**Additional Demo Info**

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This is info. which is neat, nice to know, and nice to have, but which takes up too much memory on the Leonardo and/or disrupts the flow of the demo, so for those two reasons, I am taking it out of the demo and placing it here instead.

**RGB LED Background Information:**

Time for a lesson on color! The three primary colors of LIGHT (\*not\* to be confused with PIGMENT), are red, green, and blue. Mixing these three colors, you can make any color of the rainbow! Red + Green = Yellow. Green + Blue = Cyan. Blue + Red = Magenta. Those are the three primary colors of PIGMENT (yellow, cyan, and magenta), and these three colors of pigment (ie: ink) can be used to make any color of the rainbow as well, though the methodology is inverse. When you mix red, green, and blue LIGHT you get WHITE. When you mix yellow, cyan, and magenta PIGMENT you get BLACK. Make sense?

Rainbow demo notes:

During the rainbow, it may help to blend the colors together better if you change the angle you are looking at the RGB LED. You want all three of the colors to line up on each other perfectly. Sadly, the Vilros kit comes with a transparent RGB LED as you see here, so it does not blend the colors as well as it could. If it had a hazy finish on it instead, it would be called a "diffused" RGB LED, and it would blend the colors together much better. To help diffuse the light, try holding a piece of white paper over the RGB LED, and it will help to blend the three colors of light together to make the rainbow colors look move even.

**Ultrasonic Rangefinder Home Alarm System:**

If you'd like to learn how to use this ultrasonic rangefinder ("ping" sensor) truly as a home alarm system, start by going to this tutorial to learn how to make an Arduino send you an email (or text message for that matter, via an email to your phone [ex: [9998887777@vzwpix.com](mailto:9998887777@vzwpix.com)]) whenever an event (such as this alarm) occurs! - see here: <https://learn.adafruit.com/arduino-lesson-17-email-sending-movement-detector?view=all>. This stuff really is powerful!

**TMP36 Analog Temperature Sensor:**

Adafruit has an excellent tutorial all about the TMP36 that I recommend you check out!

**Servo:**

One of the really cool things about Arduino is how useful it is in robotics! You've seen all sorts of interesting things to do with Arduino, so next up is a demonstration of controlling a servo motor with a potentiometer. A potentiometer is simply a knob that can be turned to control something. In short, it is a variable resistor, where the resistance varies according to the knob's position. The Arduino uses its ADC (Analog to Digital Converter) to read the voltage drop across the potentiometer, then it commands the servo to go to a position linearly scaled to the knob's position. In other words, \"move the blue knob, and the servo moves too! As you watch the servo move, realize that this is exactly how Radio Controlled devices work too. You move a stick on a transmitter, and based on your stick position, a microcontroller (like an Arduino), or appropriate circuitry, actuates something on a car, plane, boat, robot, etc.