CS152 Homework I, Fall 2006

Name: _____

SSID: _____

Homework I is due in class on Thursday September 28 at 11:10 AM.
This class is the Mid-term I review session.

Late homeworks are NOT accepted. Thus, if you will not be attending the review session, you MUST make arrangements to hand off the homework to the instructor before classtime.

Homework will be graded on effort (did you make an honest attempt to solve each problem?), not correctness. We will distribute the correct answers for the homework in the review session, but we will probably not return the homework you hand in until after the exam. So, you may wish to make a copy for reference before you hand it in.

This homework will count for approximately 1.5% of your final grade.
The homework is based on the Mid-term I exam from Fall 05.
You may discuss the homework problems with fellow students and the TAs, but what you write down must be your own work (no copying the answers from someone else's homework). Good luck! John Lazzaro

#	Points	
1	10	
2	15	
3	10	
4	10	
5	15	
6	15	
7	10	
8	15	
Tot	100	

1 Register File Design (10 points)

On the top slide on the next page, we show the write logic for the register file design we showed in Lecture 1-2.

Redesign the write logic for the register file, so that two registers may be written on the same positive clock edge. The 5-bit values ws1 and ws2 specify the registers to write, the 1-bit values WE1 and WE2 enable writing for each port (1 = enabled, 0 = disabled), and the 32-bit values wd1 and wd2 are the data to be written. If both write ports are enabled, and ws1 and ws2 specify the same register, this register MUST be written with the value wd1.

Draw your final design on the bottom slide shown on the next page. If you need to use a complex logic function in your answer, define a truth table for a function $f(x, y, \ldots)$ below the slide, and draw boxes on the schematic labeled with $f(x, y, \ldots)$. You may use standard symbols for simple gates (OR gates, AND gates, multiplexers, demultiplexers, etc).

Work out your design below BEFORE drawing on the slide on the next page. Only the next page will be graded.

From Lecture 1-2: Register File Design