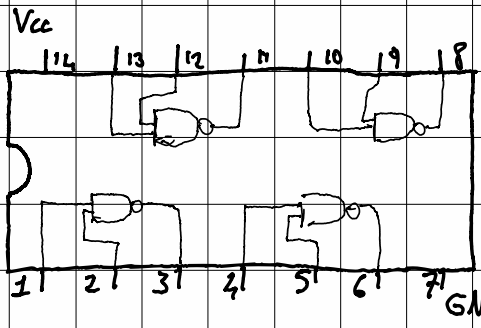
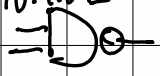


NAND

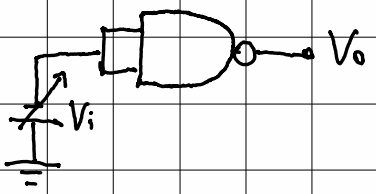


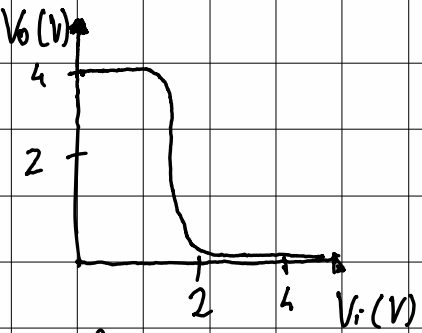
A	B	Q
0	0	1
0	1	1
1	0	1
1	1	0

$V_{cc} = (4.75 \div 5.25)V$ (Scelgo 5.1V)

---

1) Realizzare porta NOT:





Variare V_i, registrare V_o e realizzare il grafico

Stimare la tensione di transizione

Collegare un'onda triangolare in V_i (0-5V) e visualizzare il risultato, testare tutte le regolazioni offset generatore (i.e. $\langle V_{in} \rangle = 2.5V$

Oscilloscopio in modalità DC

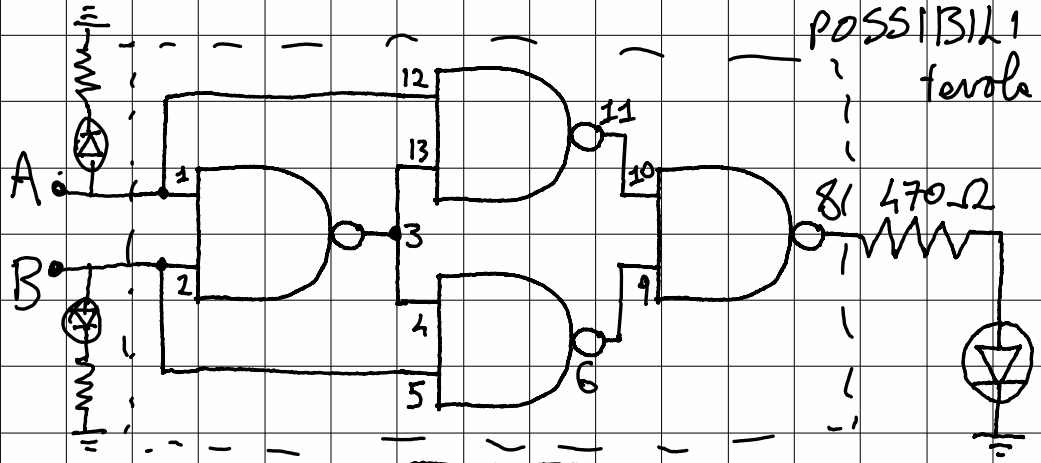
In e Out non saranno mai esattamente 0V o 5V, ma Low e High, per cui accetto:

	INGRESSO	USCITA:
HIGH	$(2 \div 5)V$	$(2.7 \div 5)V$
LOW	$(0 \div 0.8)V$	$(0 \div 0.8)V$

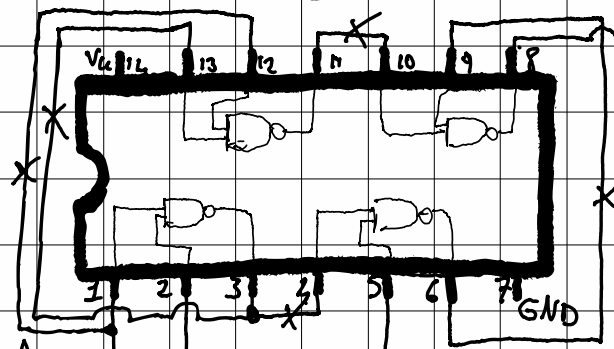
XOR

(Per vedere lo stato delle uscite usare dei led con resistori ~470Ω)

FARE FOTO PER I 4 STATI POSSIBILI e verificare tavola verità



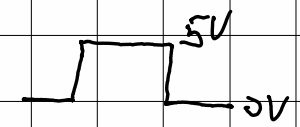
A	B	Q
0	0	0
0	1	1
1	0	1
1	1	0



$R_O = 330.2\Omega$

$R_A = 326.2\Omega$

$R_B = 328.4\Omega$

Porre A a 5V e B a 

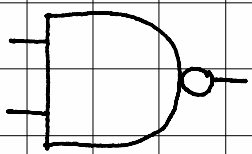
Con l'oscilloscopio si osservano il segnale in B e l'uscita

Misure:

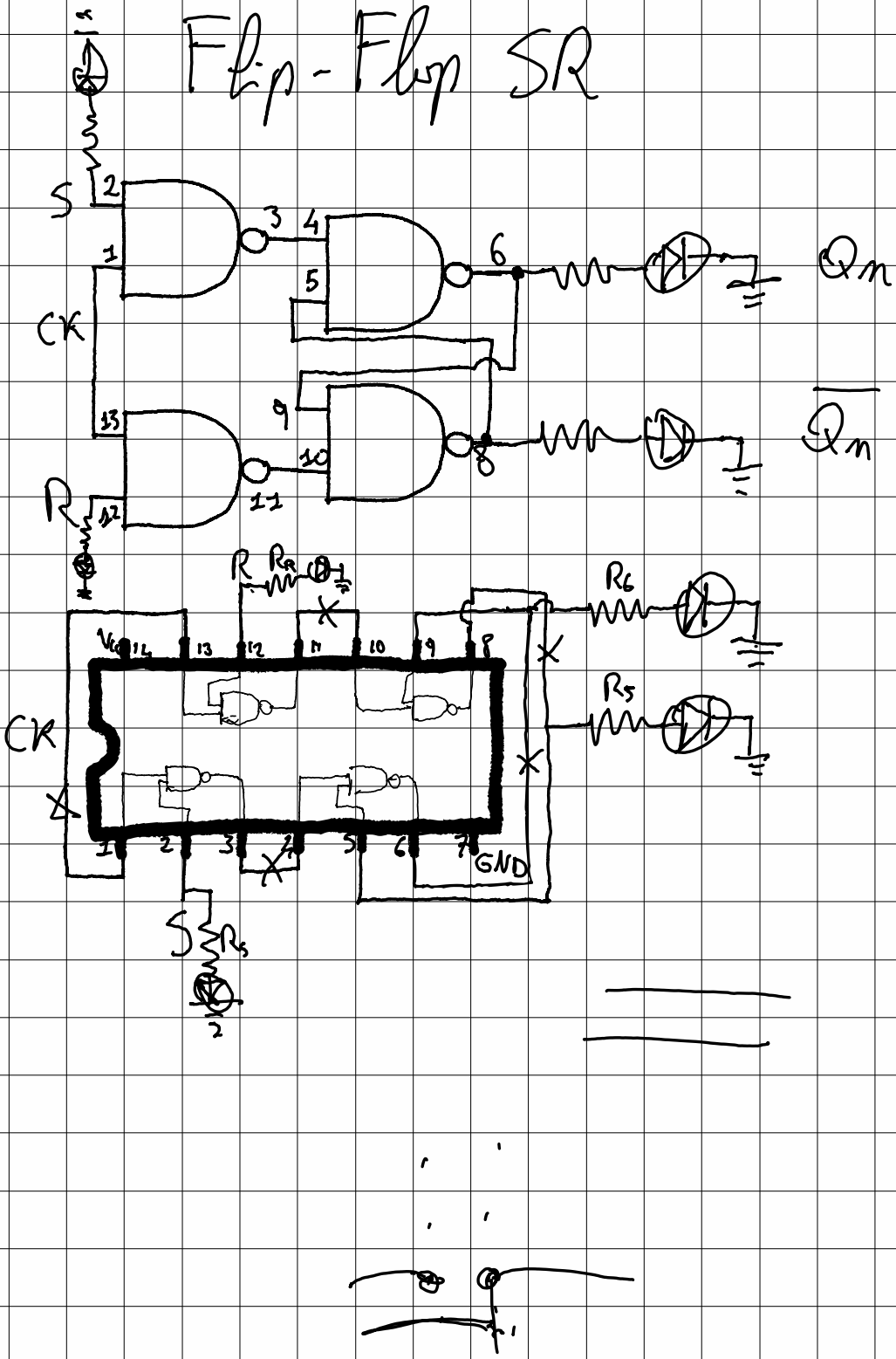
Scope_6 e 7 hanno A = 5V

Scope_8 ha A = 0V

V_A	V_B	V_o
2.34mV	3.61mV	127mV
601mV	5.12V	3.37V
5.10V	12.2mV	3.38V
5.1V	5.06V	151mV



Flip-Flop SR



S_n	R_n	Q_{n+1}
0	0	Q_n
0	1	0
1	0	1
1	1	?

ORDINE LED:
S; R; Q; $\bar{Q}$

Clock: 0V ; $S_n = 0$; $R_n = 0$; $Q_n = 0$

Clock -> 1 ; $Q_{n+1} = 0$

Clock: 0V $S_n = 0$; $R_n = 1$; $Q_n = 0$

Clock -> 1 ; $Q_{n+1} = 0$

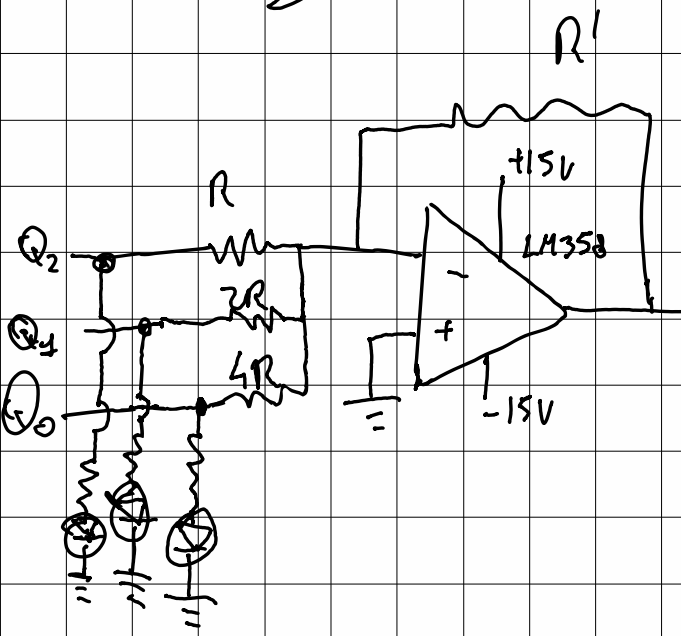
Clock: 0V ; $S_n = 1$; $R_n = 0$; $Q_n = 0$

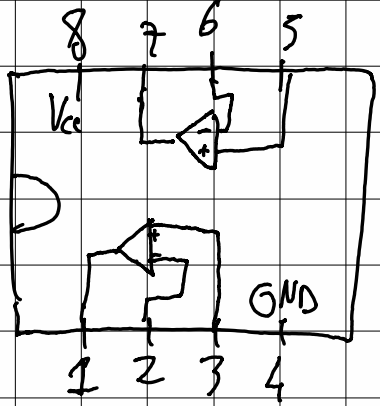
Clock -> 1 ; $Q_{n+1} =$

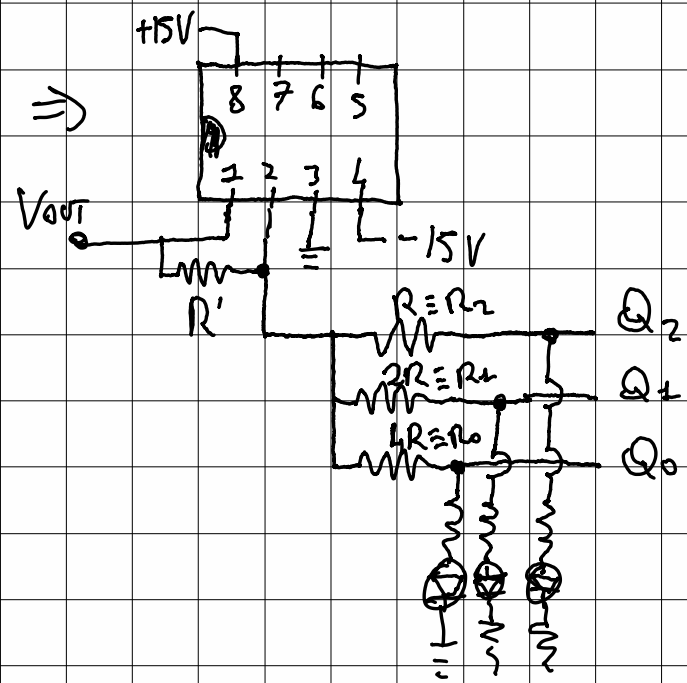
Scope_10 : Giallo = S_n Verde = Q_{n+1}

Scope_11 : " R_n "

DAC







$R_0 = 3126\,\Omega$

$R_1 = 2188\,\Omega$

$R_2 = 1008.6\,\Omega$

$R' = 1485\,\Omega$

$V_{CC} = 15.015V$

$GND = -15.007V$

Combinazioni:

A	B	C	Vout
0	0	0	
0	0	1	
0	1	0	
0	1	1	
1	0	0	
1	0	1	
1	1	0	
1	1	1	