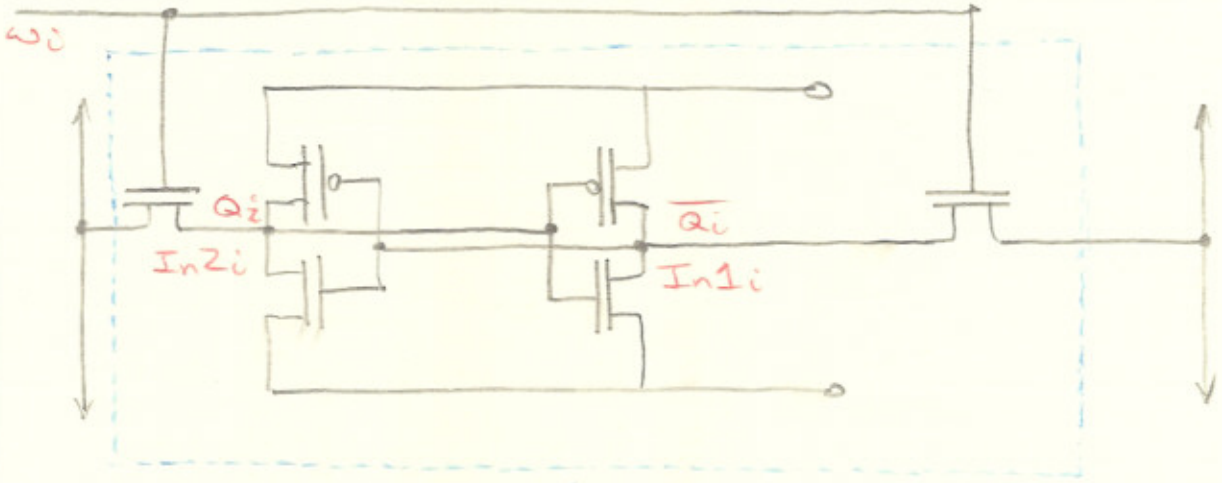
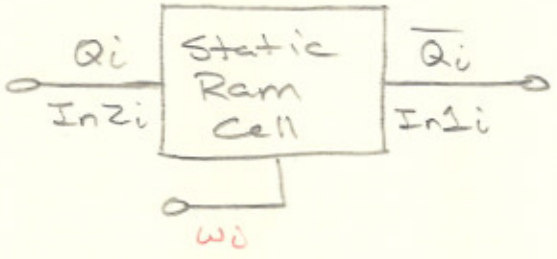
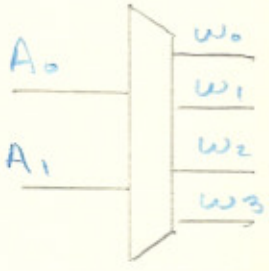
Static Ram Cell



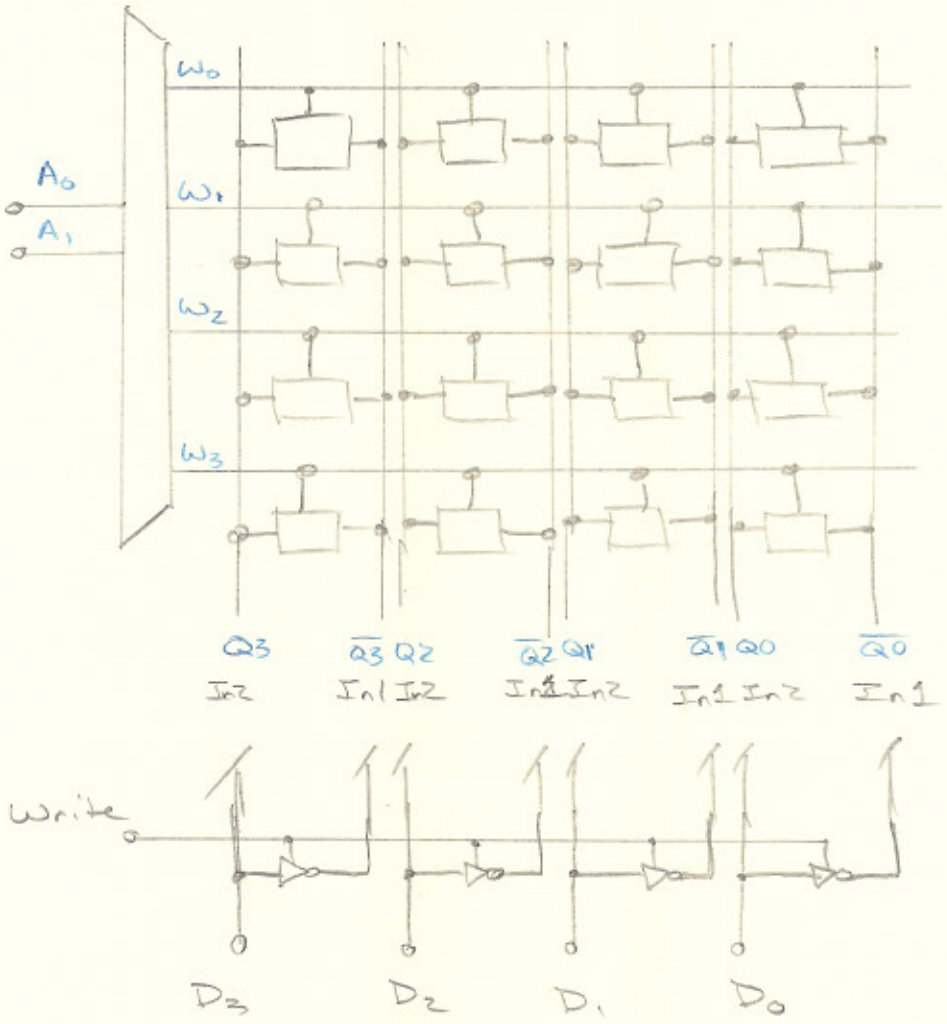
static RAM cell



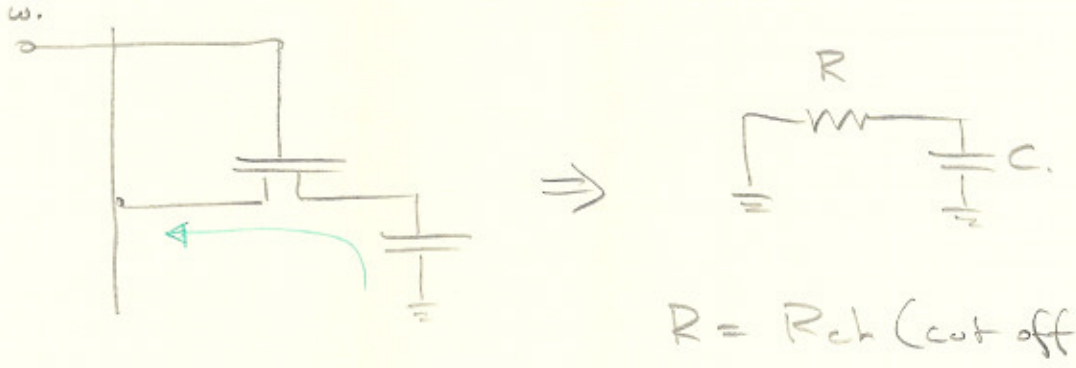
Organise 4 words of 4 bits



A_0	A_1	W_0	W_1	W_2	W_3
0	0	1	0	0	0
0	1	0	1	0	0
1	0	0	0	1	0
1	1	0	0	0	1



We want the system to hold charge even when power is off; we investigate the cap.



$R = R_{ch}$ (cut off)

$$i_c = C\frac{dv_c}{dt}$$

$$V_R + V_c = 0$$

$$Ri(t) + V_c = 0$$

$$RC\frac{dv_c}{dt} + V_c = 0$$

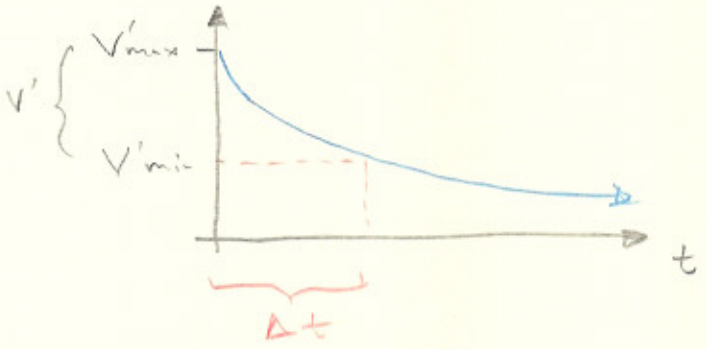
$$RCK' + K^\circ = 0$$

$$K = \frac{-1}{RC}$$

$$V_c(t) = Ae^{-1/RC \cdot t} = Ae^{-t/\tau}$$

$$\tau = RC$$

$$V_c(t) = V'_{max}\, e^{-t/\tau}$$



$$V_c(\Delta t) = V'_{min}$$

$$V_c(\Delta t) = V'_{max}\, e^{-\frac{\Delta t}{\tau}}$$

$$\Delta t = -\tau \ln\left(\frac{V'_{min}}{V'_{max}}\right)$$

We should recharge the capacitor at:

$$T_o = \frac{\Delta t}{2}$$

$\therefore$ @ a freq of:

$$f_o = \frac{1}{T_o} = \frac{2}{\Delta t} = 2\left[-\tau \ln\left(\frac{V'_{min}}{V'_{max}}\right)\right]^{-1}$$