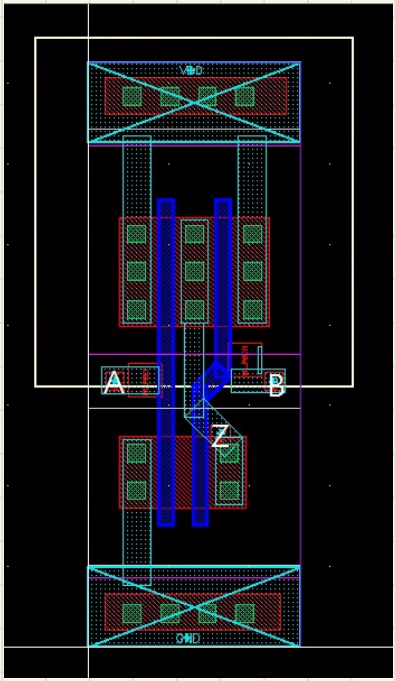
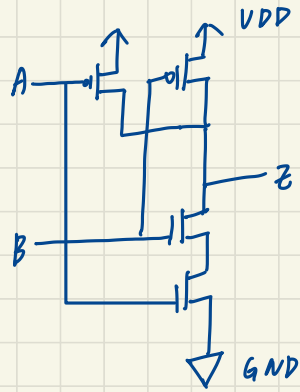
1.

(5) ND2

B09901055 楊佳綺



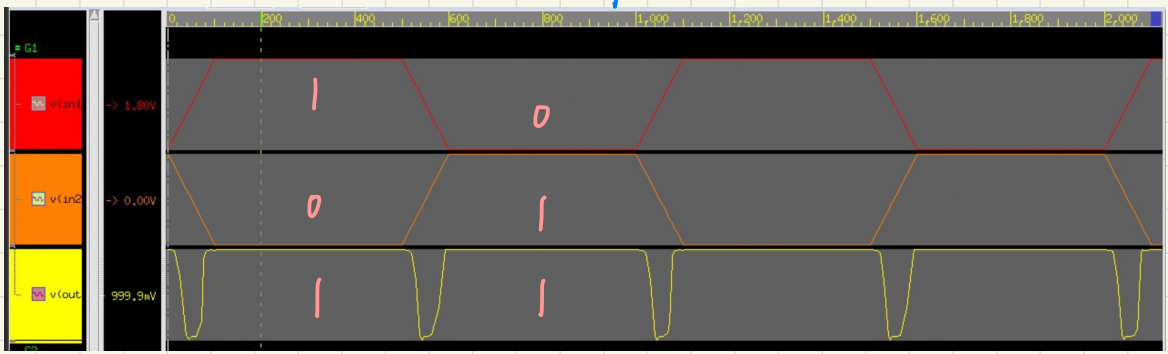


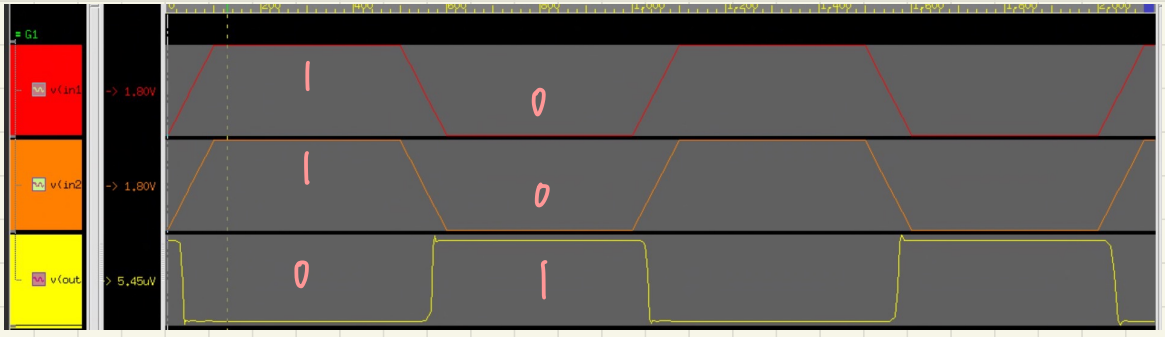
A	B	Z
0	0	1
0	1	1
1	0	1
1	1	0

observation:

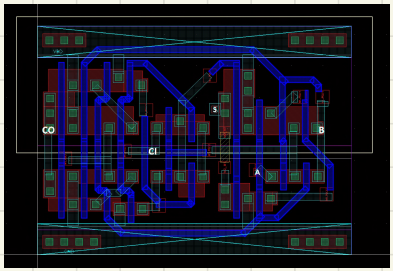
when one of the input is 0, then the output would be 1.

If both of the inputs are 1, the output would be 0.





(10) FA1

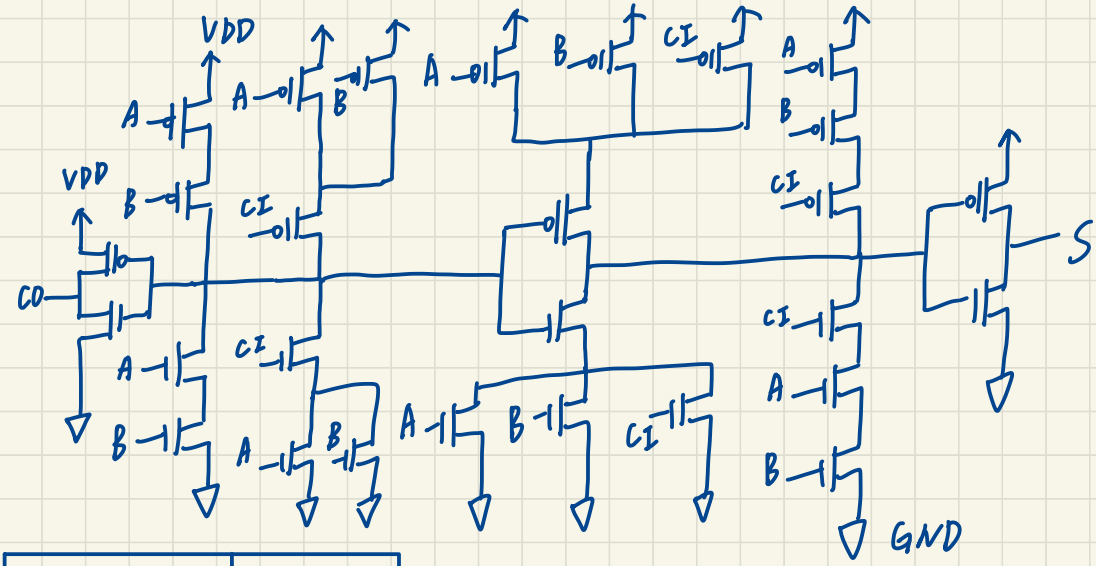


observation:

when there's only one 1 in the inputs, then S=1, CO=0.

when there're two 1 in the inputs, then S=0, CO=1.

when there're three 1 in the inputs, then S=1, CO=1

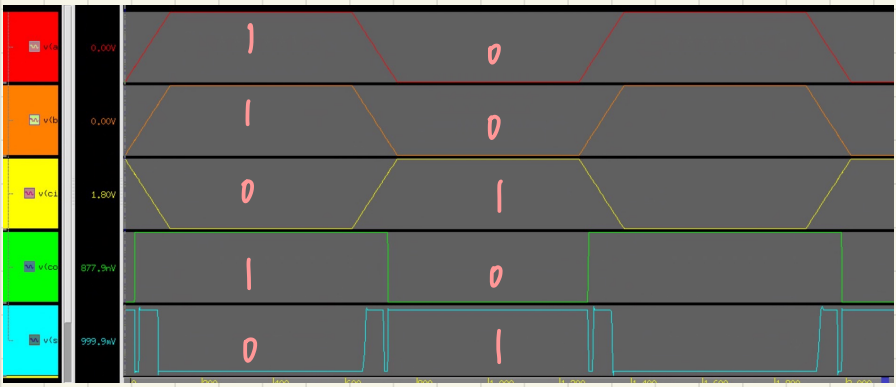


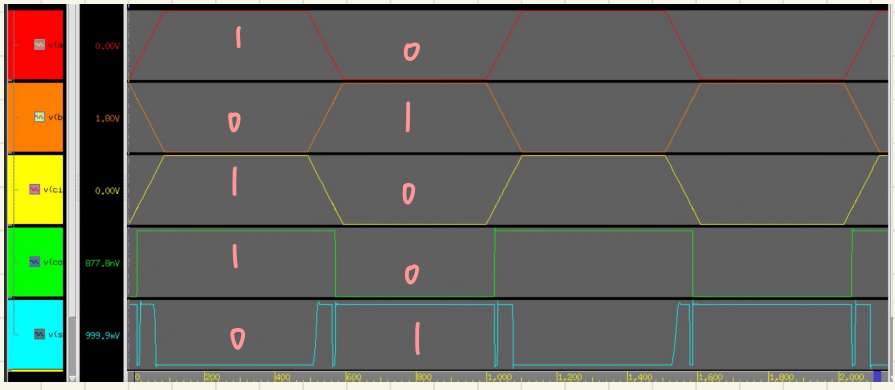
A	B	CI	S	CO
0	0	0	0	0
0	0	1	1	0
0	1	0	1	0
0	1	1	0	1
1	0	0	1	0
1	0	1	0	1
1	1	0	0	1
1	1	1	1	1

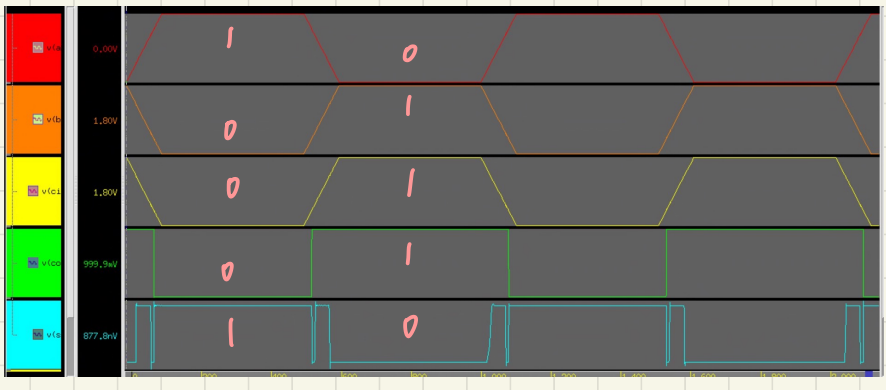
☆ problems :

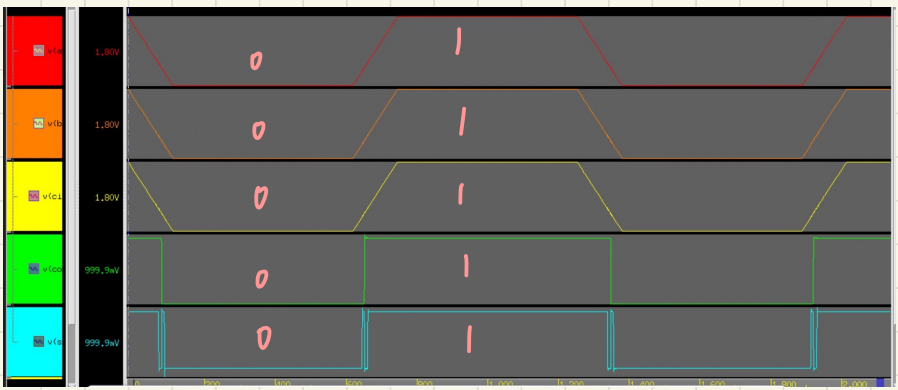
① 一開始忘記第一行要註解

② 在 inputs 有改變時 (0 ↔ 1), output 會出現 error

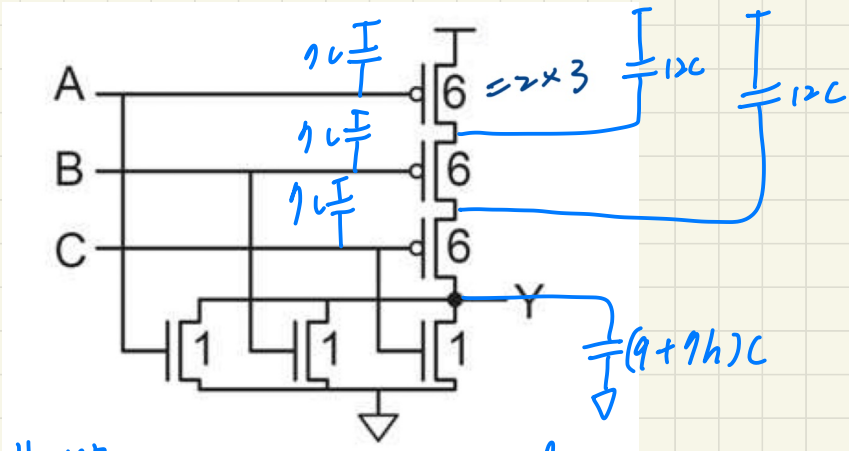

0.00V
0.00V
1.80V
877.9mV
999.9mV


0.00V
1.80V
0.00V
877.8mV
999.9mV

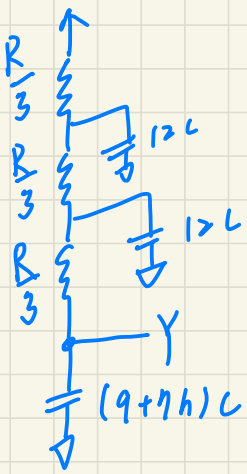

0.00V
1.80V
1.80V
999.9mV
877.8mV


1.80V
1.80V
1.80V
999.9mV
999.9mV

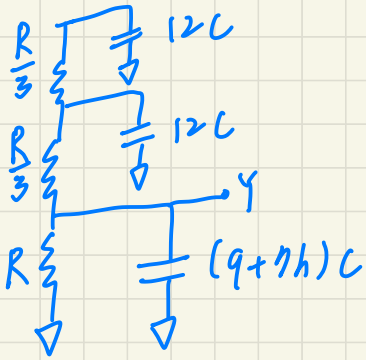
2.



pull-up



pull-down



t_{pdr}

$= (9+7h)C \cdot R + 12C \cdot \frac{2}{3}R + 12C \cdot \frac{1}{3}R$

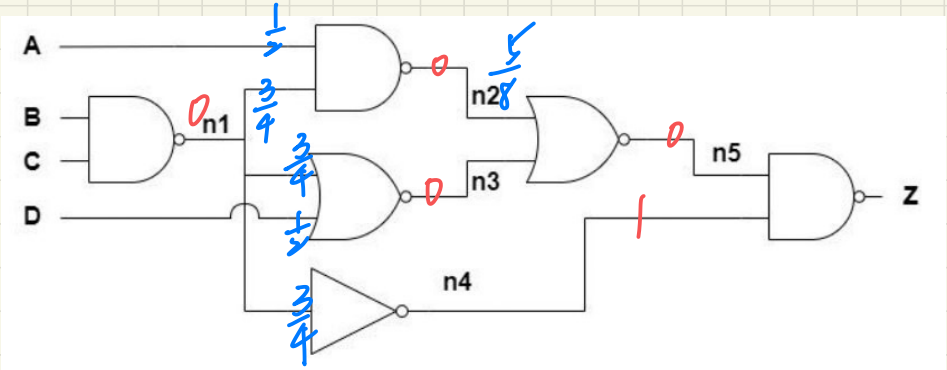
$= (21+7h)RC$

t_{pdf}

$= (9+7h)C \cdot R + 12C \cdot R + 12C \cdot R$

$= (33+7h)RC$

3.



n_1:

$P_1 = \frac{3}{4}$ $\alpha_1 = \frac{3}{16}$

n_2:

$P_2 = \frac{5}{8}$ $\alpha_2 = \frac{15}{64}$

n_3:

$P_3 = \frac{1}{8}$ $\alpha_3 = \frac{1}{64}$

n_4:

$P_4 = \frac{1}{4}$ $\alpha_4 = \frac{3}{16}$

when $z=1$

① $n_5=1$, $n_4=0$

$n_1=1$ $n_2=0$ & $n_3=0$

$P=\frac{1}{2}$ $P=1$

$P=\frac{3}{4}\times\frac{1}{2}=\frac{3}{8}$

② $n_5=0$, $n_4=1$

$n_1=0$ $1-(n_2=0)(n_3=0)$

$P=\frac{1}{4}$ $P=0$ $P=1$

$P=1\times\frac{1}{4}=\frac{1}{4}$

③ $n_5=0$, $n_4=0$

$n_1=1$ $1-(n_2=0)(n_3=0)$

$P=\frac{1}{2}$ $P=1$

$P=\frac{3}{4}\times\frac{1}{2}=\frac{3}{8}$

$\therefore P_z = \frac{3}{8}+\frac{3}{8}+\frac{1}{4}=1$

$\alpha_z = 0$