CSE562M: Analog Integrated Circuits Project 3

In this assignment you need to design a first-order sigma-delta modulator for measuring currents that range from -100nA to 100nA. For your convenience the system level architecture of the modulator is shown in the figure below. You would need to design each of the circuit components.

For your final report and presentation you need to submit 5 slides:

(a) System level architecture with component values (C, Io, CLK, VREF, VCMP).
(b) Circuit implementation of the amplifier
(c) Circuit implementation of the latched comparator, CMOS switch and current source and sink.
(d) Using transient analysis ramp the input current from 0 to 100nA. Plot the output of the modulator using a moving window. Also plot the voltage Vx.
(e) Summarize the specification of the modulator (Speed, resolution and power dissipation).

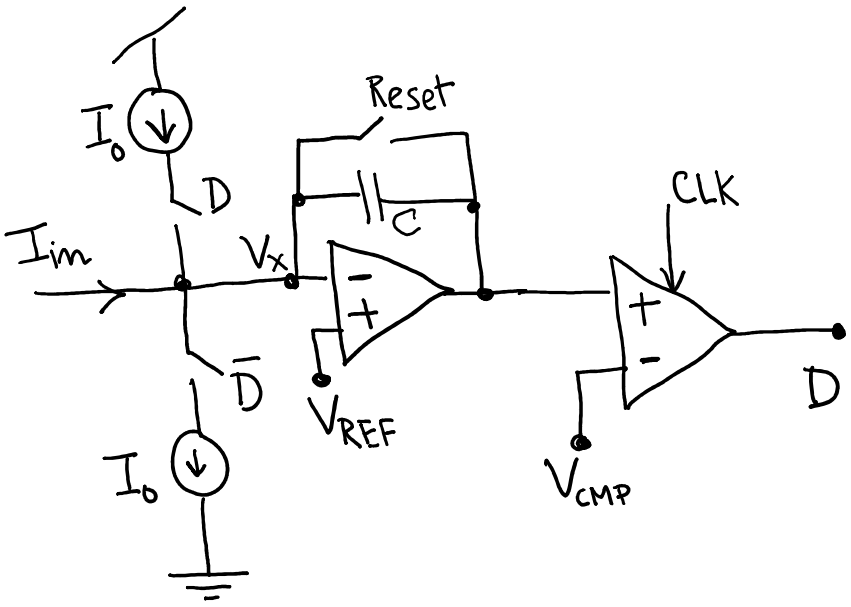

Fig. 1