INSTITUTE OF INFORMATION TECHNOLOGY

JAHANGIRNAGAR UNIVERSITY

Number of Lab Report : 07

Name of Lab Report : N mod counter with Jk flipflop.

Course Tittle : Digital Logic Design Lab

Course Code : ICT – 2104

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Experiment Name: N-mod Counter.

Objectives:

1. To know how to construct a mod-7 Counter
2. To know and study the Operations of mod-7 Counter.

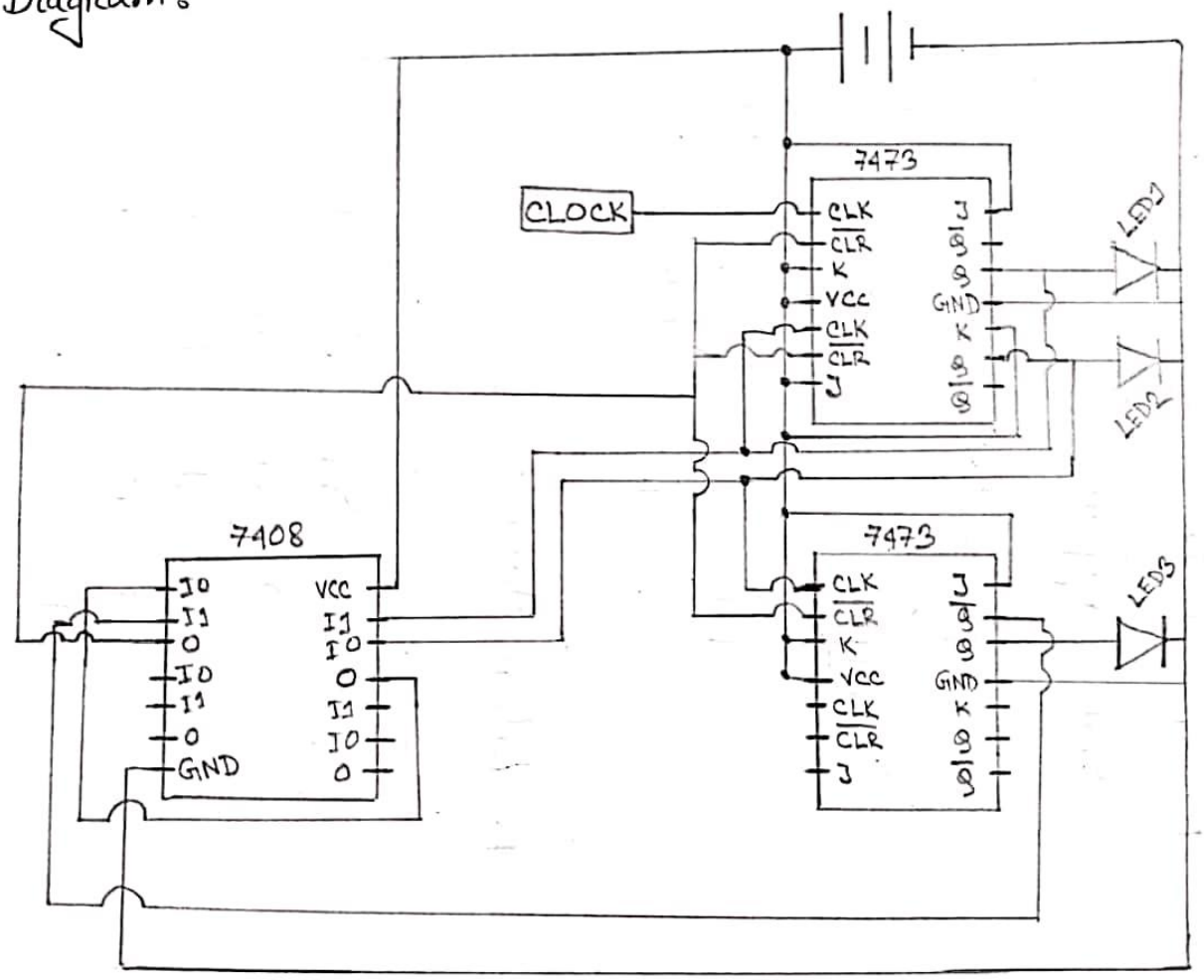
Theory: Binary Counters are one of the application of sequential logic using flip-flops. A Counter is a devich stores or displays the number of times a Particular event or Process has occured in form of clock Pulse. On application of Pulses the flip-flop connected together undergo a change of state in such a manner that the binary number stored in the flip-flops represents the number of Pulses applied at input.

To make a mod-7 counter it will require 3 flip-flops as $2^3=8$ which can county show total 8 different states we will modify it to count 7 states and repeat the same process.

Apparatus:

1. Bread board
2. Power source
3. IC 7473
4. Clock Pulse
5. LEDs
6. Connecting wires.

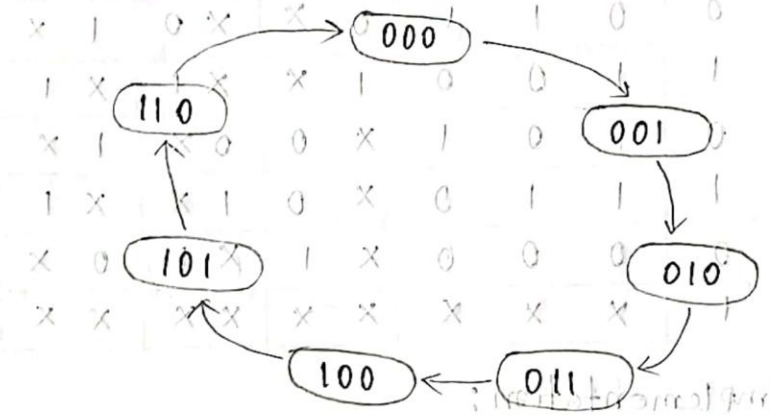
Diagram:


7473
CLOCK
CLK
CLR
K
VCC
CLK
CLR
J
J
Q
GND
K
Q
LED1
LED2
7408
I0
I1
O
I0
I1
O
GND
VCC
I1
I0
O
I1
I0
O
7473
CLK
CLR
K
VCC
CLK
CLR
J
J
Q
GND
K
Q
LED3

Results:

Number of flip-flops : 3

State diagram:

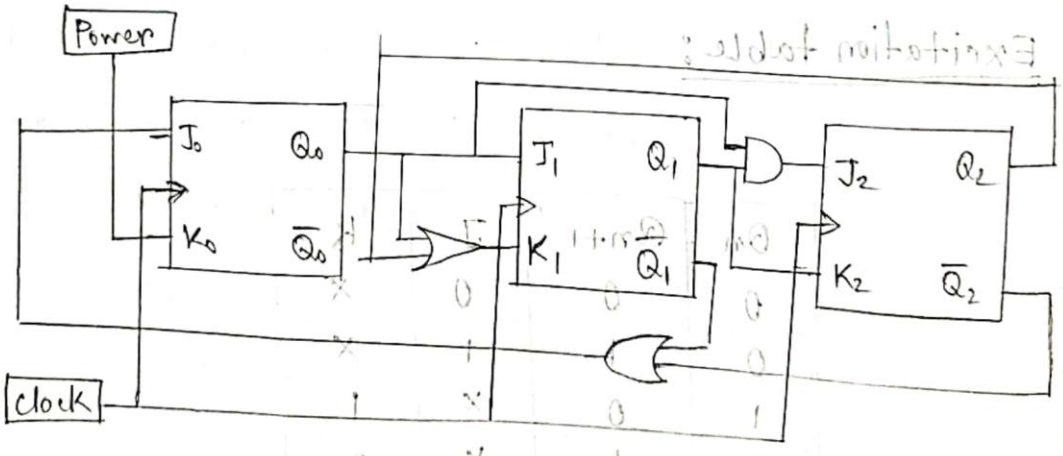


Excitation table:

Qn	Qn+1	J	K
0	0	0	x
0	1	1	x
1	0	x	1
1	1	x	0

Present			Next								
Q_2	Q_1	Q_0	Q_2^+	Q_1^+	Q_0^+	J_2	K_2	J_1	K_1	J_0	K_0
0	0	0	0	0	1	0	X	0	X	1	X
0	0	1	0	1	0	0	X	1	X	X	1
0	1	0	0	1	1	0	X	X	0	1	X
0	1	1	1	0	0	1	X	X	1	X	1
1	0	0	1	0	1	X	0	0	X	1	X
1	0	1	1	1	0	X	0	1	X	X	1
1	1	0	0	0	0	X	1	X	1	0	X
1	1	1	X	X	X	X	X	X	X	X	X

Circuit implementation:



Discussion:

The Counter is counting 0 to 6 total 7 numbers Properly. we used 3 flip-flops to cover 000_2 to 110_2. When the count reaches 110_2 it will repeat the same Process.

References:

1. Digital Systems Principles and Applications Ronald J. Tocci 12th Edition

2. www.wikipedia.com

THE END