Sequential Logic System
Chapter Two

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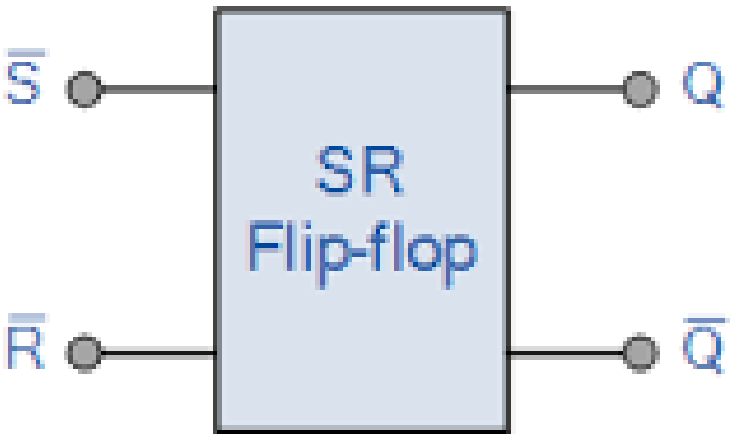
Understand Flip-Flop

- flip-flop or latch is a circuit that has two stable states and can be used to store state information – a bistable multivibrator. The circuit can be made to change state by signals applied to one or more control inputs and will have one or two outputs.

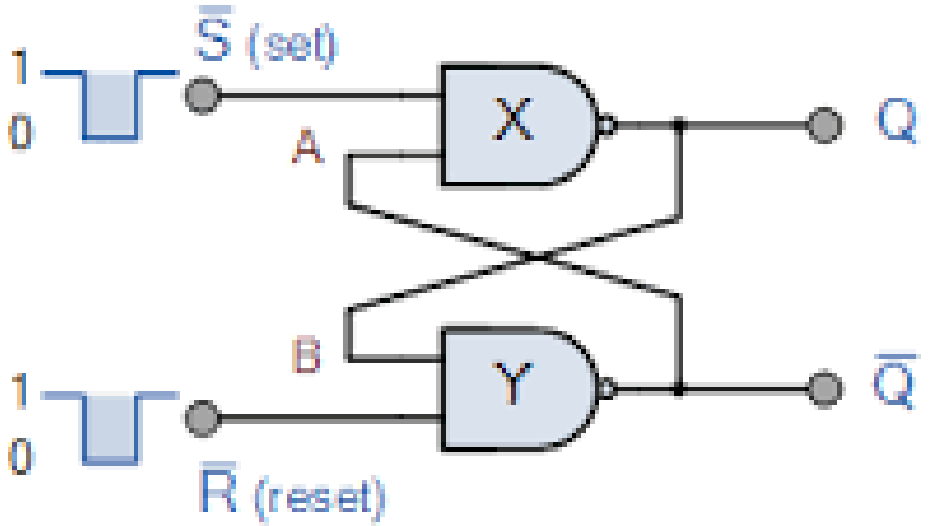
Types of Flip Flop

- **There are basically four different types of flip flops and these are:**
- Set-Reset (SR) flip-flop or Latch.
- JK flip-flop.
- D (Data or Delay) flip-flop.
- T (Toggle) flip-flop.

SR Flip Flop



Symbol

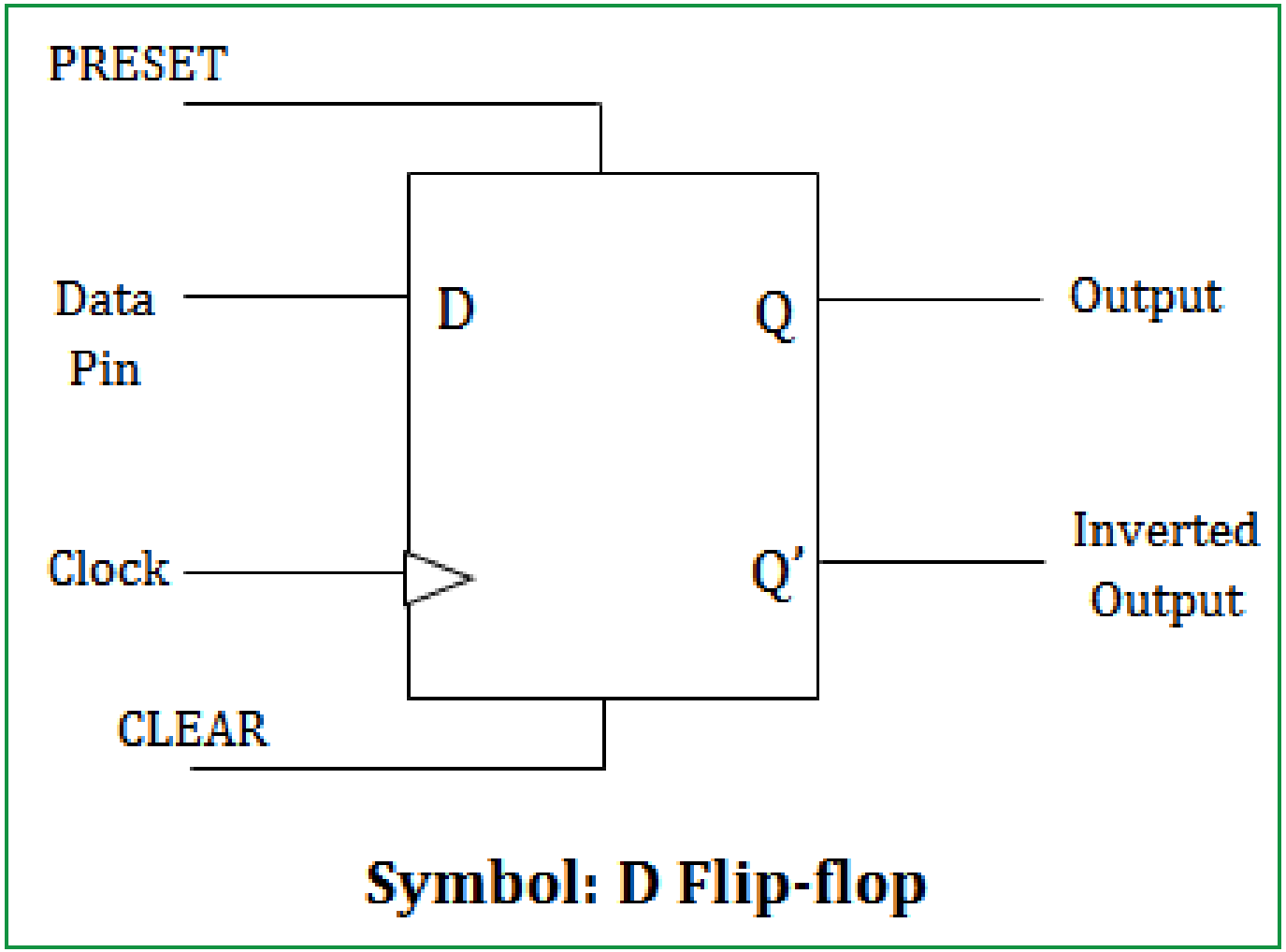


Circuit

- Truth Table

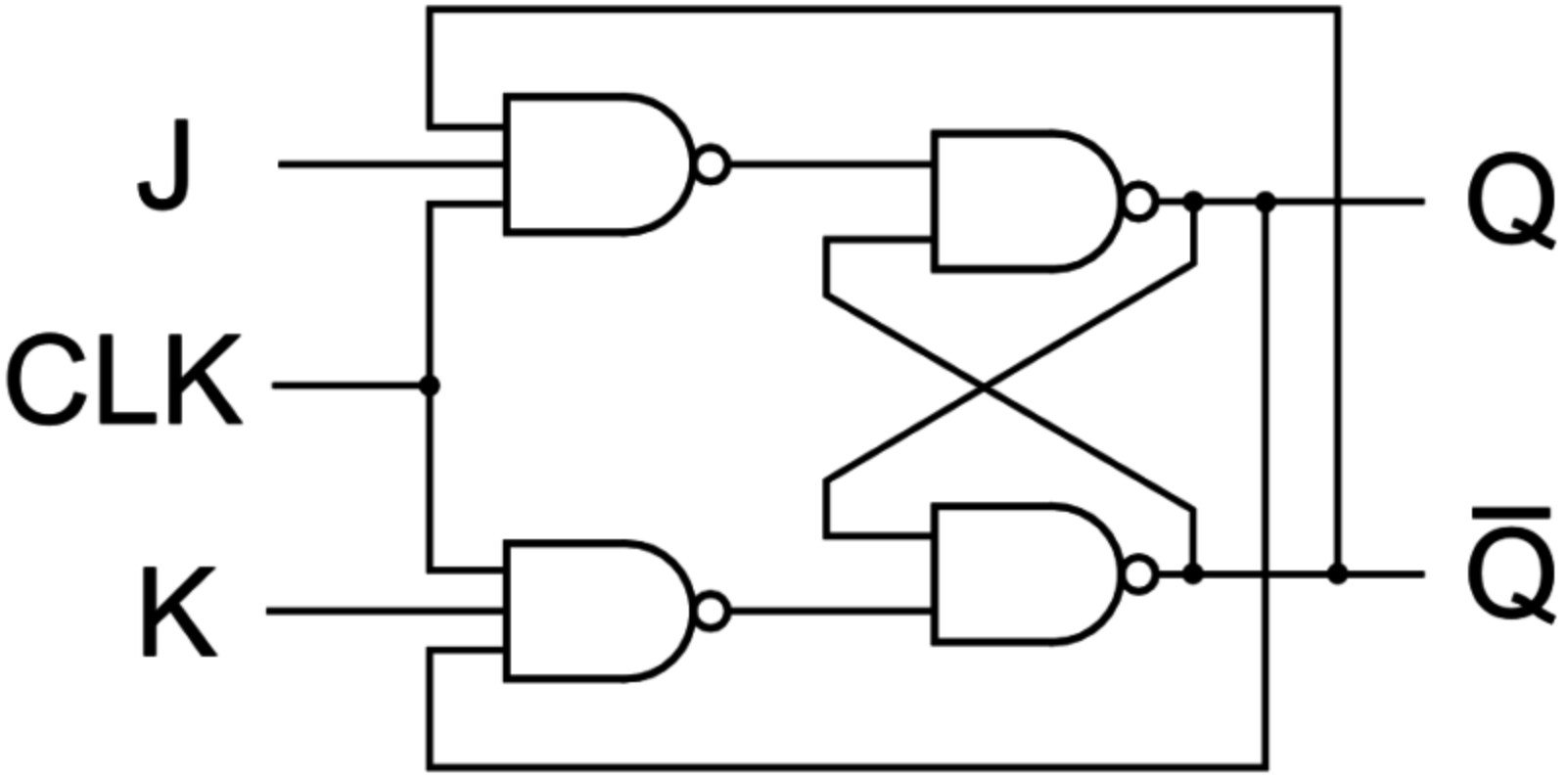
S	R	Q	Q’	
1	0	1	0	
0	0	1	0	After S = 1 and R = 0
0	1	0	1	
0	0	0	1	After S = 0 and R = 1
1	1	0	0	Invalid

D flip flop

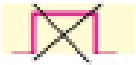


Symbol: D Flip-flop

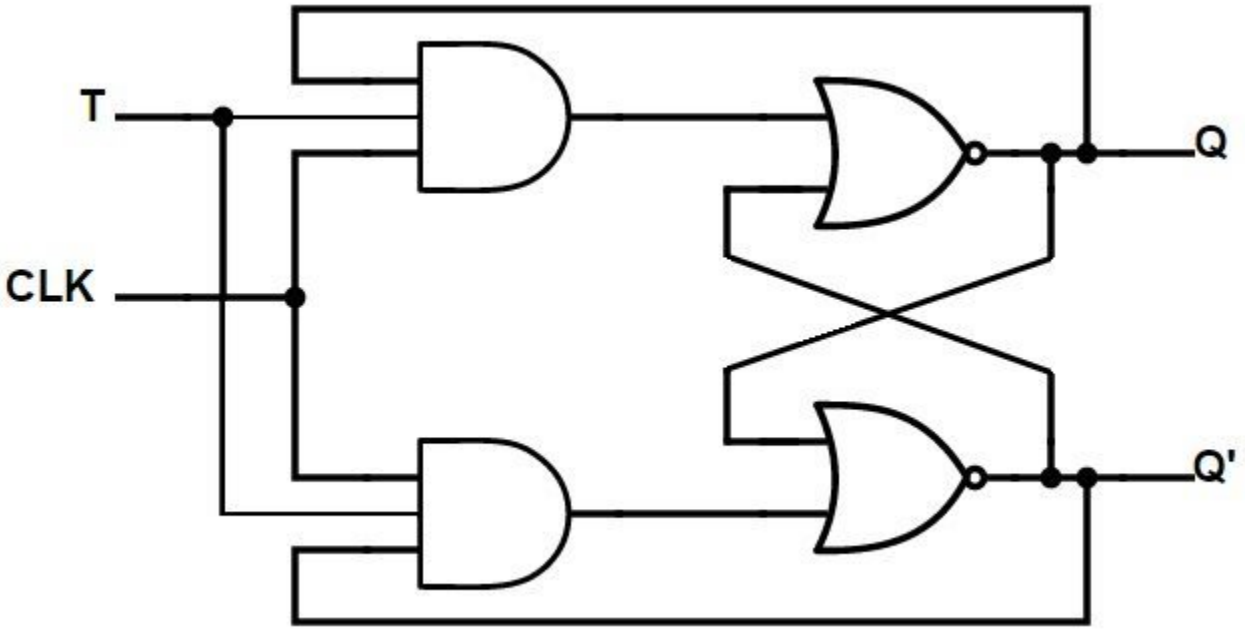
J-K Flip Flop



- J-K Flip Flop

Trigger	Inputs		Output				Inference
			Present State		Next State		
CLK	J	K	Q	Q'	Q	Q'	
	x	x	-		-		Latched
	0	0	0	1	0	1	No Change
			1	0	1	0	
	0	1	0	1	0	1	Reset
			1	0	0	1	
	1	0	0	1	1	0	Set
			1	0	1	0	
	1	1	0	1	1	0	Toggles
			1	0	0	1	

T flip flop



Truth Table

Input	Outputs	
	Present State	Next State
T	Q_n	Q_{n+1}
0	0	0
0	1	1
1	0	1
1	1	0