Lab 9
Introduction to VHDL

Objectives

- To get familiar with the Xilinx VHDL Editor Tool.

- To get familiar with the Xilinx Simulation Tool.

- To design and implement simple combinational logic circuits using the VHDL Editor and Simulator.

- To download your circuits onto the prototyping board and test it.

Laboratory Instructions

- Create a directory with your name on the C drive of your lab PC. Use this directory to create your project, store your results, bitstreams, etc. during the lab session.

- You can bring complete project files on a floppy disk and then use the **Copy Project** command from the Project Manager menu to copy it into the directory you created above.

- Alternatively, you can create a new project in your directory on the C drive and then copy your files to that new project directory. Remember to **Add** your .SCH file to the project.

- Alternatively, you create a new project in your directory on the C drive and then copy your VHDL files to that new project directory. Remember to **Add** your VHDL file to the project.

- Refer to appendix C on how to create a project, enter the VHDL code, and synthesize the VHDL code to a netlist.

- Perform functional simulation of your design and have it checked by your TA.

- Refer to appendix A for instructions on performing functional simulation.

- Refer to appendix B for instructions on how to download the circuit to the prototyping board.

- Test and demonstrate your circuit to your TA.

- Before you leave the lab please **remove** the files and directories that you created on your lab PC and leave our workplace clean and tidy.

Design Problems

Using the Xilinx VHDL Editor and Simulation Tools, design, simulate, and demonstrate on the prototyping board the following circuits:

1. Use VHDL (either at the dataflow level or the behavioral level) to do Design Program #2 from Lab 8. You do not need to redo the entire VGA monitor controller circuit. Just do the driver for displaying the red boarder and the two large block letters "CS". Combine this VHDL driver code with the VGA controller schematic circuit from Lab 8, and test it out on the prototyping board.