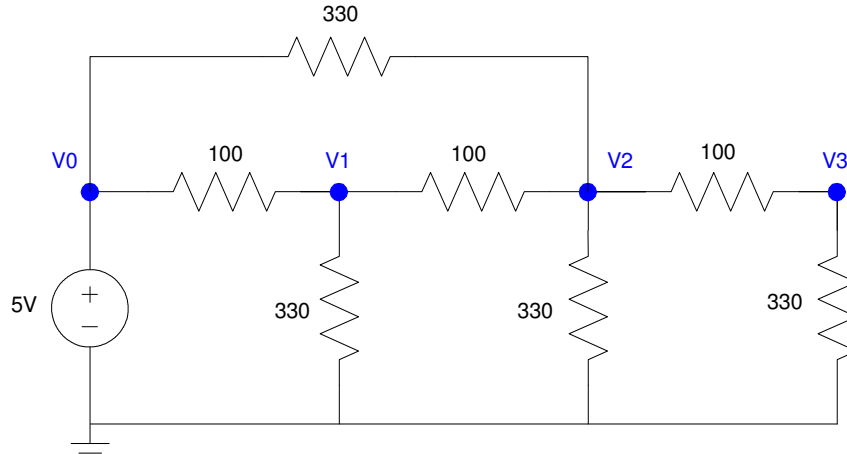


ECE 211: Homework #3

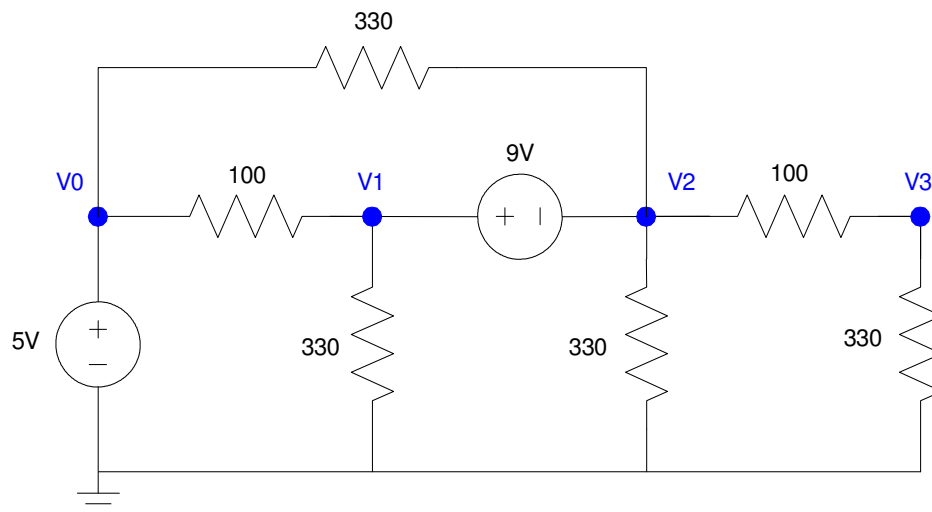
Voltage Nodes, Current Loops.

Voltage Nodes

- 1) Write the voltage node equations for the following circuit
- 2) Solve for $\{V_1, V_2, V_3\}$

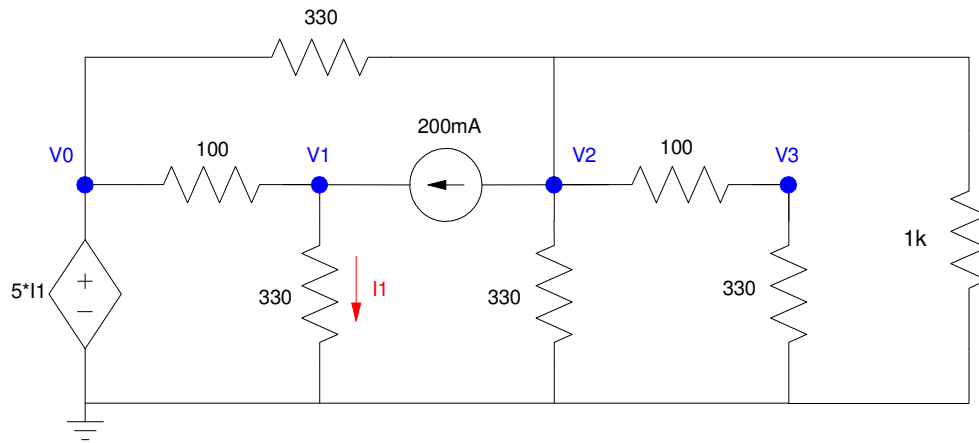


- 3) Write the voltage node equations for the following circuit
 - you don't need to solve



4) Write the voltage node equations for the following circuit

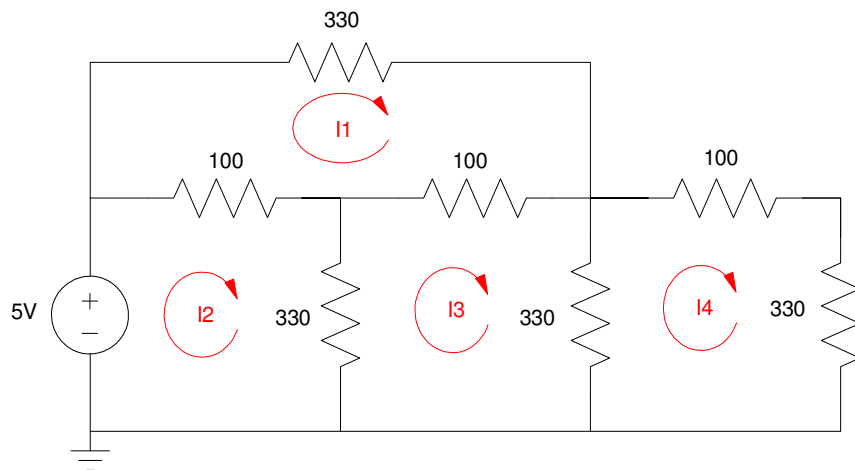
- you don't need to solve



Current Loops

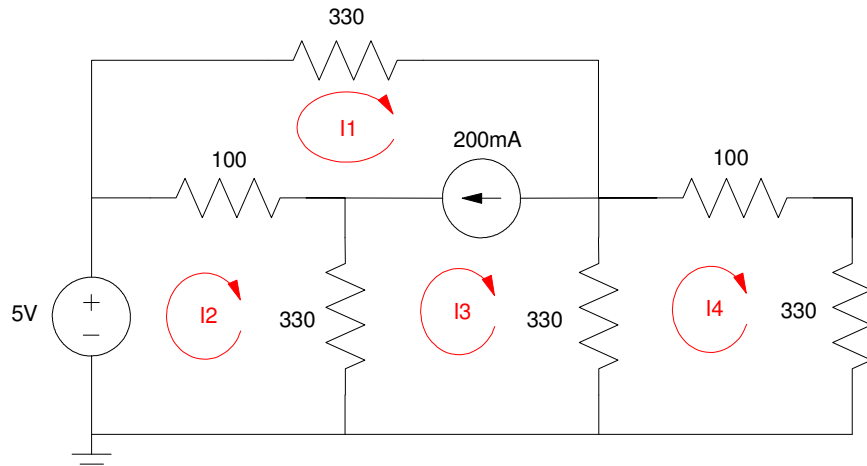
5) Write the current loop equations for the following circuit

6) Solve for $\{I_1, I_2, I_3, I_4\}$



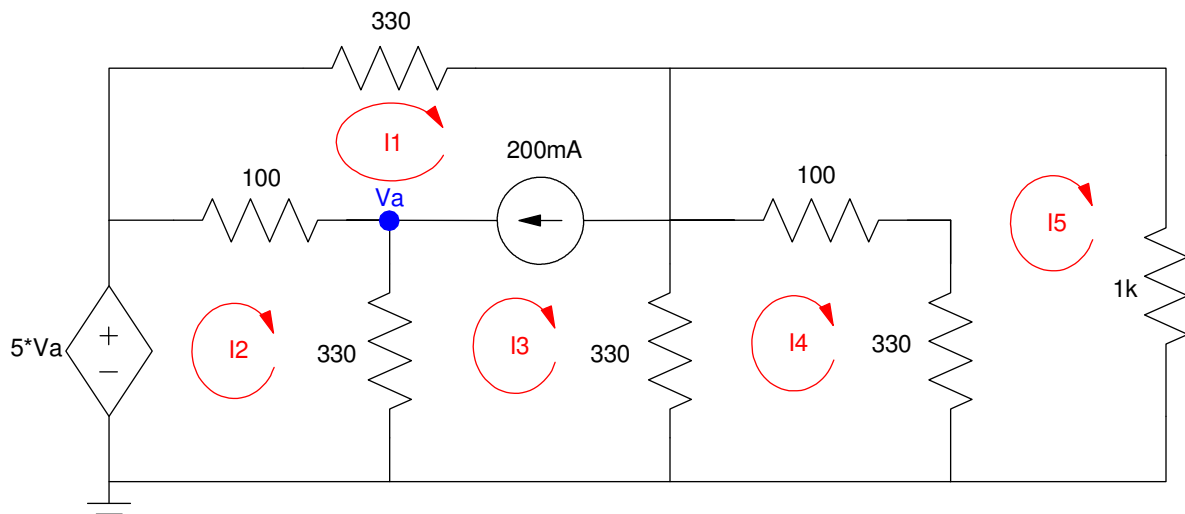
7) Write the current loop equations for the following circuit

- you don't need to solve



8) Write the current loop equations for the following circuit

- you don't need to solve



Lab

9) Find the voltages and currents for the following circuit using CircuitLab

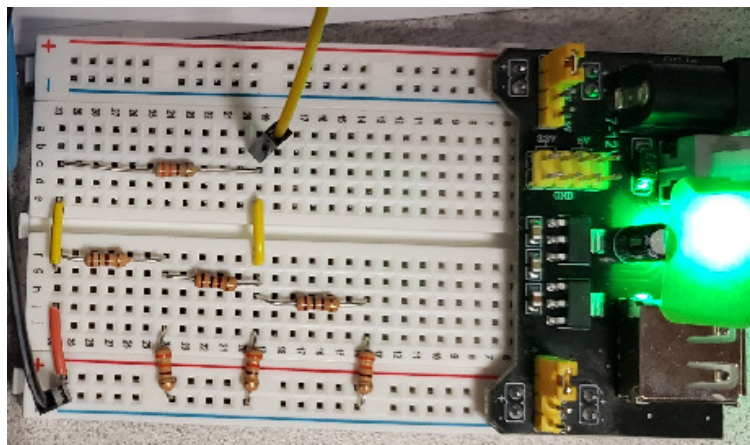
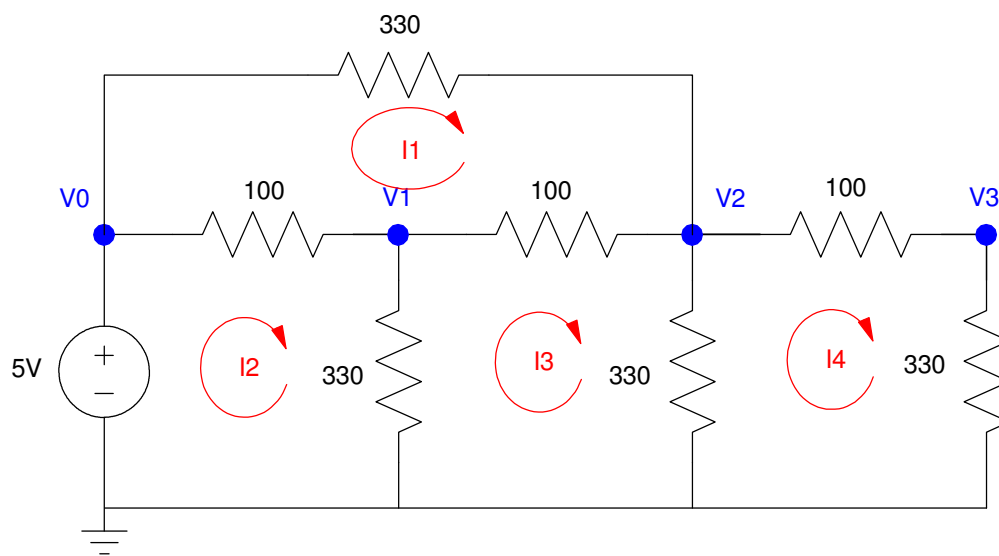
- Include a screen shot of your circuit and CircuitLab's solution

10) Build this circuit on your breadboard.

- Measure the voltages {V0, V1, V2, V3}
- Measure the currents {I1, I2, I3, I4}

note: To measure current, measure the voltage across a resistor and compute the current from $V = IR$

- Include a photo of your breadboard in your solutions



Sample of what your circuit might look like. Keep it neat and orderly (saves time)
Power rails (top and bottom) are +5V (red) and ground (blue)