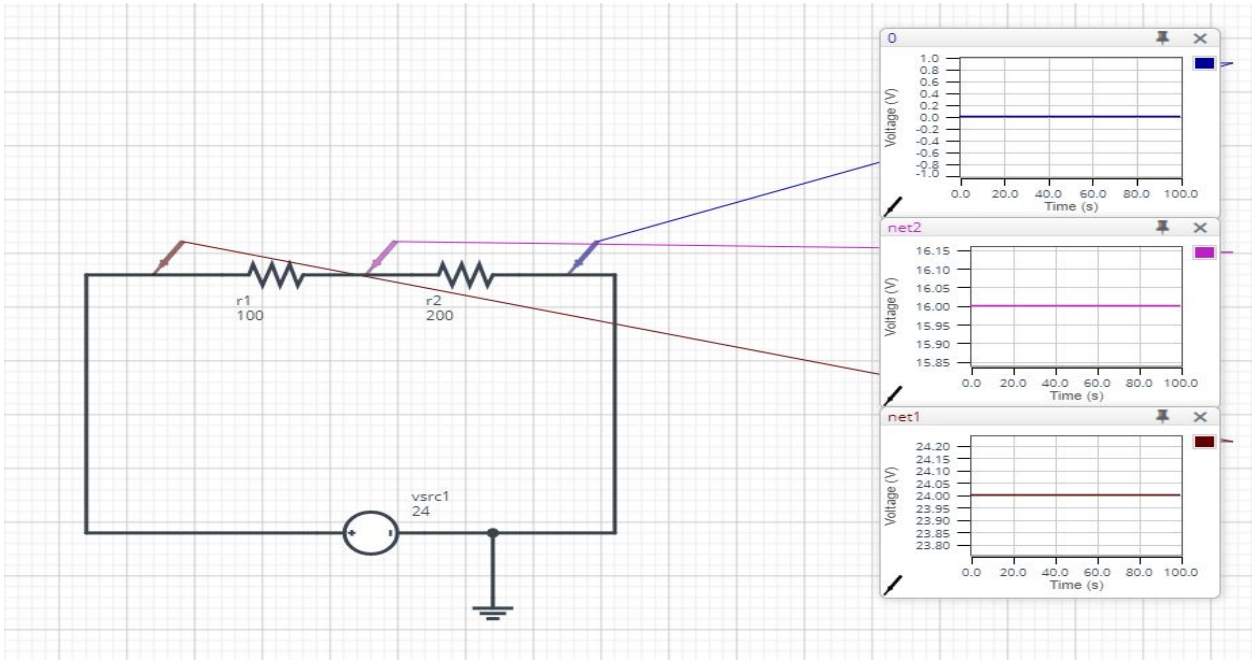
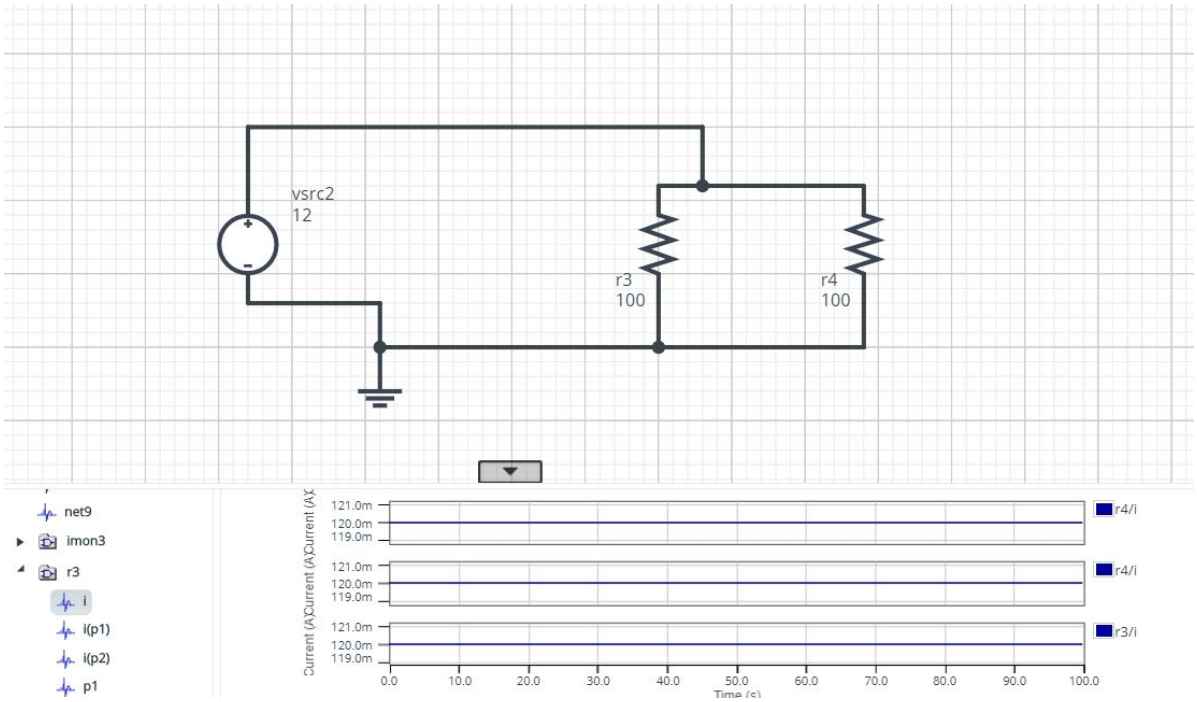
Aaron Bursten
Lab 9
4/30/20

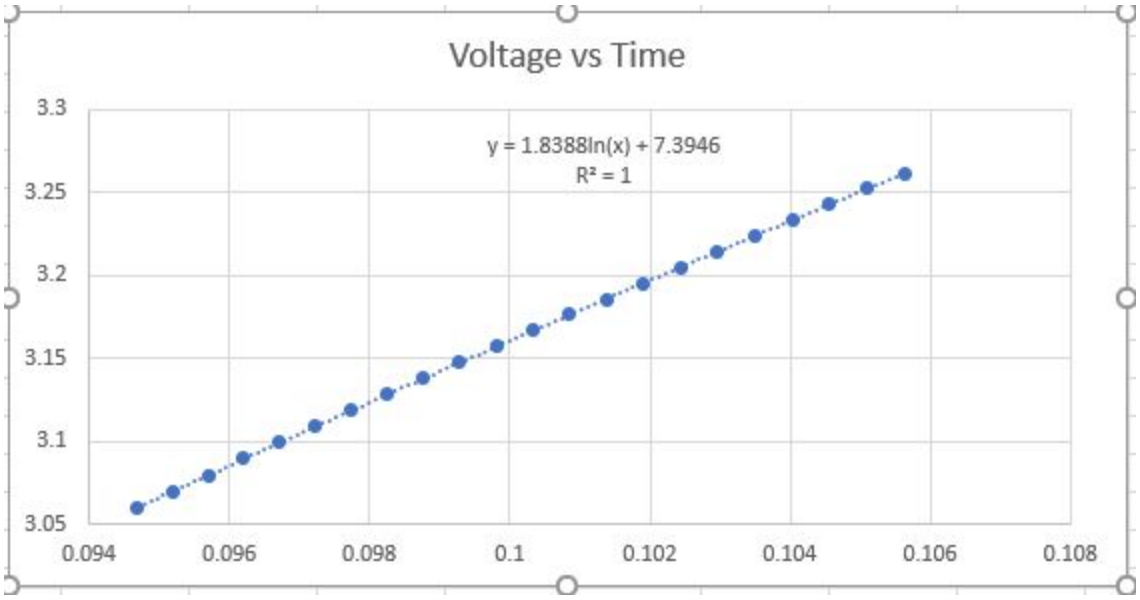
4. Build a voltage divider circuit (Figure 1 – left side). Confirm the Kirchoff's voltage and current law on the circuit.

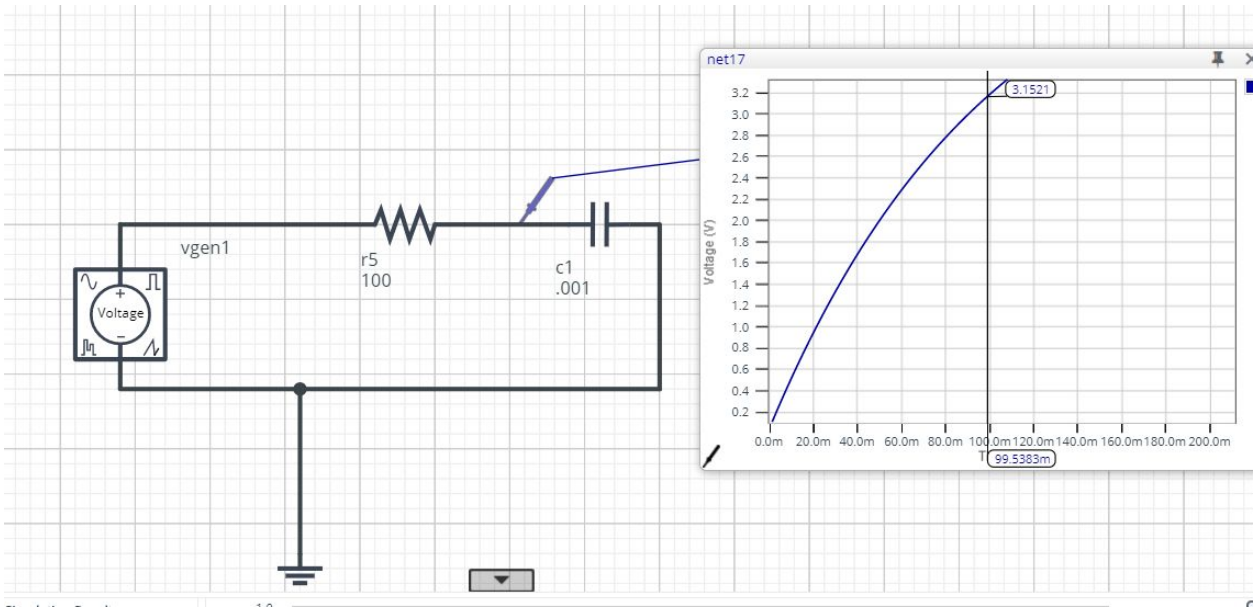


5. Build a current divider circuit (Figure 1 – right side). Confirm the KVL and KCL on the circuit using different closed paths for voltage law and nodes for current law.



6. In the RC circuit, measure the pulse response: input voltage is $Vs(t)$ which can be connected to a function generator to generate a square (or rectangular) wave signal instead of using battery and mechanical switch and output is voltage across the capacitor. Measure the time constant of the response, τ: the time duration during which output voltage reaches 63% of its steady state value. Note $\tau = R.C$ for this RC circuit input-output transfer function.





63% X 5v = 3.15
0.0994248 Seconds

7. Do the same for the RL circuit for step response. This time measure the voltage across L to measure the time constant. Note: $\tau = L/R$ is the time constant for RL circuit input-output transfer function. V = 5 V Period = 4s Pulse width = 2s R = 100 Ohms C = 0.001 F L = 0.01 H

y = -8E+17x6 + 3E+15x5 - 5E+12x4 + 4E+09x3 - 2E+06x2 + 471.16x + 0.0002

63% X .05a = 0.0315

Time = 0.000103886