**EEL 5722C - FPGA Design**
**Fall 2013**
**University of Central Florida**
***Lab Assignment #2***

# Display colors on a VGA monitor

**Objective:** Display 8 colors sequentially on a 640x480 pixel VGA computer display using the XUPV2P Xilinx development board. The displayed color should change when the push button PB_UP on the board is pressed. The push button should also be used to increment a counter that is displayed on the 4-LED panel on the XUPV2P. Once all 8 colors have been displayed, pressing the push button should start displaying the colors again from the beginning. Likewise, the counter should count from 0 to 7, and then be reset to start counting from 0 again. PB_ENTER is used to reset the LED and the VGA display. Write a Verilog/VHDL program to implement the solution to the above problem.

Due: At the beginning of the lab 3 session.

User Constraint File:

```
NET "clock" LOC = "AJ15";

NET "reset" LOC = "AG5";

NET "hsync" LOC = "B8";

NET "vsync" LOC = "D11";

NET "blank" LOC = "A8";

NET "comp_sync" LOC = "G12";

NET "pixel_clock" LOC = "H12";

NET "red[7]" LOC = "H10";

NET "red[6]" LOC = "C7";

NET "red[5]" LOC = "D7";

NET "red[4]" LOC = "F10";

NET "red[3]" LOC = "F9";
```

```
NET "red[2]" LOC = "G9";
NET "red[1]" LOC = "H9";
NET "red[0]" LOC = "G8";
NET "green[7]" LOC = "E11";
NET "green[6]" LOC = "G11";
NET "green[5]" LOC = "H11";
NET "green[4]" LOC = "C8";
NET "green[3]" LOC = "D8";
NET "green[2]" LOC = "D10";
NET "green[1]" LOC = "E10";
NET "green[0]" LOC = "G10";
NET "blue[7]" LOC = "E14";
NET "blue[6]" LOC = "D14";
NET "blue[5]" LOC = "D13";
NET "blue[4]" LOC = "C13";
NET "blue[3]" LOC = "J15";
NET "blue[2]" LOC = "H15";
NET "blue[1]" LOC = "E15";
NET "blue[0]" LOC = "D15";
NET "pb_up" LOC = "AH4";
NET "led[0]" LOC = "AC4";
NET "led[1]" LOC = "AC3";
NET "led[2]" LOC = "AA6";
```