

ENR325 Lab 2: I/O

Task 1:

Soldering 101

- 1) Heat up iron to 600-700 F (315-370 C)
- 2) Secure or position the connection
- 3) Clean up iron on sponge
- 4) Apply heat and solder
- 5) Inspection of your work

Video tutorial:

<https://www.youtube.com/watch?v=Qps9woUGkvl>

Soldering 201: SMD (Surface mounted device)

- 1) Heat up iron to 600-700 F (315-370 C)
- 2) Pre-apply solder (tinning) one pad
- 3) Attach to pre-tinned side
- 4) Solder the other pad
- 5) Apply flux to clean the soldering spot if darkened
- 6) Clean up (Q-tip with alcohol and tooth brush)

Video tutorial:

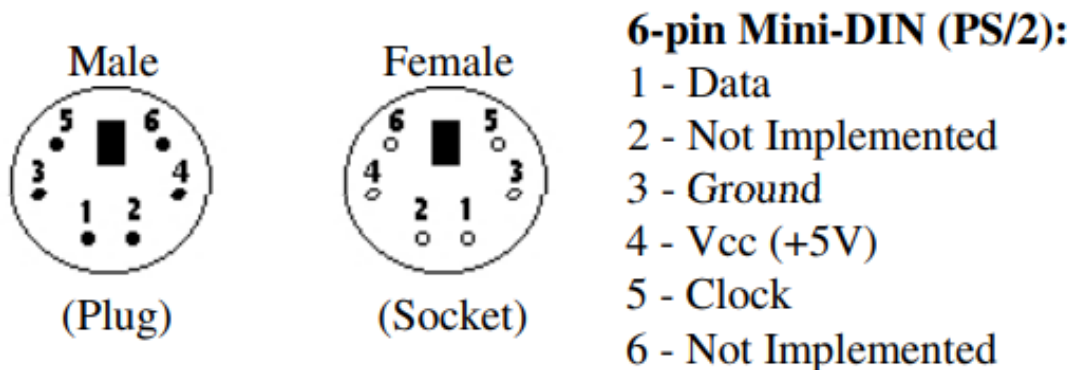
<https://www.youtube.com/watch?v=fYInlAmPnGo>

Task 2:

PS/2 input visualization with scope

PS/2 mouse and keyboard port was an obsolete tech (1987 by IBM). But unlike your USB/blue tooth mouse and keyboard, that thing don't even need your operation system to boot up to work!

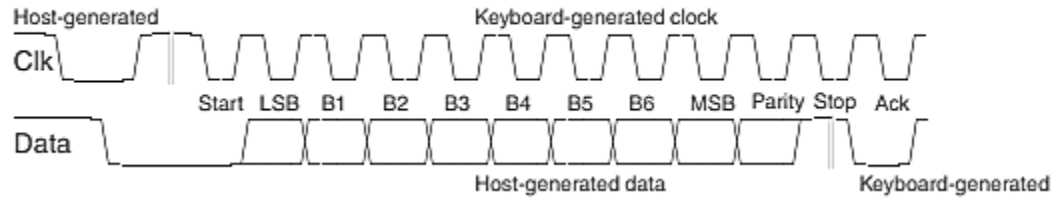
I found two old keyboards in the storage room, and let's take them to good use.



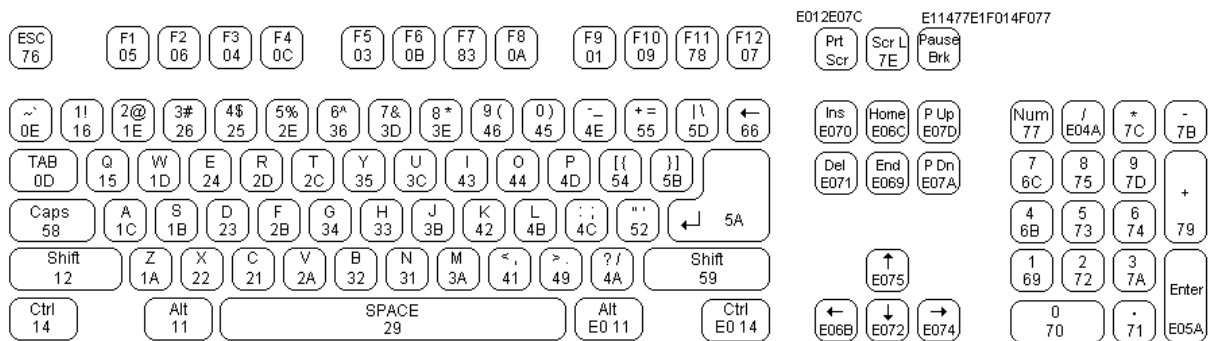
Clock frequency is 10-16.7 kHz

Try to hook up the pins to a scope and let's see if we can catch the clock waveform and the data waveform.

Some good reference for PS/2:



Keycode map



Task 3:

Can we use a microcontroller, say Microbit, to record the PS/2 output data stream? (Caution, Microbit handles 3.3V)

1st try this block set up:

```
let clk = 0
let dat = 0
basic.forever(function () {
  clk = pins.digitalReadPin(DigitalPin.P1)
  dat = pins.digitalReadPin(DigitalPin.P2)
  serial.writeLine("CLK=" + clk + " DATA=" + dat)
  basic.pause(1)
})
```