# 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 |
| Arduino | Uno | 1 |
| LED | - | 2 |
| IC | 7474 | 1 |
| Jumper Wires | - | 20 |

Table 1:

## 3 Procedure

1.Connect 5V of the Arduino to the Top Green of the Bread Board and GND to the Bottom Green.
2.Connect D13 pin in the Arduino 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 Arduino D2 pin to the 2(1D) of the IC 7474.
5.Connect Arduino D5 pin 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 D8 pin in the Arduino from VCC to GND and observe the outputs.

## 4 Code

Execute the following code using the below provided link

| https://github.com/Susi9121/FWC/assembly.asm |
|---|

## 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:

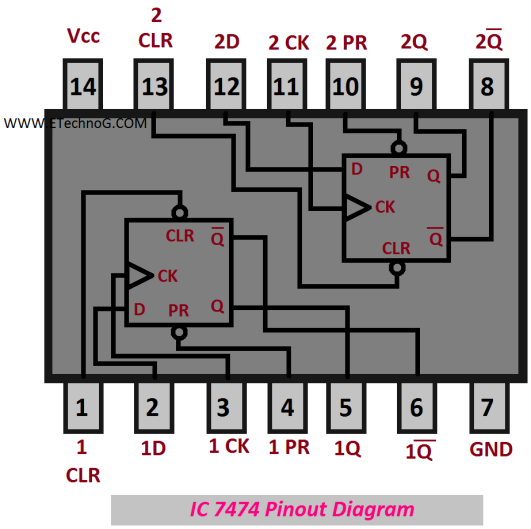


Figure 1: 7474

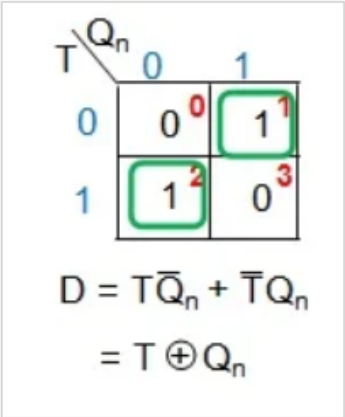


Figure 2: kmap

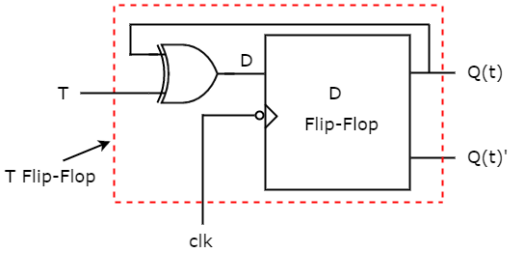


Figure 3: Circuit Diagram