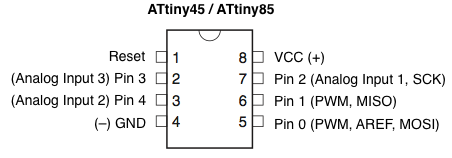


**Idea:**

Self-motivated project designed to change water color according to temperature of water. Uses a 10kΩ thermistor along with the Steinhart Equation to calculate the temperature. Includes a switch to operate and 3xAAA batteries for power. Color ranges from Dark Blue to Aqua, Green, Yellow, Orange, and Red, and is designed to flash red if water is dangerously hot (115°F or greater)

**Challenges:**

* First experience soldering, which resulted in a complete re-do 2 times before the final model was developed.
* Programming the AtTiny85 traditionally requires an extra board, which was not available at the time. Research was done to program the device with an Arduino Uno instead.
* The AtTiny85 only has two Pulse Width Modulation (PWM) pins, so software PWM was needed on analog input pin 2 in order to have access to the entire color spectrum.
* Original temperature scale ranged from 32-120 °F, however town water only gets as low as 60 °F so scale had to be revised.
* RGB LED was not properly sealed on the first test, resulting in water damage to the light. Redesign of the wrapping system was necessary.



**Scale:**

**Color** **RGB code – (xxx-xxx-xxx) from 0 to 255**

< 70°F – **Dark Blue 000-000-255**

70 to 79°F – **Aqua 000-255-255**

79 to 88°F – **Green 000-255-000**

88 to 97°F – **Yellow 255-100-000**

97 to 106°F – **Orange 255-030-000**

106 to 115°F – **Red 255-000-000**

> 115°F – **Flashing Red 255-000-000**

**Future Plans (v2.0):**

* Code smooth transitions between color changes, need to re-work most of the code to enable this feature.
* Design and have a PCB made to save space and organize electronic components more efficiently.
* Design a more attractive casing to hold the electronics using Fusion 360 and 3D printing.
* Add a sensor that detects the presence of water and use “watchdog timer” on AtTiny85 to automatically turn on when the faucet is activated.
* Currently contemplating a complete under-the-faucet design, or an above faucet “box” containing necessary components.