

PRACTICAL REPORT

MODUL 6

DIGITAL SYSTEM



By:

M. RIFQY FAUZY

L200184090

INFORMATION TECHNOLOGY

COMMUNICATION AND INFORMATICS FACULTY

MUHAMMADIYAH UNIVERSITY OF SURAKARTA

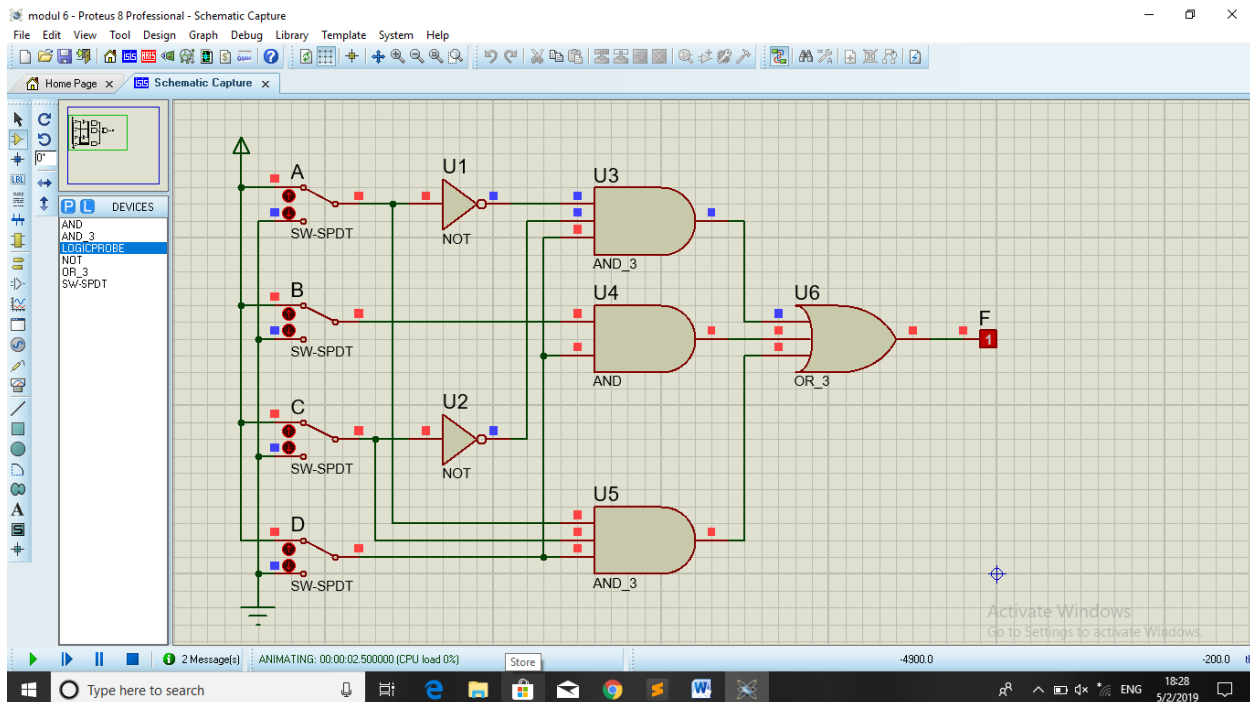
1. Trial 1

1. Make the logic gate combination based on the following K map!

| | | AB | | | |
|----|----|----|----|----|----|
| | | 00 | 01 | 11 | 10 |
| CD | 00 | 0 | 0 | 0 | 0 |
| | 01 | 1 | 1 | 1 | 0 |
| | 11 | 0 | 1 | 1 | 1 |
| | 10 | 0 | 0 | 0 | 0 |

2. Boolean function: $F = A'C'D + BD + ACD$

3. Make the logic gates based on your Boolean function!



Trial 2

1. Make the logic gate combination based on the following K map!

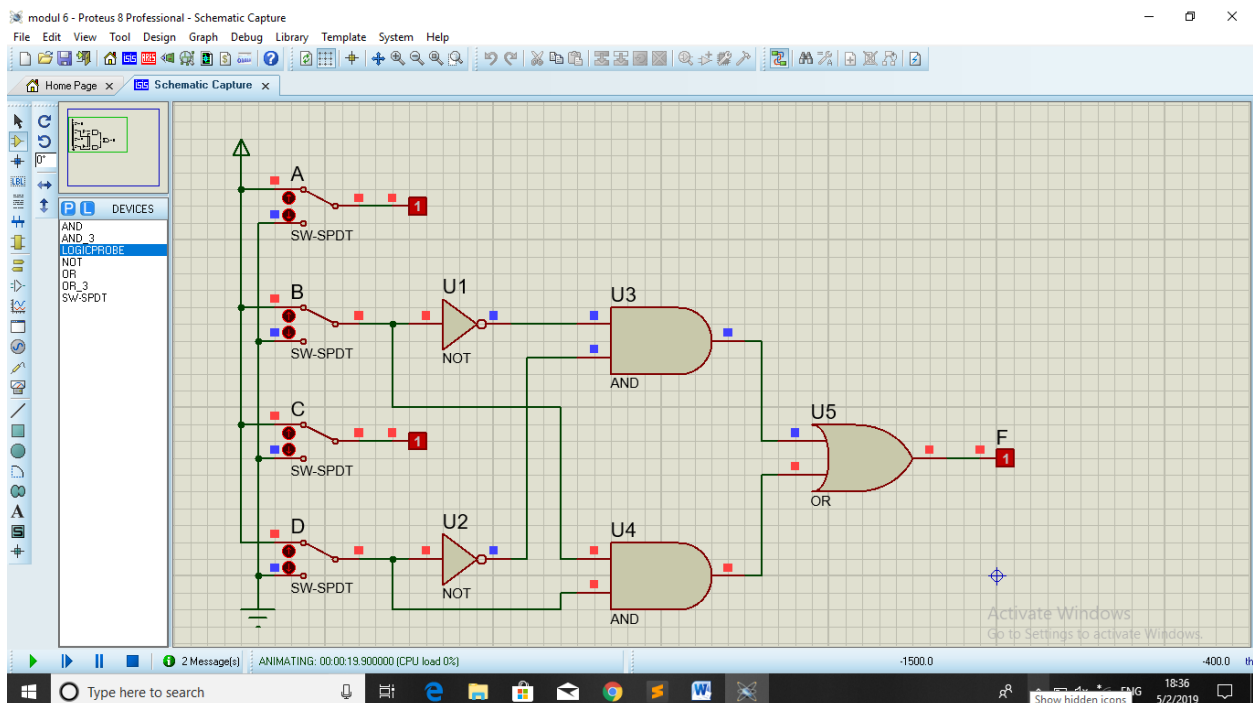
| | | AB | | | |
|----|----|----|----|----|----|
| | | 00 | 01 | 11 | 10 |
| CD | 00 | 1 | 0 | 0 | 1 |
| | 01 | 0 | 1 | 1 | 0 |
| | 11 | 0 | 1 | 1 | 0 |
| | 10 | 1 | 0 | 0 | 1 |

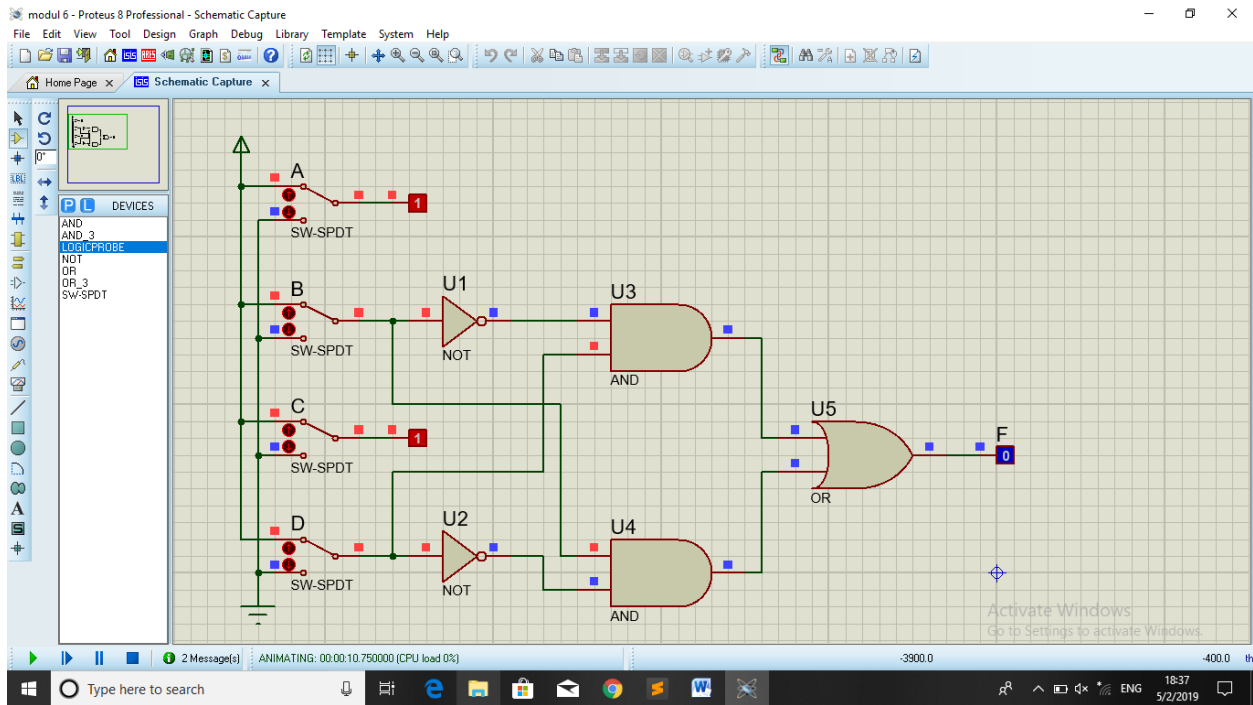
2. Boolean function:

$$F = B'D' + BD \text{ (AND-OR)}$$

$$F = B'D + BD' \text{ (OR-AND)}$$

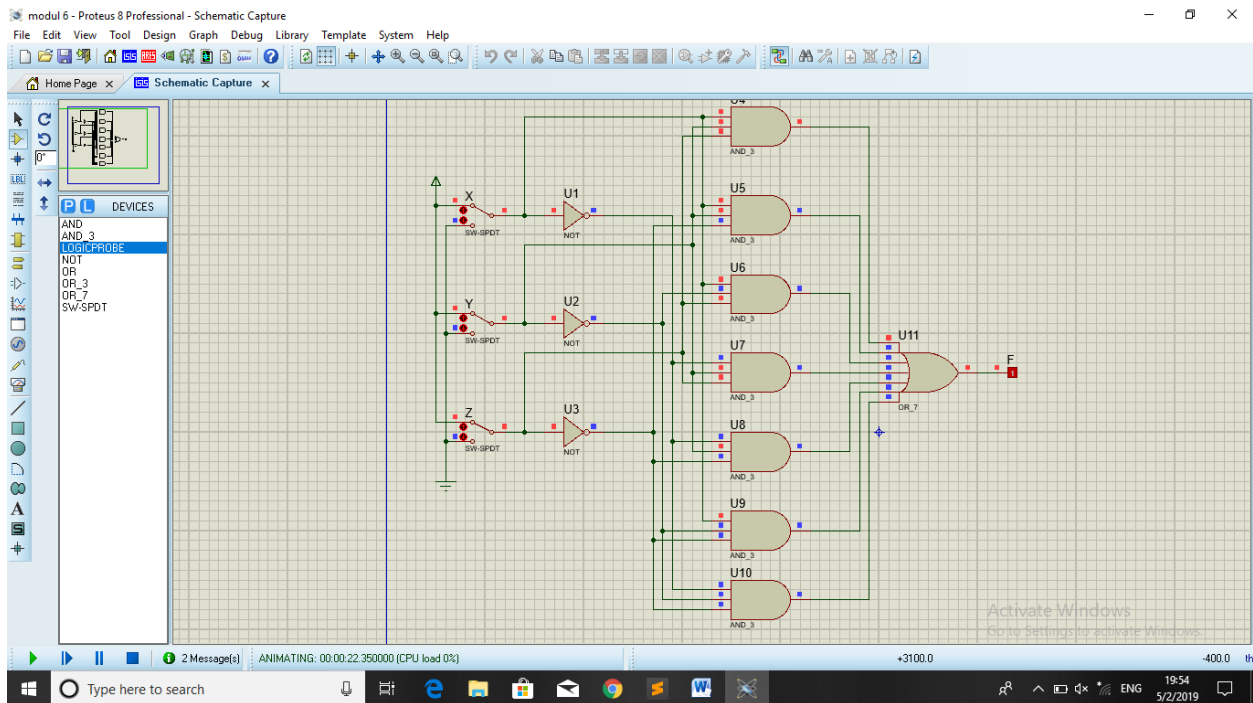
3. Make the logic gates based on your Boolean function!





Trial 3

- Boolean function: $F = XYZ + XYZ' + XY'Z + X'YZ + X'YZ' + XY'Z' + X'Y'Z'$

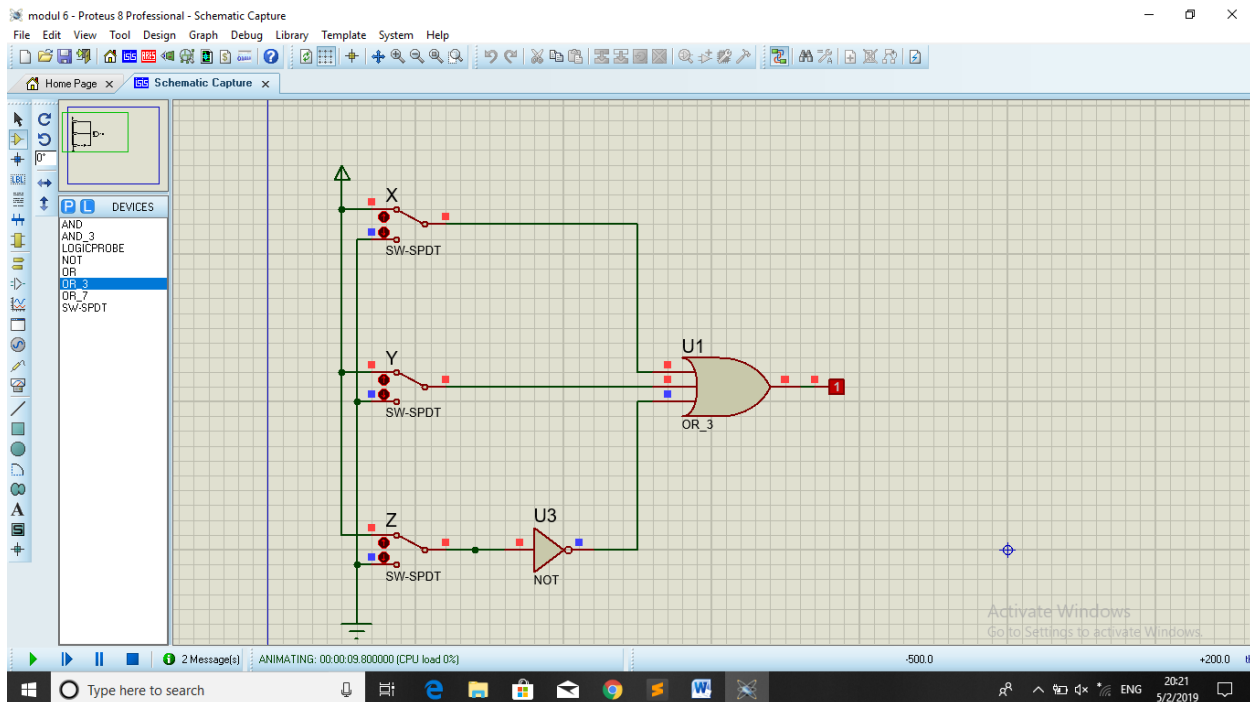


2. Based on the Boolean function, fill the blank in the following K map!

| | | XY | | | |
|---|---|----|----|----|----|
| | | 00 | 01 | 11 | 10 |
| Z | 0 | 1 | 1 | 1 | 1 |
| | 1 | 0 | 1 | 1 | 1 |

3. Simplify the Boolean function: $F = X + Y + Z'$

4. Draw the logic gates based on your Boolean function!

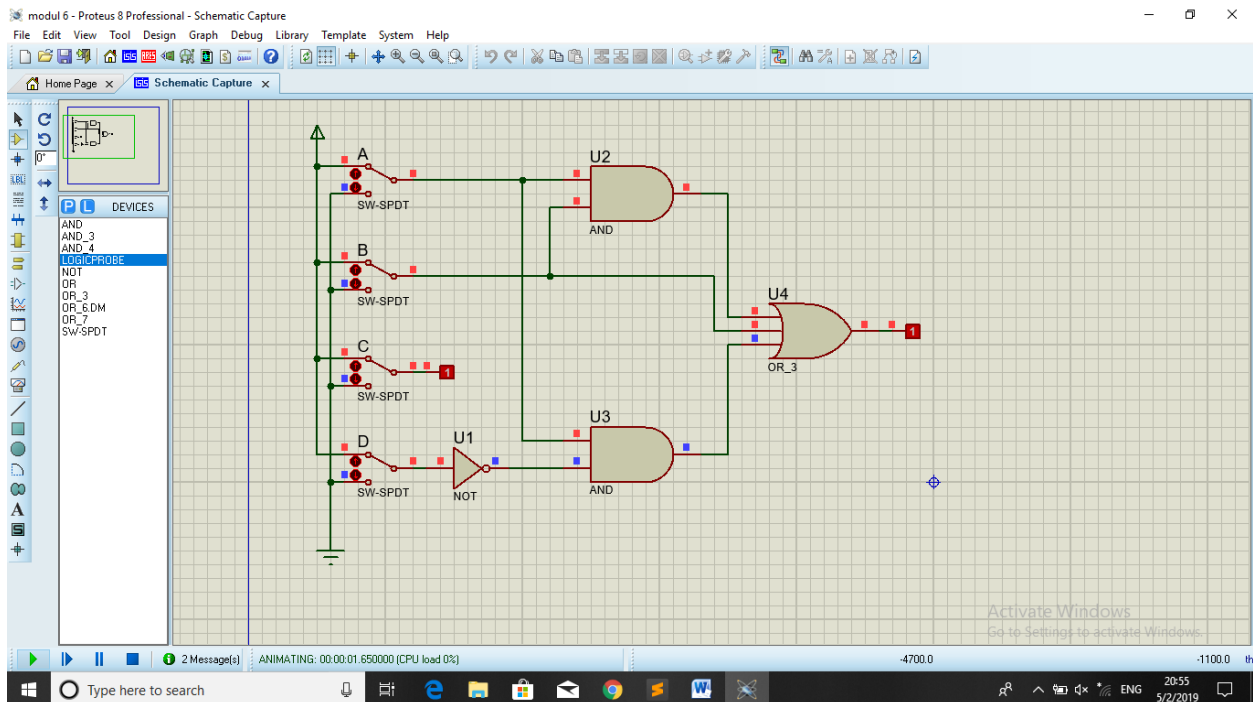


Trial 4

1. Boolean function: $F = AD' + ABC + ABC' + BCD + BC'D' + AB'CD'$
2. Based on the Boolean function, fill the blank in the following K map!

| | | AB | | | |
|----|----|----|----|----|----|
| | | 00 | 01 | 11 | 10 |
| CD | 00 | 0 | 1 | 1 | 1 |
| | 01 | 0 | 0 | 1 | 0 |
| | 11 | 0 | 1 | 1 | 0 |
| | 10 | 0 | 0 | 1 | 1 |

3. Simplify the Boolean function: $F = AB + AD' + B$
4. Draw the logic gates based on your Boolean function!



Trial 5

1. Boolean function table.

| A | B | C | D | F |
|---|---|---|---|---|
| 0 | 0 | 0 | 0 | 1 |
| 1 | 0 | 0 | 0 | 0 |
| 0 | 1 | 0 | 0 | 0 |
| 1 | 1 | 0 | 0 | 1 |
| 0 | 0 | 1 | 0 | 1 |
| 1 | 0 | 1 | 0 | 1 |
| 0 | 1 | 1 | 0 | 0 |
| 1 | 1 | 1 | 0 | 0 |
| 0 | 0 | 0 | 1 | 1 |
| 1 | 0 | 0 | 1 | 1 |
| 0 | 1 | 0 | 1 | 0 |
| 1 | 1 | 0 | 1 | 1 |
| 0 | 0 | 1 | 1 | 1 |
| 1 | 0 | 1 | 1 | 0 |
| 0 | 1 | 1 | 1 | 1 |
| 1 | 1 | 1 | 1 | 0 |

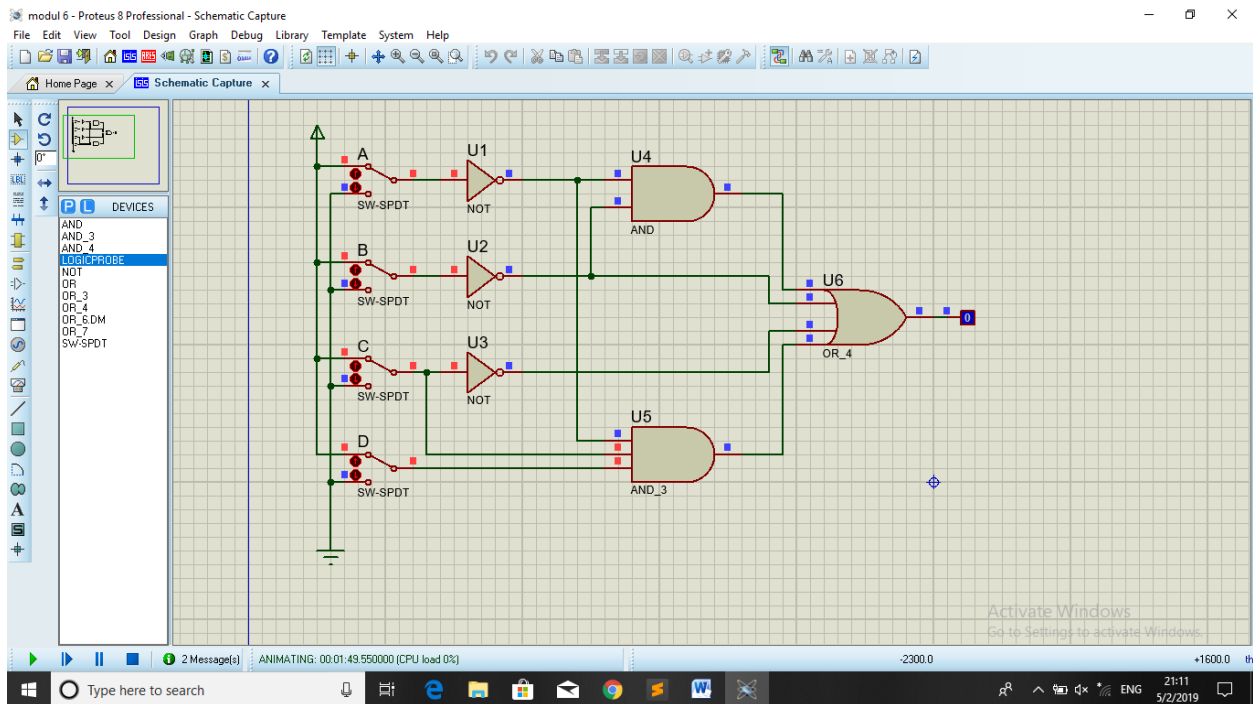
2. Based on the table, fill the blank on the following K map!

| | | AB | | | |
|----|----|----|----|----|----|
| | | 00 | 01 | 11 | 10 |
| CD | 00 | 1 | 0 | 1 | 0 |
| | 01 | 1 | 0 | 1 | 1 |
| | 11 | 1 | 1 | 0 | 0 |
| | 10 | 1 | 0 | 0 | 1 |

3. Simplify the Boolean function!

$$F = A'B' + B' + A'CD + C'$$

4. Draw the logic gates based on your Boolean function!



Is all the two combinations give the same result? NO