FACULTY OF ENGINEERING & TECHNOLOGY

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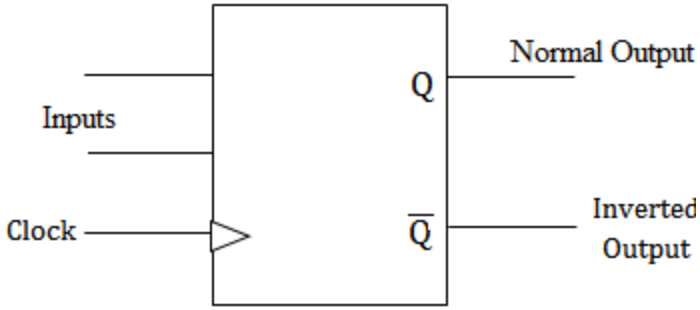
FLIP-FLOP

Flip Flop (Sequential Circuits)

It is a Sequential Circuits which has two stable states and thereby is capable to store a bit of memory , bit 1 or bit 0. In digital circuits, the flip-flop, is a kind of bi-stable multivibrator.



- They have two stable conditions and can be switched from one to the other by appropriate inputs. These stable conditions are usually called the states states states states of the circuit.
- They are 1 (HIGH) or 0 (LOW).
- Whenever we refer to the state of flip flop, we refer to the state of its normal output (Q).
- More complicated Flip flop use a clock as the control input. These clocked flip-flops are used whenever the input and output signals must occur within a particular sequence.

Types Of Flip Flop

1. SR Flip Flop SR
   a.SR Flip Flop Active Low = NAND gates
   b. SR Flip Flop Active High = NOR gates
2. Clocked SR Flip Flop
3. JK Flip Flop
4. JK Flip Flop With Pre-set And Clear
5. T Flip Flop
6. D Flip Flop
7. Master-Slave Edge-Triggered Flip-Flop

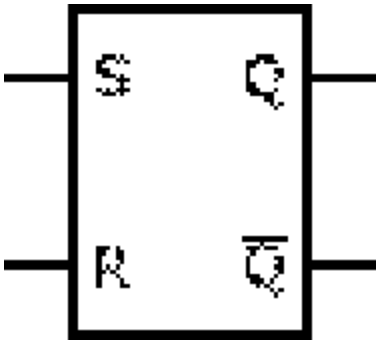
The Used of Flip Flop

- For Memory circuits
- For Logic Control Devices
- For Counter Devices
- For Register Devices

FLIP-FLOP

1.SR Flip Flop

- The most basic Flip Flop is called SR Flip Flop.
- The basic RS flip flop is an asynchronous device.
- In asynchronous device, the outputs is immediately changed anytime one or more of the inputs change just as in combinational logic circuits.
- It does not operate in step with a clock or timing.
- These basic Flip Flop circuit can be constructed using two NAND gates latch or two NOR gates latch.



- The SR Flip Flop has two inputs, SET (S) and RESET (R).
- The SR Flip Flop has two outputs, Q and $\overline{Q}$
- The Q output is considered the normal output and is the one most used.
- The other output $\overline{Q}$ is simply the compliment of output Q.