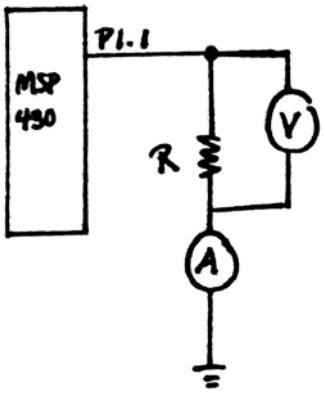
Carlton Duffett
Neeraj Basu
EC450 HW2
Professor Giles
2/17/2015

EC450 Homework 2

I partnered with Neeraj Basu (Nrjbs87) for this lab.

I. Active High Tests

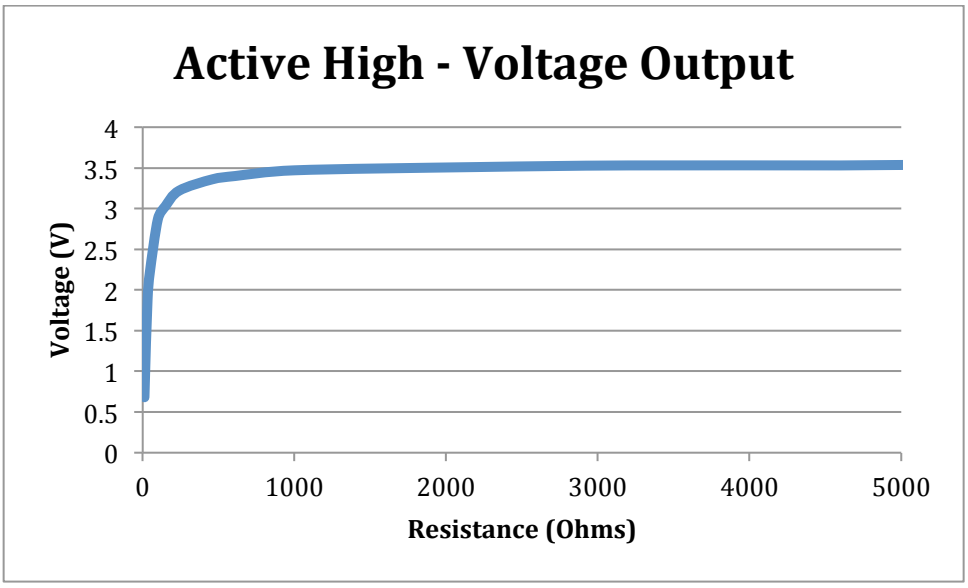
To test the output characteristic of a GPIO pin in the active high (logical 1) state, we used the following circuit:

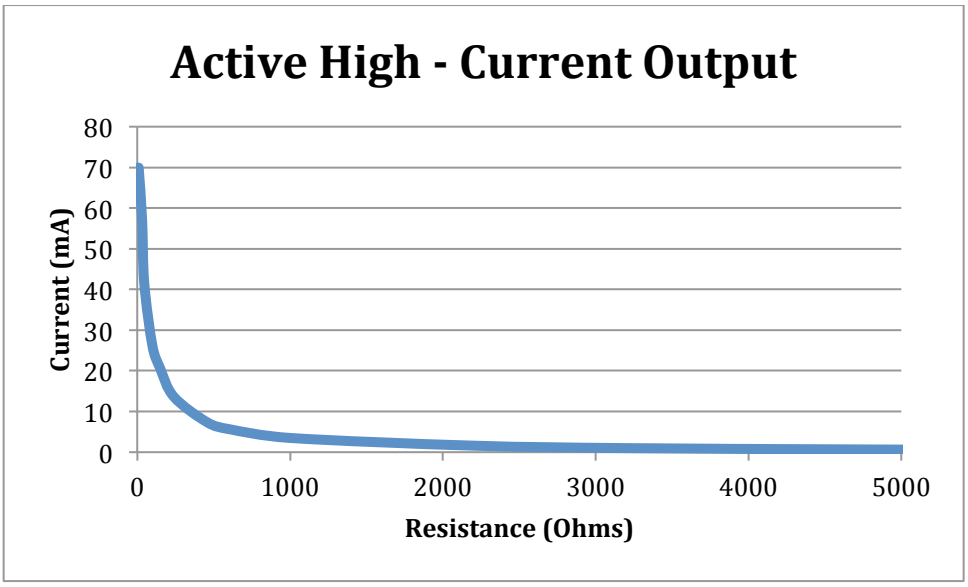


We measured the voltage across and current through various resistor values ranging from 10Ω to 5kΩ. Our measurements yielded the following results:

Resistance (Ω)	Voltage (V)	Current (mA)
10	0.68	70
32	1.88	57
46	2.2	41.5
100	2.87	26
150	3.03	20.6
240	3.22	13.6
460	3.36	7.3
610	3.4	5.6
1000	3.47	3.5
2200	3.51	1.6
3200	3.53	1
4600	3.53	0.7

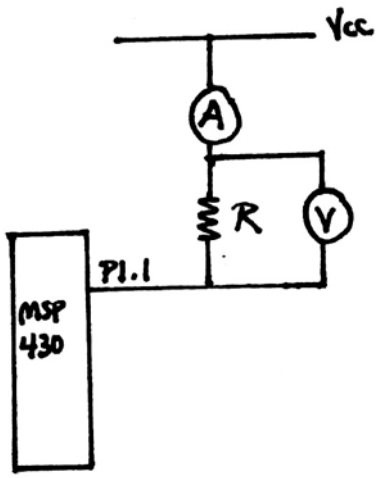
From our measurements we developed the following plots of voltage and current as functions of resistance for an active high GPIO pin:





II. Active Low Tests

To test the output characteristic of the GPIO pin in the active low (logical 0) state we used the following circuit:



We measured the voltage across and current flowing through various resistor values ranging from 10Ω to 5kΩ. Our measurements yielded the following results:

Resistance (Ω)	Voltage (V)	Current (mA)
10	0.51	51.6
32	1.6	48.7
46	2.02	40.5
100	2.78	28
150	3	18.2
240	3.2	13.4
460	3.37	7.28
610	3.42	5.5
1000	3.46	3.54
2200	3.5	1.6
3200	3.52	1.1
4600	3.53	0.75

From our measurements we developed the following plots of voltage and current as functions of resistance for an active low GPIO pin: