EECS 16A Designing Information Devices and Systems I
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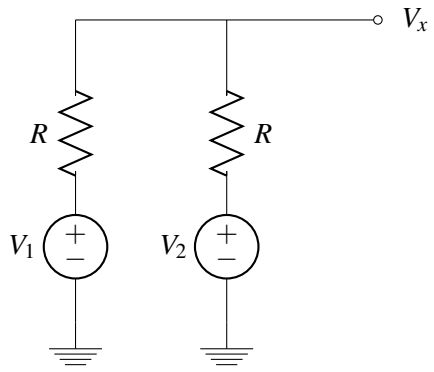
Discussion 8A

1. Designing a Circuit: Inside Out!

(a) Solve the following circuit for V_x.



(b) You have access to two voltage sources, V_1 and V_2. You can use two resistors (as long as $0 \leq R < \infty$). How would you draw a circuit that gives a voltage $V_x = \frac{1}{3}V_1 + \frac{2}{3}V_2$?

(c) **(BONUS)** You have two current sources I_1 and I_2. You also have a load $R_L = 6k\Omega$. Similar to the first part, you can use whatever resistors you want (as long as they are finite integer values). How would you draw a circuit such that the current running through R_L is $I_L = \frac{2}{5}(I_1 + I_2)$?

2. Open Review

The rest of this discussion will be left to reviewing concepts from lecture. Feel free to ask any questions. Here are some concepts we've covered so far (it is not in order):

- Passive Sign Convention
- Power and Energy
- Parallel / Series R + C
- Physical origin of R and C
- KCL / KVL
- Current and Voltage Sources
- Voltage and Current Dividers
- **Nodal Analysis**
- Thevenin / Norton
- Superposition
- Capacitors
- **Charge Sharing**
- Op Amps (Comparators)