

1 Abstract

The digital circuit shown in fig generates a modified clockpulse at the output. choose the correct waveform from the options given below .

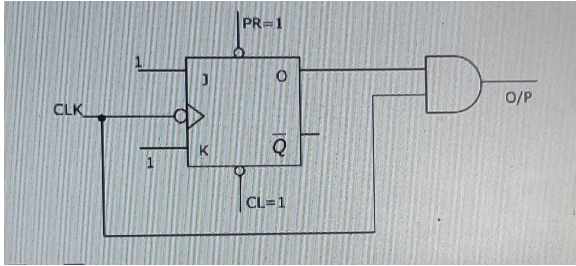


Figure 1: Circuit Diagram

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 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.

4 Code

Execute the following code using the below provided link.

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

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

Kqn

		00	01	11	10
0	J	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

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

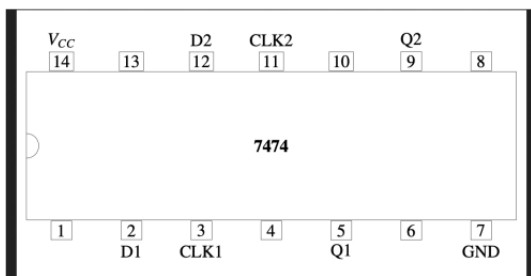


Figure 1: 7474

Figure 2: 7474

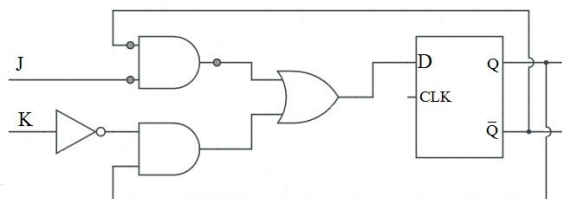


Figure 3: Circuit Diagram