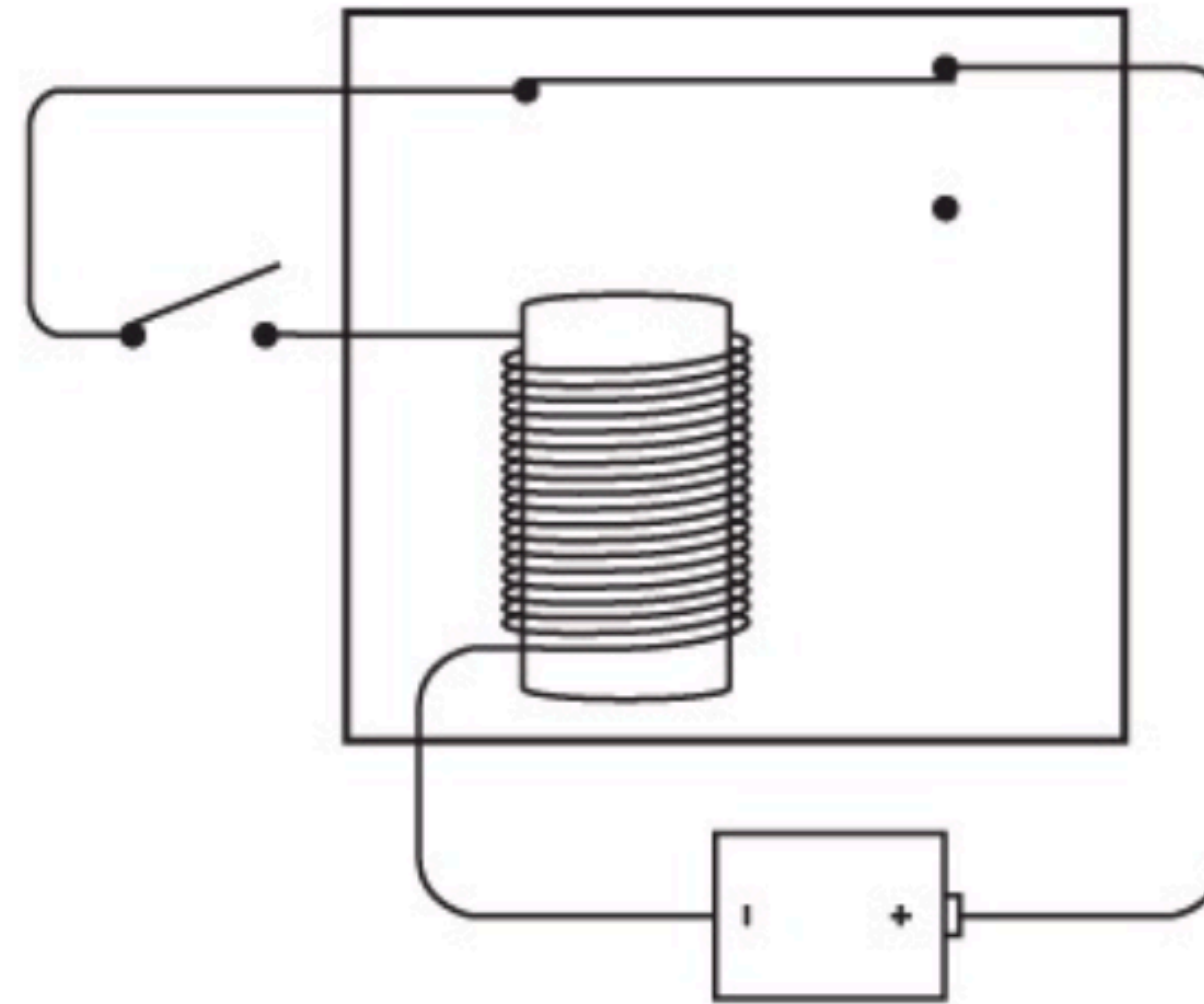


피드백과 플립플롭

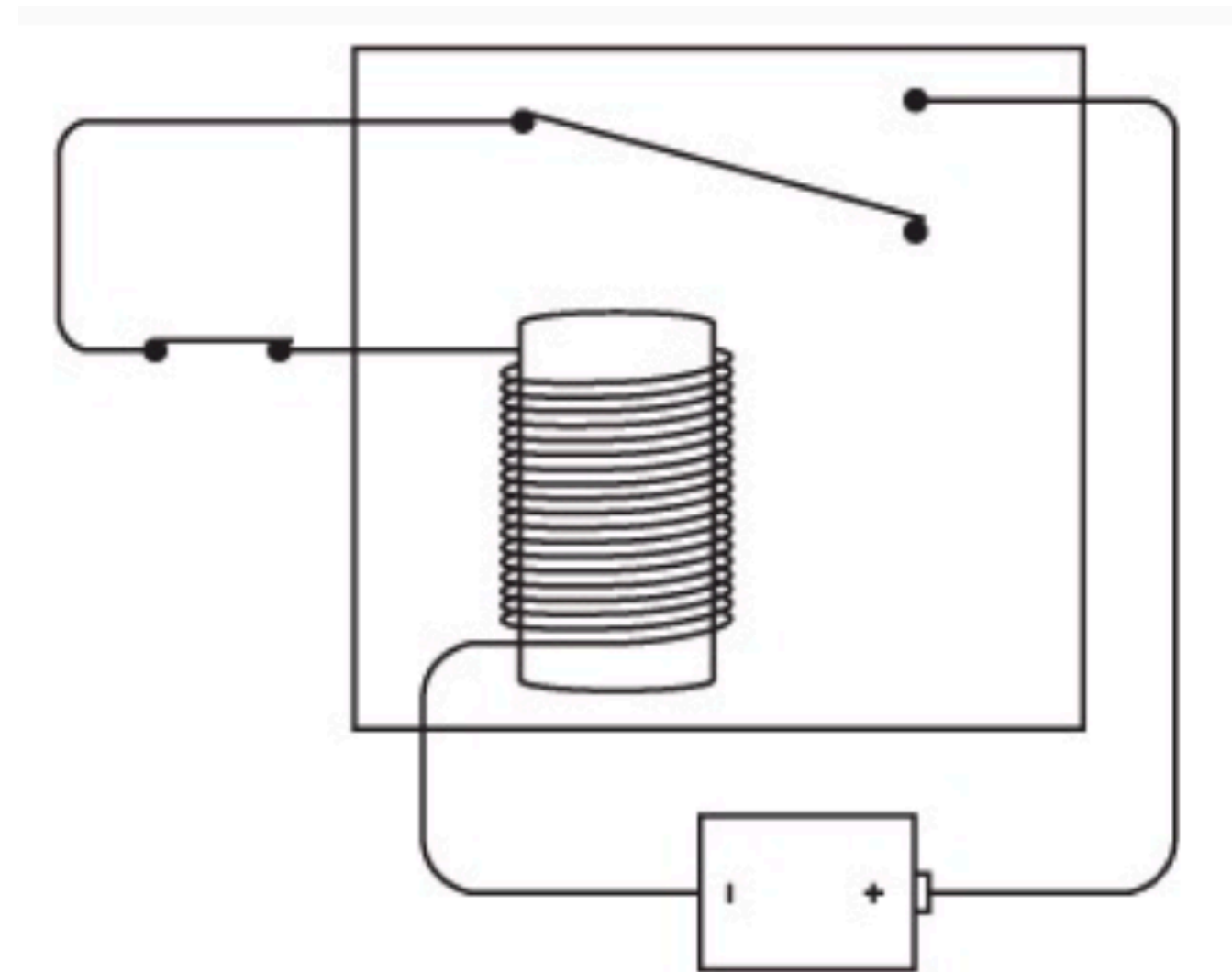
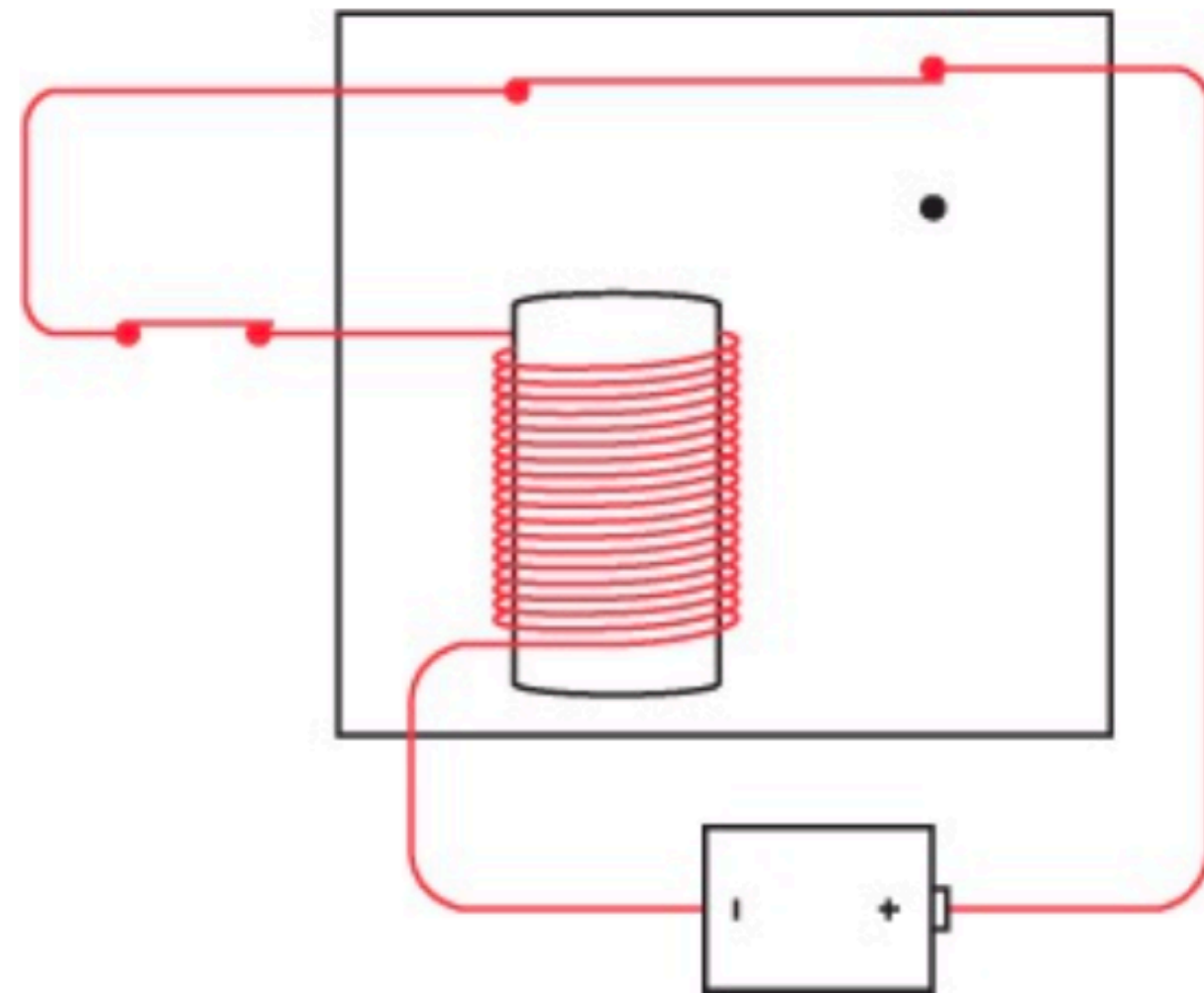
2023.07.16.일요일

오실레이터 Oscillator, 진동자



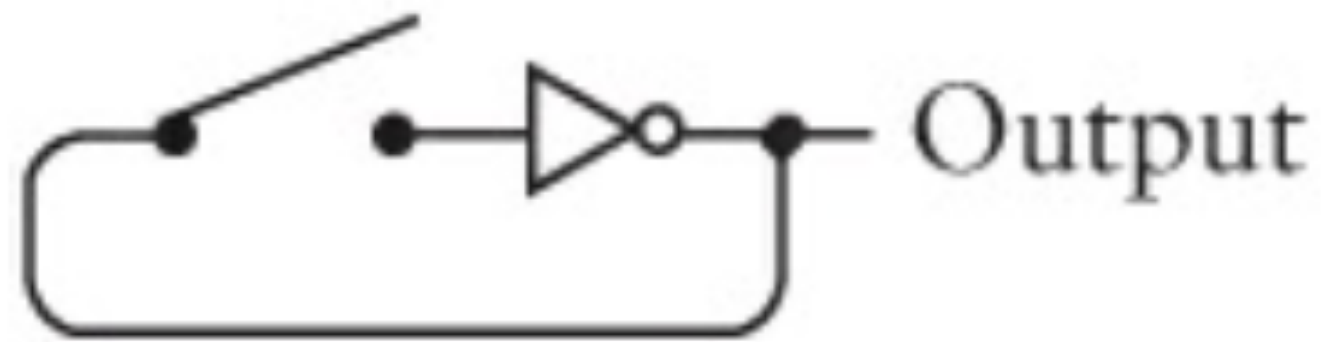
오실레이터 Oscillator, 진동자

Flip back



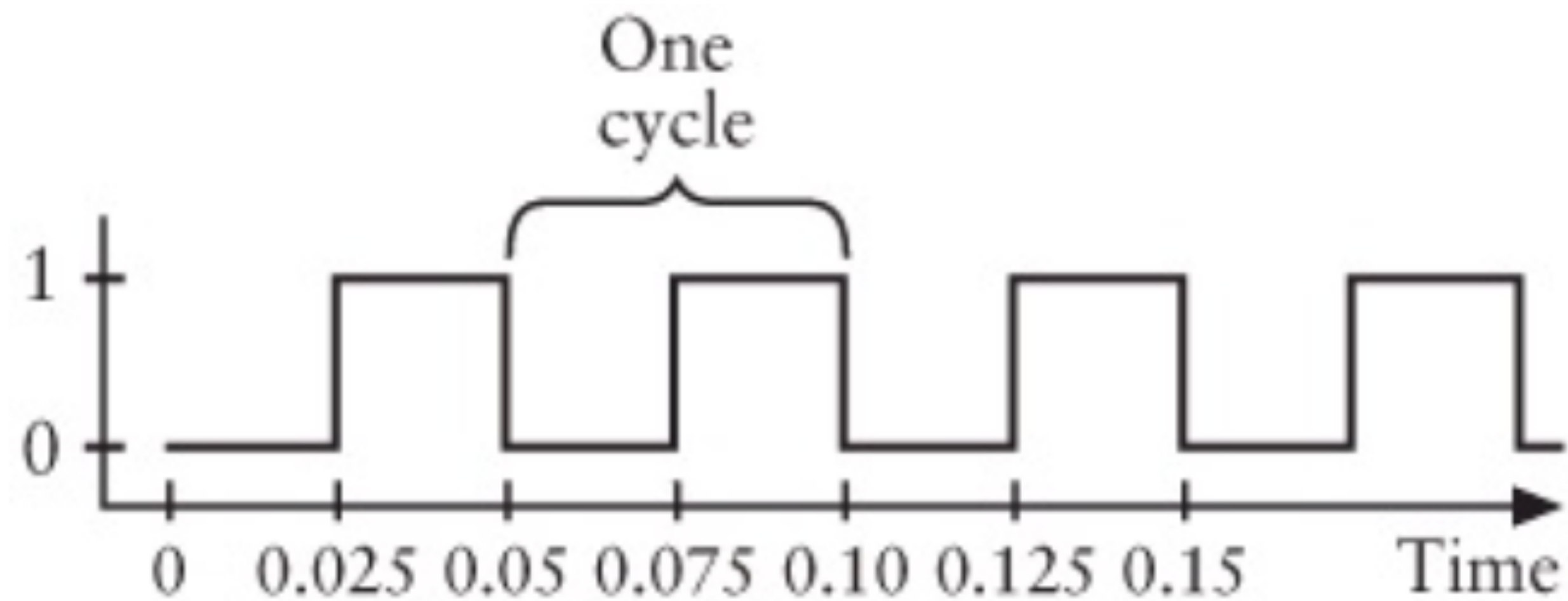
오실레이터 Oscillator, 진동자

인버터



오실레이터 Oscillator, 진동자

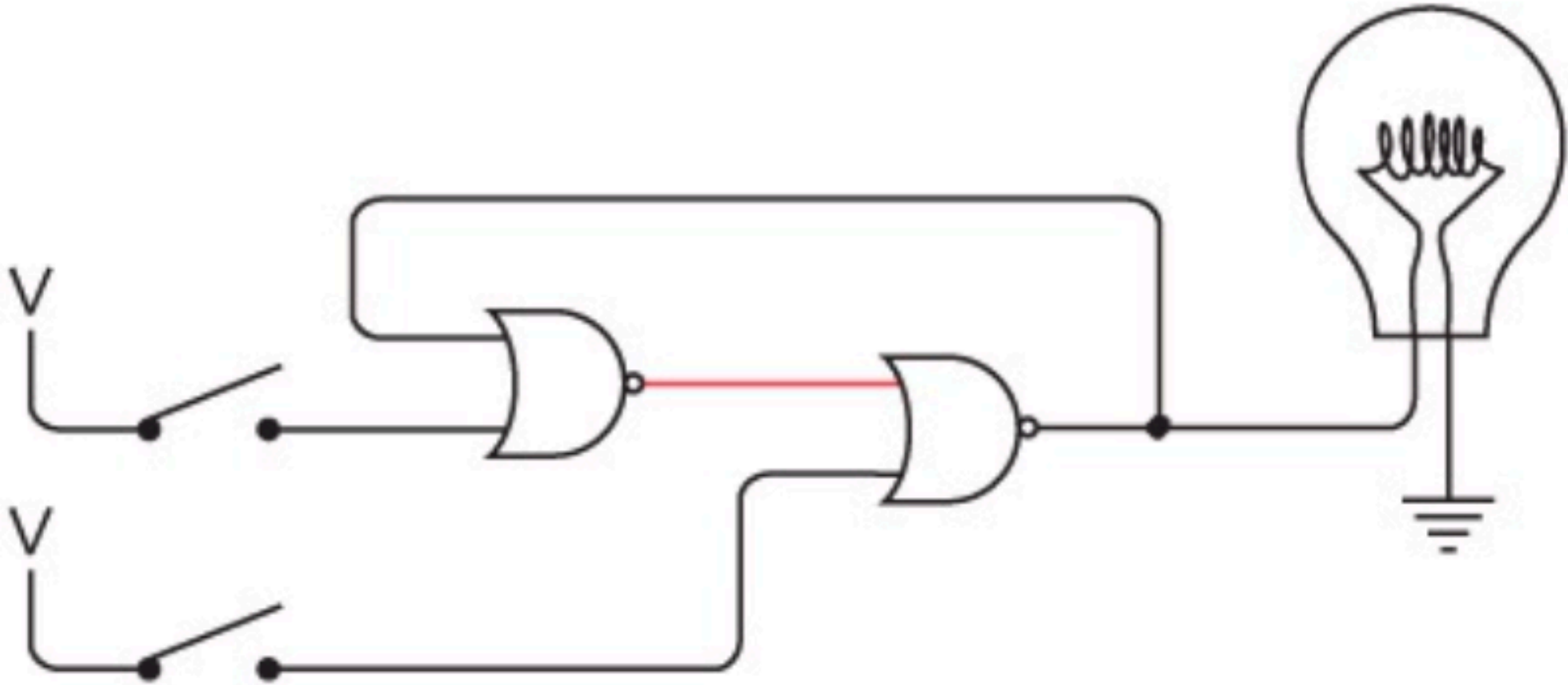
Clock, Period - Hz



플립 플롭 flip-flop

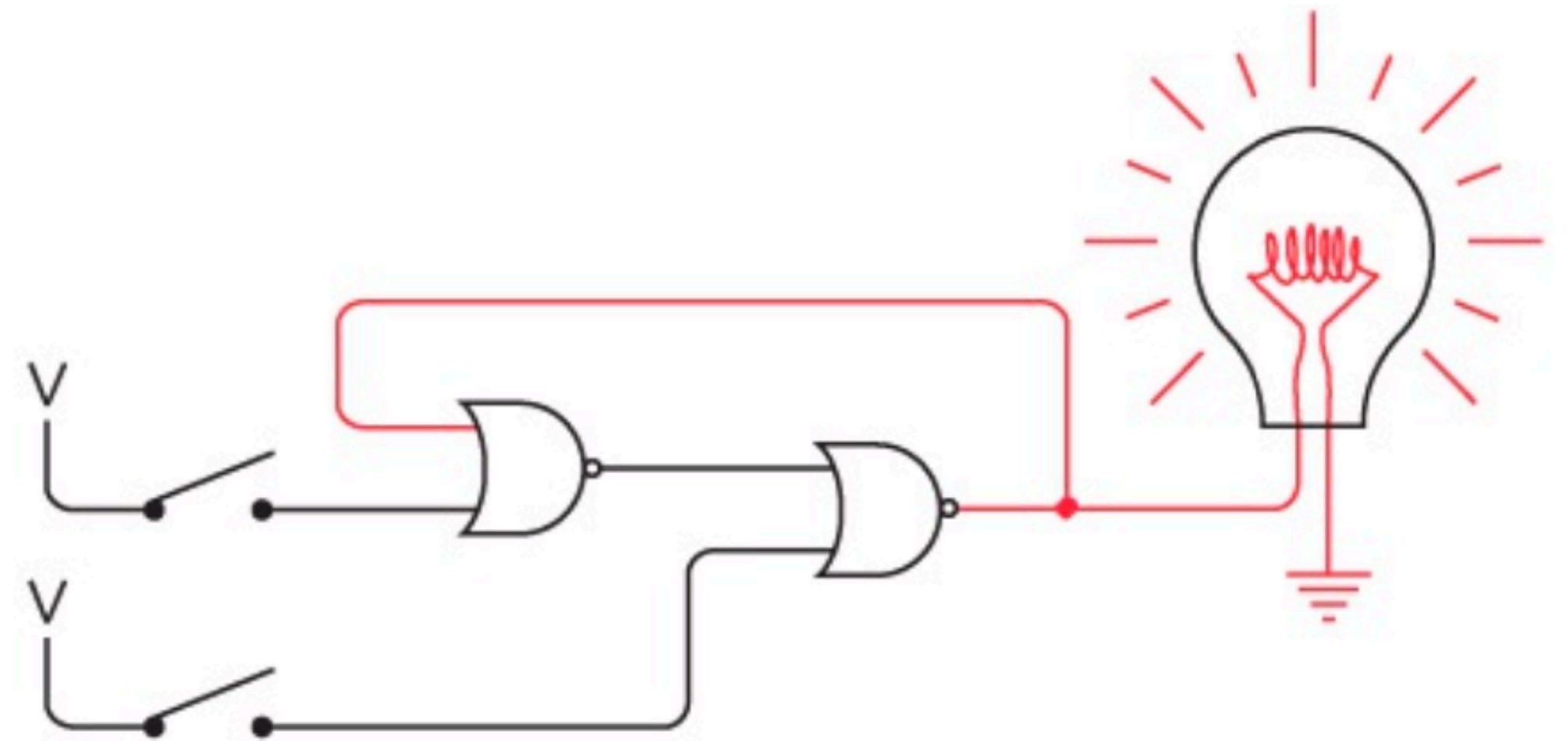
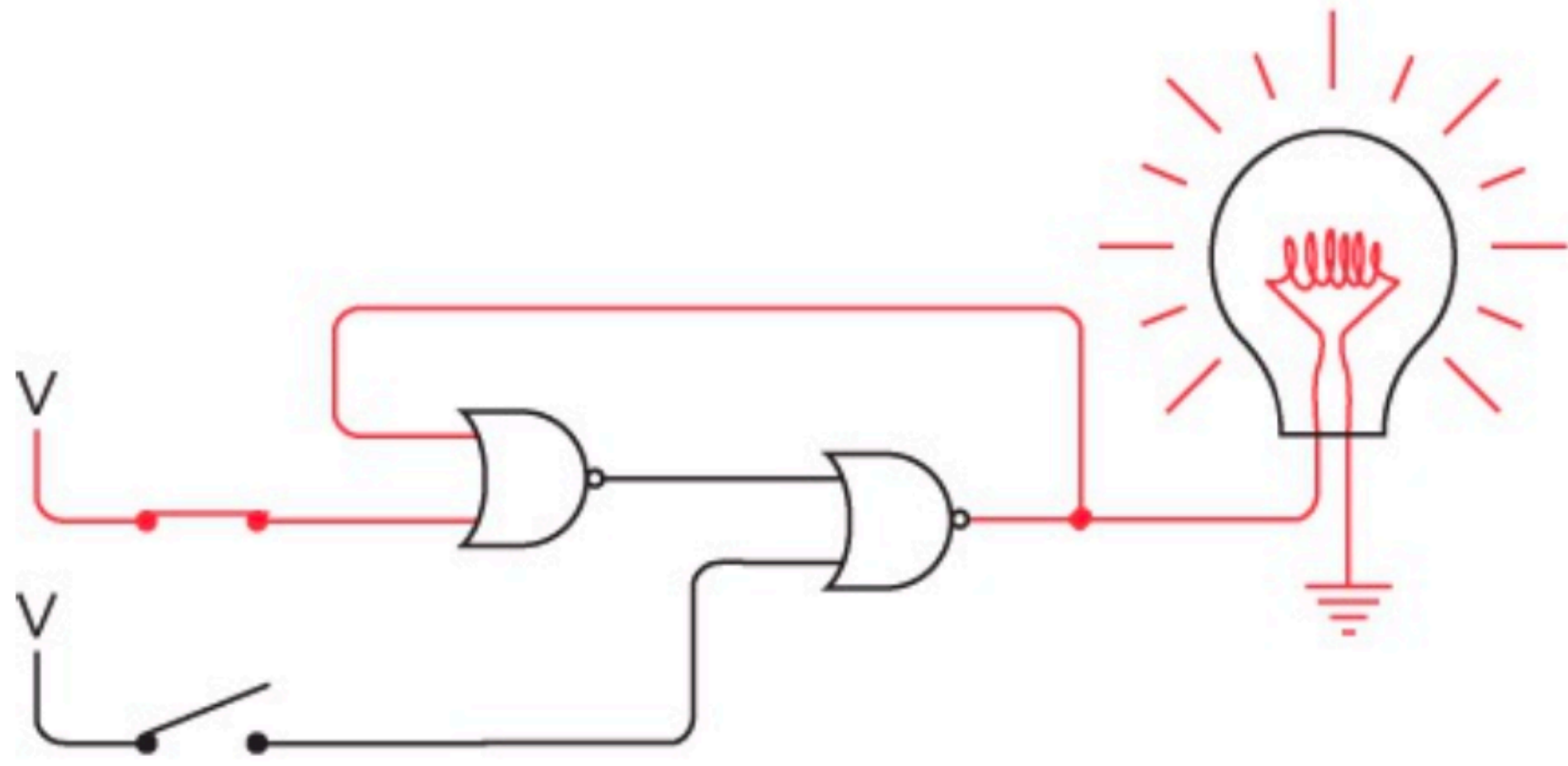
Feedback

Nor	0	1
0	1	0
1	0	0



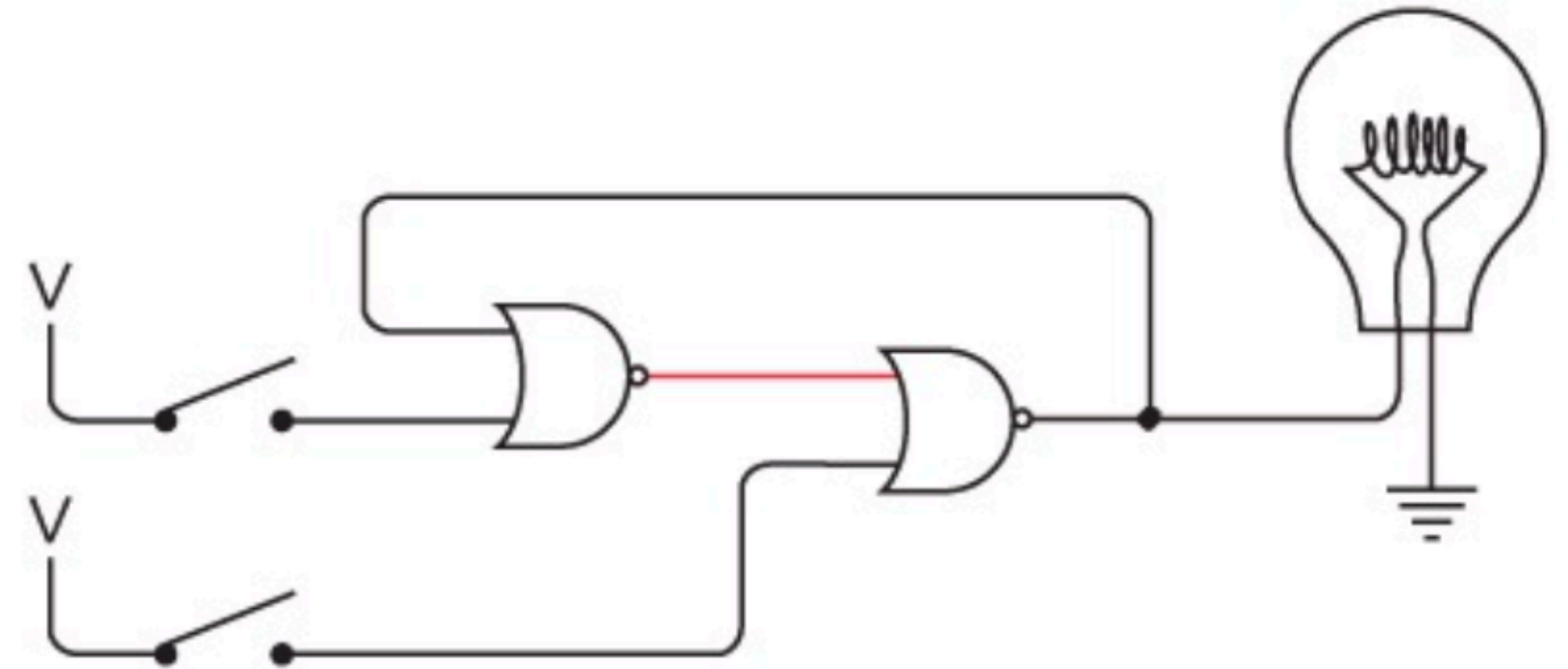
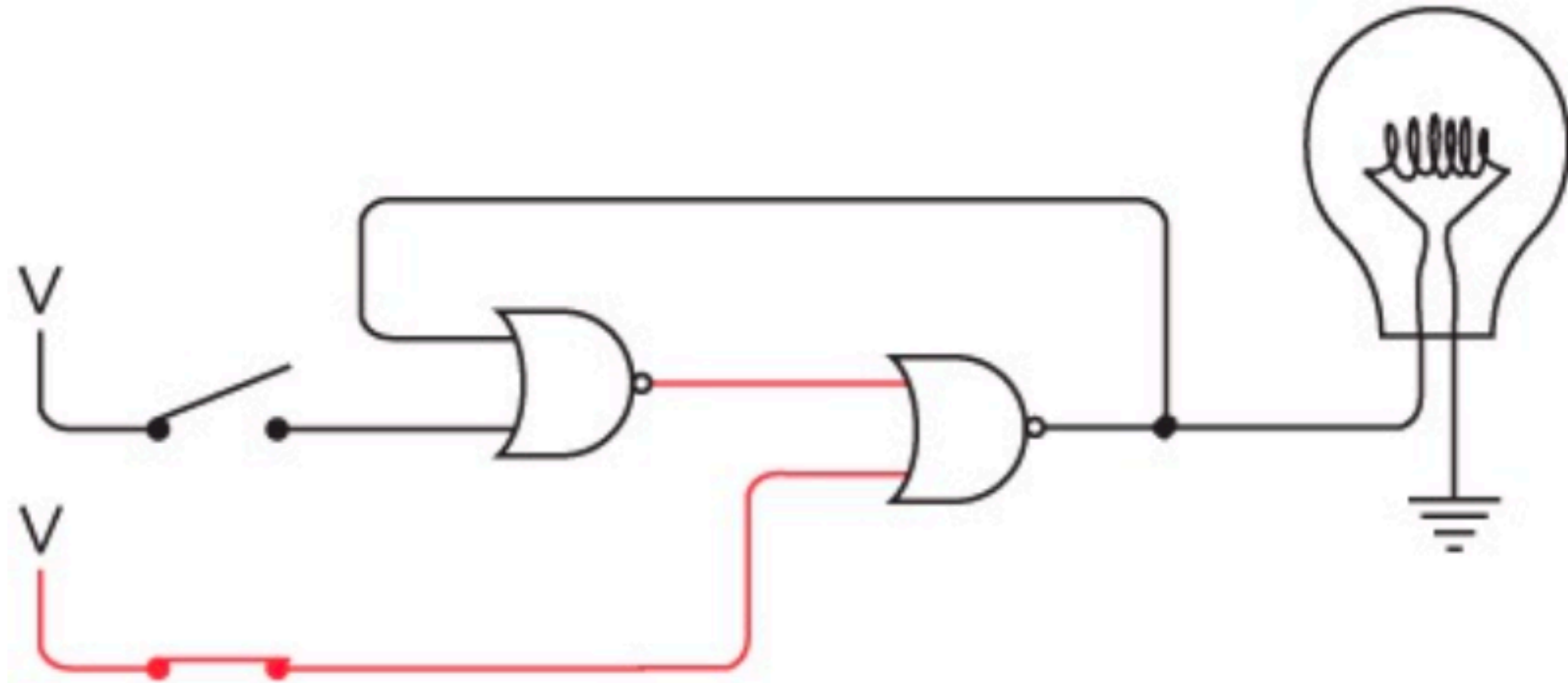
플립 플롭 flip-flop

위쪽이 닫힌 상태



플립 플롭 flip-flop

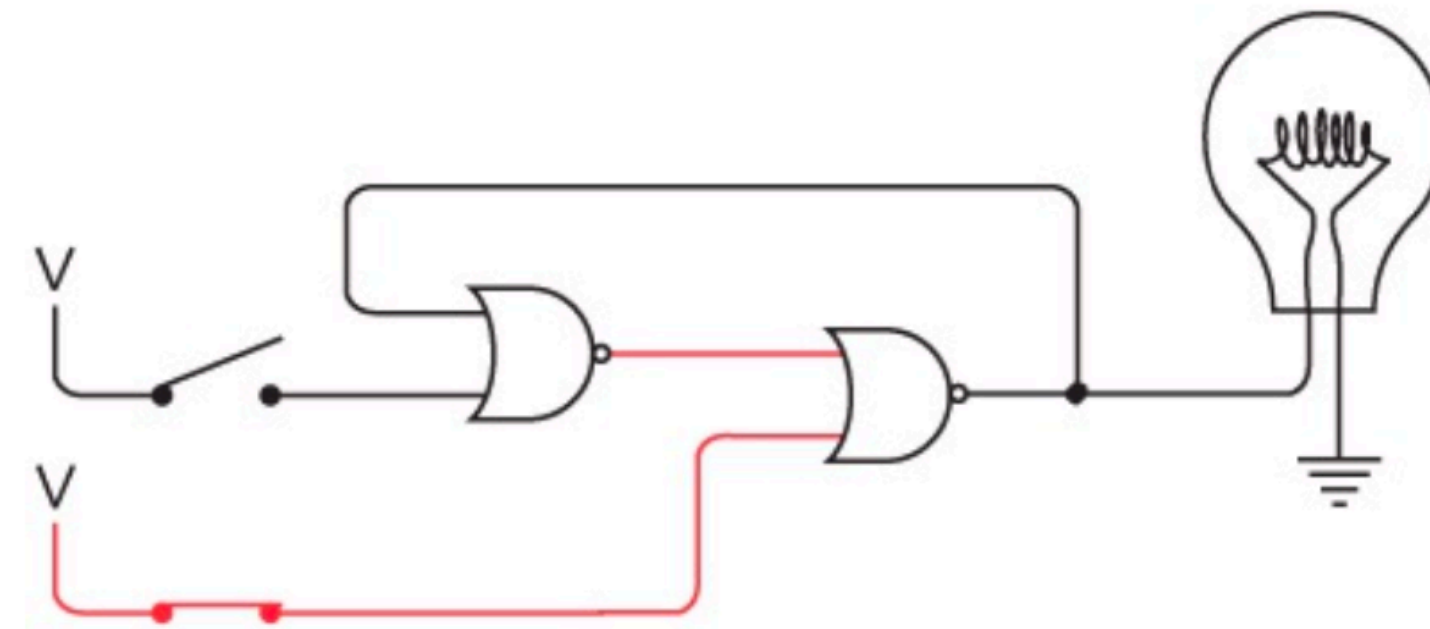
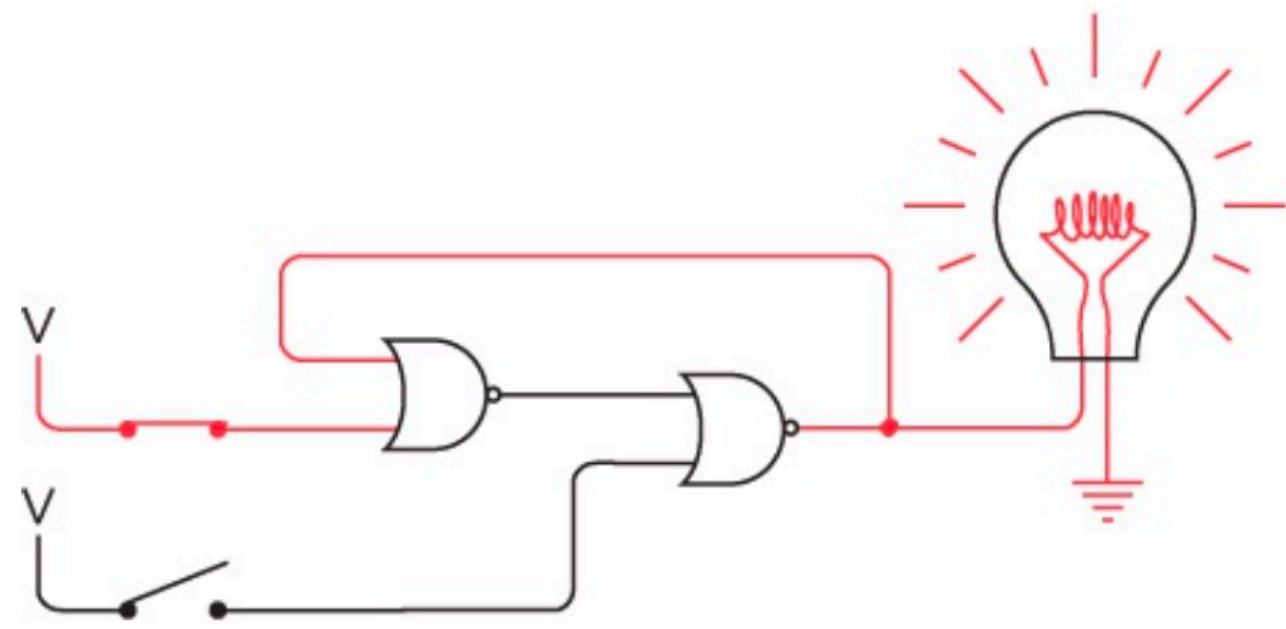
아래쪽이 닫힌 상태



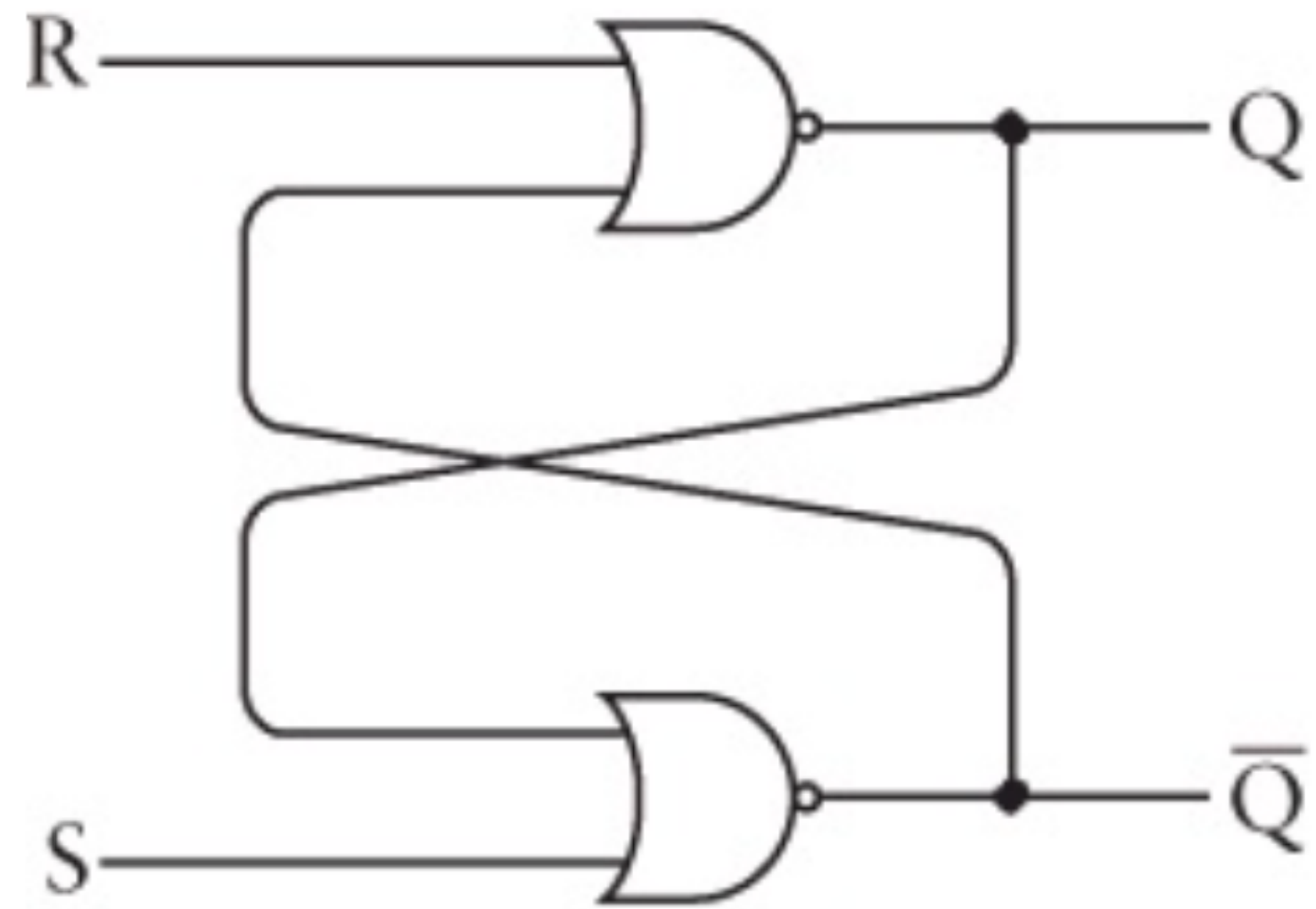
플립 플롭 flip-flop

요약

- 위쪽 스위치를 닫으면 전구가 켜지며,
그 이후에는 스위치가 열리더라도 그 상태(전구가 켜진 상태)를 유지하게 된다.
- 아래쪽 스위치를 닫으면 전구가 꺼지며,
그 이후에는 스위치가 열리더라도 그 상태(전구가 꺼진 상태)를 유지하게 된다.

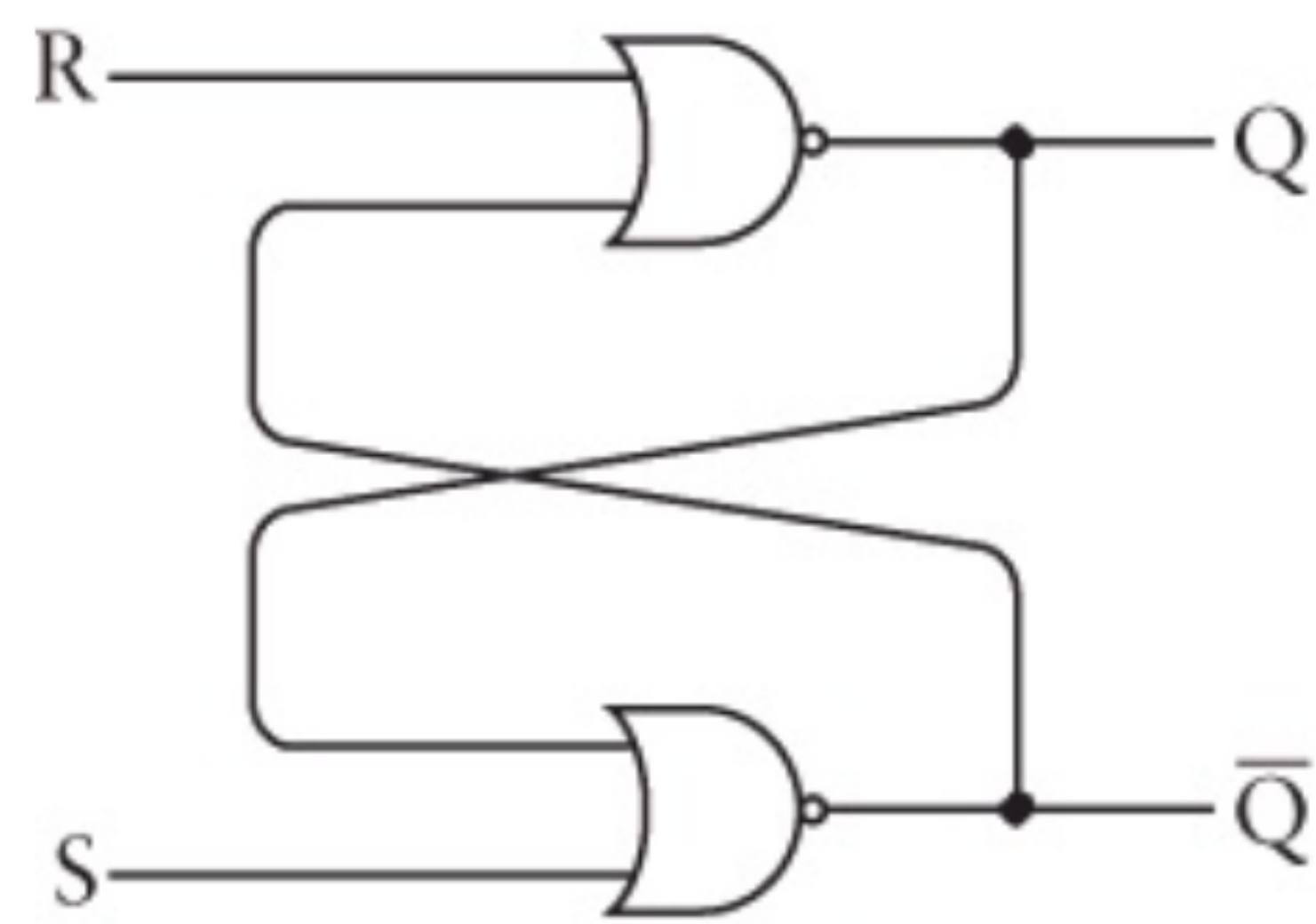


R-S 플립플롭



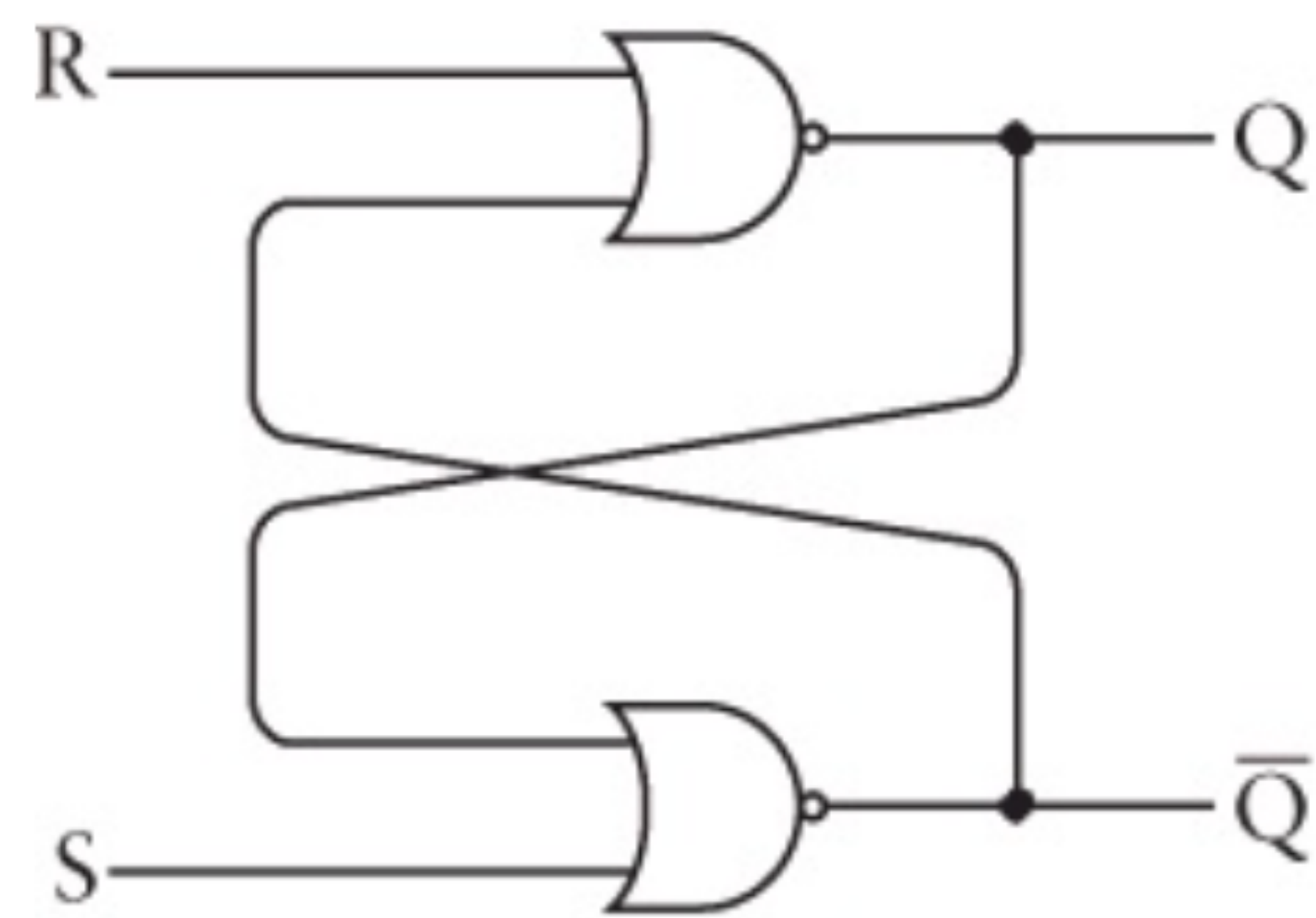
R-S 플립플롭

Inputs		Outputs	
S	R	Q	\bar{Q}
1	0	1	0
0	1	0	1
0	0	Q	\bar{Q}
1	1	Disallowed	



R-S 플립플롭

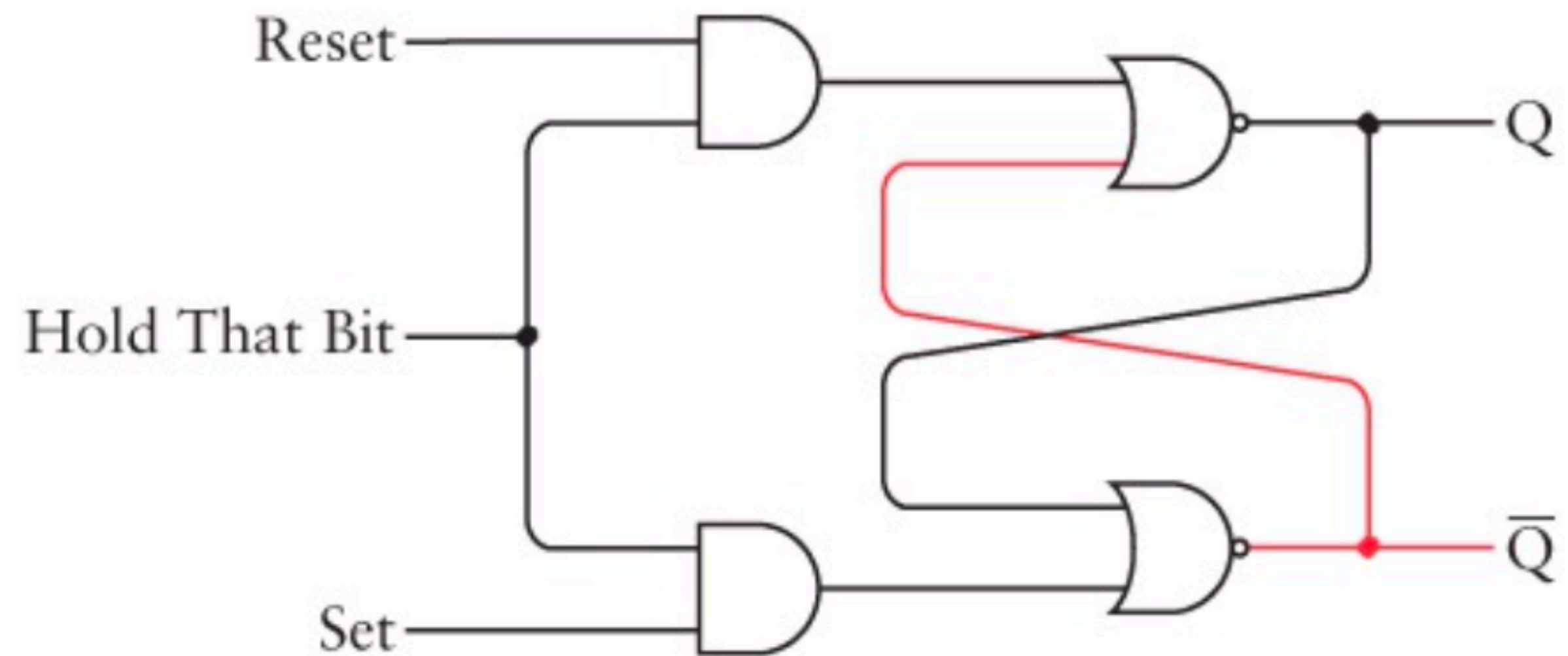
Inputs		Outputs	
S	R	Q	\bar{Q}
1	0	1	0
0	1	0	1
0	0	Q	\bar{Q}
1	1	Disallowed	



Level-triggered D-type 플립플롭

값 보존(Hold that Bit) 신호 0

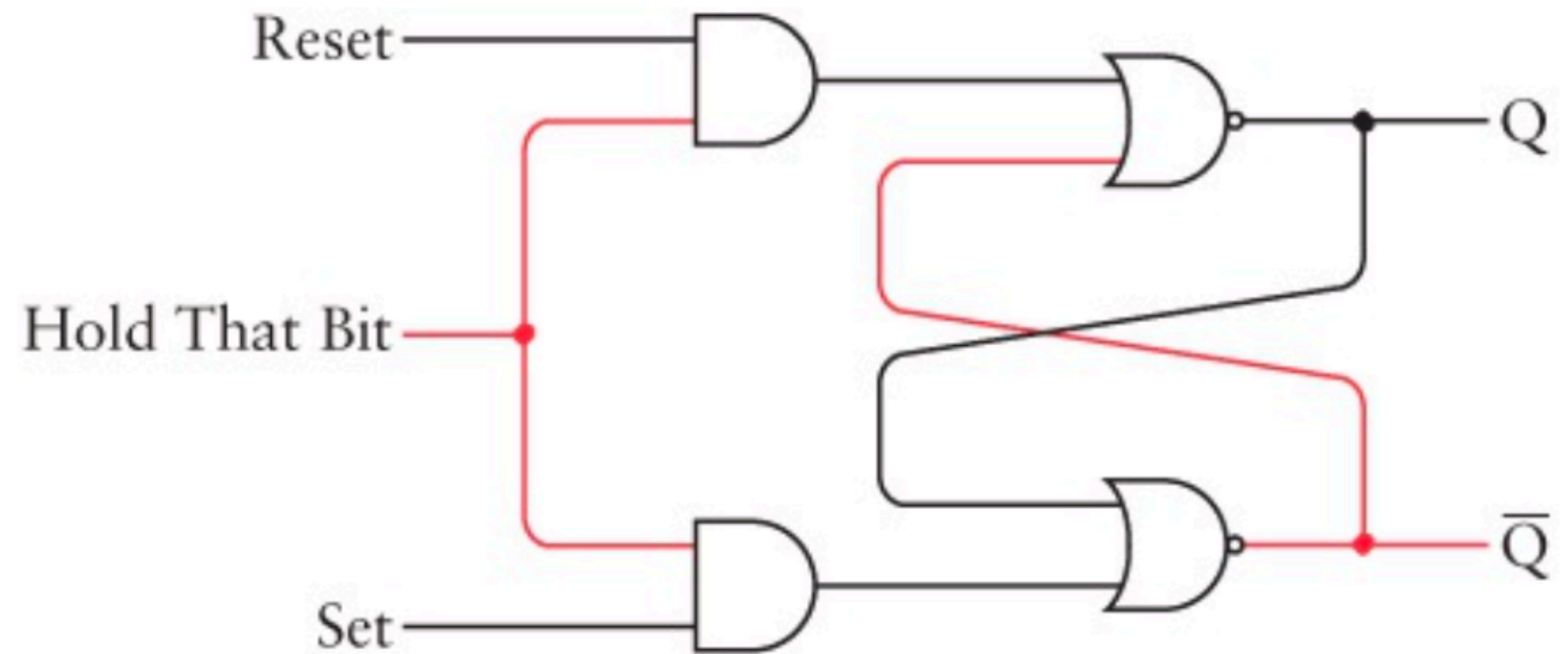
Inputs		Outputs
Data	Hold That Bit	Q
0	1	0
1	1	1
X	0	Q



Level-triggered D-type 플립플롭

값 보존(Hold that Bit) 신호 1

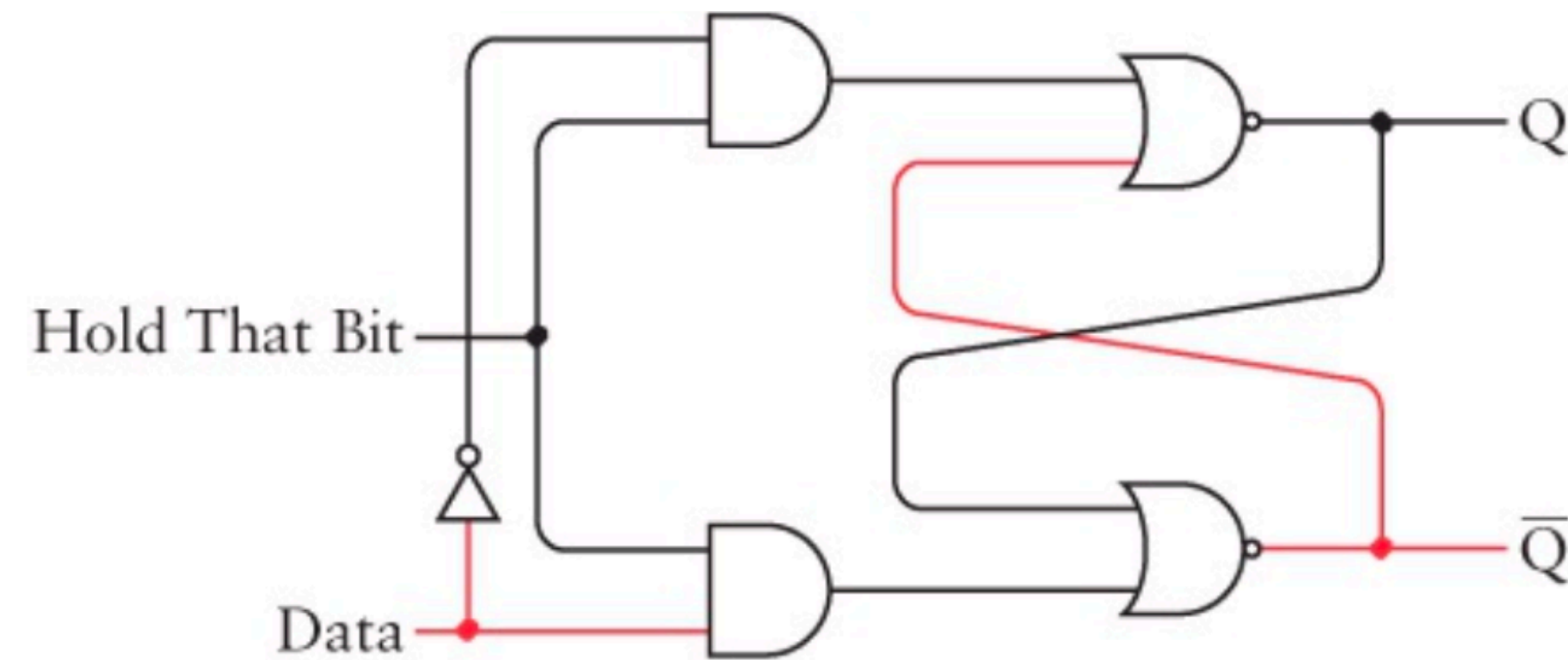
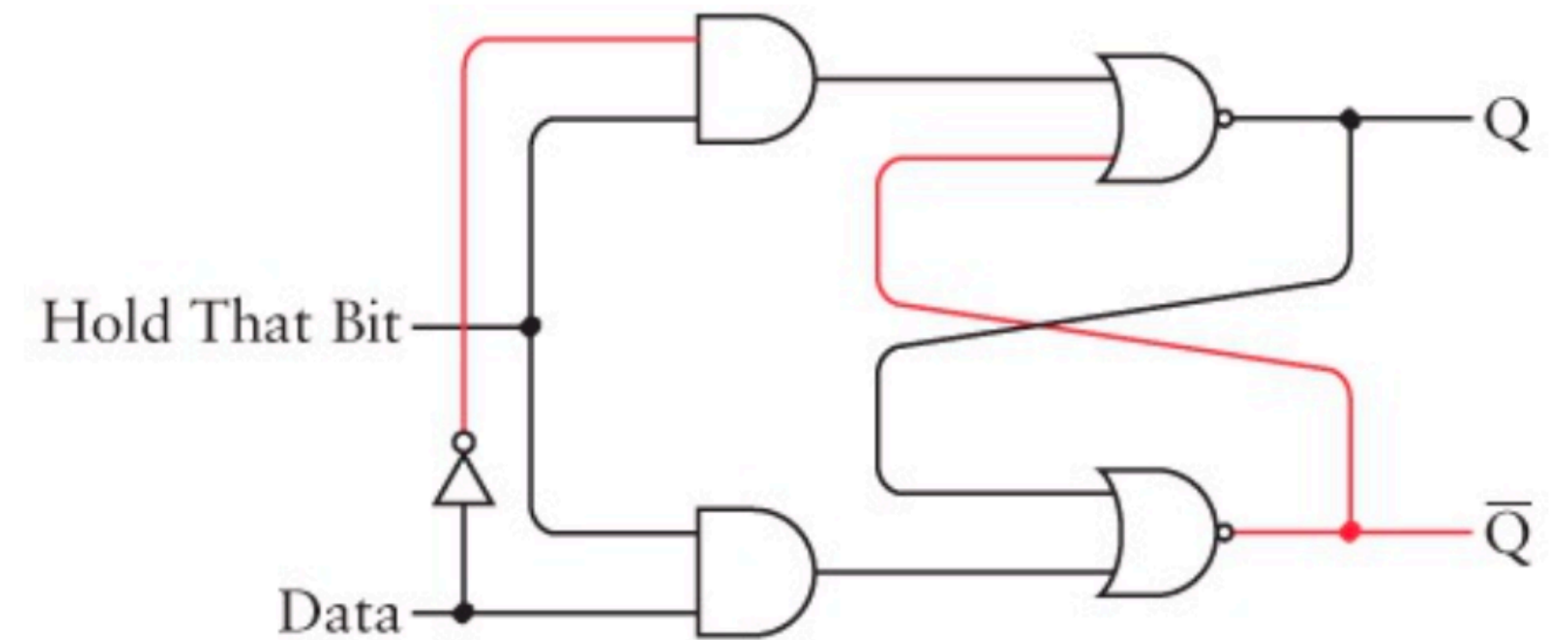
Inputs		Outputs
Data	Hold That Bit	Q
0	1	0
1	1	1
X	0	Q



Level-triggered D-type 플립플롭

Set 값을 invert - 두 입력 값 0

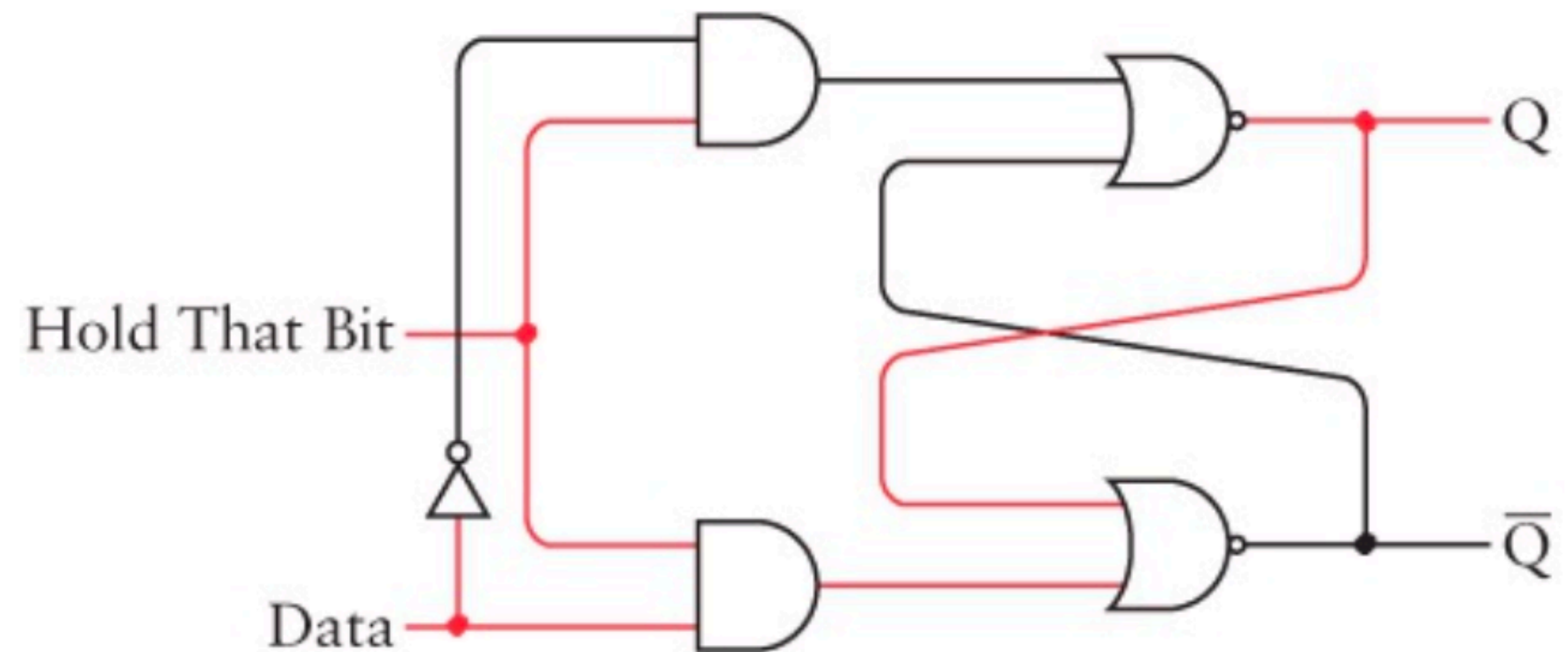
Inputs		Outputs
Data	Hold That Bit	Q
0	1	0
1	1	1
X	0	Q



Level-triggered D-type 플립플롭

Set 값을 invert - 값 보존 신호 1

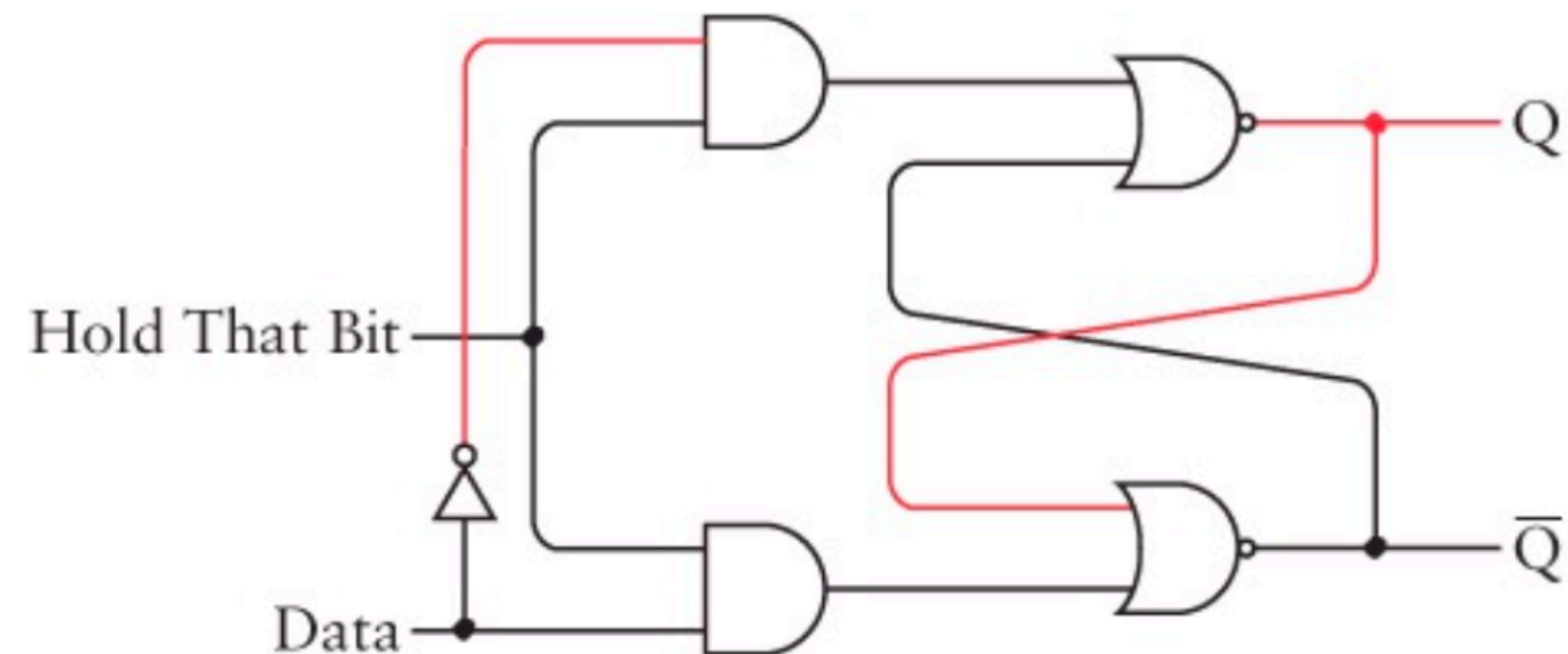
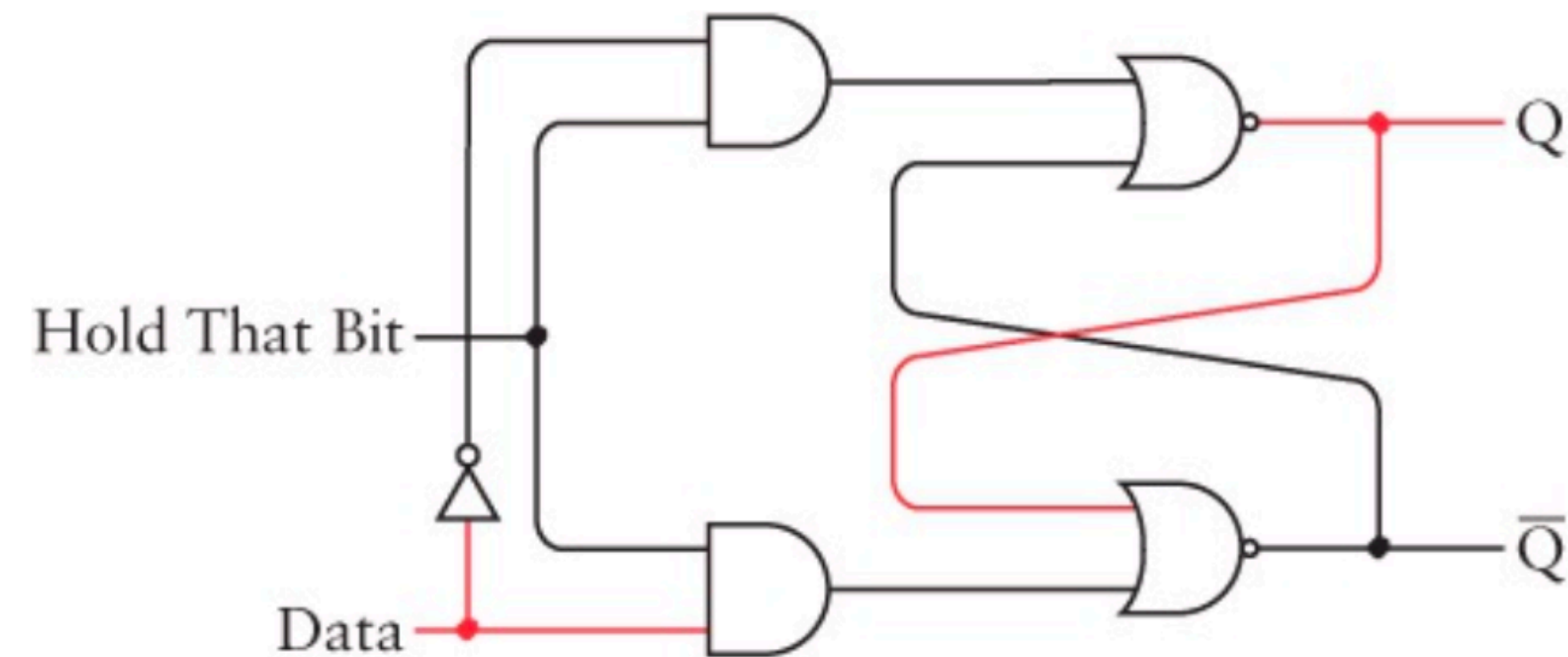
Inputs		Outputs
Data	Hold That Bit	Q
0	1	0
1	1	1
X	0	Q



Level-triggered D-type 플립플롭

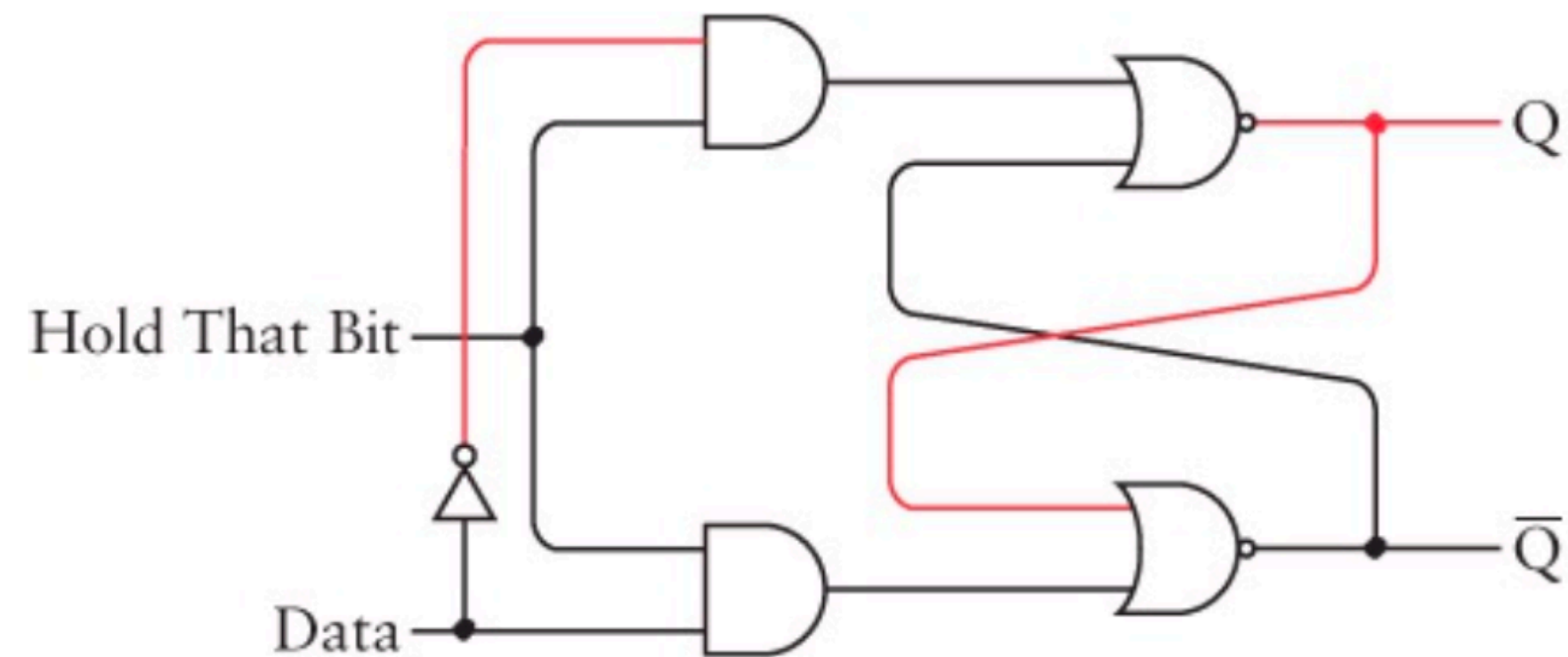
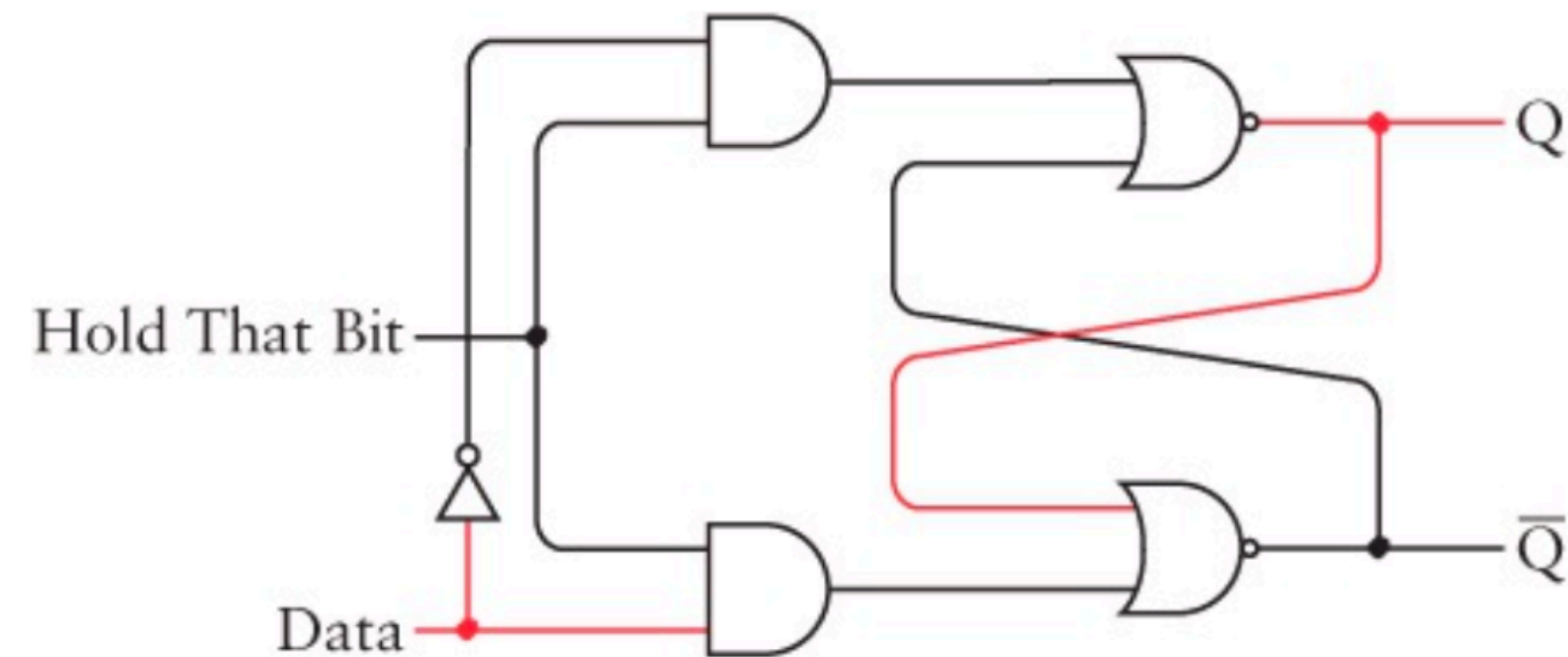
Set 값을 invert - 값 보존 신호를 다시 0으로

Inputs		Outputs
Data	Hold That Bit	Q
0	1	0
1	1	1
X	0	Q

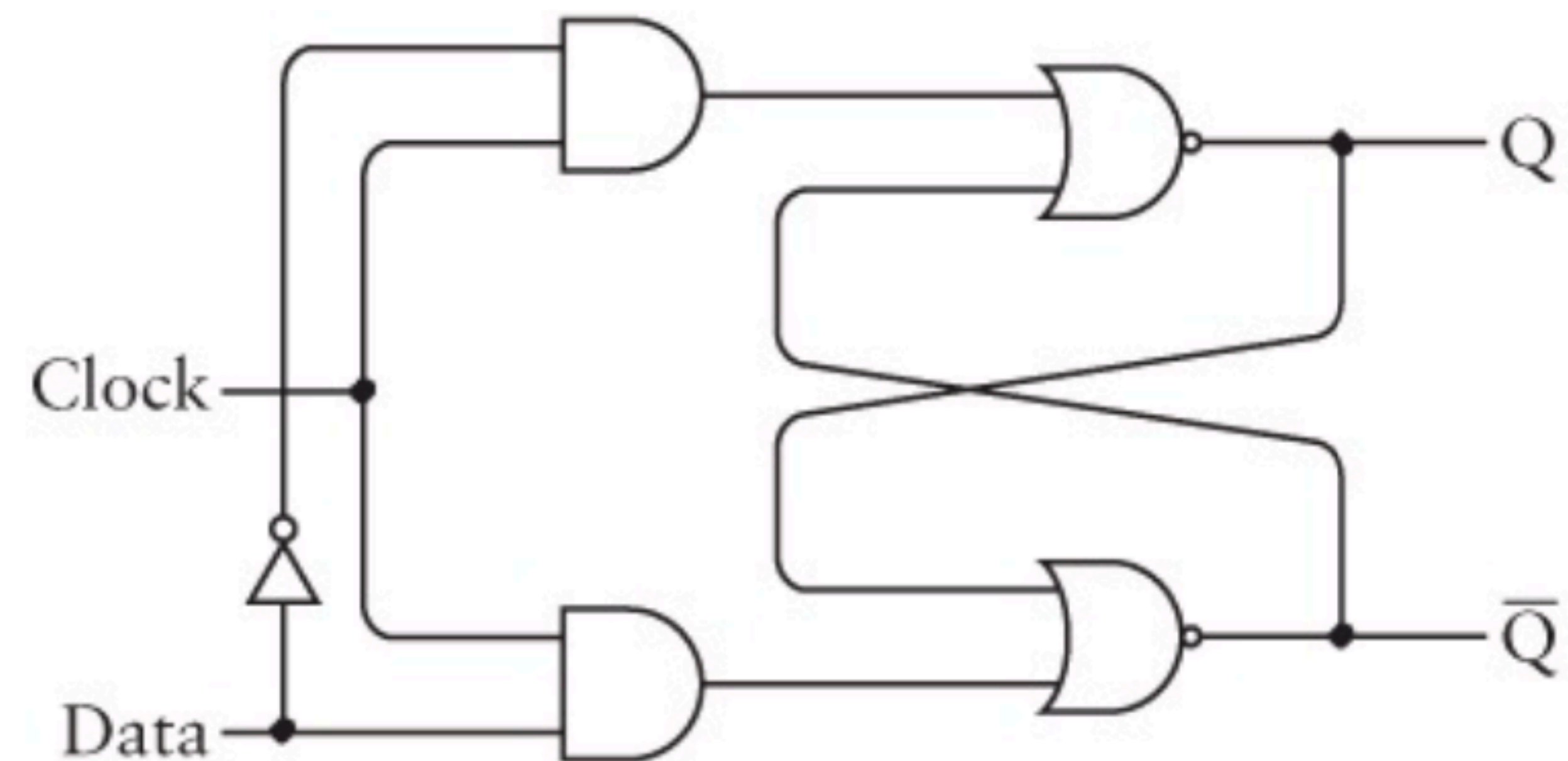


Level-triggered D-type 플립플롭

- D: Data
- Level-triggered:
값 보존 입력이 특정 값인 경우에
이 플립플롭이 데이터 입력 값을 저장한다



Level-triggered D-type 래치(Latch)



Inputs		Outputs	
D	Clk	Q	\overline{Q}
0	1	0	1
1	1	1	0
X	0	Q	\overline{Q}

To be continue...

- 엣지 트리거
- 엣지 트리거 D-타입 플립플롭
- Frequency divider
- Ripple counter
- 그래서 오실레이터의 주파수를 알아낼 수 있는 방법은?