Abstract / Objective:

In this lab we connect external hardware to our BASYS 3. To do so we need to use the Pmod ports on the BASYS 3. This lab is like our first step towards our projects. In my project I will use digital sound sensors as an input for a game. To test that out I will place my censors on my breadboard then conncet my bread to my BASYS 3 through the Pmod ports. After doing this I will be one step closer to realizing my project.

Design Specification Plan:

I want to measure the amplitude of the sound the user is making to do so I will use 5 digital sound censors. This censors are adjustable to a specified Db value and give an output of 0V if the sound present is less than that or give Vdd if the present more than the that. I will adjust my censors to different values with an increasing order then connect their output to my BASYS 3. I will be using multiple digital censors instead of a single analog one because it is a lot more straightforward and also it will be an easier to adjust to input source for my project. Then I will connect the input signal inside of my BAYSY 3 with the leds on my BASYS 3. This seemed like the most basic way to display how strong the voice the user made.

Proposed Design Methodology :

The censors require a steady direct current and a connection to the ground this will be supplied from the Pmod ports of the BASYS 3.
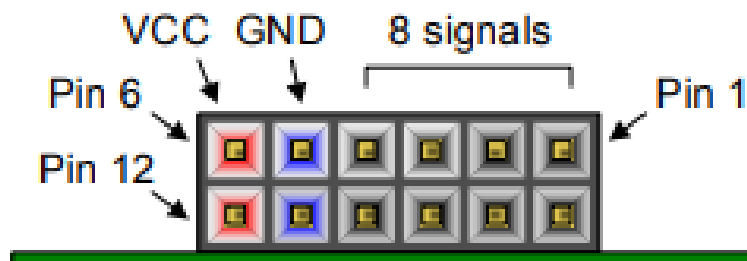

Figure 20. Pmod ports; front view as loaded on PCB.

Like shown in the figure the left most pins are Vcc (I like to call it Vdd) and the pins next to them are ground. This will be connected to the 5 digital sound censors ground and Vcc inputs. The binary outputs of the censors will be connected to the signal pins of the Pmod ports. All this connections will be done on a breadboard with jumper cables. The digital sound censors have rheostats on them for us to adjust the sound level where it will give a signal of "1". I will adjust them to increasing values.
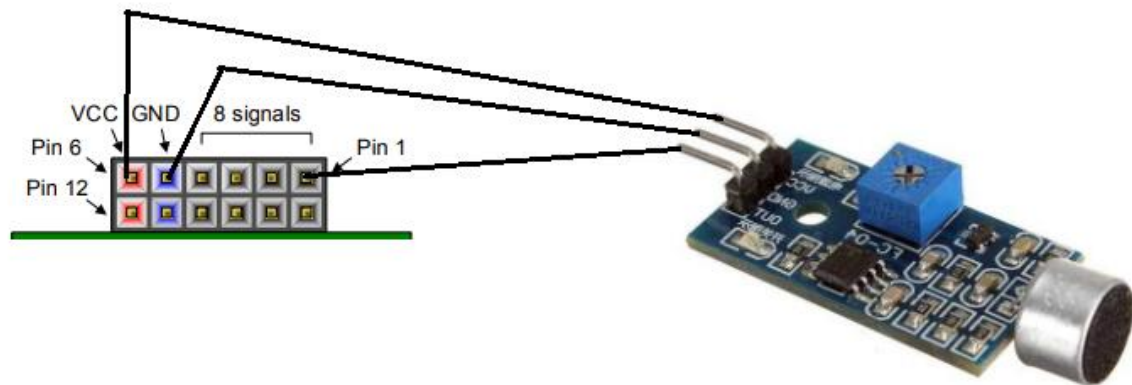
An extremely simplified picture of a single censor's connections.

The code inside of the BASYS 3 will be extremely simple as it is not the focus of this lab I will connect the Pmos port inputs with the Led on the BASYS 3 and write constraints for the both of them.