DIGITAL SYSTEMS

PRACTICUM 8

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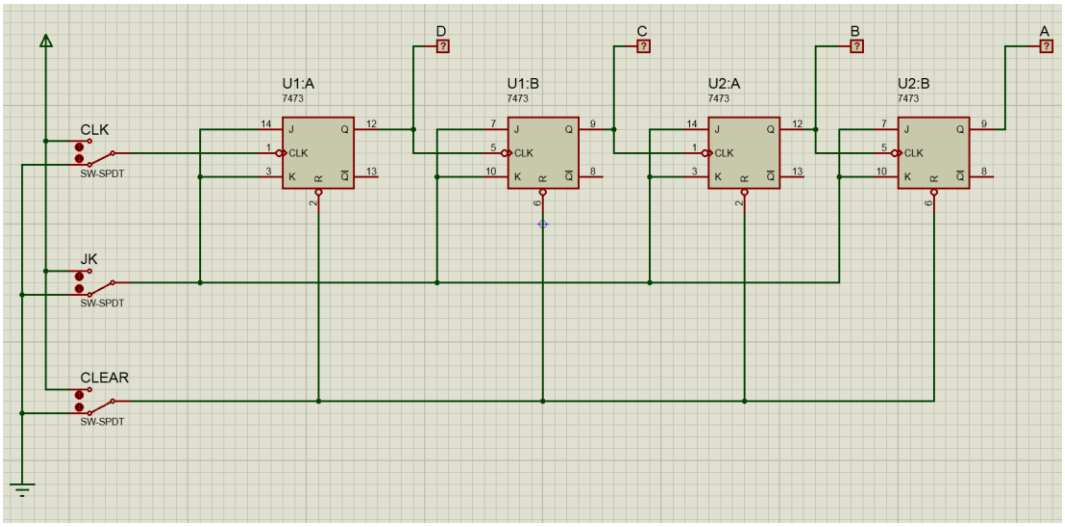
Experiment 1

1. Flip-Flop JK Combination



Picture 1.1 Flip-Flop JK Logic Gate

2. Truth Table

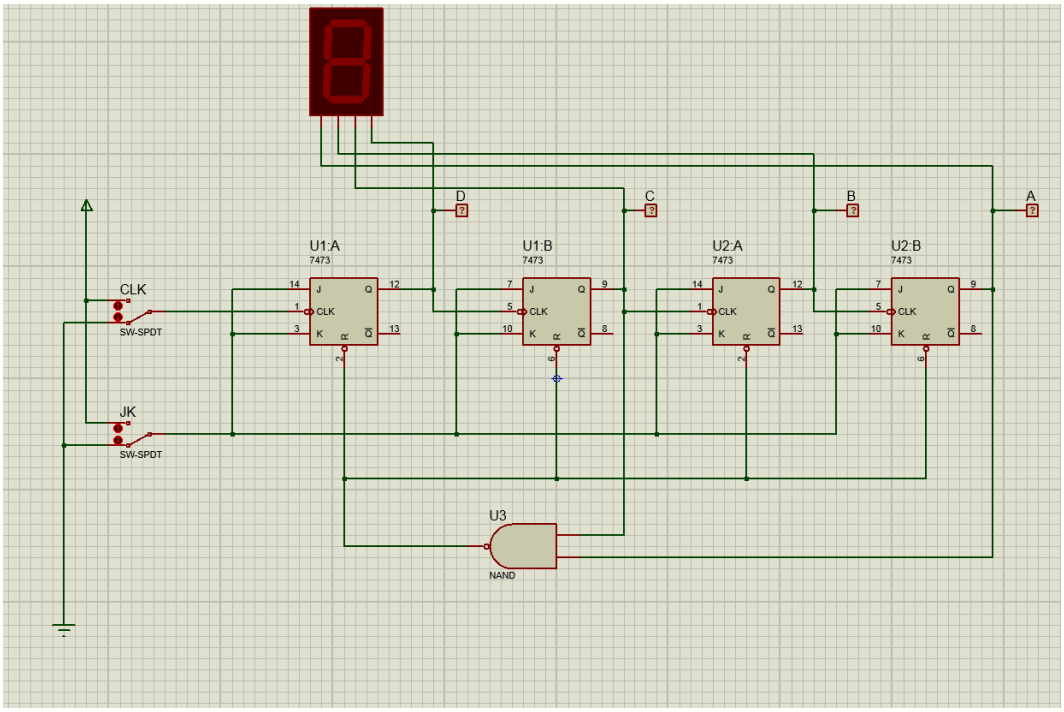
	INPUT			OUTPUT			
	CLEAR	**JK**	**CLK**	**A**	**B**	**C**	**D**
1	1	1	0	0	0	0	0
2	1	1	1	0	0	0	0
3	1	1	0	0	0	0	1
4	1	1	1	0	0	0	1
5	1	1	0	0	0	1	0
6	1	1	1	0	0	1	0
7	1	1	0	0	0	1	1
8	1	1	1	0	0	1	1
9	1	1	0	0	1	0	0
10	1	1	1	0	1	0	0
11	1	1	0	0	1	0	1
12	1	1	1	0	1	0	1
13	1	1	0	0	1	1	0
14	1	1	1	0	1	1	0
15	1	0	0	0	1	1	0
16	1	0	1	0	1	1	0
17	1	1	0	0	1	0	1
18	1	1	1	0	1	0	1
19	0	1	0	0	0	0	0
20	0	1	1	0	0	0	0

3. What is the function of
    a. Switch CLK : add/change the value of next binary output
    b. Switch JK : Save the output value according to the last output
    c. Switch Clear : to display the binary output, if input is 0, all output are also 0 (Reset)
4. Conclusion

    FF.JK determined the output of the FF

Experiment 2

1. JK Flip-Flop combination



Picture 2.1 Flip-Flop JK Logic Gate

2. Truth Table

	INPUT		OUTPUT			
	JK	**CLK**	**A**	**B**	**C**	**D**
1	1	0	0	0	0	0
2	1	1	0	0	0	0
3	1	0	0	0	0	1
4	1	1	0	0	0	1
5	1	0	0	0	1	0
6	1	1	0	0	1	0
7	1	0	0	0	1	1
8	1	1	0	0	1	1
9	1	0	0	1	0	0
10	1	1	0	1	0	0
11	1	0	0	1	0	1
12	1	1	0	1	0	1
13	1	0	0	1	1	0
14	1	1	0	1	1	0
15	1	0	0	1	1	1
16	1	1	0	1	1	1

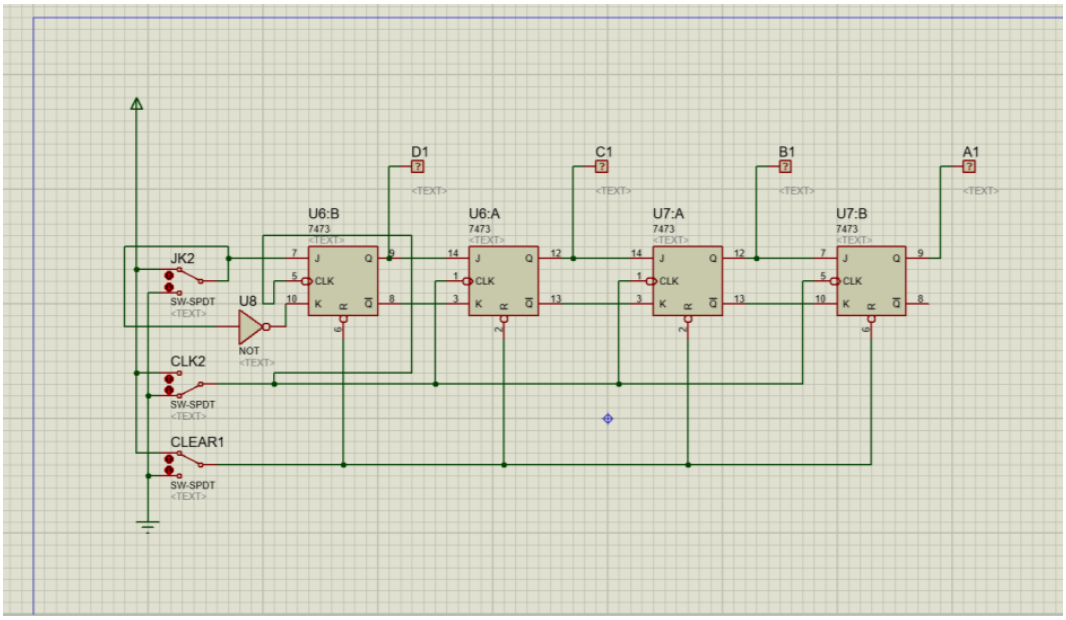
17	1	0	1	0	0	0
18	1	1	1	0	0	0
19	1	0	1	0	0	1
20	1	1	1	0	0	1
21	0	0	1	0	0	1
22	0	1	1	0	0	1
23	1	0	0	0	0	0
24	1	1	0	0	0	0

3. Conclusion

   Functions of CLK switch is to continue to the next binary number at the output. Functions of JK switch is as an increase in binary numbers if the value is 1, if the JK input is 0 then the output of the binary number is not forwarded or remains the last output.

Experiment 3

1. Flip-Flop JK



Picture 3.1 Flip-Flop JK Logic Gate

2. Truth Table

	INPUT			OUTPUT			
	CLEAR	**JK**	**CLK**	**A**	**B**	**C**	**D**
1	0	X	-	0	0	0	0
2	1	1	-	0	0	0	0
3	1	1	1	0	0	0	1
4	1	1	2	0	0	1	1
5	1	1	3	0	1	1	1
6	1	0	4	1	1	1	0
7	1	0	5	1	1	0	0
8	1	0	6	1	0	0	0
9	1	0	7	0	0	0	0
10	1	0	8	0	0	0	0
11	1	1	9	0	0	0	1
12	1	0	10	0	0	1	0
13	1	0	11	0	1	0	0
14	1	0	12	1	0	0	0
15	1	0	13	0	1	0	0

3. Conclusion

   If the CLK switch is not connected then all output results will produce 0.

   If the input value of JK 0 then the output will move to

   the output part that is located in front of it and the last output part changes to 0 until all output results are 0.