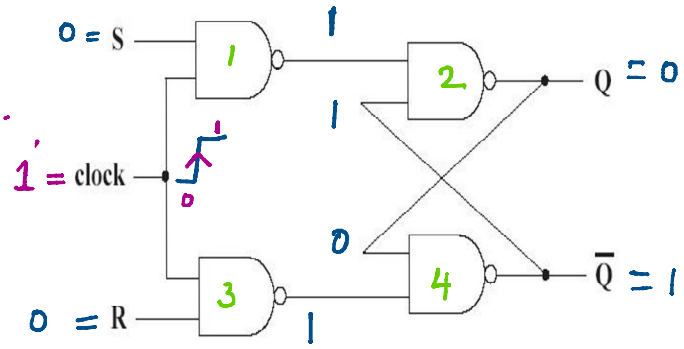
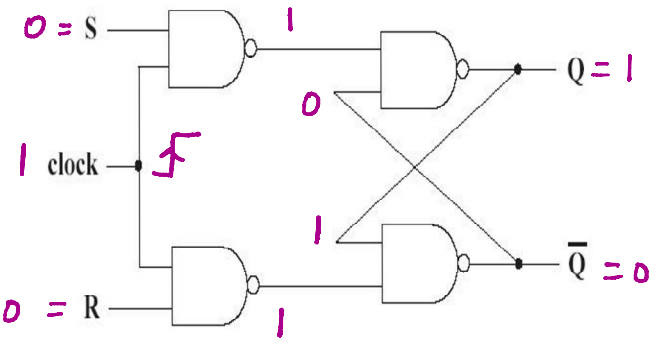
SR flip-flop

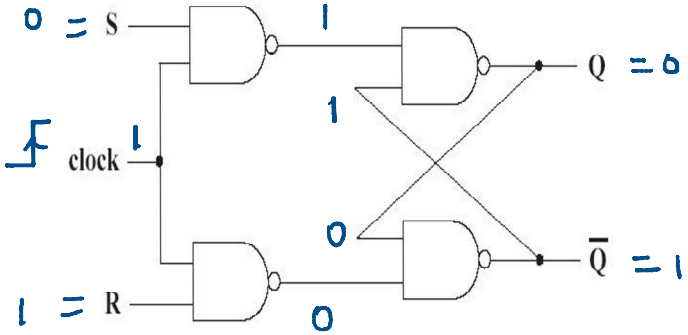


clock	S	R	Q	Q(t+1)
↓	0	0	0	0

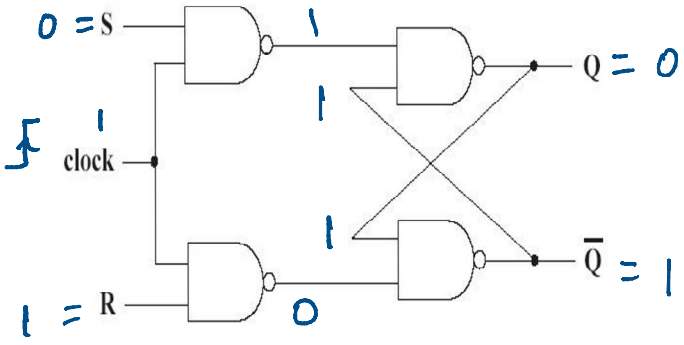


clock	S	R	Q	Q(t+1)
↓	0	0	1	1
↓			1	1

S	R	Q	Q(t+1)	State
0	0	0	0	No change
0	0	1	1	

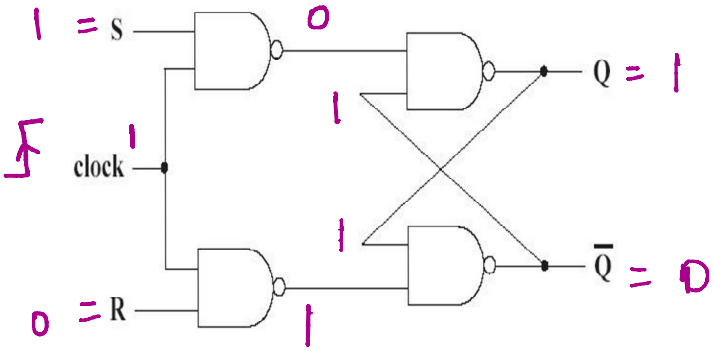


S	R	Q	Q(t+1)
0	1	0	0

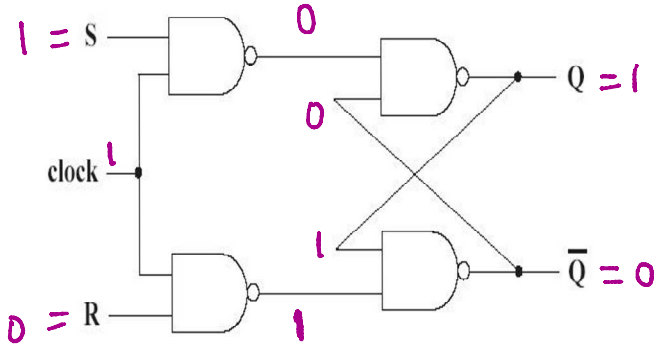


S	R	Q	Q(t+1)
0	1	1	0

S	R	Q	Q(t+1)	State
0	1	0	0	Reset
0	1	1	0	

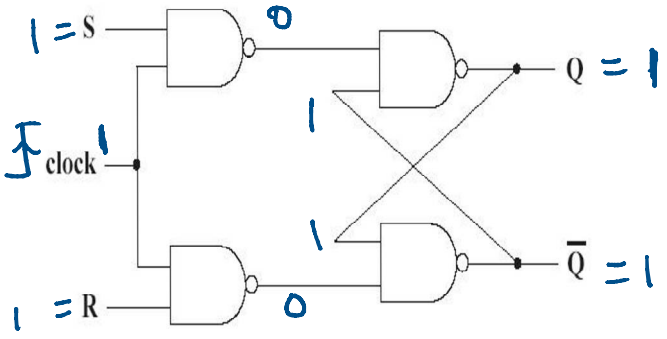


S	R	Q	Q(t+1)
1	0	0	1



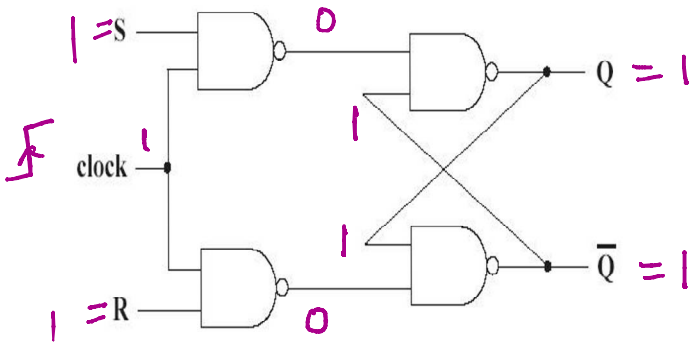
S	R	Q	Q(t+1)
1	0	1	1

S	R	Q	Q(t+1)	State
1	0	0	1	Set State
1	0	1	1	



$Q = \overline{Q} = 1$ → Not used state

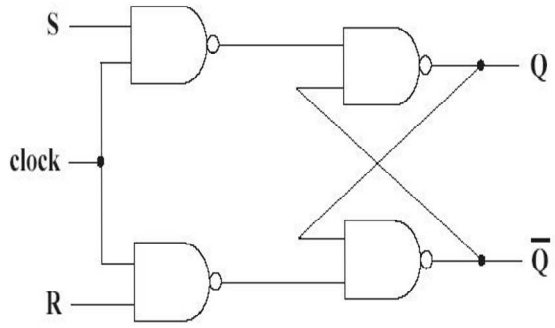
S	R	Q	Q(t+1)
1	1	0	X



$Q = \overline{Q} = 1$ → prohibited (or) not used state (X)

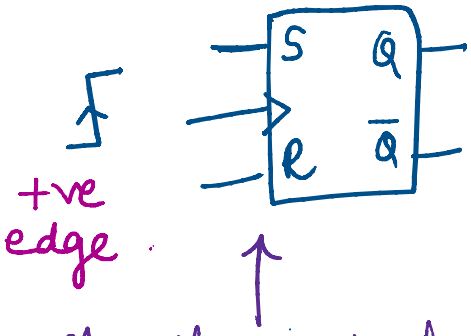
S	R	Q	Q(t+1)
1	1	1	X

S	R	Q	Q(t+1)	State
1	1	0	X	Not used
1	1	1	X	

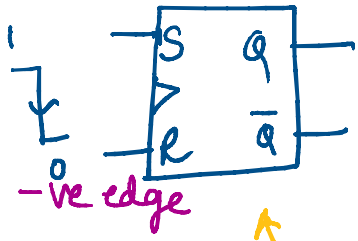


clock	S	R	Q	Q(t+1)	State
↓ = 0	0	0	0	0	No change
↓ = 0	0	0	1	1	
↓	1	0	0	0	
↓	1	0	1	1	
↓	0	1	0	0	
↓	0	1	1	1	
↓	1	1	0	0	
↓	1	1	1	1	

+ve edge triggered SR flip flop



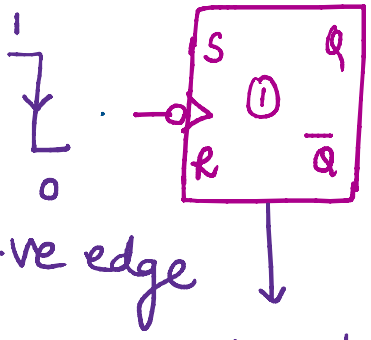
flip flop will change its state according to i/p by applying +ve edge triggering



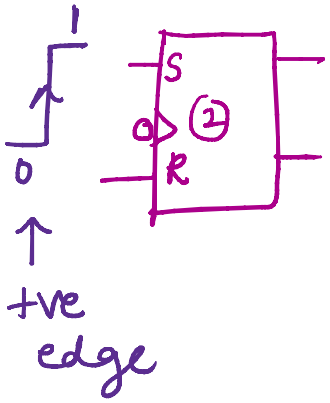
NO change state

Because of -ve edg pulse flip flop will have no change state

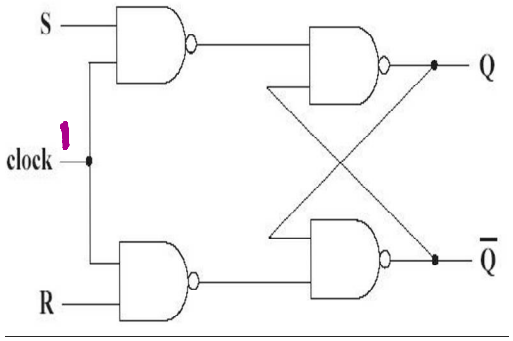
-ve edge triggered SR flip flop



Flip flop will changes its state according to i/p

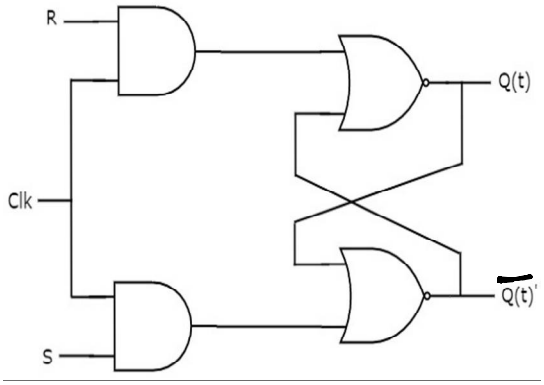


No change

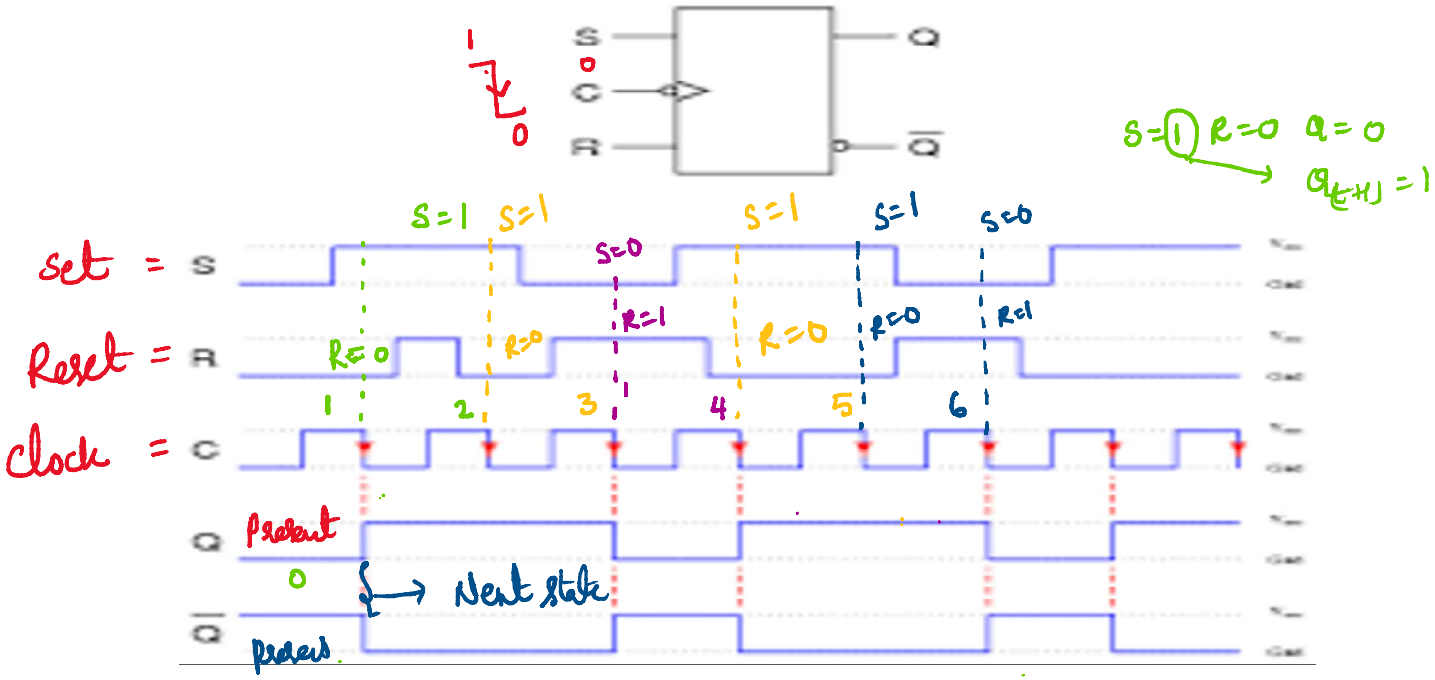


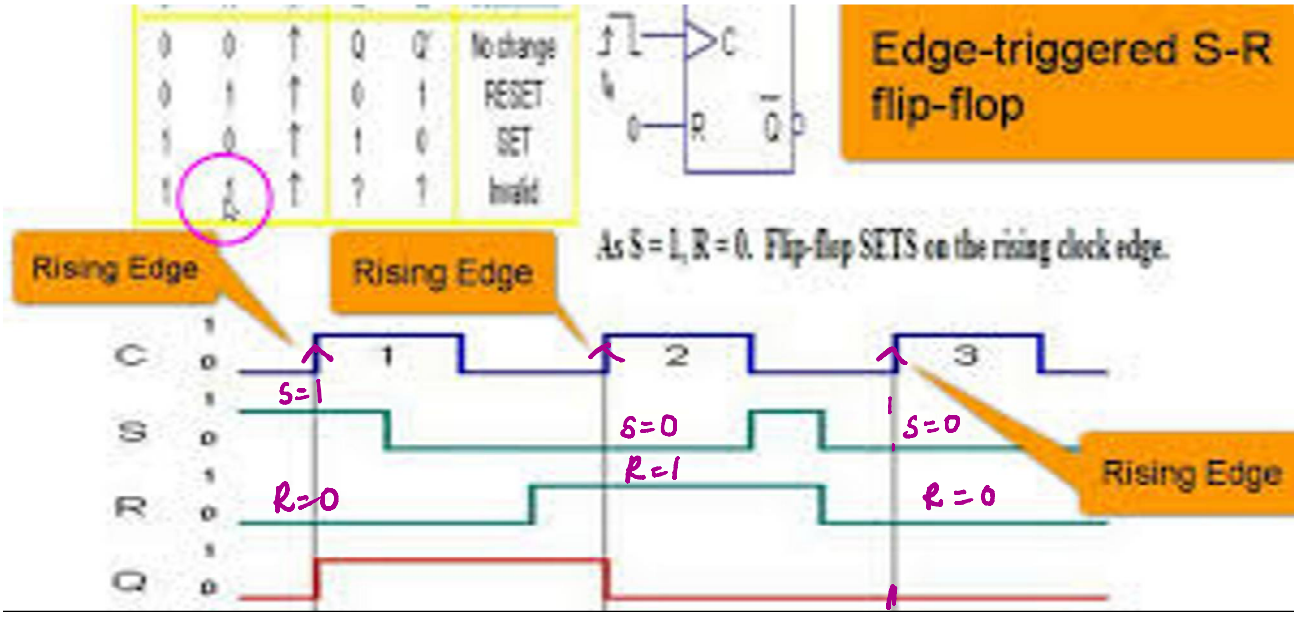
clock	S	R	Q	Q(t+1)	State
↓	x	x	0	0	No change
↓	x	x	1	1	
↑	0	0	0	0	No change
↑	0	0	1	1	
↑	0	1	0	0	Reset
↑	0	1	1	0	
↑	1	0	0	1	set state
↑	1	0	1	1	
↑	1	1	0	x	Not used (or prohibited)
↑	1	1	0	x	

SR flip flop



clock	S	R	Q(t)	Q(t+1)	State
↓ =0	x	x	x	No change	
↑	0	0	0	0	No change
↑	0	0	1	1	
↑	0	1	0	0	Reset
↑	0	1	1	0	
↑	1	0	0	1	set
↑	1	0	1	1	
↑	1	1	0	x	Not used
↑	1	1	1	x	


S
C
R
Q
Q̄
S=1 R=0 Q=0
Q(t+1) = 1
set = S
Reset = R
clock = C
S=1
S=1
S=0
S=1
S=1
S=0
R=0
R=0
R=1
R=0
R=0
R=1
1
2
3
4
5
6
Present
0
Next state
Present


No change
RESET
SET
Invalid
Edge-triggered S-R flip-flop
As S = 1, R = 0, Flip-flop SETS on the rising clock edge.
Rising Edge
Rising Edge
Rising Edge
C
S
R
Q
1
2
3
S=1
S=0
R=1
R=0
S=0
R=0

SR flip flop with -ve edge triggered waveform