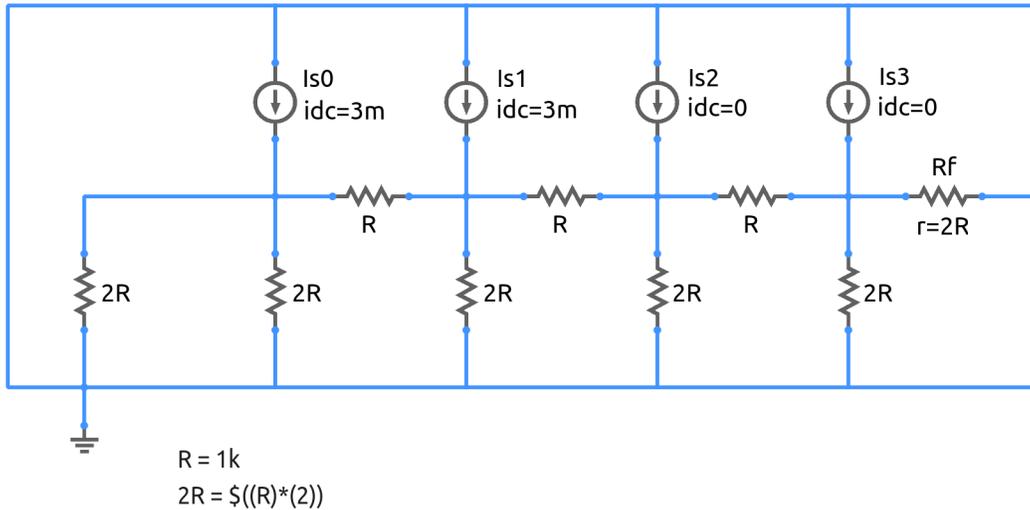


ee101_network_11.sqproj



The circuit shown in the figure is a current-driven R-2R ladder used in some of the digital-to-analog converters (DACs). Each source current is either 3 mA or 0 mA. Note that, in practice, the top end of each current source may be connected to a voltage supply (rather than ground), but it is not important in our context.

Exercise Set

1. Find an expression for the current through R_f in terms of the four source currents using superposition. (Hint: Taking one source at a time, simplify the network by combining resistances in series or parallel, and then use current division.)
2. Verify your results with simulation for a few specific cases such as that shown in the figure.