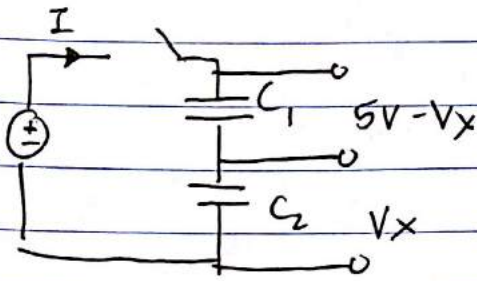
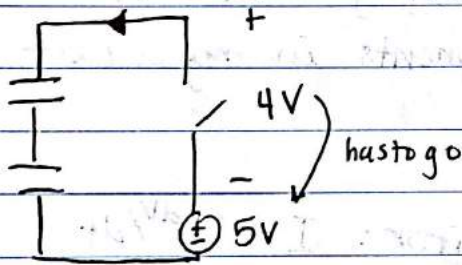
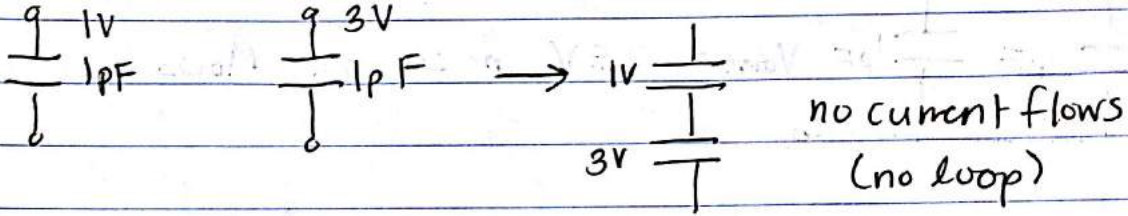


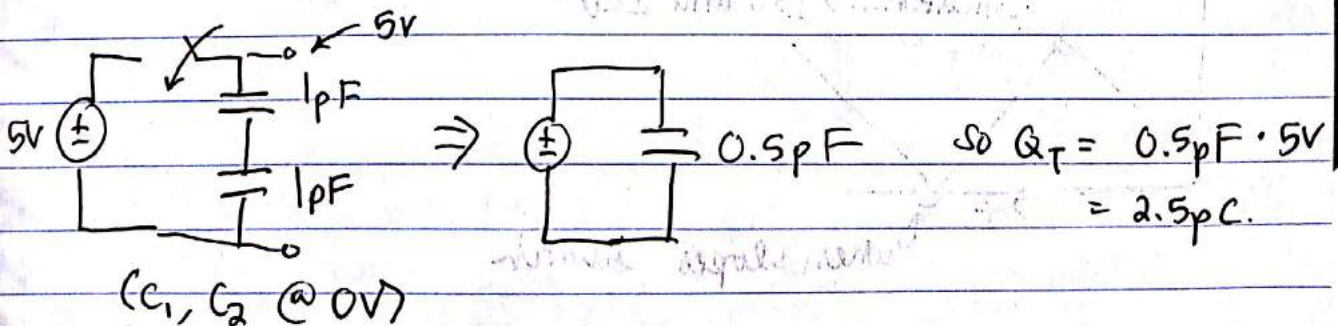
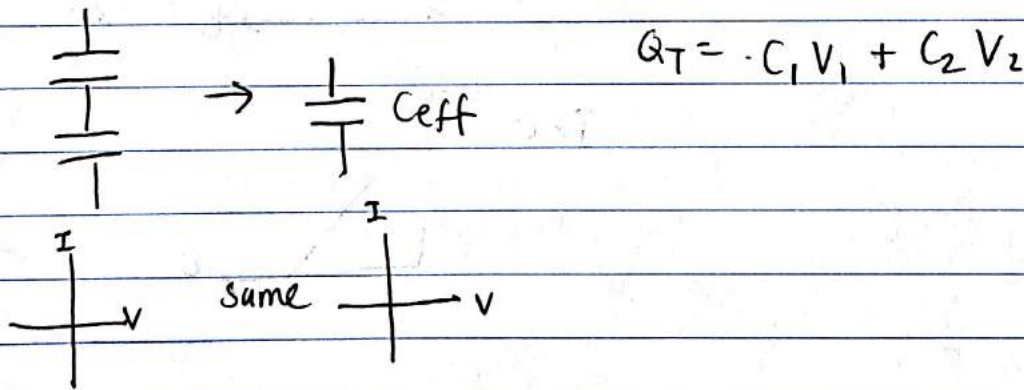
Review

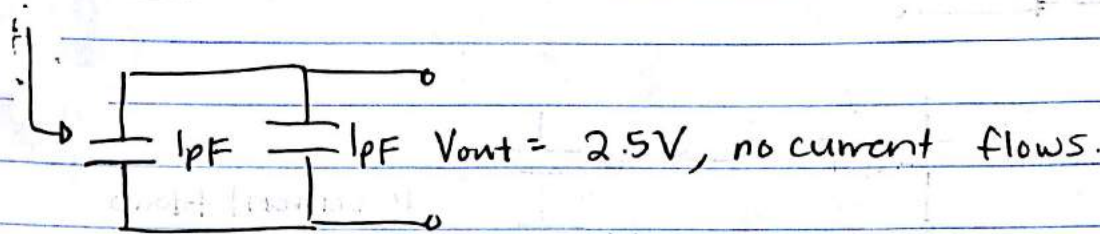
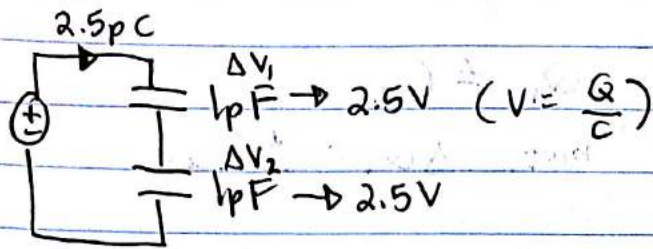


$Q_1 \neq Q_2$
but, $\Delta Q_1 = \Delta Q_2$.



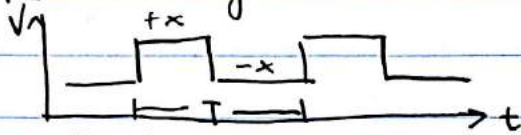
Equivalence





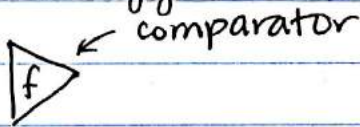
(2) Timer Circuit Design

Step 1: Define goal

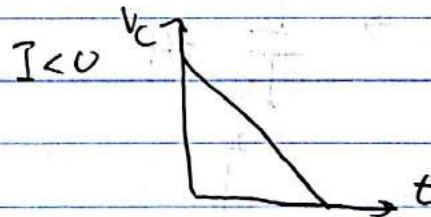
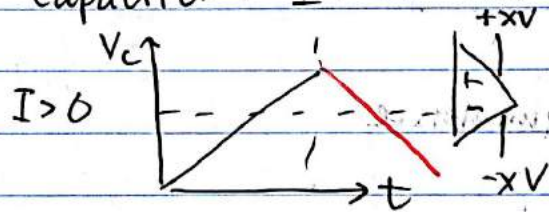


T : set only by values of components in my circuit

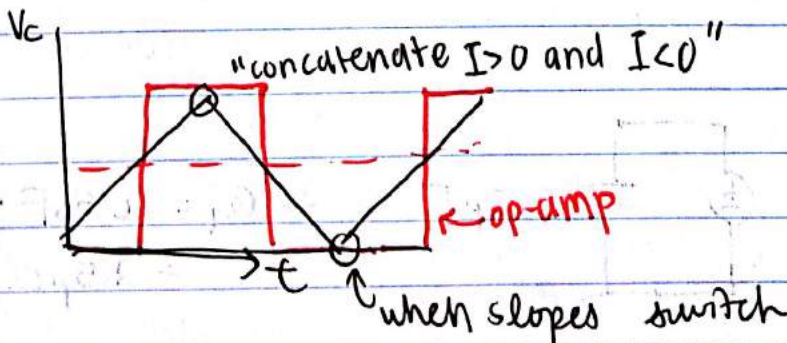
Step 2: Strategy



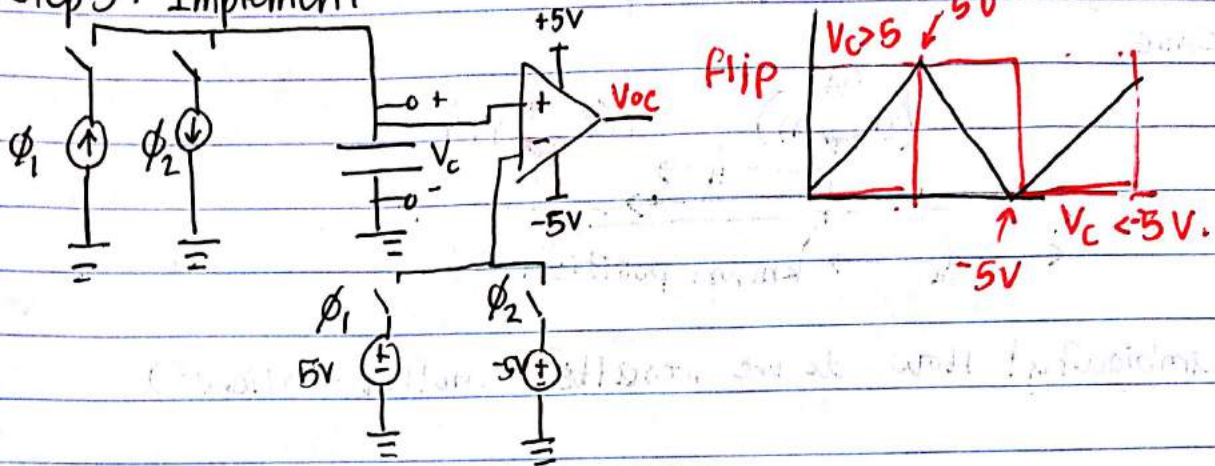
Capacitor: $I = C \frac{dV}{dt}$



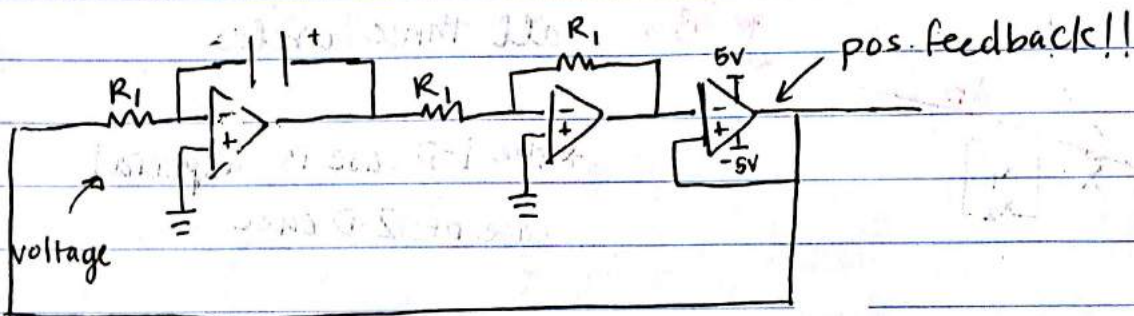
Want:



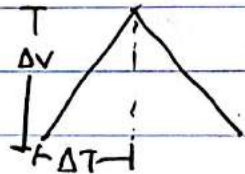
Step 3: Implement



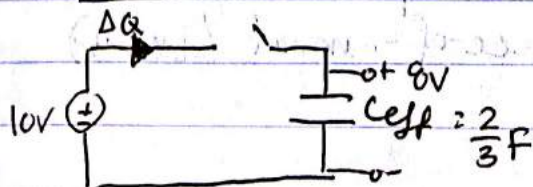
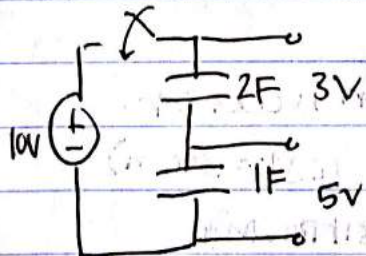
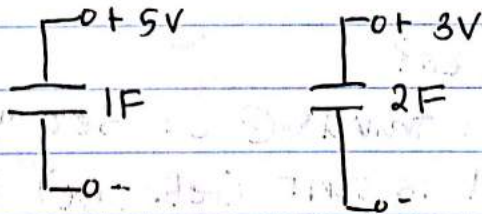
w/o switches or current srcs.



$$I = C \frac{dV}{dt} \rightarrow I = C \frac{\Delta V}{\Delta T}, \quad \Delta T = \frac{C \Delta V}{I}$$



Capacitor Charge Sharing



$$V_{init} = 8V \quad \Delta V$$

$$\Delta Q = \frac{2}{3} F (10 - 8) = \frac{4}{3} C$$

$$\Delta V_{2F} = \frac{\frac{4}{3} C}{\frac{1}{2}} = \frac{2}{3} V$$

$$\Delta V_{1F} = \frac{\frac{4}{3} C}{1} = \frac{4}{3} V$$