

Subject:

Year. Month. Date.

تاریخ: ۱۳۹۷/۰۵/۰۵

(۱)

الف)

A	B	Q	Q'	Q ⁺
0	0	1	0	1
0	1	hold	0	0
1	0	0	1	0
1	1	hold	1	1

AB	00	01	11	10
0	1	0	0	0
1	1	1	1	0

$$Q^+ = QB + A'B'$$

ب)

AB	Q	Q'	Q ⁺
00	1	0	1
01	1	0	1
10	hold	hold	0
11	NA	NA	X

AB	00	01	11	10
0	1	1	X	0
1	1	1	X	1

$$Q^+ = Q + A'$$

الف)

AB	Q	Q ⁺
00	1	NA
01	1	NA
10	1	NA
11	1	NA

ب)

A	B	Q	Q ⁺
0	0	1	1
0	1	1	NA
1	0	1	NA
1	1	1	NA

(۲)

ج)

S	R	Q	Q ⁺
0	0	1	hold
0	1	1	0
1	0	1	1
1	1	1	NA

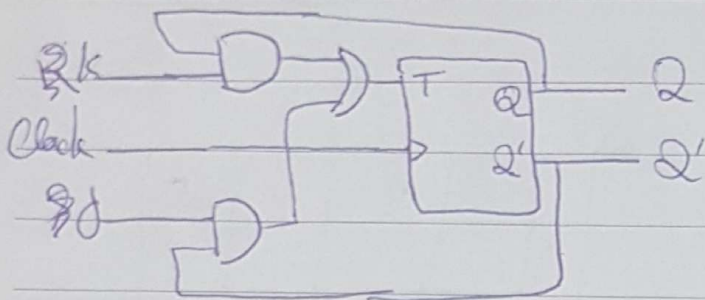
S-R latch

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And با این می توانیم
و این را می توانیم

$\delta k Q$	00	01	11	10
0	0	0	1	0
1	1	0	1	1

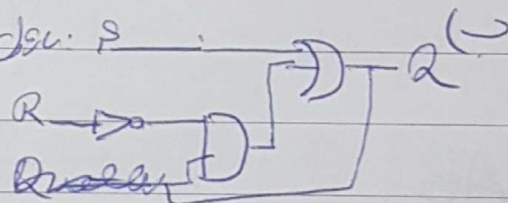
$$T = \delta Q' + k Q$$

S	R	Q	Q ⁺
0	0	$\begin{smallmatrix} 1 \\ 0 \end{smallmatrix}$	$\begin{smallmatrix} 1 \\ 0 \end{smallmatrix}$ hold
0	1	$\begin{smallmatrix} 1 \\ 1 \end{smallmatrix}$	$\begin{smallmatrix} 1 \\ 0 \end{smallmatrix}$ reset
1	0	$\begin{smallmatrix} 1 \\ 1 \end{smallmatrix}$	$\begin{smallmatrix} 1 \\ 1 \end{smallmatrix}$ set
1	1	$\begin{smallmatrix} 1 \\ 1 \end{smallmatrix}$	$\begin{smallmatrix} 1 \\ 0 \end{smallmatrix}$ reset

Q^{SR}	00	01	11	10
0	0	0	0	1
1	1	1	0	1

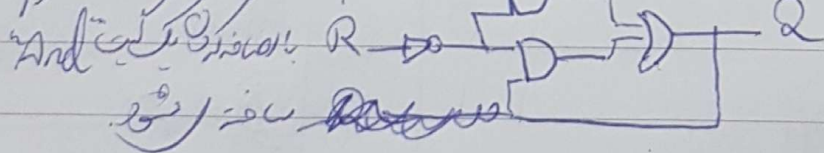
$$Q^+ = SR' + QR'$$

SR latch: $Q^+ = \cancel{SR} + R'Q \Rightarrow$ dec. S



reset dominate

Flip Flop

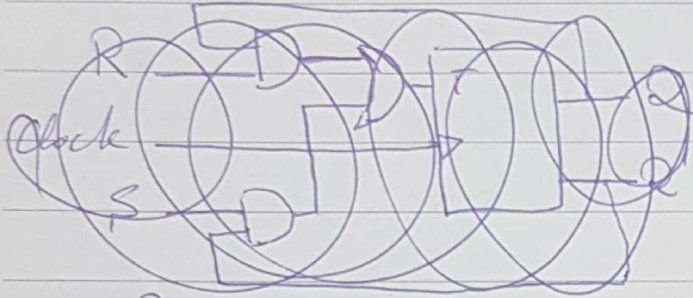


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SR flip-flop truth table:

S	R	Q	Q'	T	S'	R'	T'	Q _{out}
0	0	0	1	1	1	0	0	1
0	1	0	1	0	0	1	1	0
1	0	1	0	1	0	0	0	1
1	1	1	0	0	1	1	1	0
1	1	NA	NA	1	0	0	1	1



D flip-flop truth table:

D	Q	Q'
0	0	1
1	1	0

S = D

D flip-flop truth table:

D	Q	Q'
0	x	1
1	0	0

R = D'

