

**DIGITAL SYSTEMS**

**PRACTICUM 10**



**By:**

**ALIF FAUZIA RAMA WAHYU K**

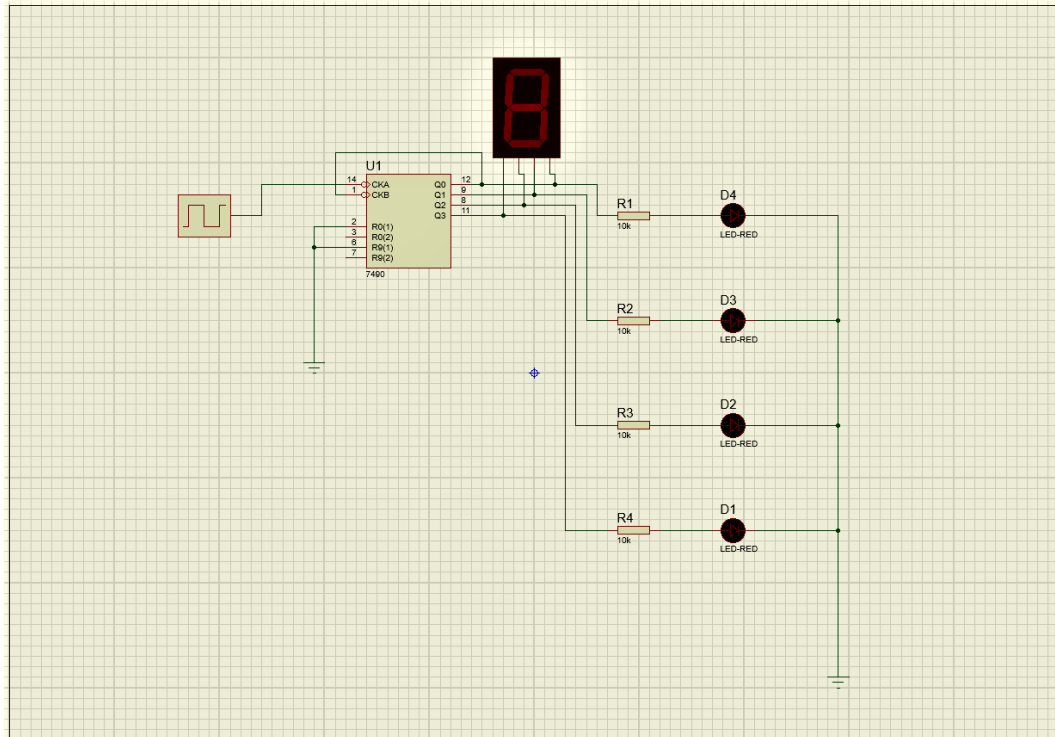
**NIM: L200183177**

**INFORMATION TECHNOLOGY**

**FACULTY OF COMMUNICATION AND INFORMATICS**

**UNIVERSITY OF MUHAMMADIYAH SURAKARTA**

## Experiment 1

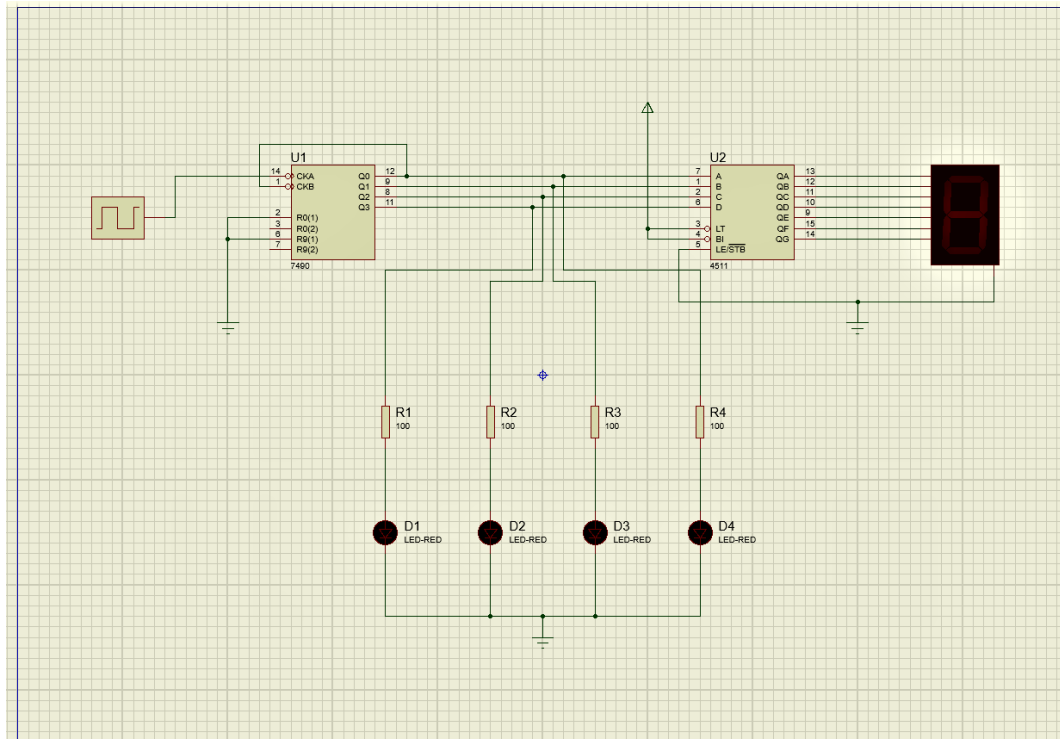


Picture 1.1. Set of clock counter

1. Column table

Input Clock	Output LED				Output Seven Segment
	D1	D2	D3	D4	
1	0	0	0	0	0
2	1	0	0	0	1
3	0	1	0	0	2
4	1	1	0	0	3
5	0	0	1	0	4
6	1	0	1	0	5
7	0	1	1	0	6
8	1	1	1	0	7
9	0	0	0	1	8
10	1	0	0	1	9

## Experiment 2



Picture 2.1. Addition of a BCD-to-segment decoder

1. Column table

Input Clock	Output LED				Output Seven Segment
	D1	D2	D3	D4	
1	0	0	0	0	0
2	1	0	0	0	1
3	0	1	0	0	2
4	1	1	0	0	3
5	0	0	1	0	4
6	1	0	1	0	5
7	0	1	1	0	6
8	1	1	1	0	7
9	0	0	0	1	8
10	1	0	0	1	9

2. Comparison of experiment 1 and experiment 2

In experiment 2, number 6 looks like the letter b and the number 9 looks like the letter q on the 7 segment. but in experiment 1, everything looks normal.

3. Is it true that 7seg-BCD is the same as the BCD-to-7 segment decoder?

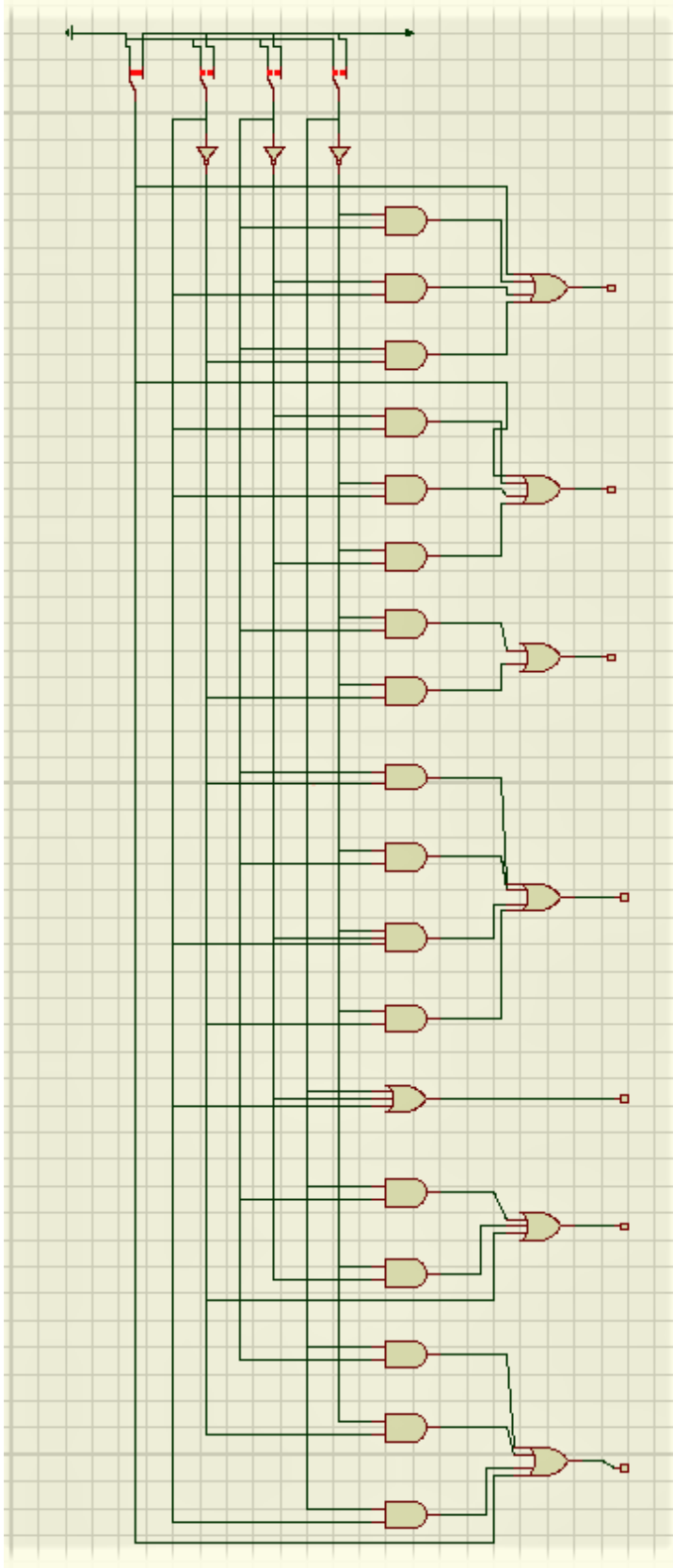
Answer : Yes

### Experiment 3

#### 1. Table function of IC 4511

Decimal Digit	Input					Output							Display Output
	L T	D	C	B	A	a	b	c	d	e	f	g	
0	H	L	L	L	L	H	H	H	H	H	H	L	0
1	H	L	L	L	H	L	H	H	L	L	L	L	1
2	H	L	L	H	L	H	H	L	H	H	L	H	2
3	H	L	L	H	H	H	H	H	H	L	L	H	3
4	H	L	H	L	L	L	H	H	L	L	H	H	4
5	H	L	H	L	H	H	L	H	H	L	H	H	5
6	H	L	H	H	L	L	L	H	H	H	H	H	6
7	H	L	H	H	H	H	H	H	L	L	L	L	7
8	H	H	L	L	L	H	H	H	H	H	H	H	8
9	H	H	L	L	H	H	H	H	L	L	H	H	9
LT	L	X	X	X	X	H	H	H	H	H	H	H	8

- The output "a" (highlight) in the table shows that LED works in seven common cathode segments
- Each output shows the state of LED from seven segment various conditions
- Each LED is controlled by a combination of logic gates.



Picture 3.1. Complete diagram logic from BCD-to-7segment decoder

5. Comparison truth table with set of BCD-to-7segment

The output results in the BCD-to-7-segment decoder circuit  
produce a value that exactly matches the truth table