

1 Abstract

This manual shows Implementation of jk flip-flop using 7474 IC after converting into D flipflop .

2 Components

Component	Value	Quantity
Bread board	-	1
Arduino	Uno	1
LED	-	2
IC	7474	1
Jumper Wires	-	20

Table 1:

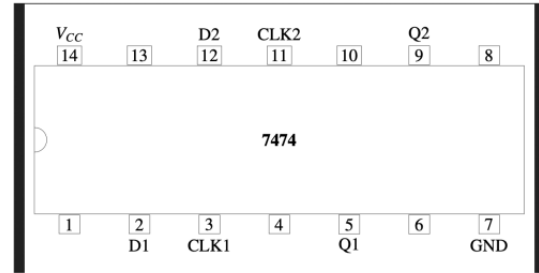


Figure 1: 7474

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4 Code

Execute the following code using the below provided link.

<https://github.com/prathyushabana/FWC/>

3 Procedure

- 1.Connect 5V of the Arduino to the Top red of the Bread Board and GND to the Bottom blue.
- 2.Connect D13 pin in the Arduino to the 3 (CLK) pin of the IC 7474.
- 3.Connect 1,14 pins of the IC 7474 to the VCC and 7 pin to the GND.
- 4.Connect Arduino D2 pin to the gnd or vcc according to the inputs.
- 5.Connect Arduino D3 pin to the gnd or vcc according to the inputs.
- 6.Connect Arduino D4 pin to the gnd or vcc according to the inputs.
- 7.Connect one LED + to the 5 pin of IC 7474 and GND the other terminal.
- 8.Connect another wire from 5 th pin of IC and 3rd pin of IC to some where.
- 9.Change the D2,D3,D4 pins in the Arduino from VCC to GND and observe the outputs.

5 Conversion table

J	K	qn	qn+1	D=Jqn!+k!qn
0	0	0	0	0
0	0	1	1	1
0	1	0	0	0
0	1	1	0	0
1	0	0	1	1
1	0	1	1	1
1	1	0	1	1
1	1	1	0	0

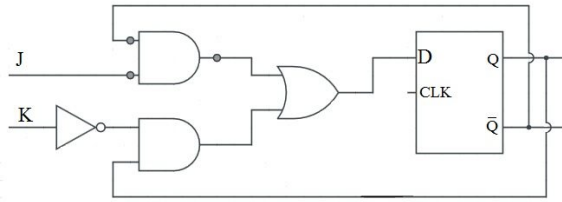


Figure 2: Circuit Diagram

		Kqn			
		00	01	11	10
J	0	0	1	0	0
	1	1	1	0	1

Using
 Boolean logic, output D in kmap can be expressed
 in terms of the inputs j, k, qn as

$$D = Jqn' + K'qn$$