

T1. Review HW01 and solve any problems that students point out they had difficulty with.

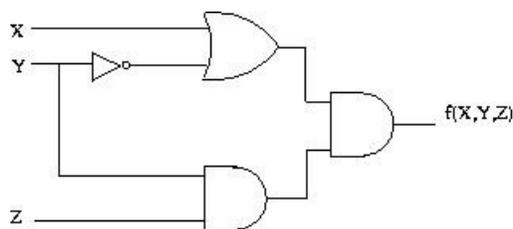
T2. Answer any general questions about HW02 and Lab 01 that students ask.

T3. Solve the following problems in order until time runs out.

1. Convert the following numbers to decimal:
  - a.  $101101_2$
  - b.  $111_2$
  - c.  $111_8$
  - d.  $111_{16}$
2. Convert the following numbers to binary:
  - a. 71
  - b. 123
  - c.  $123_{16}$
  - d.  $AB_{16}$
3. If you want to use assign a unique ID in binary to each of the 99 counties in Iowa, how many bits do we need?
4. By observation, write a logic expression of the function shown in the truth table below. Then show its gate-level implementation:

x	y	F(x, y)
0	0	1
0	1	1
1	0	0
1	1	1

5. For the circuit shown below write the logic expression for the function and show the truth table of the function.



Recitation Material for Week 2  
Tasks to do in the recitation section  
Assigned Date: First Week

6. Prove that the following two functions

$$f1 = xy(z+yz')+z' \text{ and } f2 = z'+xy$$

are the same using truth table method. Also, draw the circuit for each case and count the cost in terms of the total number of gates plus the total number of inputs to all gates in the circuit.

7. Prove the following properties of Boolean algebra using perfect induction (i.e., by truth table):

$$(x.y)' = x'+y' \quad 15a$$

$$(x+y)' = x'.y' \quad 15b$$

$$x+x'.y = x+y \quad 16a$$

$$x.(x'+y) = x.y \quad 16b$$

Students should draw circuits for each case for left and right side and count the cost in terms of the total number of gates plus the total number of inputs to all gates in the circuit.

*Remark: You will learn these properties in Lecture 5.*