CSE4117 Microprocessors

HW1

You will upload your homework to the classroom as a zip file which contains all source files. The name of your zip file will be the name and surname of group members, e.g.

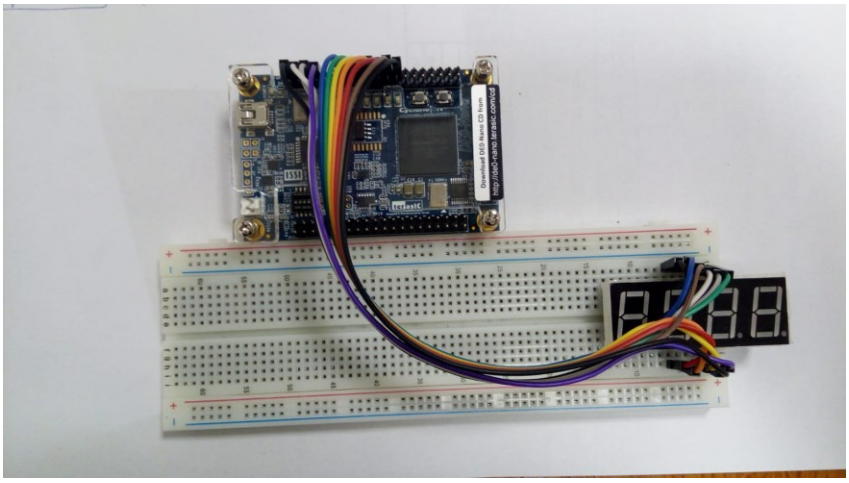
CSE4117_name_surname_name_surname_name_surname_hw#.zip. Any of group members can upload the file.

Part 1 (Verilog Part)

In this assignment, you will increase the data on the seven-segment display. You will also manipulate scan speed. For this purpose, you will use two push buttons that are on the DE0-nano FPGA board.

Realize the following instructions with SystemVerilog and FPGA:

1) Initially, a constant value (e.g. F7A2) will be displayed on the seven-segment display.
2) If you press the left push button, the data on the display will be incremented by one. When data reaches 0xFFFF, it will roll over to 0x0000 in the next button press.
3) If you press the right push button, scan speed of the grounds will change.
    a. Initially, the scan speed must be sufficient for flicker-free display.
    b. When you press the button, the scan speed will drop, and the digits start to flicker.
    c. When you press it again, the scan speed will drop so low that only a single digit on the seven-segment display will be seen.
    d. If you press it once more, go to **a**.



Part 2 (Logisim Part)

1. Realize Reptile-8 in Logisim.

2.Connect register 0 to 4x7-segment display unit.

3. Write a program which will have a variable in register 0. Your code should increment register 0 in a loop.

4. Your system must work with both 4 KHz clock and with discrete ctrl-T clock pulses.

5. Complete and use the assembler given in the website.