LAB - Manual 13

Objective

In this lab we will learn about T- flip flop and Registers and their working. Process and where they work

⇒ Required Tools.

Logic gates.
Wires.
Battery / Power
Bread / Board

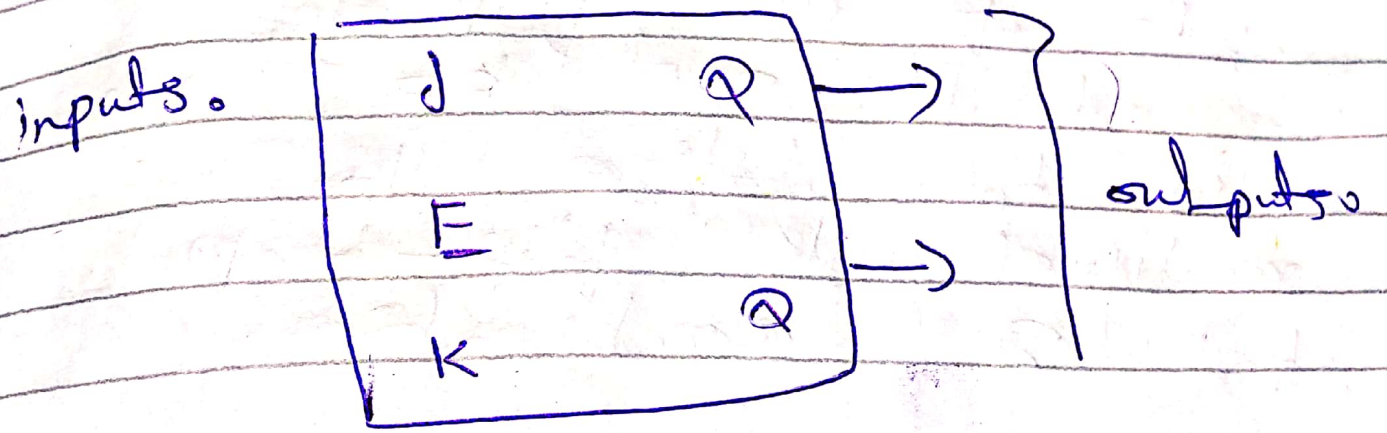
⇒ Softwar

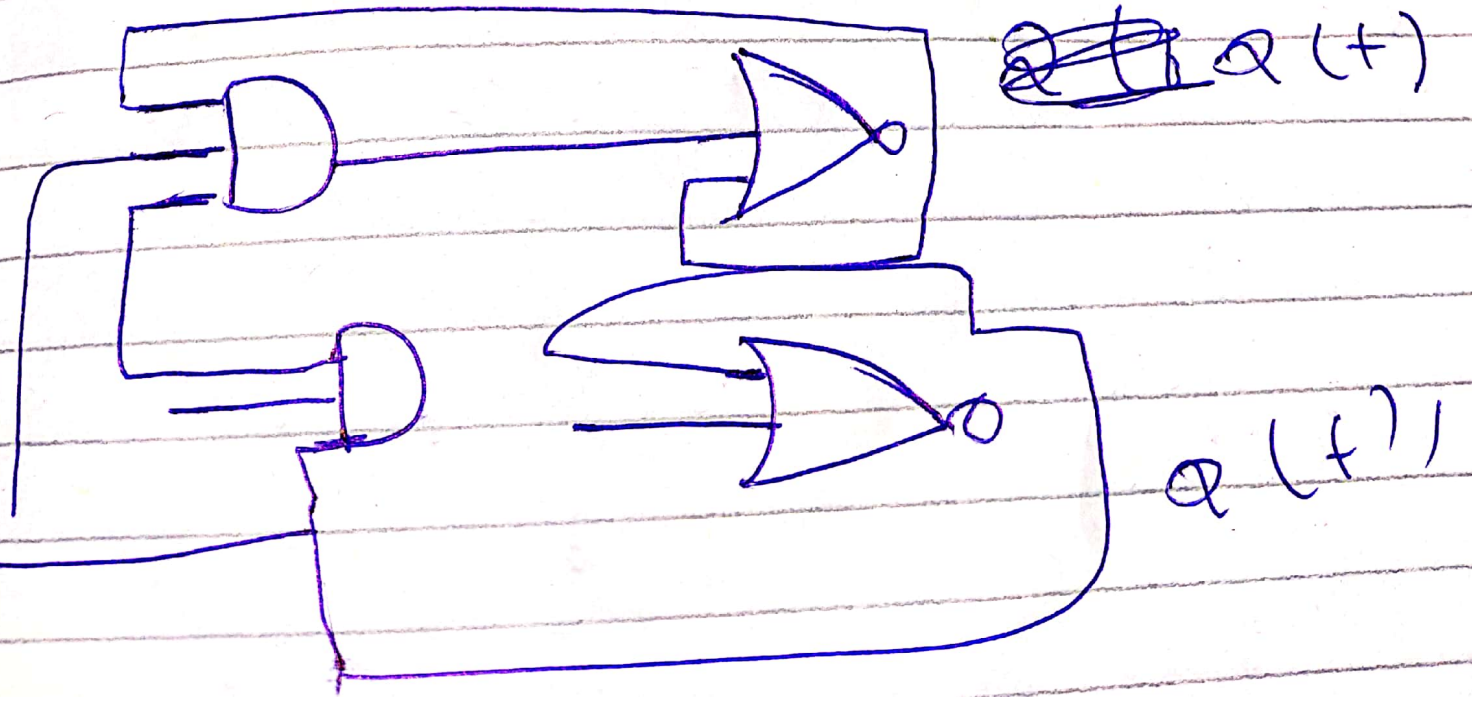
Multism

T- flip flop

- T- flip flop is the simplified version of JK-flipflop. It is obtained by connecting same input 'T' to both inputs of JK - flip flop

- The circuit diagram of T- flipflop is shown in the following figure





T flip flops.

- This circuit has single input T and two outputs. $Q(t)$ and $Q(t')$

The operation of T-flip-flop is same as that of JK-flip flop.

Here we considered the inputs of JK flip flop as $J = T$ and $K = T$ in order to utilize the modified JK flip-flop for a combination

4. The following table shows the characteristic table of T flip flop

Inputs	present state	Next state
0	0	0
0	1	1
1	0	1
1	1	0

From the above characteristics table we can directly write the next state

$$Q(t+1) = T'(Q(t)) + TQ(t')$$
$$= Q(t+1) \oplus Q(t)$$

T- flip flop

The output of T- flip flop always toggles for every positive transition of the clock signal.

Hence, T flip flop can be used in counters.

In this section we implemented various flip flops by providing the cross coupling between NOR gates. Simplify you can implement these flip-flop by using NAND gates.

Conclusion

In this lab we learn about T flip flop and working process of T-flip flop and registers.