MC542
Organização de Computadores

Aula 5
Registradores

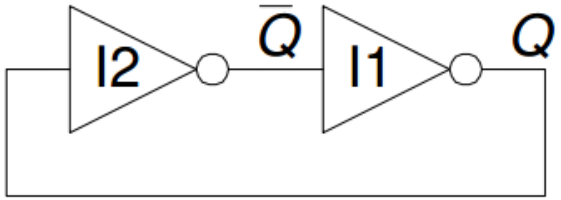
Professor: Rogério Drummond
PED: Bruno Bastos
Unicamp / 2012

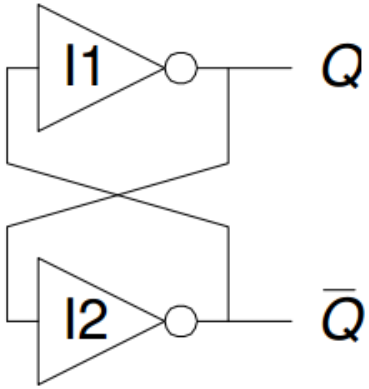
Tópicos

- Circuito bi-estável
- Latch
- Flip Flop

Circuito Bi-estável

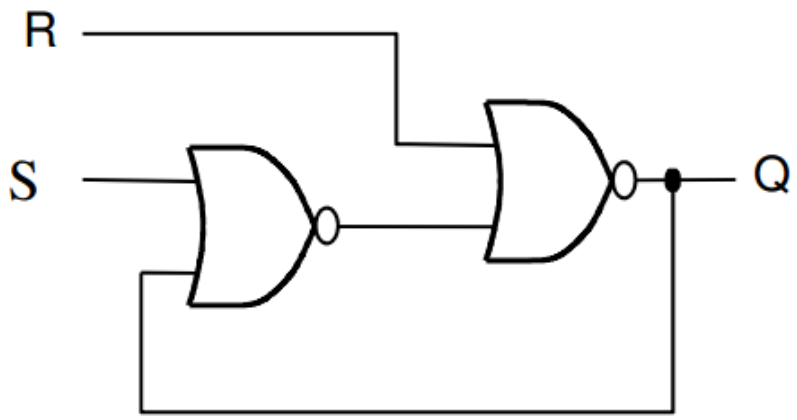
- Bloco Fundamental para a construção dos outros elementos de estado
- Duas saídas: Q, $\overline{Q}$
- Sem entradas.

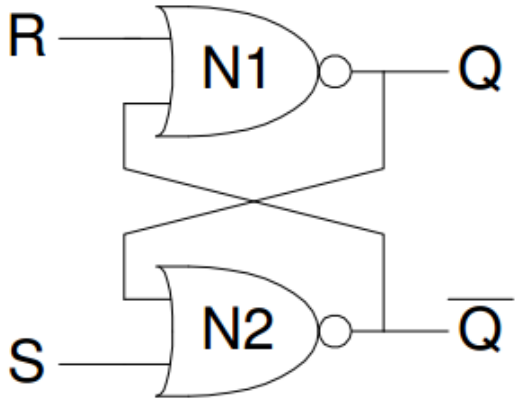




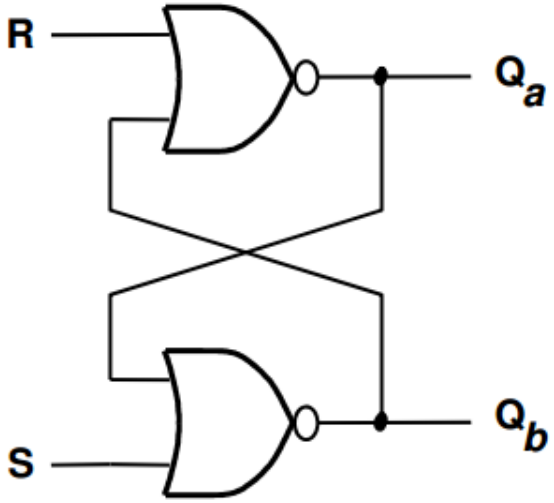
Latch RS

- Latch Set/Reset (Latch SR)
- Definições
  - Set: Saída igual a 1
  - Reset: saída igual a 0
- Quando a entrada set, *S*, é 1 (e *R* = 0), *Q* = 1
- Quando a entrada reset, *R*, é 1 (e *S* = 0), *Q* = 0



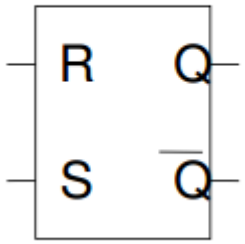


Latch RS



S	R	Q_a	Q_b	
0	0	0/1	1/0	(no change)
0	1	0	1	
1	0	1	0	
1	1	0	0	

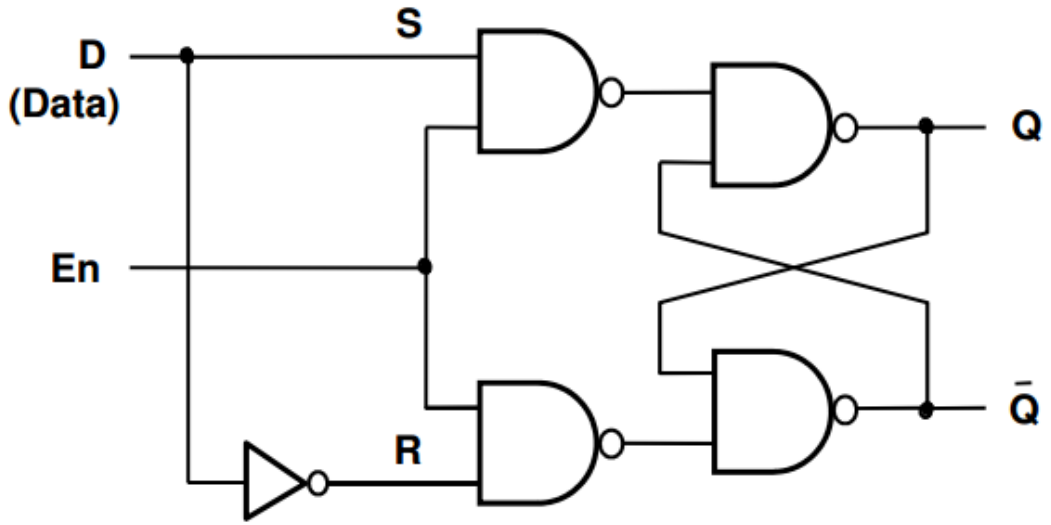
Latch SR



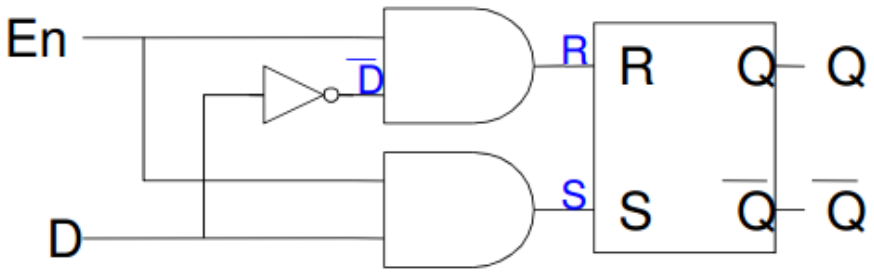
Exercício

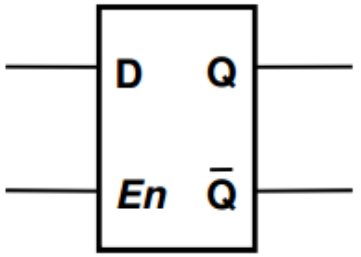
Desenhe o diagrama de tempo do Latch SR.

Latch D



En	D	Q(t + 1)
0	x	Q(t)
1	0	0
1	1	1

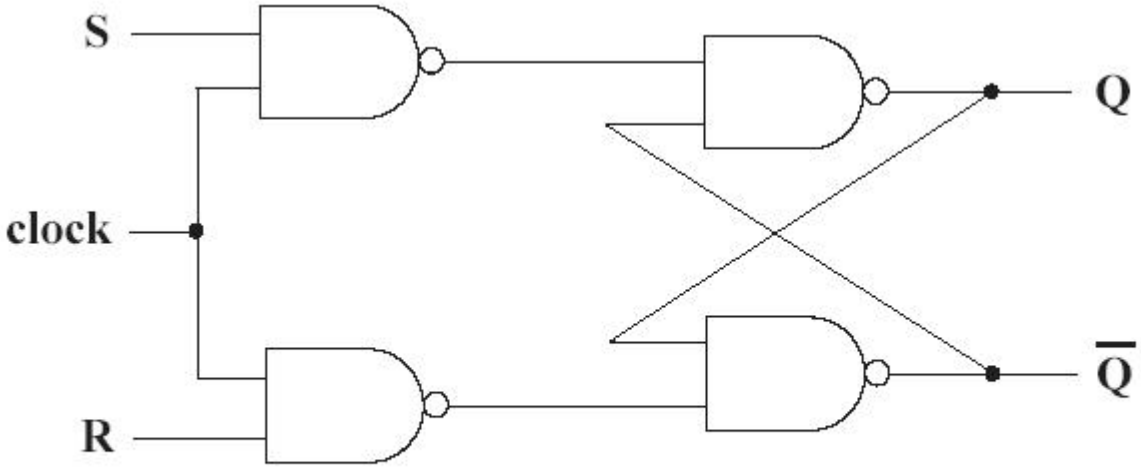


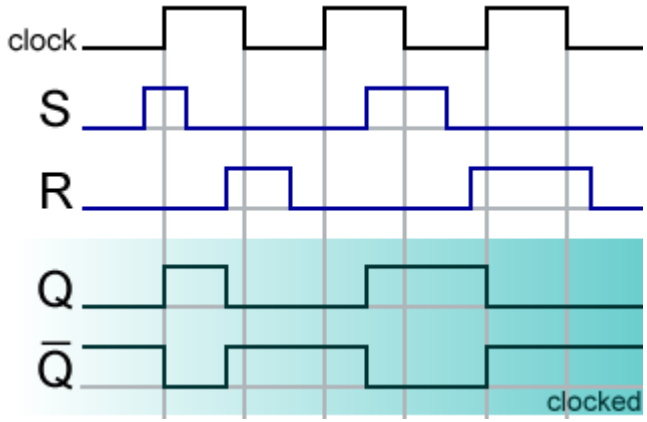


Exercício

Desenhe o diagrama de tempo do Latch D.

Flip Flop RS Síncrono

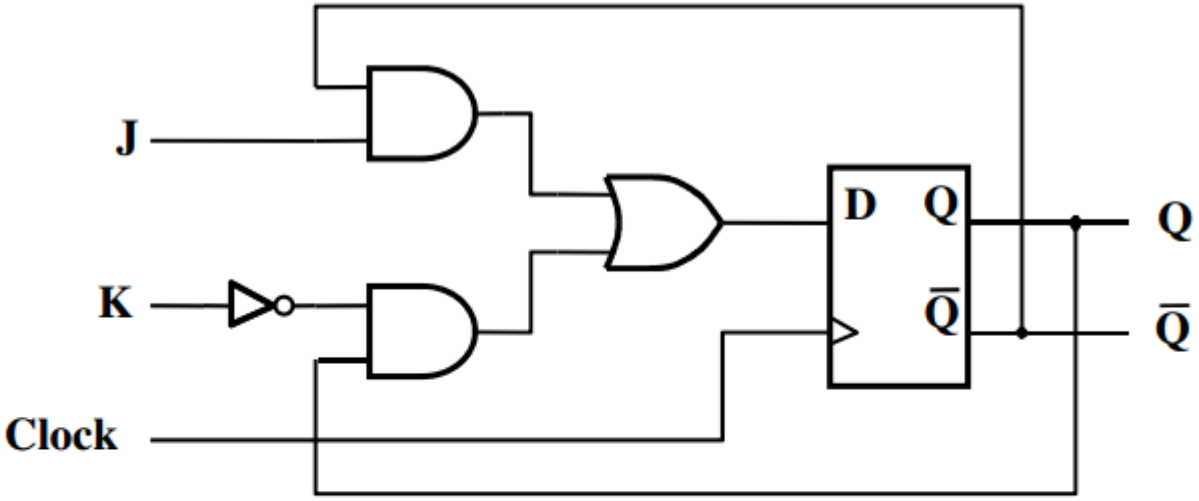




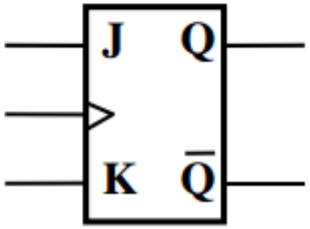
Exercício

Desenhe o diagrama de tempo do Flip Flop RS.

Flip Flop JK



J	K	Q(t+1)
0	0	Q(t)
0	1	0
1	0	1
1	1	Q̄(t)



Exercício

Desenhe o diagrama de tempo do Flip Flop JK.