

ECE 204L - BOOLEAN ALGEBRA - LAB 7

KARNAUGH MAPS

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OBJECTIVE

The objective of this lab is to use Karnaugh Maps to simplify the implementations of logic functions.

LAB

1. Design, build and test a logic circuit to implement the following Karnaugh Map for F1 with AOI gates

		WX			
		00	01	11	10
Y	0	1	0	1	0
	1	1	0	0	0

In particular

- a. **Prelab** - Obtain a logic equation for F1. Be sure to show how you grouped the 1's in the Karnaugh Map to obtain your equation for F1
 - b. **Prelab** - Draw a logic diagram with pin numbers for realizing F1 with AOI gates
 - c. Build your circuit and then measure the truth table for F1
 - d. Verify that your circuit is working - that it has the same Karnaugh Map as the one given
2. Given the following expression for F2

$$F2 = \sum_{w,x,y} (2,3,4,5,6,7)$$

- a. **Prelab** - Design and draw a logic diagram with pin numbers for F2 with AOI gates. Always be sure to show how you grouped the 1's to obtain your logic equation
 - b. Build your circuit and then measure the truth table for F2.
 - c. Verify that your circuit is working - that it agrees with the equation for F2
3. Given the following expression for F3

$$F3 = \sum_{w,x,y} (0,5) + d(1,3,4,6)$$

- a. **Prelab** - Design and draw a logic diagram with pin numbers for F3 with AOI gates. Be sure to indicate the values you chose for the don't cares
- b. Build and test your logic diagram in part (a).
- c. Verify that your circuit is working