Paper Potentiometer

Hello again and welcome to part 2 of lesson 3 in this lesson I want to go over resistance in a bit more detail. By the end of this lesson we will have a working potentiometer using only a few paperclip chains, the BE BOARD, a pencil, and a business card. We will also use analog inputs again to make an LED dimmer or brighter depending on where the Paperclip chain is on the business card, so let's get started.

We went over resistance in chapter 4, but only for a little bit just to learn what it is an also how important it is when it comes to electronics. When you have resistance you are resisting current which normally translates into heat which is why all resistors have wattage specs. Now remember OHMs law:

V = IR

Which if we want to use it to solve for resistance the formula becomes:

V/I = R

That is to say when Voltage is high and Current is low Resistance is high, WHen Voltage is low and Current is high Resistance is low. Let's do a few as an example:

say we have:V = 5V, I = 10mA, so our formula will look something like this:

5V/10mA = 500ohms

now the reverse of that: V = 5V, I = 1A:

5V/1A = 5ohms

it is important to know that Resistors will impede current.

Now that we understand resistance a bit we can go over what we will need for this lesson.

The BE BOARD

Several Paperclips that are not insulated

A business card

A Number 2 Pencil

So now that we have the hardware for this lesson let's get started:

First take the paperclips and make three paperclip chains of the same length.

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Next take the business card and pencil and draw a rectangle on the business card and fill that rectangle in completly.

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Next take the first paperclip chain and attach it to GND on the BE BOARD

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Now take the second paperclip chain and attach it to +5V on the BE BOARD (you should not have power to your BE BOARD at this time)

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Take the final paperclip chain and attach it to A1 on the BE BOARD at this time you may also want to put a piece of paper between A1 and the GND, +5V paperclip chains

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Alright the hardware is done, now let's get started with the software. Open the Arduino IDE.

<Video of software make sure you go over analog inputs and ADC/DACs that are within the ATMEGA)

Now move the center paperclip chain around the business card and you will notice that the BE BOARDs LED (L13) will be dimming and getting brighter depending on where the paperclip chain is reletive to the outer paperclip chains.

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That should do it for this lesson, thank you for joining me. Please join me for lesson 4 where I will go over the features of the BE BOARD and BE SHIELD.

Thanks.