CPE462 - VHDL: Simulation and Synthesis - Fall'11

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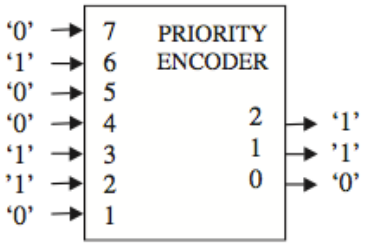
Homework Assignment #9

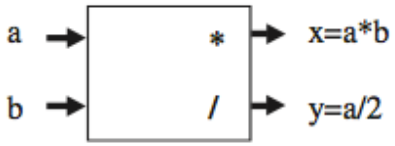
Due Date: Monday, October 17th 2011

Homework policy: If I see something unusual about your work, you can be sure I will ask you about it. If you are unable to explain it to me why you chose some implementation method I will have to consider your entire solution wrong. Now, what is my definition of "unusual work"? Well, things like suspicious parts of code that may have been copied from a website or chunks of your implementation that are very close to one of your colleagues. I really encourage communication amongst yourselves, and I want you guys to have a good time learning while doing these exercises... but please don't blindly copy code. If you really must, at least acknowledge your sources.

1. The following image shows the top-level diagram of a 7-level priority encoder. The circuit must encode the address of the input bit of highest order that is active. "000" should indicate that there is no request at the input (no bit active). Write a solution of this circuit using WHEN/ELSE statements.



2. Using only concurrent code, design the following multiplier/divider.



The circuit has two 8-bit integer inputs (a, b) and two integer outputs (x, y), where x = a*b and y=a/2.

3. Using only concurrent statements design the following 8-bit adder.