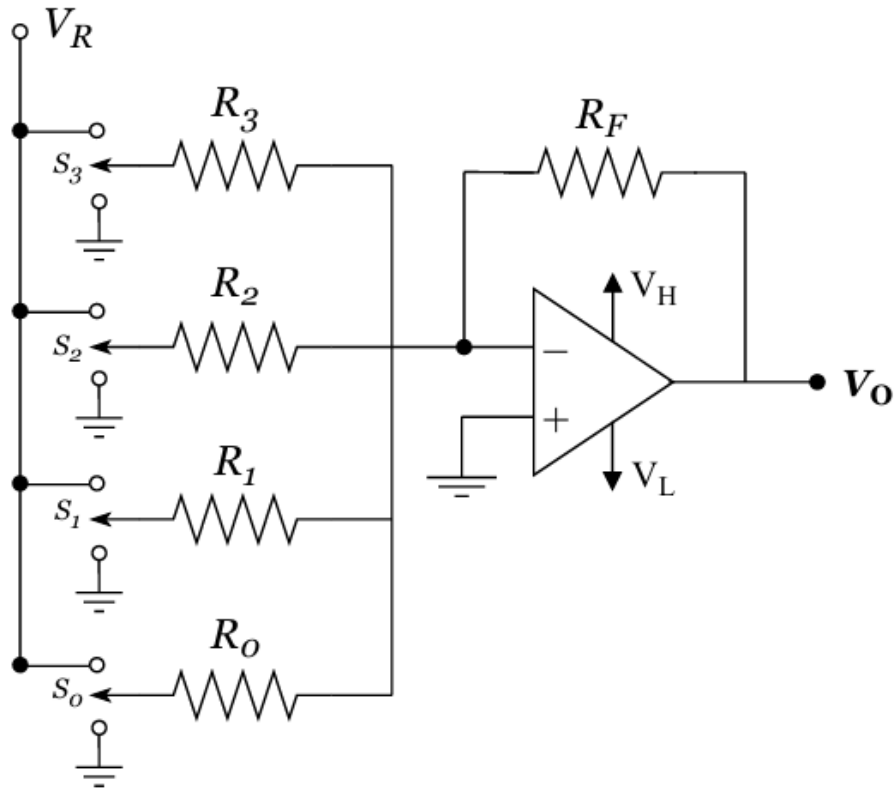


### Assignment 3: (Binary Weighted DAC + R-2R Ladder)

Question 1:

A binary weighted DAC is shown below.



For part (a) & part (b):  $V_R = -8V$ ,  $R_3 = R_f$  Input bit sequence:  $S_3 S_2 S_1 S_0$

- Show the output voltages for all possible input cases.
- Calculate the ratio of maximum output voltage and LSB voltage.
- Given  $V_R = -8V$ , find the ratio  $R_3/R_f$ , if we want the output voltage for input '1010' to be 5V?
- Draw  $V_O$  vs.  $V_{in}$  (from part a).
- How can we improve the resolution of that DAC? Explain.