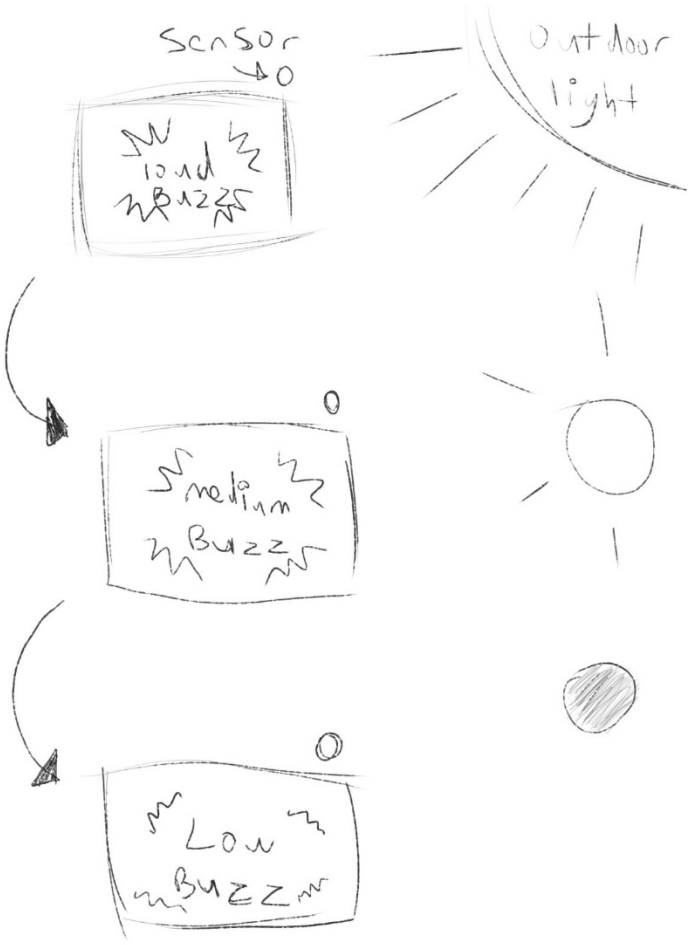
Michael Petitclerc & Sabrina Shipanock
CART 360 - Tangible Media and Phyiscal Computing
Elio Bidinost & Sabine Rosenberg
10/27/2017

Sensor Research



1) Photocell

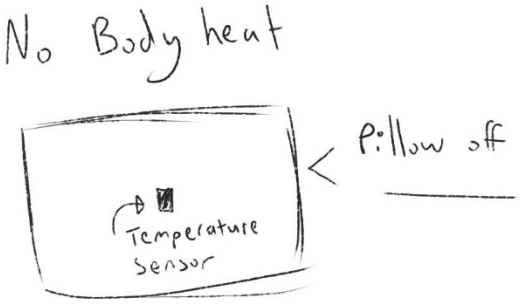
- Easy to use, can run on Arduino's 5V with no problems. Use a resistor, just in case.
- No external libraries to use for it.
- Picks up a fairly wide range of lighting.

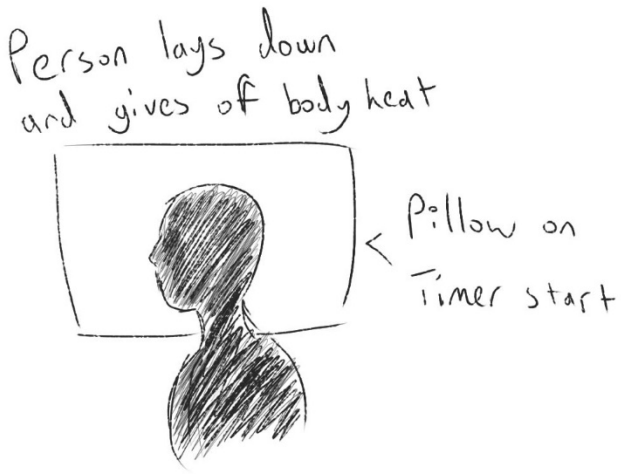
From the Spikenzie website:

- Light resistance : ~1k Ohm
- Dark resistance : ~10k Ohm
- Max voltage : 150V
- Max power: 100mW

Can implement a photocell into the pillow to pick up the time of day in the room, changing the intensity of the buzz from high to low and allowing for a more comfortable way to wake up instead of being jolted into consciousness by a set buzz level.

[Datasheet]





2) Temperature Sensor

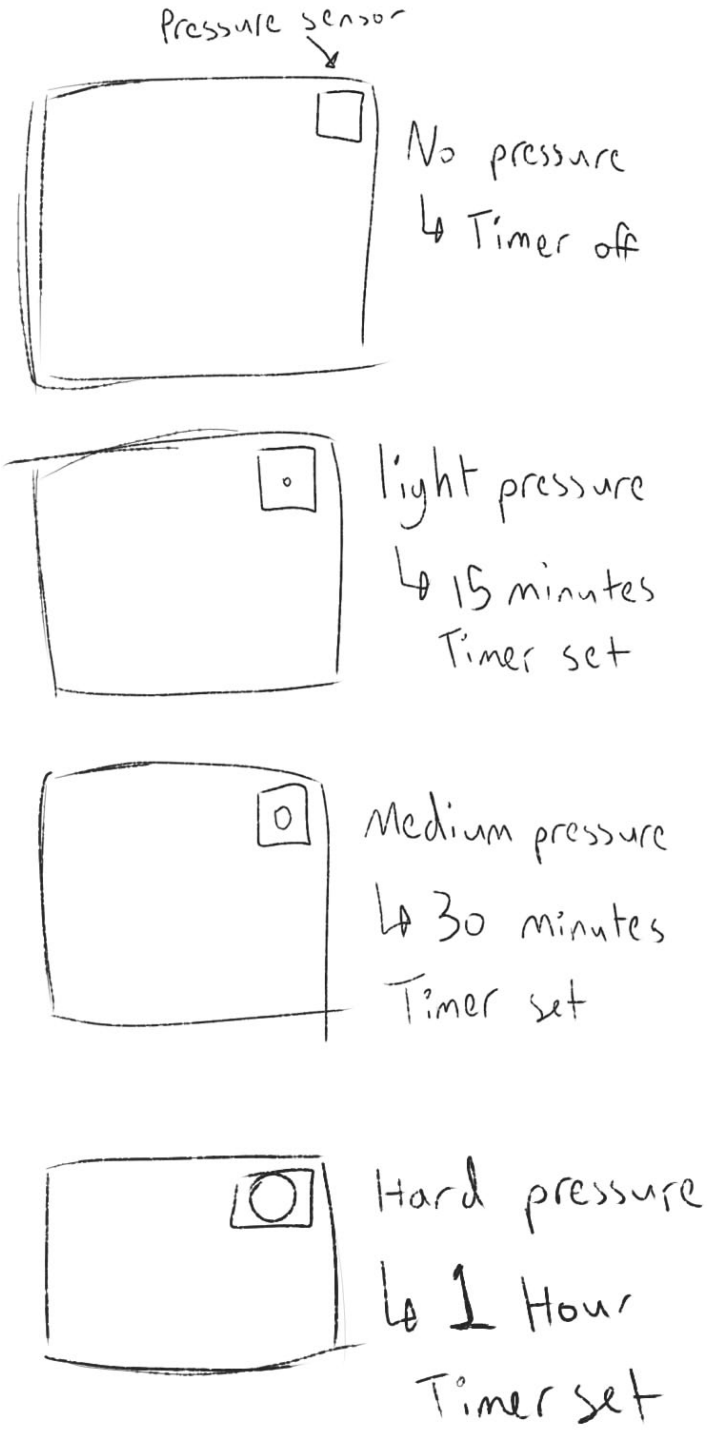
- Uses voltage multiplied by 100 (Celsius) or 9/5+32 (Fahrenheit) to read temperature.
- Easy to understand and has three pins, for ground, signal, and power.
- Works off the 5V pin, and Sparkfun does not show any usage of resistors with it. No external libraries are necessary.

From the Spikenzie website:

- TO-92 package
- Linear + 10.0 mV/˚C scale factor
- 0.5˚C accuracy
- Operates from 4 to 30 volts

Using a temperature sensor to pick up a person's body heat in order to activate or deactivate the pillow's alarm, while using the buttons to set the timer.

[Datasheet]



3) Pressure Sensor (using velostat)

- Measures increase and decrease in resistance by the amount of pressure applied to it.
- Squeezing or adding pressure to velostat reduces the amount of resistance and increases conductivity.
- No external libraries or resources for coding needed.

From the Spikenzie website:

- *Dimensions*: 11" x 11" (280mm x 280mm)
- 8 mil / 0.2mm thick
- *Weight*: 18.66g
- *Temperature Limits* : -45°C to 65°C (-50°F to 150°F)
- *Heat Sealable* : Yes
- *Volume Resistivity* : <500 ohm-cm
- *Surface Resistivity* : < 31,000 ohms/sq.cm

A velostat pressure sensor can be used either to detect a person laying down on the pillow, or to set the timer for the buzzer alarm. The harder you squeeze the "button" the longer the timer goes for (the risk being that it wouldn't always be accurate if you accidentally squeeze too hard or not hard enough).

[Datasheet (none provided)]