Introduction to Altera Quartus II Software and DE1 board

Signature and Grading Sheet

Group #:_____ Name(s):_____ .

Signature

Section 4.2(c): _____.

Grading

- Section 4.2(b) (20 points):_____.
  Attach a printout page with the "total logical elements" circled.
- Section 4.2(c) (40 points):_____.
- Section 4.3(b) Simulation (40 points):_____.
  Attach simulation timing diagram printout.

Total points: _____.

Introduction to Altera Quartus II Software and DE1 board

1 Purpose

To learn synthesis and simulation using Altera Quartus software with the DE1 board

2 Reading

- Sections 3.1 – 3.5 of *Embedded SoPC Design with Nios II Processor and VHDL Example*
- *Introduction to Simulation of VHDL Designs* (Altera Quartus simulation tutorial)

3 Discussion

Altera Quartus II provides a framework for synthesis, simulation, and device programming. Quartus simulator is with a simple GUI and easy to use. However, it can only simulate the post-synthesis netlist and is not a VHDL simulator.

4 Procedures

4.1 Set up license

Follow the *General Digital Lab Instruction* document (in CSU Blackboard) to log in and set up the Altera license.

4.2 Synthesis and implementation

(a) Follow Section 3.5 of *Embedded SoPC Design* to implement the physical circuit.

(b) Print "compilation report" similar to Figure 3.14 in text.

(c) Test the circuit with four switches on DE1 board and observe the LED. Demonstrate the circuit to instructor and get signature.

4.3 Quartus simulation tutorial

(a) Follow *Introduction to Simulation of VHDL Designs* (in CSU Blackboard), including Appendices A and B, to learn the Quartus simulation. Since the simulator does not provide a built-in print function, you need to capture and print the screen. The "Snipping tool" of Windows 7 can be used for this task. If you haven't used this tool before, search it in Windows' "Help and support" menu.

(b) Capture screen similar to that of Figure 27 in *Introduction to Simulation of VHDL Designs* and print it.

5 Additional info

Quartus II is a complex software package. The tutorial in Section 3.5 just helps you getting started. Additional information can be found in the Help menu of Quartus or the following link http://www.altera.com/literature/lit-qts.jsp