Due to Prof. Walker by 5:30pm on Wednesday 15 March 2006
this project counts as 10% of your course grade

1. Review the design of the 3-bit counter using D flip-flops in the attached handout. Implement this counter using the FLEX chip on the UP1 board, with the output of the counter displayed on a 7-segment LED, such that the circuit counts to the next value each time a pushbutton is pressed. Turn in:

   a) a description of your design and any design decisions that you made in your implementation (15 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 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 (Kevin Schaffer), by one of Prof. Walker's research students listed on the door of the lab, or by *two* other students in the class (15 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 3-bit counter, implemented on the FLEX chip using the 7-segment LED and pushbutton as in Problem 1, but instead of entering the counter graphically, enter it using AHDL design in a style to the one on page 162 of *Digital Systems Design and Prototyping*. Turn in:

   a) items (a) through (c) similar to those in problem 1 above (35 points)

   b) a signature on the statement below by Prof. Walker, by the TA (Kevin Schaffer), by one of Prof. Walker's research students listed on the door of the lab, or by *two* other students in the class (15 points):

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

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