DIGITAL SYSTEMS LABORATORY WORK

MODUL 6 : THE MAP KARNAUGHT

By :

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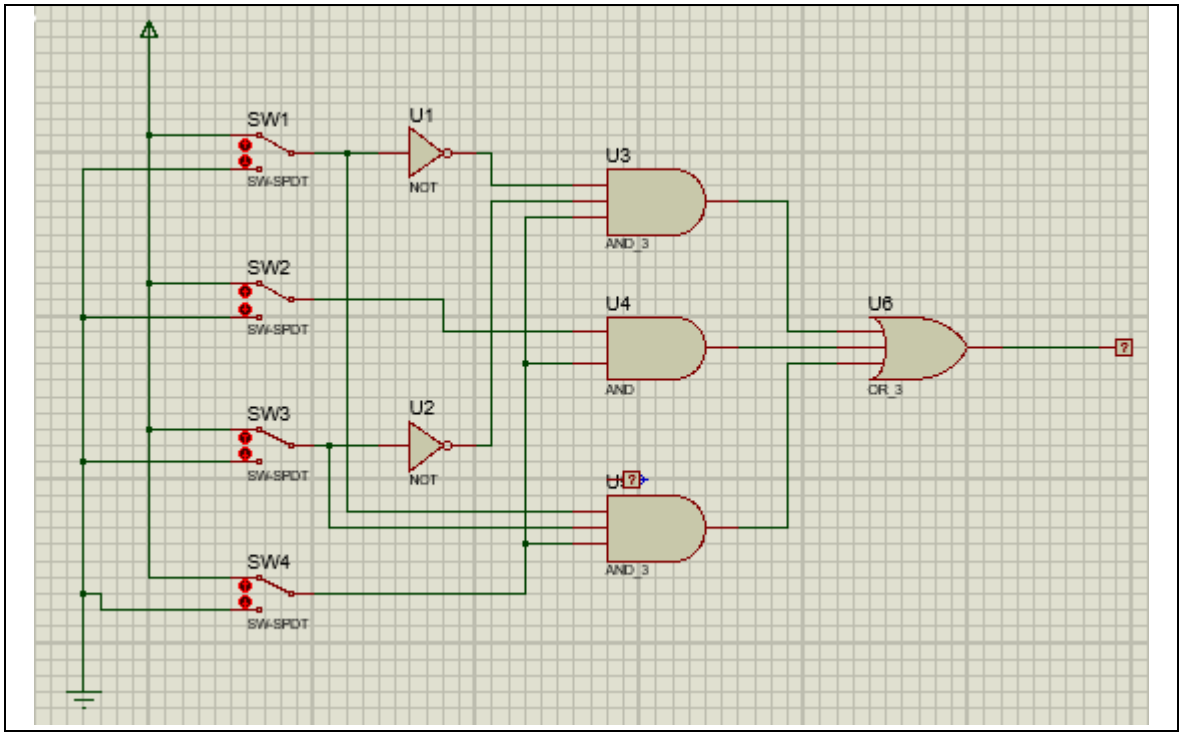
Attempt 1

1. Create a combination of logic gates based on the following 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. Create logic gates based on your boolean function! Picture in the box below!



Attempt 2

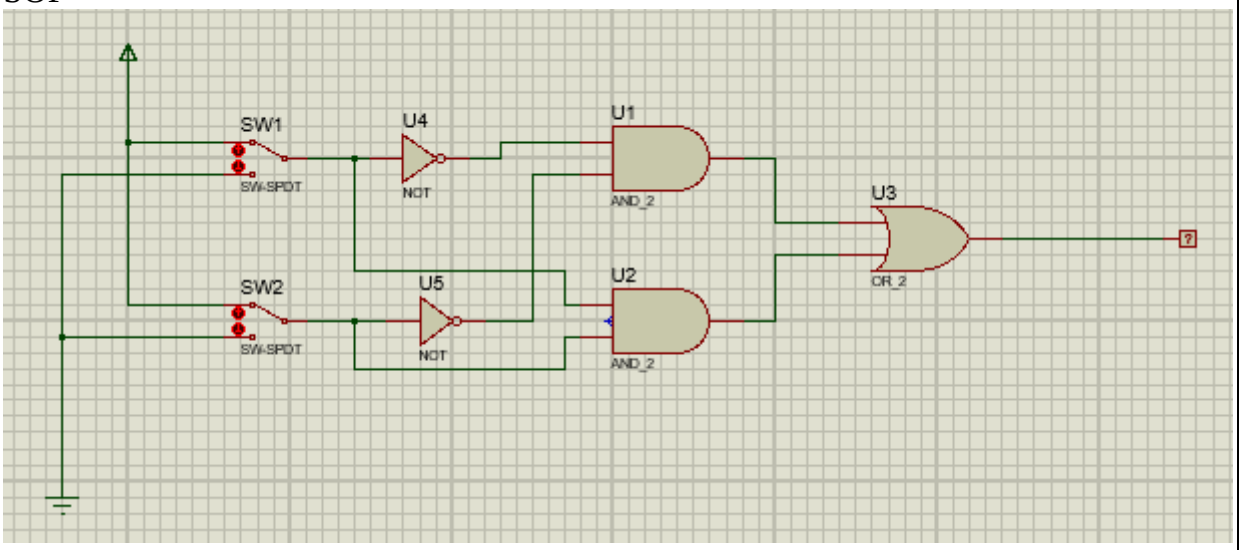
1. Create a combination of logic gates based on the following map.

		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

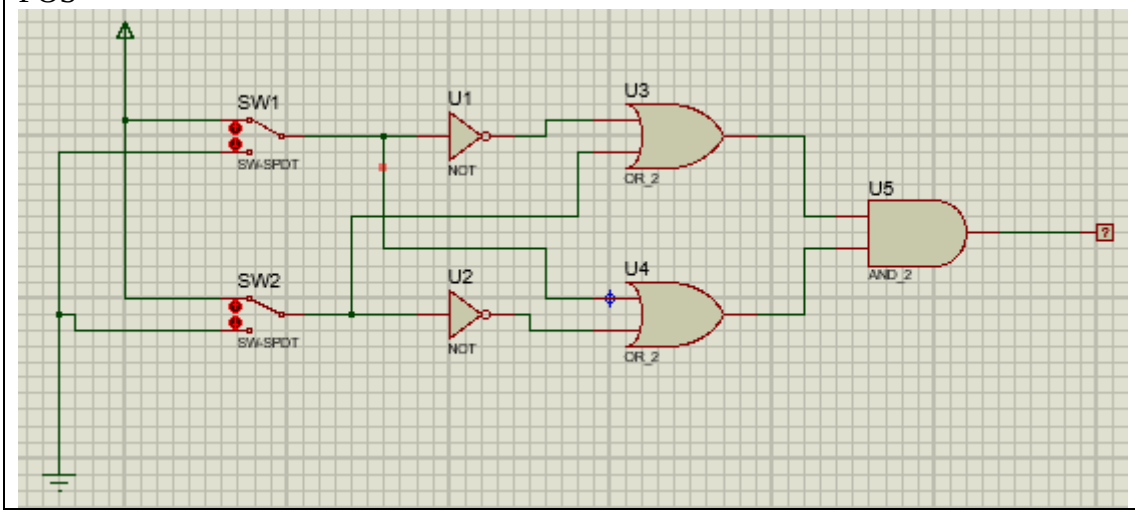
2. Boolean function **:**
   F = B'D' + BD (AND-OR)
   F = (B'+D) (B+D') (OR-AND)

3. Create logic gates based on your boolean function! Picture in the box below!

SOP



POS



Do the two combinations give the same results? Yes or ~~No~~

- **F = BD + B'D'**
- **F = (B'+D) (B+D')**
  = B'B + B'D' + BD + DD'
  = 0 + B'D' + BD + 0
  = B'D' + BD
  = BD + B'D'

Attempt 3

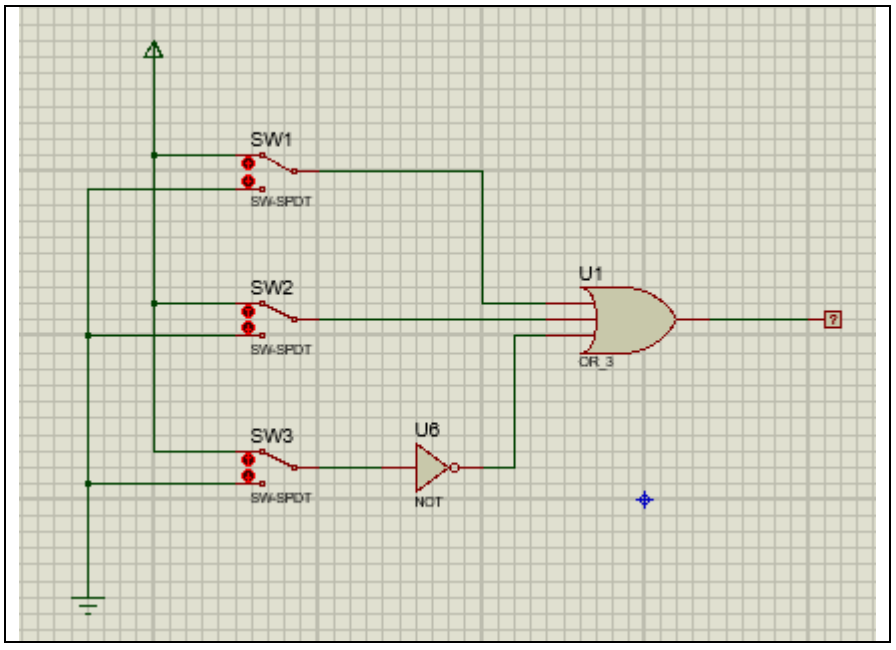
1. Boolean function **: F = XYZ + XYZ' + XY'Z + X'YZ + X'YZ' +XY'Z' + X'Y'Z'.**

2. Based on the boolean function, fill in the points on the map karnaugh of the following!

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

3. Simplify boolean functions **: F =** X + Y + Z'

4. Create logic gates based on your boolean function! Picture in the box below!



Attempt 4

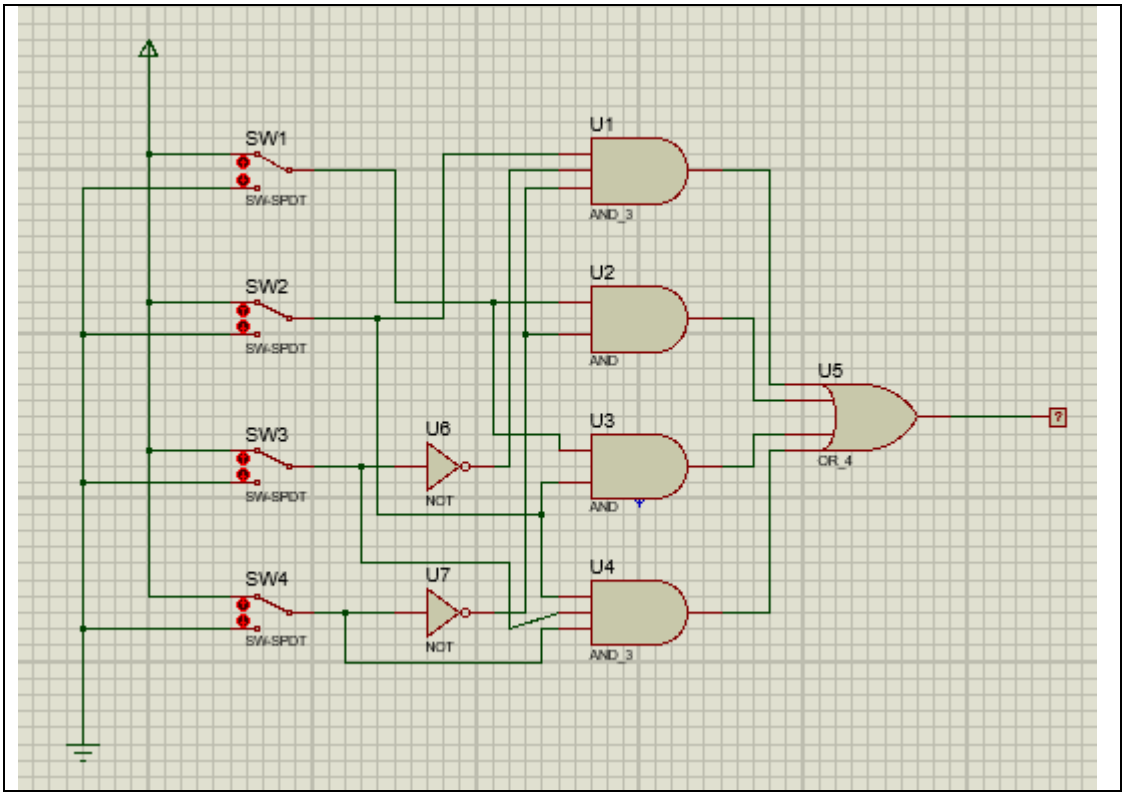
1. Boolean function **: F = AD' + ABC + ABC' + BCD + BC'D + AB'CD'.**

2. Based on the boolean function, fill in the points on the map karnaugh of the following!

		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 boolean functions **: F =** BC'D' + AD' + AB + BCD

4. Create logic gates based on your boolean function! Picture in the box below!



Attempt 5

1. Table of boolean function:

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**

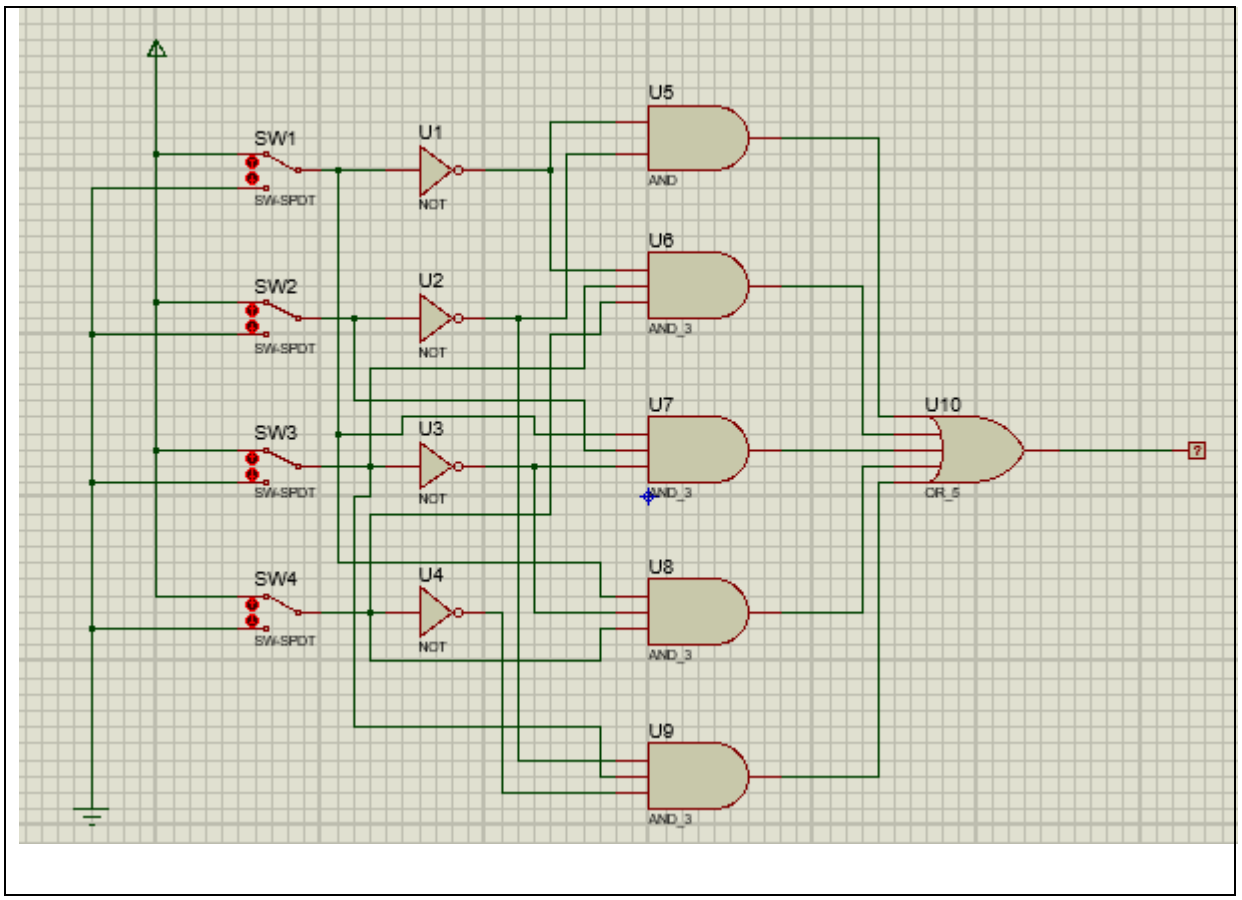
1	0	1	0	**1**
0	1	1	0	0
1	1	1	0	0
0	0	0	1	**1**
1	0	0	1	**1**
0	1	0	1	0
1	1	0	1	**1**
0	0	1	1	**1**
1	0	1	1	0
0	1	1	1	**1**
1	1	1	1	0

2. Based on the table. Fill in the points on the map karnaugh of the following!

		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 boolean functions **:**
   F = A’B’ + A’CD + ABC’ + AC’D + B’CD’

4. Create logic gates based on your boolean function! Picture in the box below!


SW1
SW-SPDT
SW2
SW-SPDT
SW3
SW-SPDT
SW4
SW-SPDT
U1
NOT
U2
NOT
U3
NOT
U4
NOT
U5
AND
U6
AND_3
U7
AND_3
U8
AND_3
U9
AND_3
U10
OR_5
?