THE ELECTRONICS LABORATORY
Department of Electrical Engineering
Military College of Signals

LAB – 2: Verification of KVL and KCL

1. OBJECTIVE
Using the circuit below, you can verify KVL by showing that the sum of voltages around the loop Vin -> R1 -> R2 is zero. You can also verify KCL by showing that the currents entering node "a" sum to zero.

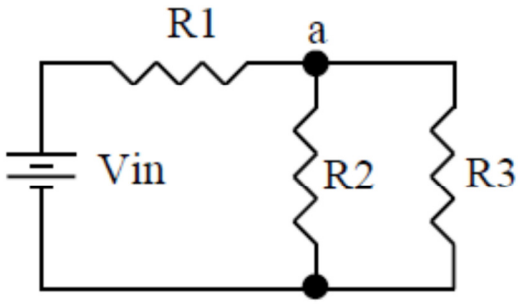
2. PREPARATION:
Ask instructor about power supply, DMM and breadboards to make sure you understand the operation of instruments and usage of the bread board. Derive equations for all circuit voltages and currents in terms of Vin, R1, R2, and R3.

3. EQUIPMENT:
Basic lab tools and breadboard, Digital Multimeter (EDM - 82) and DC power supply

4. NOTES:
Set current limit and connect the power after verifying the circuit & connections thoroughly. Check the Multimeter setup before making any measurement. Improper setup can give incorrect readings and/or damage the meter.

5. IMPORTANT:
When constructing the circuit, select resistor values such that the power dissipated in each resistor in the circuit is well below its 1/4 watt rating.

6. METHOD:



Schematic of the KCL/KVL verification circuit

Construct the circuit shown above. Choose appropriate R1, R2, and R3 (all three of them in few Kilo Ohms range), and measure their values using the DMM. Apply the power and adjust Vin=1.0 V (approximately), under load.
KVL: Calculate the expected voltages across R1 and R2, and then measure them.
KCL: Calculate the expected currents through R1, R2, and R3, and then measure them.