Project #4

Due to Prof. Walker by 5:30pm on Wednesday 19 April 2006
this project counts as 15% of your course grade

1. An older-model Thunderbird car has three left and three right tail lights, which flash in unique patterns to indicate left and right turns. For a left turn, the lights on the left side flash off off off, off off on, off on on, and on on on, in sequence. For a right turn, the lights on the right side flash off off off, on off off, on on off, and on on on, in sequence. Design a state machine in VHDL that controls some part of the 7 segment displays on the UP1 board to demonstrate these lights. Use switches or push buttons as appropriate for three inputs — left, right, and hazard. Left and right are from the driver's turn signal, so can not be on at the same time. Hazard takes priority over all else, and causes all 6 lights to flash. Turn in:

    a) a description of your design and any design decisions that you made in your implementation (30 points)

    b) a readable (not microscopic) printout of the schematic (10 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 (30 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 (30 points):

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

    _____ Name _____ Date

    _____ Name _____ Date