DIGITAL SYSTEMS

PRACTICUM 8

By :

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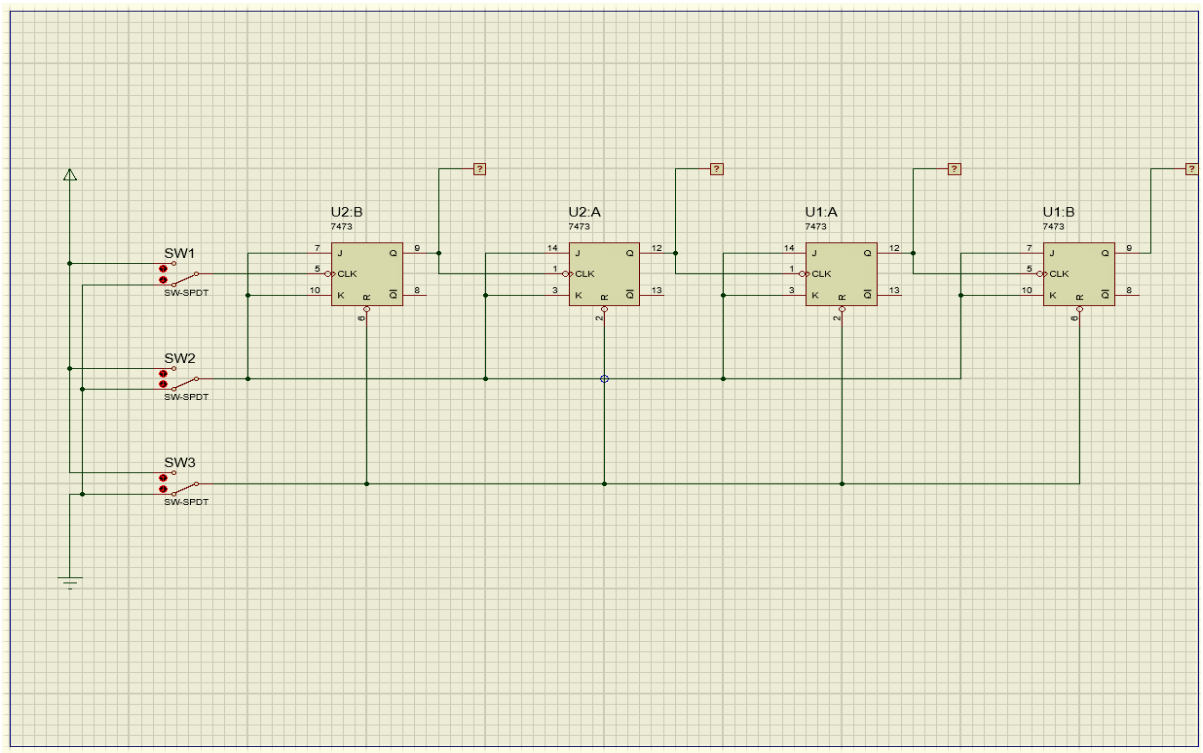
Task 1



Picture 1.1. JK flip-flop combination

1. Simulation 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	1	1
18	1	1	1	0	1	1	1
19	0	1	0	0	0	0	0
20	0	1	1	0	0	0	0

2. What is the function of
    a. Switch CLK:

        Answer: Functions to continue to the next binary number at the output.

    b. Switch JK:

        Answer: Functions 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.

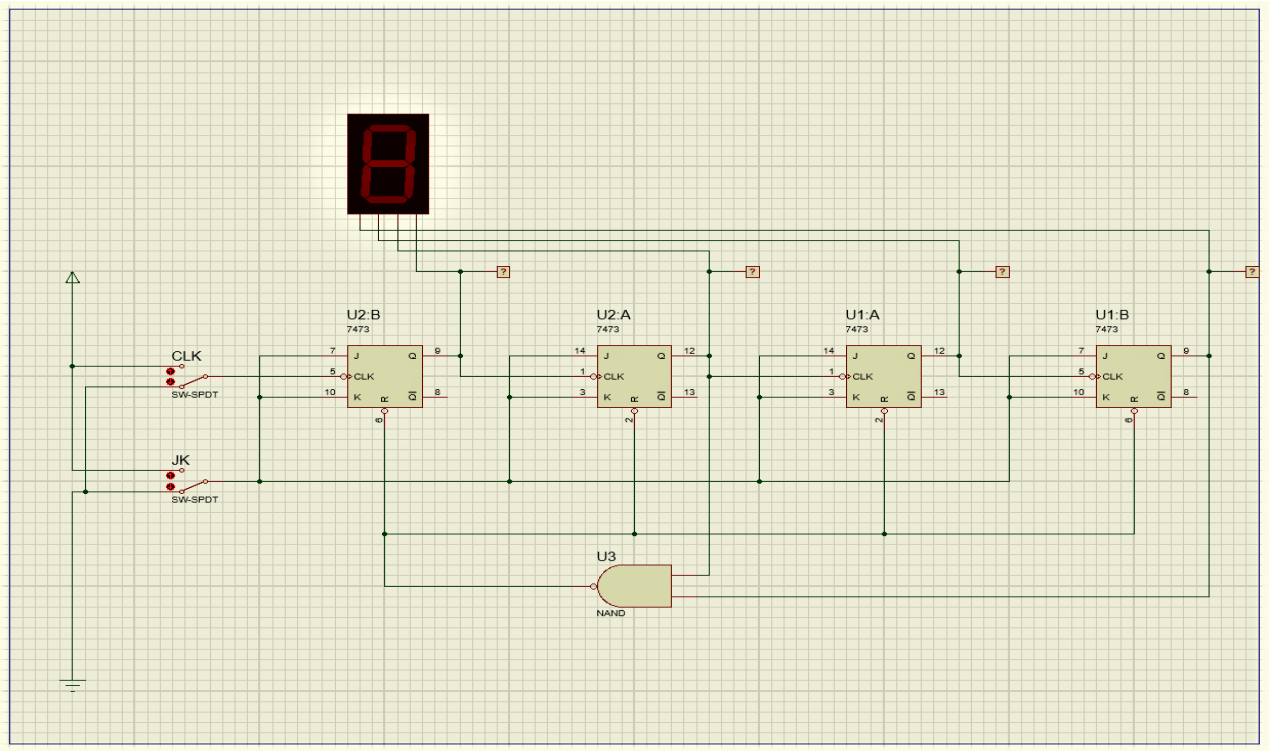
    c. Switch CLEAR:

        Answer: Functions to display the binary number output, if the CLEAR input is 0 then all the output results are 0

3. Conclusion

    If the CLEAR input is 0 then all the output results are 0, if the JK input is 0 then the output of the binary number is not forwarded or remains the last output.

Task 2



Picture 2.1. JK flip-flop combination

1. Simulation table

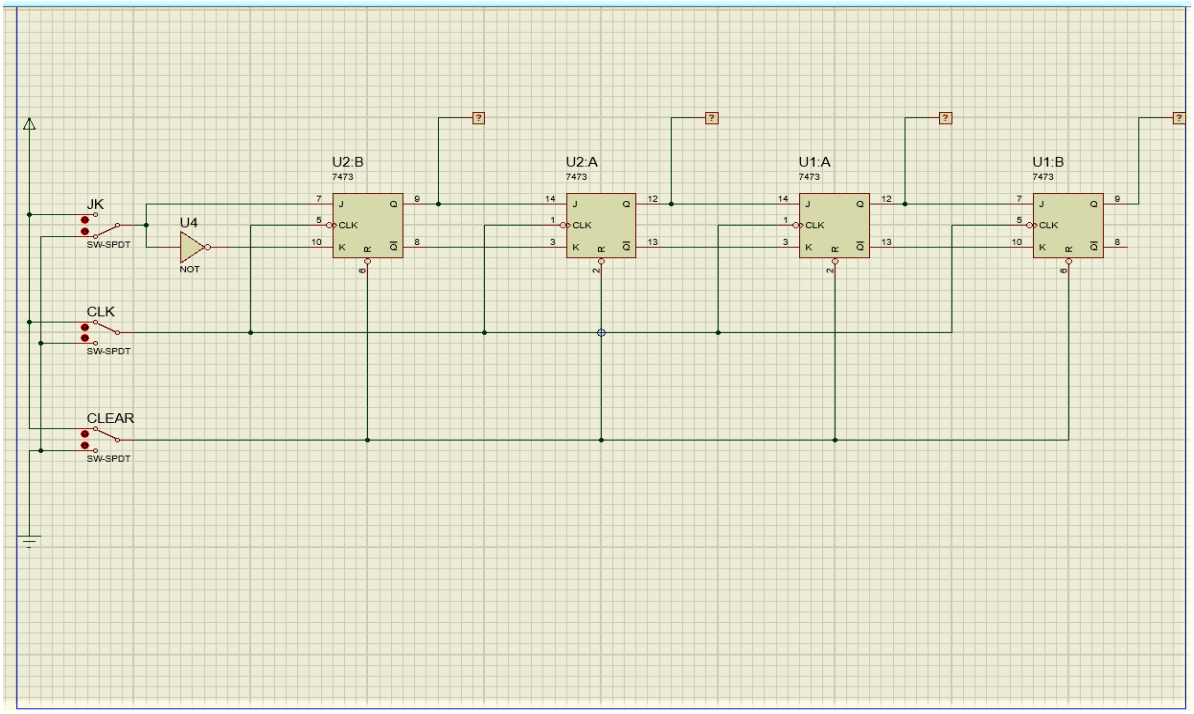
	INPUT		OUTPUT			
	JK	**CLK**	**A**	**B**	**C**	**D**
1	1	0	0	0	0	0
2	1	1	0	0	0	0
3	1	0	0	0	0	1
4	1	1	0	0	0	1
5	1	0	0	0	1	0
6	1	1	0	0	1	0
7	1	0	0	0	1	1
8	1	1	0	0	1	1
9	1	0	0	1	0	0
10	1	1	0	1	0	0
11	1	0	0	1	0	1
12	1	1	0	1	0	1
13	1	0	0	1	1	0
14	1	1	0	1	1	0
15	1	0	0	1	1	1
16	1	1	0	1	1	1
17	1	0	1	0	0	0

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

2. 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.

Task 3



Picture 3.1. JK flip-flop combination

1. Simulation 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	0
4	1	1	2	0	0	0	1
5	1	1	3	0	1	1	1
6	1	0	4	0	1	1	1
7	1	0	5	1	1	1	0
8	1	0	6	1	0	0	0
9	1	0	7	1	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	1
13	1	0	11	0	1	1	0
14	1	0	12	1	1	0	0
15	1	0	13	1	0	0	0

2. Conlusion

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.