Homework 3
Reading Assignment
due Saturday, October 4

Required:
1. P. Chu, *RTL Hardware Design using VHDL*
   - Chapter 2, Overview of Hardware Description Languages
   - Chapter 3, Basic Language Constructs of VHDL

Recommended:

Hands-on Assignment
due Saturday, October 4, 11:59pm
(submission using Blackboard)

Task 1 – Installation of Tools

Please install the following three software packages on your laptop or desktop at home:
1. Xilinx ISE Webpack 14.7
2. Aldec Active-HDL Student Edition 9.3
3. Altera Quartus II Web Edition 14.0

Please follow the detailed instructions available at [http://ece.gmu.edu/tutorials-and-lab-manuals](http://ece.gmu.edu/tutorials-and-lab-manuals)
under FPGA Tools => The Detailed Instructions on How to Configure your FPGA Tools at School, and Install and Configure your FPGA Tools at Home (Part: CAD tools at home).

*Please make sure to install all recommended libraries and acquire all required licenses.*

Deliverables for Task 1:

Please prepare and submit a short report containing:

1. Short information about the machine(s) you installed the required tools on.
   
   For each machine, please provide the following information:
   a) type (e.g., laptop, desktop, tablet)
   b) operating system (e.g., Windows 7, Windows 8, Linux)
   c) vendor
   d) CPU speed
   e) amount of RAM.
2. Approximate amount of time required for the installation of each software package (including the time required to acquire and install the license).
3. Problems encountered (if any).
4. Proposed modifications to the document cadtools.html (The Detailed Instructions on How to Configure your FPGA Tools at School, and Install and Configure your FPGA Tools at Home) [to be rewarded with bonus points]

**Task 2 – Getting Familiar with Simulators**

Please get familiar with the following three simulators:

1. Xilinx ISim (part of the Xilinx ISE Webpack installation)
2. Aldec Active-HDL

In order to do that, please use the following three tutorials, available at http://ece.gmu.edu/tutorials-and-lab-manuals,

- Tutorial on Simulation with ISim
- Tutorial on Simulation with Aldec Active-HDL
- Introduction to Simulation with ModelSim-Altera and Altera Quartus II Setup
- Tutorial on Simulation with ModelSim.

In particular, please go over all examples described in these tutorials, using source codes included in the file: simulator_examples.zip.

Afterwards, please locate full User Guides for all the aforementioned simulators. Explore options and features of these simulators not described in the GMU tutorials.

Review the document Simulators Reference Guide - covering ISim, Aldec Active-HDL, and ModelSim. and make sure that you are capable of performing all operations described in this document, using all three simulators.

After performing these tasks, decide which simulator seems to best suit your needs and personal preferences.

**Deliverables for Task 2:**

Please prepare and submit a short report containing:

1. Reasons for the choice of the simulator that you believe the best suits your needs and personal preferences.
2. Proposed modifications to each of the three simulator tutorials (including possible extensions) [to be rewarded with bonus points]
3. Proposed modifications to the Simulators Reference Guide [to be rewarded with bonus points].