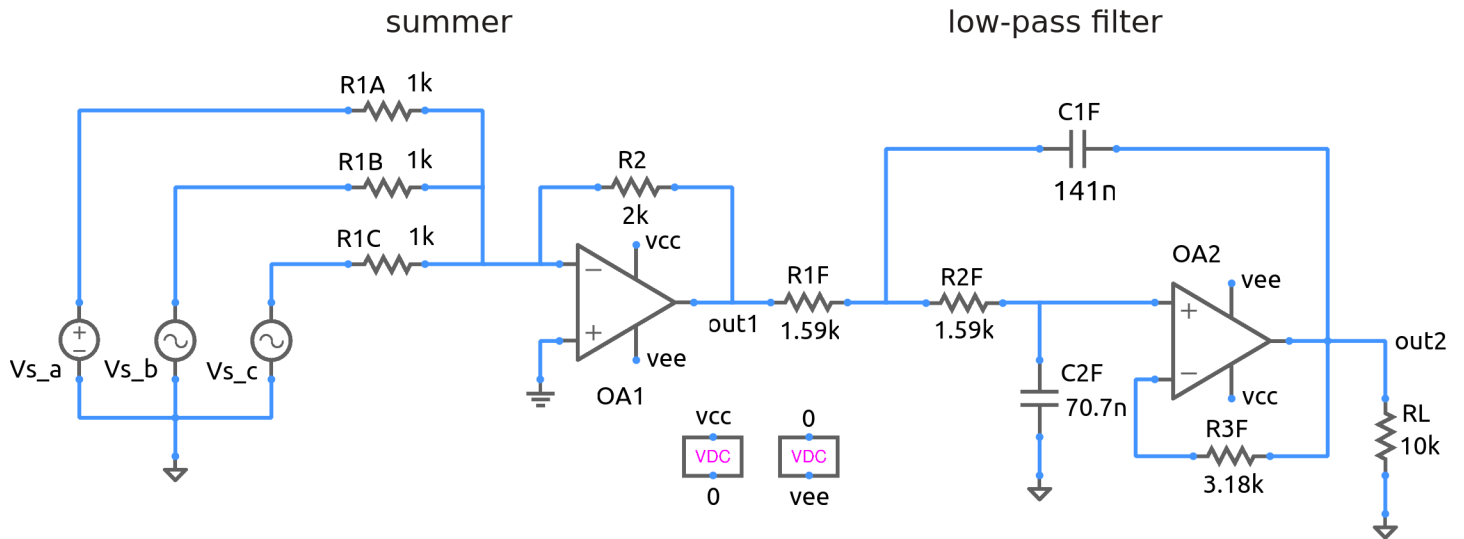# low_pass_filter_trns_1.sqproj

The circuit shown in the figure is an illustration of the functioning of a filter in the time domain. The corresponding frequency-domain description of the filter circuit can be found in `low_pass_filter_1.sqproj`.

Exercise Set

1. Simulate the filter circuit in the frequency domain and note the cut-off frequency (see `low_pass_filter_1.sqproj`).

2. How is V_{out1} related to V_a, V_b, V_c? Verify with simulation by plotting V_a, V_b, V_c, and V_{out1} versus time.

3. What is $V_{out2}(t)$ expected to be? Verify with simulation by plotting V_{out1} and V_{out2} versus time. Compare the filter ouput $V_{out2}(t)$ with the input voltages for the summer circuit $V_a(t)$, $V_b(t)$, $V_c(t)$. Explain your observations.

References:

1. J. M. Fiore, *Op amps and linear integrated circuits,* Delmar, 2001.

2. A. S. Sedra, K. C. Smith, and A. .N. Chandorkar, *Microelectronic Circuits*, Oxford University Press, 2004.