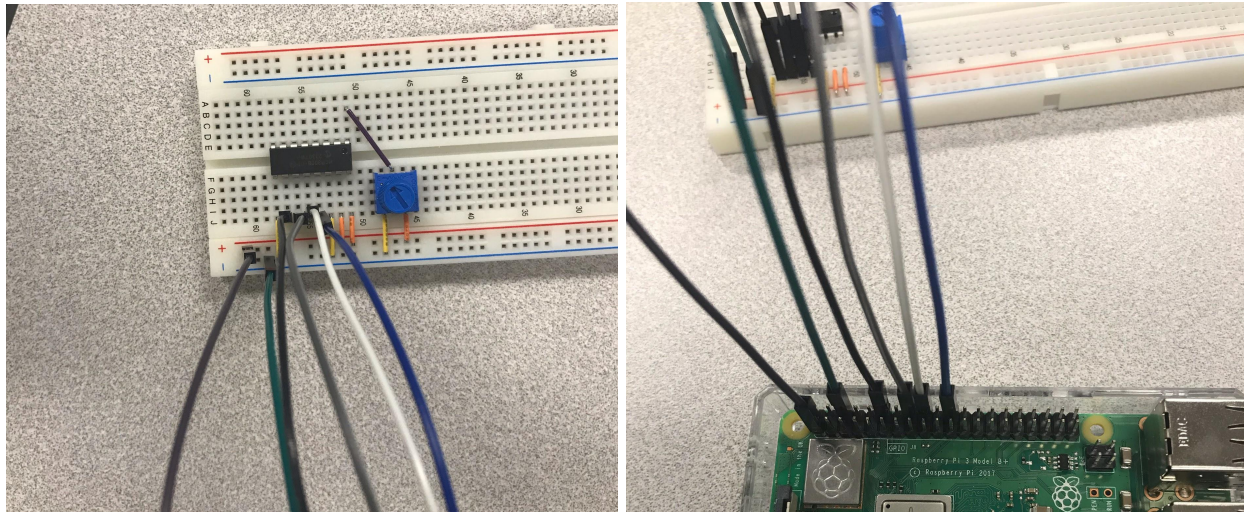Kelsey Yen
CS-326-A
Professor D. Schuurman
26 February 2021

Lab 04 Questions

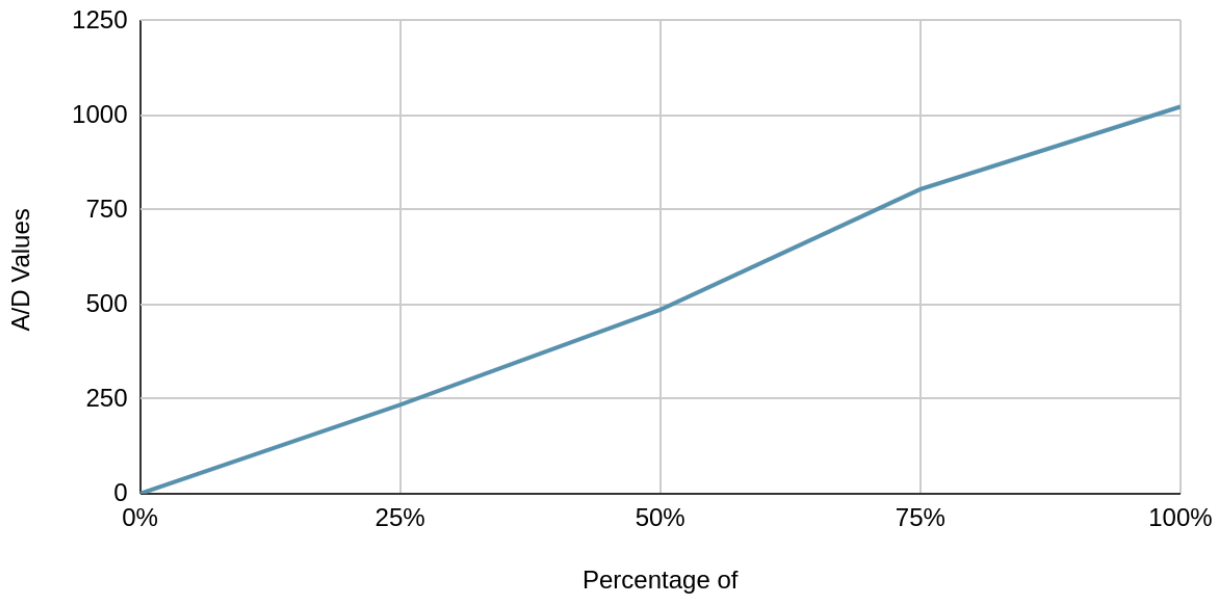1. Wired lab setup:

2. Table and graph of approximate potentiometer position and A/D values:

| Percentage of Potentiometer Turned	A/D Values
0%	0
25%	235
50%	486
75%	805
100%	1023

A/D Values vs. Percentage of Potentiometer Turned
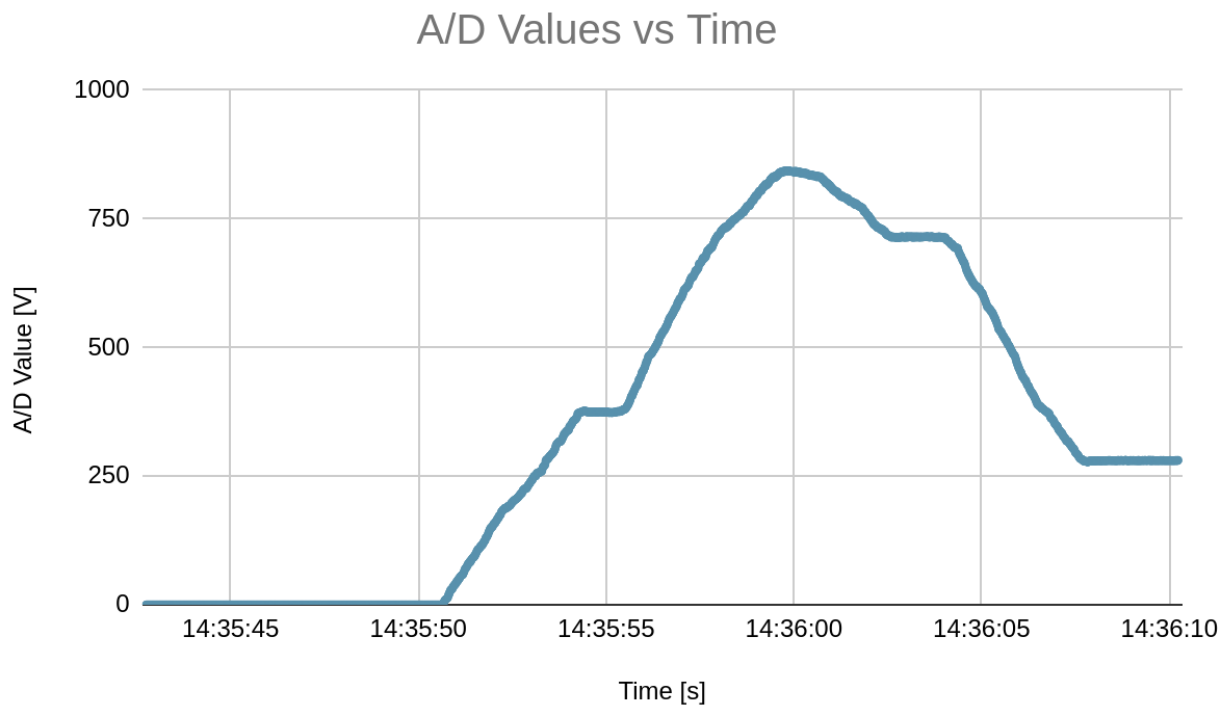

3. The maximum possible digital reading is $2^{10} = 1024$. The resolution of this A/D converter is $3.3V/2^{10} = 0.003222V = 3.222mV$.

4.

Voltage [V]	A/D Values [V]
0	0
0.3	93.09090909
0.6	186.1818182
0.9	279.2727273
1.2	372.3636364
1.5	465.4545455
1.8	558.5454545
2.1	651.6363636
2.4	744.7272727
2.7	837.8181818
3	930.9090909
3.3	1024

A/D Values vs. Voltage

5.

A/D Values vs Time
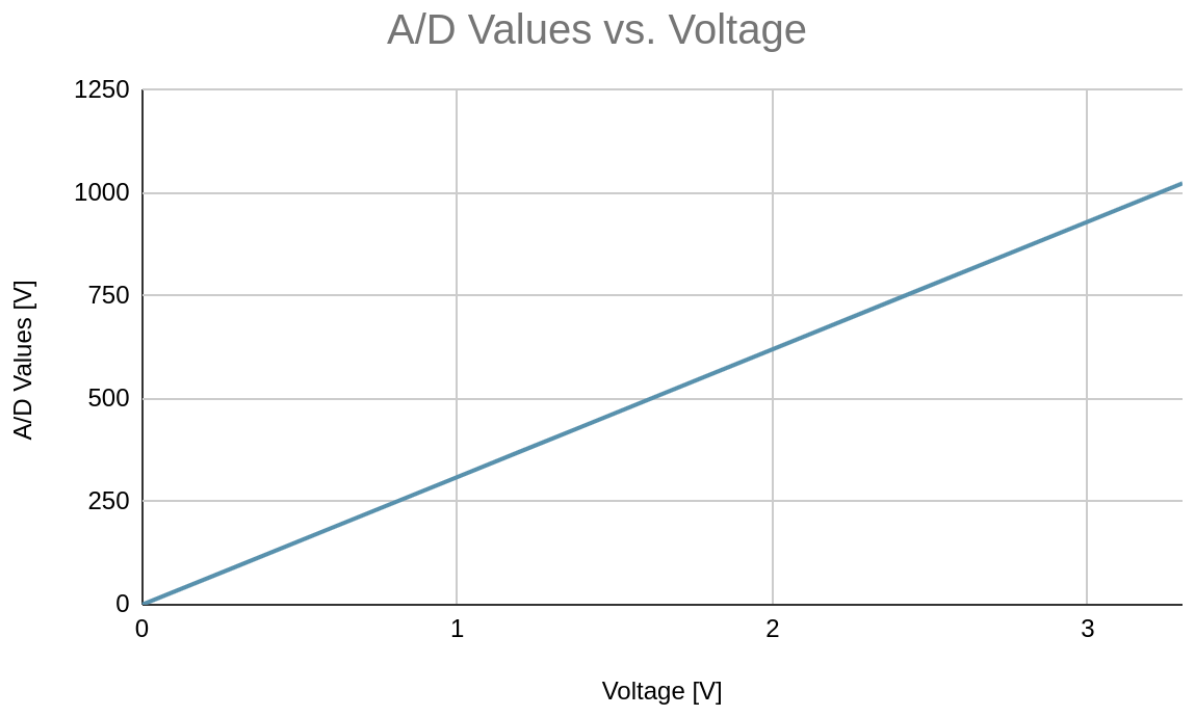
6. The timing drift and "jitter" would cause the values collected to be delayed from the actual time it occurred.

7. An SPI is a serial communication interface for communicating with embedded systems synchronously, acting as the interface between the microcontroller and other peripheral ICs like sensors and A/D converters. The data from the master/slave are transmitted at the dame time and is synchronized on the rising/falling clock edge. The four data/control lines used in SPI are clock (SCLK), chip select (SS), master out/slave in (MOSI), and master in/slave out (MISO).

8. The maximum sampling rate for this part is 250 ksps.

9. According to this summary, there is usually a summary of the functions and features of a part on the first page, briefly describing the general functionality, specifications, and internal functions (through functional block diagram), to give the reader a good idea of whether or not the part will work for a certain project. The end of many datasheets have packaging information, providing dimensions of the packages a part is available in, which is useful for PCB layouts.