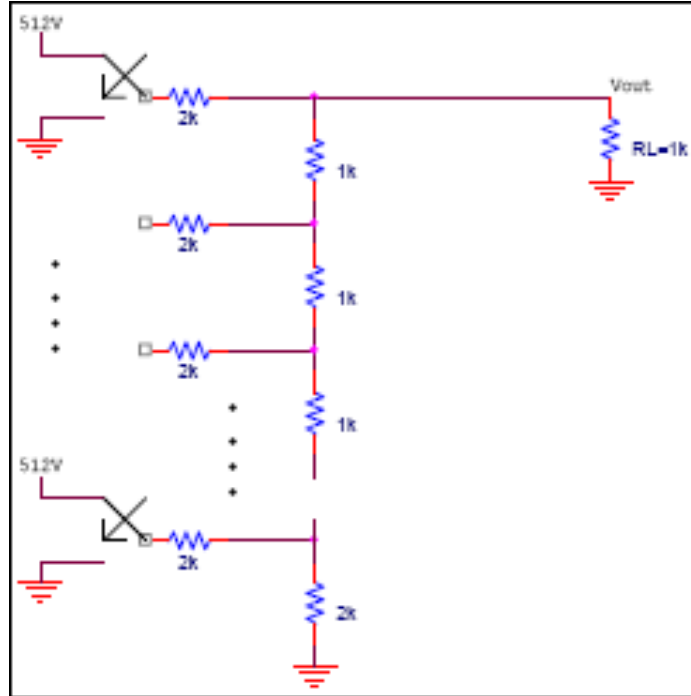


EEE 202-CIRCUIT THEORY SOFTWARE LAB #2

A) Preliminary Work:

An 8-bit digital-to-analog converter (DAC) using a $2R$ - R resistor ladder network is given in the figure.



1. Convert the last three digits of your ID number into binary and feed the last 8 bits of the number into this DAC with the aid of switches. (If the last 3 digits of your ID no. is 000, 256, 512 or 768, please use 235 instead).
2. Find the output voltage, V_{out} .
3. Calculate the power on each element and use this to calculate the total power loss.
4. Find the efficiency of the DAC by calculating the ratio of power delivered to R_L to the total power loss.

B) Experimental Work:

1. Implement the DAC in 5Spice. Check your findings in the preliminary work.
2. Change R_L to find the most power efficient load value.

Rules and Instructions:

1. The Preliminary work is worth 30% and the experimental work, 70%.
2. You are expected to have finished the Preliminary work before coming to your lab session.
3. Submit your results and comments in the form of a report at the end of the lab.