Implementation of T Flip-Flop using D Flip -Flop

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1 Abstract

This manual shows Design of T flip-flop using D flip-flop

2 Components

Component	Value	Quantity
Bread board	-	1
Vaman Board	-	1
LED	-	2
IC	7474	1
Jumper Wires	-	20

Table 1:

3 Procedure

1.Connect 5V in the vaman board to the Top Green of the Bread Board and GND to the Bottom Green.
2.Connect 18 pin in the vaman board to the 3 (CLK) pin of the IC 7474.
3.Connect 1,4,14 pins of the IC 7474 to the VCC and 7 pin to the GND.
4.Connect 3 pin in vaman board to the 2(1D) of the IC 7474.
5.Connect 2 pin in vaman board to the 5 (1Q) of the IC 7474 .

6.Connect one LED + to the 5 pin of IC 7474 and GND the other terminal.
7.Connect another LED + to the 6 (!Q) pin of the IC 7474 and GND the other terminal.
8.Change the 6 pin in the vaman board from VCC to GND and observe the outputs.

4 Code

Execute the following code using the below provided link

https://github.com/Susi9121/FWC/fpga/codes/src

5 Conversion table

Input	**Intermediate Inputs**			**Outputs**	
T	Qn	!Qn	T=D xor Qn	Qn	!Qn
0	0	1	0	0	1
0	1	0	1	1	0
1	0	1	1	1	0
1	1	0	0	0	1

Table 2:

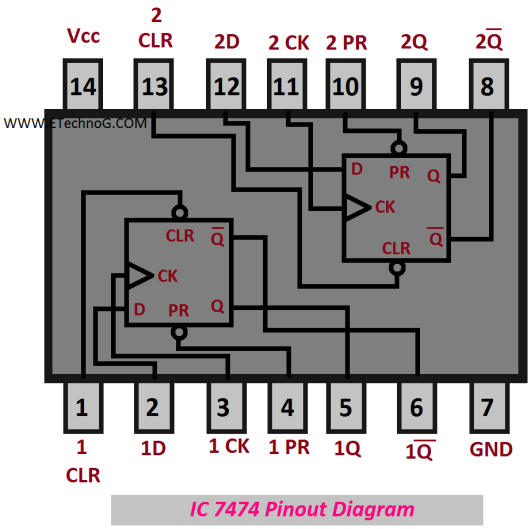

Figure 1: 7474

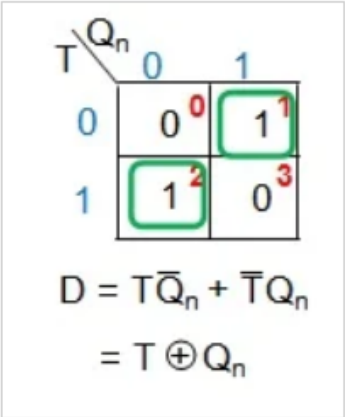

Figure 2: kmap

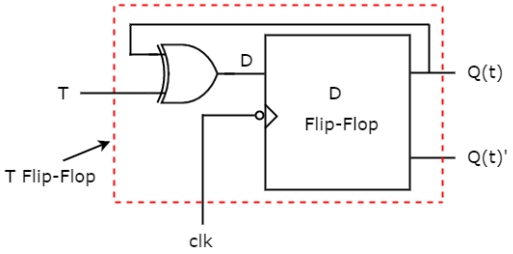

Figure 3: Circuit Diagram