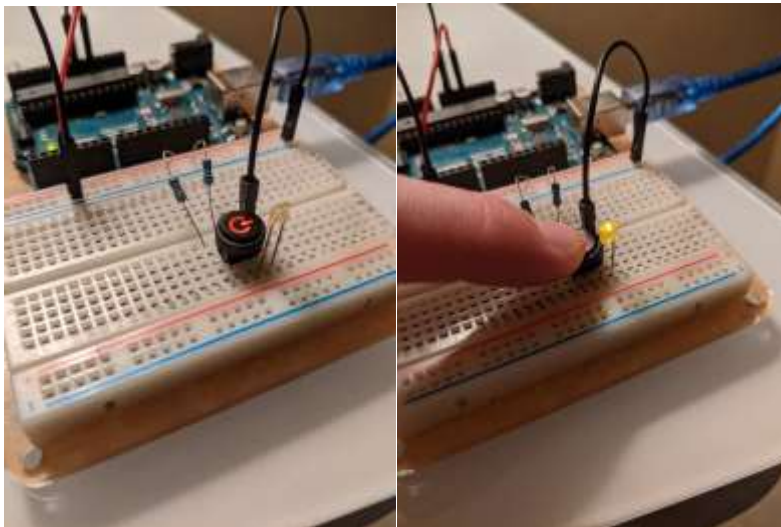


# Memo

**To:** Kevin Pintong  
**From:** Zak Rowland  
**Date:** January 23, 2021  
**Re:** Memo 1

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After last term ended, I wasn't working on the project for almost a month as I was visiting family. Once the term started again, I would dive back into the project. But, motivation has been extremely hard to come by, and not just in this class. The first thing I worked on was testing resistors and capacitors with a multimeter as well as the LEDs and push button. The push button I got for the Pi has a LED built in, so I tested the external LEDs using this button and an Arduino for power.



While testing and looking through my parts, I realized I forgot to order surface-mount to dual-inline-pin adapters for my small ICs that will allow me to breadboard the circuit easier, so I ordered some. After meeting with you and discussing my schematic, I changed the 5V regulator to use a bigger input capacitor and began assembling the power delivery portions of the circuit. I built and tested the 12V to 5V circuitry first which worked as expected. I also attached breadboard wires to my OBD-II connector.

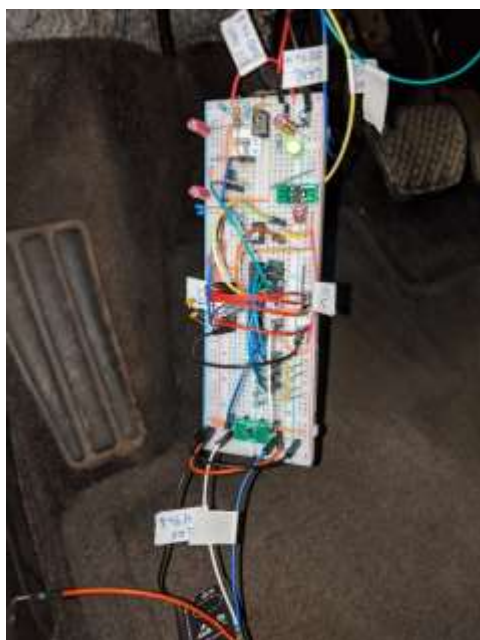
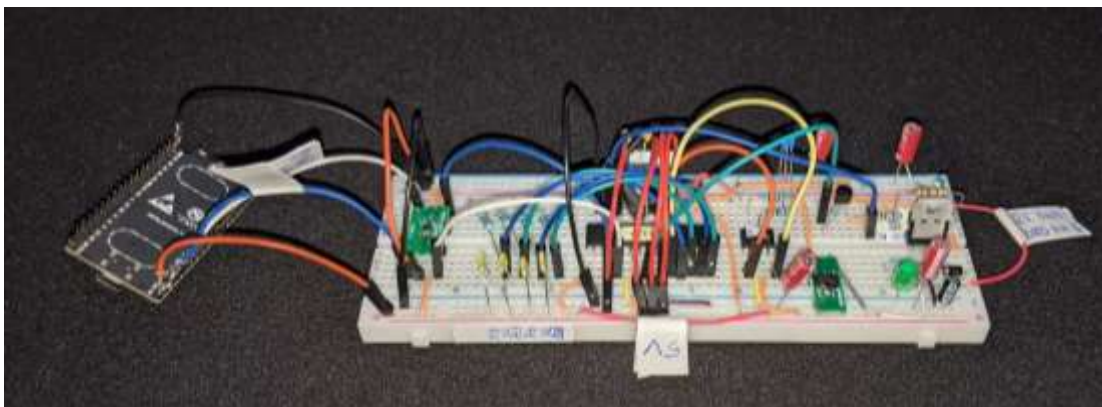


Once I had 5V power, I added and tested the 3.3V circuitry which also worked as expected.



After I had the power circuitry, I began assembling the rest of the circuit. Once the SMD to DIP adapters came, I soldered them together with the ICs. I had trouble at first soldering the legs of the tiny 8-pin package (I used too much solder,) but eventually got the first side soldered and the other side went much smoother. The excess heat from messing up could have damaged the IC but it is unlikely.





```
ELM_test_1
char buffer[64];
volatile byte count = 0;

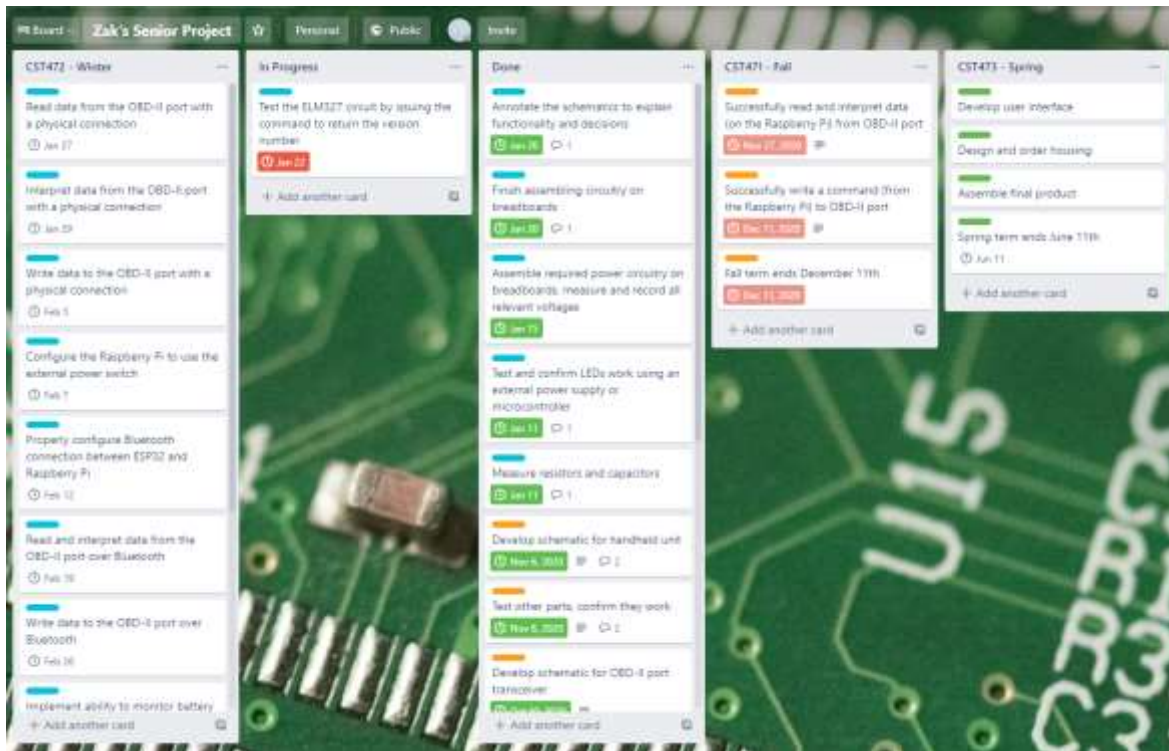
void setup() {
  // put your setup code here, to run once:
  Serial1.begin(38400);
}

void loop() {
  // put your main code here, to run repeatedly:
  if(Serial1.available() > 0){ //if there is data to be read
    byte temp = Serial1.read();
    if(count < sizeof buffer){
      buffer[count++] = temp;
      if(temp == '\r'){
        count = 0;
        Serial1.print(buffer);
      }
    }
  }
  //else{
    //Serial1.print("AT Z\r"); //Reset command
  //}
}
```

The next step is obviously to debug the circuit. One way to do this is connecting the ELM327 directly to a RS232 to USB adapter (which I have already) to test the version number, bypassing the ESP32 for now. I should also go back through the circuit and double check everything is connected properly, measuring voltages if I need to. Debugging this circuit may be tough without an oscilloscope, so I could have to order one.



Hours worked since term start: 14



<https://trello.com/b/57kp2fr0/zaks-senior-project>