Name : Motwkel Mhmoud Mohmed Adam

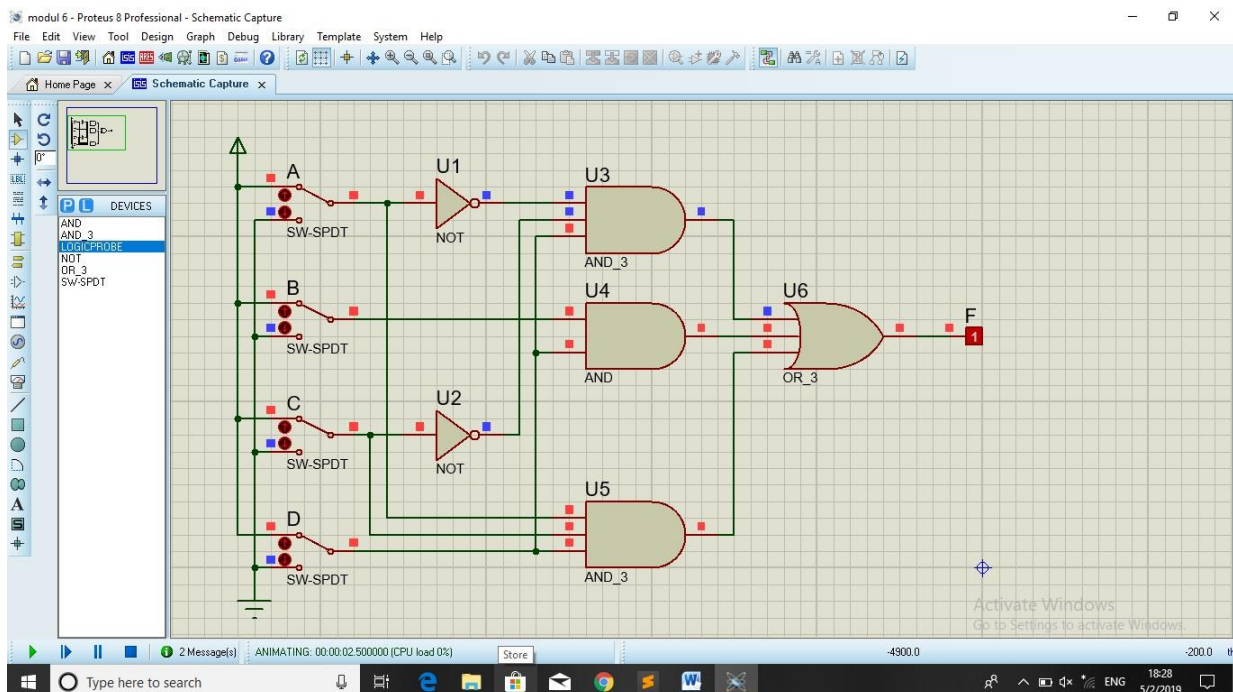**Class : X**

NIM : L200184220

1. Experiment 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!

Experiment 2

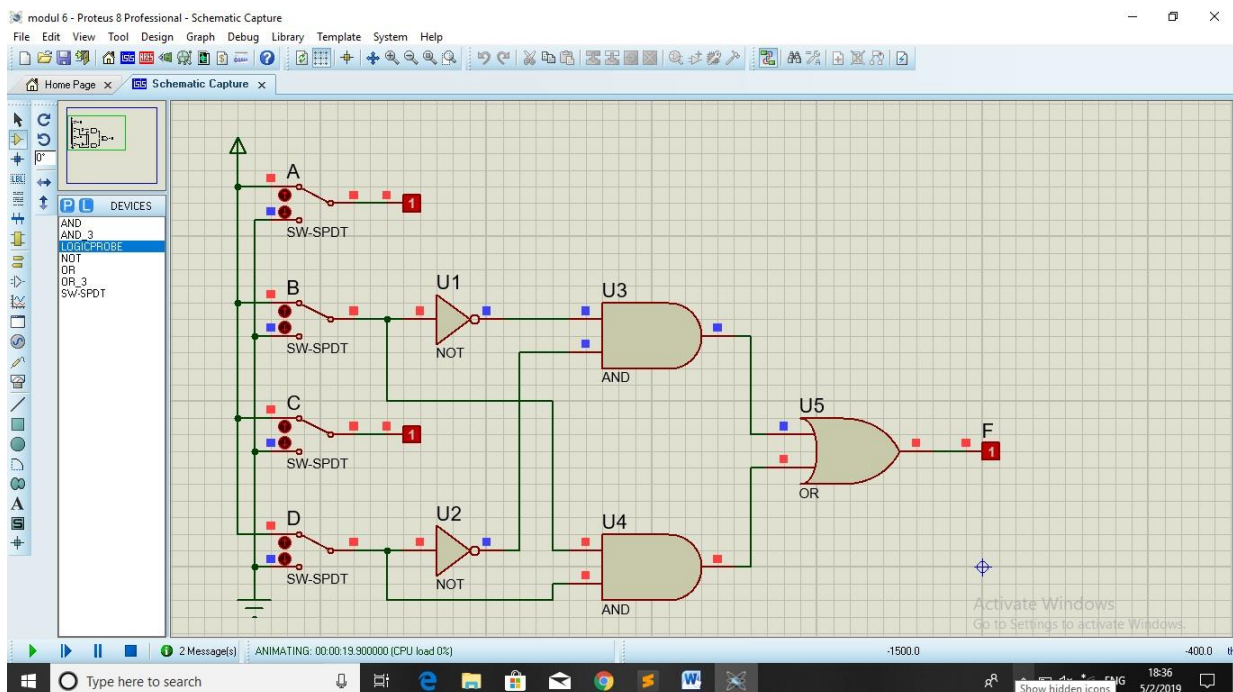1. Make the logic gate combination based on the following K map!

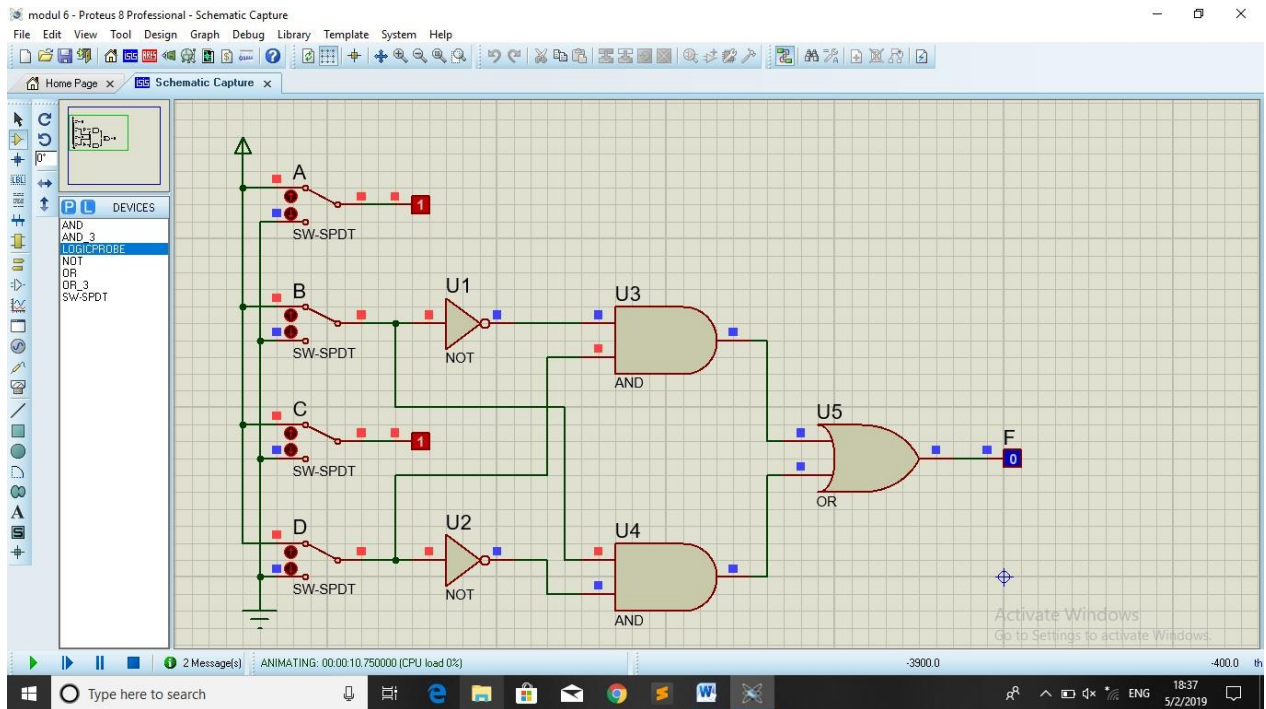|		AB			
		00	01	11	10
CD	00	1	0	0	1
	01	0	1	1	0
	11	0	1	1	0
	10	1	0	0	1

2. Boolean function:

   $F = B'D' + BD$ *(AND-OR)*
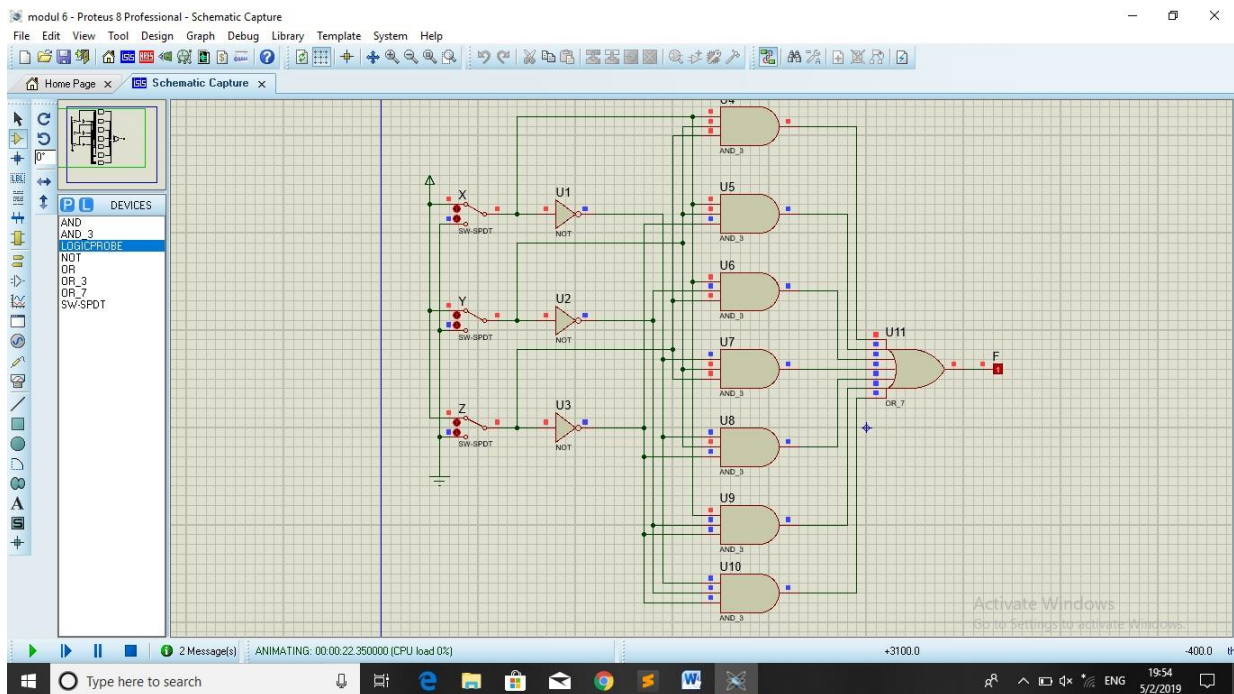
   $F = B'D + BD'$ *(OR-AND)*

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

Experiment 3

1. 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!
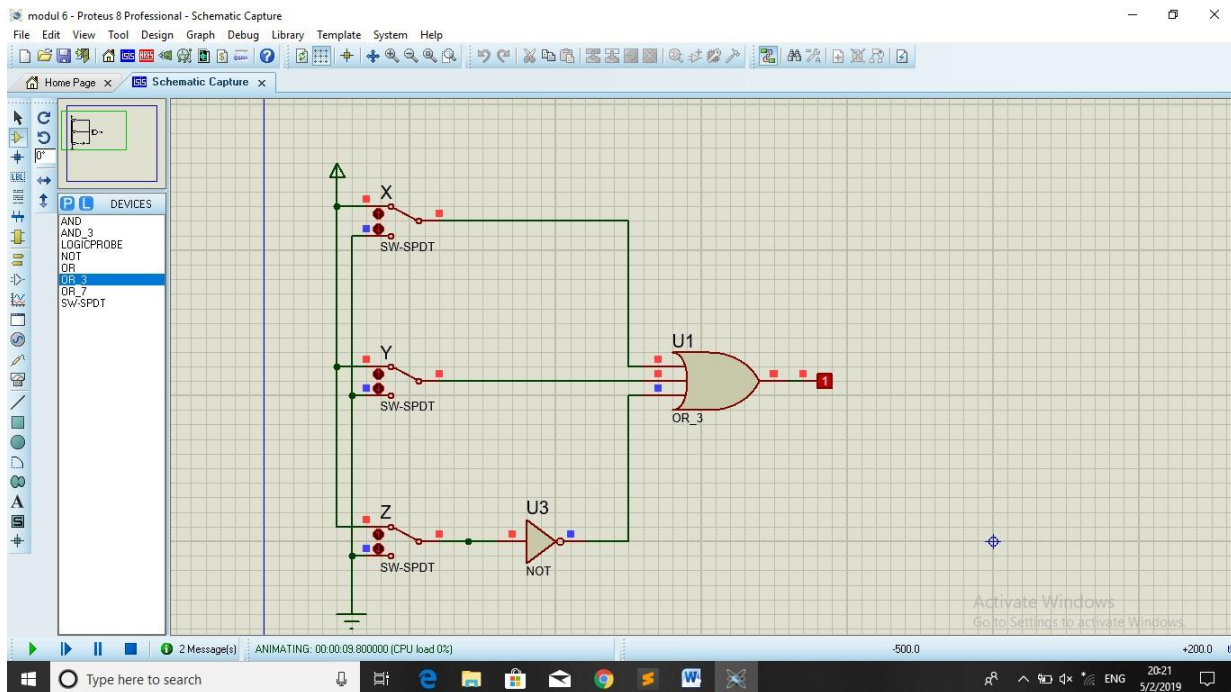
Experiment 4

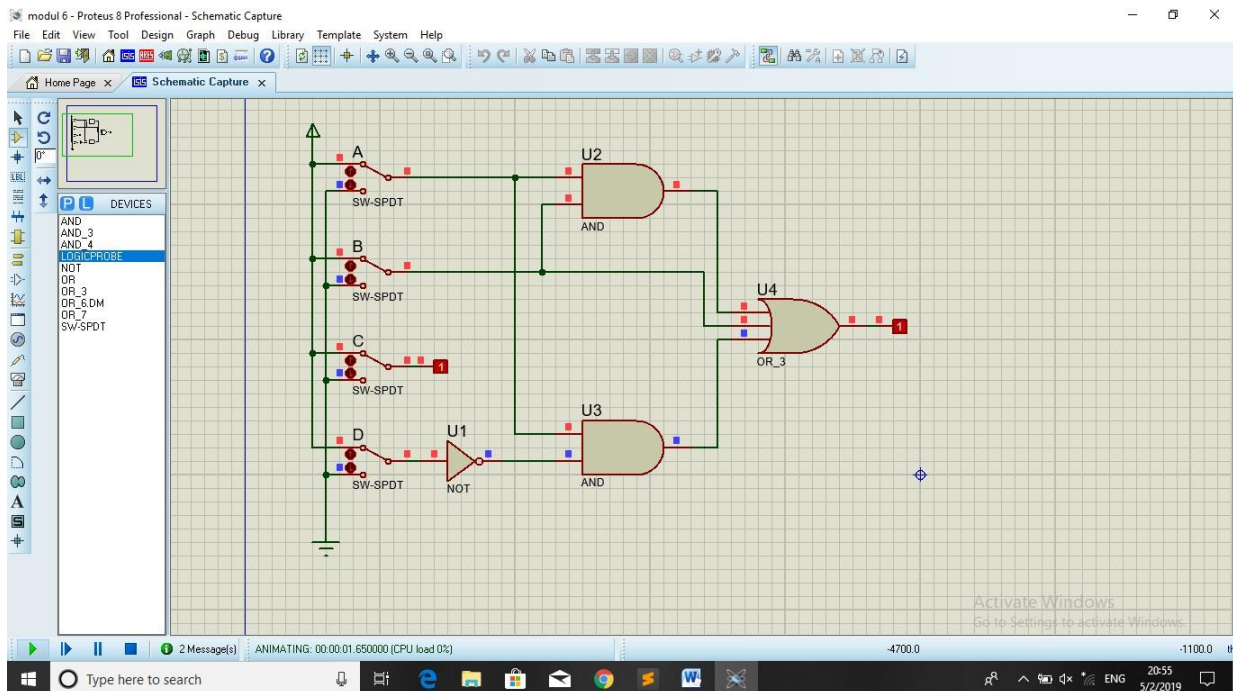1. Boolean function: $F = AD' + ABC + ABC' + BCD + BC'D' + AB'CD'$

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!

Experiment 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!