

Due to Prof. Walker by 5pm on Wednesday 17 November 2004
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 AHDL 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) the usual items (a) through (c) — a document describing your design decisions, a readable printout of the schematic and AHDL code, and a printout of the test inputs and simulation output annotated to explain the operation of the circuit (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

_____ Name _____ Date

2. Re-do the 3-bit counter design from the last two projects (including the output on the 7-segment LED), but implement the 3-bit counter using a VHDL design. 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.

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