DIY Switch Lab

The goal of this lab is to familiarize ourselves with different ways of creating switches. While it seems at first that a switch is a switch, and that there is no reason to spend creative energy thinking about switches, this turns out to be untrue.

For most projects and interaction scenarios, the ideal sensor is a switch. Its advantages:

1. its cheap (hopefully) What is the most expensive switch you can find on the internet? Try McMaster or West Marine
2. simple to construct – all you need is 2 pieces of conductive material
3. versatility
4. scalable
5. customizable

Making switches is an art. Now lets make some.

First, lets draw some diagrams of potential switches. Draw a diagram of your own designs for the following uses:

A. Sense if a person is standing outside your door.
B. Senses the wind
C. Senses a magnet getting close to it
D. Senses when the temperature is too hot for comfort, say over 80F (hint, think old time thermostat)
E. Senses if the temperature gets above 32F

Types of Switches

- rocker switch (lever switch)
- elevator switch
- push button
- SPST, SPDT, DPST, DPDT
- Mercury switch
- Arcade button switch
- Tilt switch
- key board switches
- touch switches… capacitive sensing
- compression pad switches
- whisker switch

Materials for Switch Making

- window screen
- cardboard

- hotglue
- ball bearings
- tin foil
- springs
- spring wire
- copper mesh
- conductive thread
- staple gun
- balsa wood
- exacto knives
- scissors
- masking tape
- LEDs

Tips for Switch Making

1. Think about resilience of material – once it bends or flexes, will it flex or bend back?
2. Can you solder to it?

To find out if we can solder to something, you can always try it out. Otherwise, here is a general list.

YES
Copper, tin, zinc, some steel, silver, gold, brass, nickel

NO
Aluminum, stainless steel, plastic coated anything, chrome anything
Anything COATED with one of these materials. Many things are coated with plastic or chrome to prevent them from oxidizing (ie rusting)

Rule of thumb: the thicker a piece of wire or metal is, the hotter it needs to get before the solder will stick to it. Otherwise, the solder will ball on the surface but really the only thing that will be connecting it to said surface will be the stickiness of the flux.