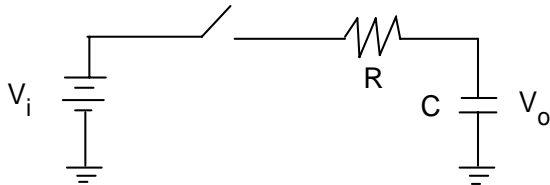


## Pre-Lab

### Low-Pass Filters and Time Response

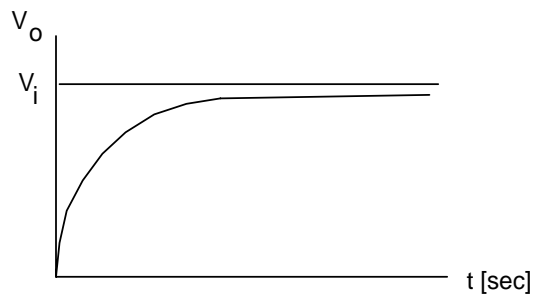
In lecture, the mathematics of a low-pass filter was derived. The resulting equation reveals a first-order differential equation given as:



$$V_o(t) = V_i(1 - e^{-t/RC})$$

Schematic of a Low-Pass Filter

Using the USB-6211 and LabVIEW, demonstrate the above circuit has the time response plot:



Time Response for a low-pass RC filter

Choose any resistor and capacitor combination you like. Possible values are 47 kilo-Ohms and 0.1 micro-Farads. In class next week, you must give a LabVIEW demonstration. Your GUI should capture data (like an oscilloscope) and display the time response plot above. Alternatively, you can capture the data into a file and plot using Excel.