

# 1 Abstract

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

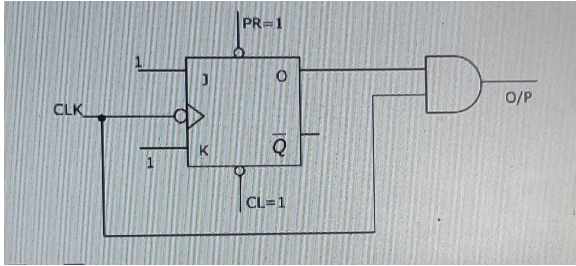


Figure 1: Circuit Diagram

## 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 D13 pin in the Arduino to the 3 (CLK) pin of the IC 7474.
- 2.Connect 1,14 pins of the IC 7474 to the VCC and 7 pin to the GND.
- 3.Connect Arduino D2 pin to the gnd or vcc according to the inputs.
- 4.Connect Arduino D3 pin to the gnd or vcc according to the inputs.
- 5.Connect Arduino D4 pin to the gnd or vcc according to the inputs.

- 6.Connect one LED + to the 5 pin of IC 7474 and GND the other terminal.
- 7.Connect another wire from 5 th pin of IC and 3rd pin of IC to some where and connect another led.
- 8.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

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

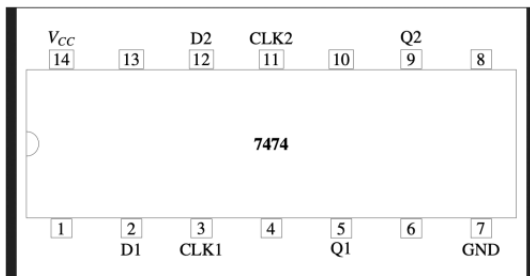


Figure 1: 7474

Figure 2: 7474

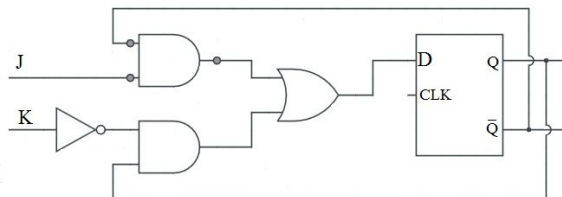


Figure 3: Circuit Diagram