Subject: EEE598D Homework#4
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Problem 1 (s-z- transformations)

For the lowpass continuous-time filter shown in Fig. 1, find the z-domain transfer functions H(z) and plot gain and phase responses versus frequency logω (0.0001π/T < ω< π/T) (i.e. BodePlots) under

1) Forward Euler
2) Backward Euler
3) Bilinear , and
4) LDI (or midpoint) transformations
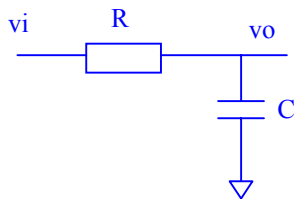
$$H_A(s) \equiv \frac{V_o(s)}{V_i(s)} = \frac{p}{p+s}$$

$$p \equiv \frac{1}{RC}$$

(Assuming 2π/T = 100p).

Problem2 (warm-up reading assignment for the SC filters)

For the rest of the course (homework/course project) we are going to use the SWITCAP program as one of the tools for SC circuit simulation. A manual/tutorial of SWITCAP can be download from

http://vlsi-libra.teipir.gr/w_flash/book5/switcap/tutor.htm

Read through this tutorial and answer the following questions:

1) What is SWITCAP used for?
2) What types of circuit components are used in SWITCAP?
3) What kind of analysis can SWITCAP do?

A DOS version of SWITCAP can be found at

http://vlsi-libra.teipir.gr/anakoinosi.html