PRACTICUM DIGITAL SYSTEM

MODUL 8

DIGITAL SYSTEM

By :

Donny Rizal Adhi Pratama

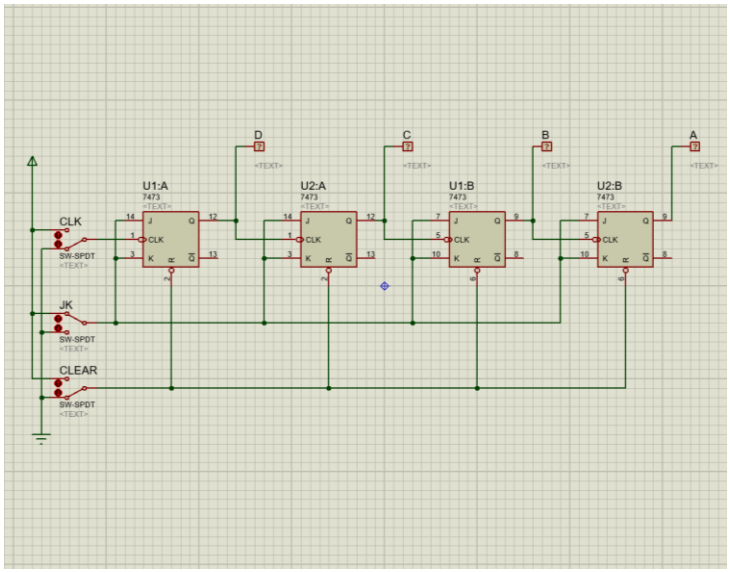
L200183161

INFORMATION TECHNOLOGY

FACULTY OF COMMUNICATION AND INFORMATIC

MUHAMMADIYAH UNIVERSITY OF SURAKARTA

Experiment 1 (Counter JK-FF)



Picture 1.1 Counter JK-FF

	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	1
16	1	0	1	0	1	1	1
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

What the function of :

a. Switch CLK

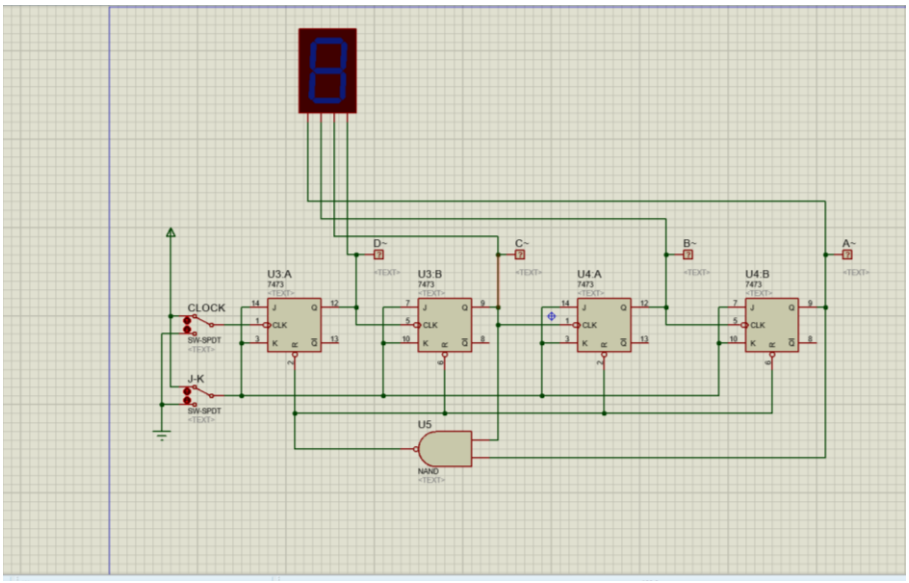
⇨ Add the output value and as long as they keep to be in their CLOCK place and change it 0 into 1 it will add/change the result of Output Value too. So when you click the CLK one by one from 0 to 1 of course they will add some Biner Digit

b. Switch JK
   ⇨ Save the Output Value (Set). As the latch in this Flip-Flop it could be the Memory or the Checkpoint.
c. Switch Clear
   ⇨ Collect all the Output Value if all of are Cleared. Or can be called as Reset the memory.

The Conclusion :

FF.JK as the Input Controller to determine what will FF do. When they received Clock that is increased, so the circuit Counter Asynchrony Model 16, use for expand the data.

Experiment 2. (Counter MOD 10)



Picture 2.1 Counter Mod 10

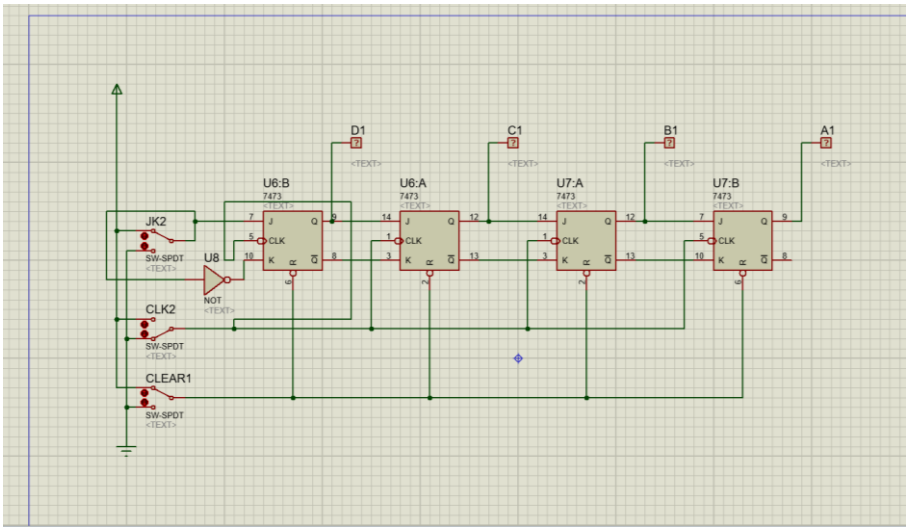
	Input		Output			
	JK	**CLK**	**A**	**B**	**C**	**D**
1	1	0	0	0	0	0
2	1	1	0	0	0	0
3	1	0	0	0	0	1
4	1	1	0	0	0	1
5	1	0	0	0	1	0
6	1	1	0	0	1	0
7	1	0	0	0	1	1
8	1	1	0	0	1	1
9	1	0	0	1	0	0
10	1	1	0	1	0	0
11	1	0	0	1	0	1
12	1	1	0	1	0	1
13	1	0	0	1	1	0
14	1	1	0	1	1	0
15	1	0	1	0	0	0
16	1	1	1	0	0	0

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

The Conclusion :

- ⇨ It is almost be the same as JKFF Counter but it showed us about the Digital Segment, and all we can do is the same as JKFF Counter. First of all you have to do is get the neutral position 0 0 0 and change the Clock when you need something to show up. For the most don't ever to change the Clock too much until not know the sequence, and you have to Repeat it again
- ⇨ Everything you may have to input it always be just the BCD and $2^3 + 2^2 + 2^1 + 2^0$. This pattern is always showed up in the Seven Segment by using the Input Clock.

Experiment 3 (Register JK-FF)



Picture 3.1 Register JK-FF

	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	0	0	0

The Conclusion :

- ⇨ Happened changing Biner if it is Click in Twice. And Clear as the Reset as if the JK output is 1 so it could be calculate from exchanging output value if it is click in twice.
  Clear 0 JK 0 → 0
  Clear 1 JK 1 → 0