EECS 270: Introduction to Digital Logic **Fall 2000**
Homework Assignment No. 1 **Instructors: Jenkins/Mazumder**
Due Date: September 18, 2000

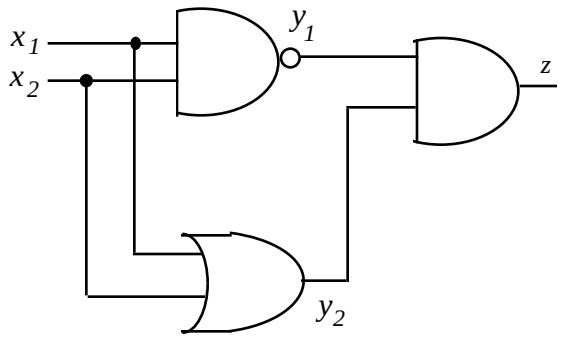
General Instructions: (these apply to all homework assignments)

1. All assignments are to be completed by each student individually; the College of Engineering Honor Code applies. Students must submit their own work in their own writing. No photocopies are accepted.
2. Assignments are due at the start of class on the due date.
3. Late homework will only be accepted at the start of the next class after the due date, and will be assessed a 50 percent grade penalty.
4. Your homework solution sheets must be stapled with your name and lab section number printed clearly on the top right corner of the front sheet. To ease handling, please do not fold your homework or use paper with rough edges. Homework papers are returned by lab section number.
5. Solutions for each homework will be available on the Web Page for EECS 270.

Problem 1. (Binary to decimal conversion) Convert the following binary number to decimal: binary 101011.100111.

Problem 2. (Decimal to binary conversion) Convert the following decimal number to binary, octal, and hexadecimal: decimal 37.8. Truncate to 4 binary octal and hexadecimal digits in the fractional parts.

Problem 3. (Basic gates, truth tables, and Boolean algebra)
For the given logic circuit, determine a truth table with column headings x_1, x_2, y_1, y_2, z by first finding the entries for y_1 and y_2 then determining z from these. The result shows that this circuit is equivalent to a single gate which has been discussed. Identify which gate. Use the Boolean equation definitions of each gate to write down an unsimplified expression for z in terms of x_1 and x_2. Then use the postulates and theorems of Boolean algebra to simplify the Boolean equation for z in terms of x_1 and x_2. The result is a simplified Boolean equation for the above gate.



Problem 4. Textbook problem 4.32

Problem 5. Textbook problem 4.39

Problem 6. Textbook problem 4.43

Problem 7. Textbook problem 4.45