CS 4/55111   **Project #3**   **VLSI Design**

Due to Prof. Walker by 5pm on Wednesday 27 October 2004
this project counts as 10% of your course grade

1. Re-do Problem 2 from Project 2 (including the output on the 7-segment LED), but implement the 3-bit counter using an AHDL design similar to the one on page 162 of *Digital Systems Design and Prototyping*. Turn in:

   a) a document that describes your design and any design decisions that you made in your implementation (10 points)

   b) a readable (not microscopic) printout of the schematic (5 points)

   c) a printout of the test inputs and simulation output that shows that the circuit works as expected, annotated to explain the operation of the circuit (15 points)

   d) a signature on the statement below by Prof. Walker, by the TA (Hong Wang), by one of Prof. Walker's research students listed on the door of the lab, or by **_two_** other students in the class (20 points):

   I certify that _____ has successfully downloaded this design to a UP1 board and the design works correctly.

   _____ Name   _____ Date

   _____ Name   _____ Date

2. Design a parallel 4-bit comparator in AHDL, which compares two unsigned 4-bit numbers and has three outputs, which in turn indicate whether the first number is greater than, equal to, or smaller than then second number. Implement this design on the UP1 board, along with some reasonable method for inputting two numbers and displaying the result. Turn in:

   a) items (a) through (c) similar to those in problem 1 above (30 points)

   b) a signature on the statement below by Prof. Walker, by the TA (Hong Wang), by one of Prof. Walker's research students listed on the door of the lab, or by **_two_** other students in the class (20 points):

   I certify that _____ has successfully downloaded this design to a UP1 board and the design works correctly.

   _____ Name   _____ Date

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