**EECE 343 Computer Interface Circuits**

**Lab 8**

**VGA Video Signal Generation**

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**Objectives**

The purpose of this exercise is to learn how to design a VGA Video Signal Generation for demonstration of the Bouncing Ball game using the DE2 Board and a VGA monitor.

**Project**

Develop a VHDL code to implement the VGA Video Signal Generation for demonstration of the Bouncing Ball game using the DE2 Board and a VGA monitor or projector. The minimum requirements for the bouncing ball are to be bounced vertically and horizontally with a changing of its size and colors of the ball. Extra credit will be given if the ball can be hit by a “rocket” (e.g. a dot) that is launched vertically and movable along with the bottom line horizontally.

**Procedure**

Perform the following steps to implement a circuit for the project on the DE2 board.

1. Create a new Quartus II project for your circuit. If using the Altera DE2 board, select Cyclone II EP2C35F672C6 as the target chip, which is its FPGA chip.
2. Create a VHDL entity for the code of the lab project.
3. Include in your project the required pin assignments for the DE2-series board, as discussed above. Compile the project.
4. Download the compiled circuit into the FPGA chip.
5. Connect VGA monitor to the DE2 board.
6. Test the functionality of the circuit.
7. Turn in your lab report on the day you demonstrate your project in class.