

Computer Project #3

Assignment Overview

This assignment develops familiarity with combinational circuits, as well as the "sim" software simulation package. You will implement and test the combinational circuits which you designed in Computer Project #2.

It is worth 40 points (4% of course grade) and must be completed no later than 11:59 PM on Thursday, 9/24.

Assignment Deliverable

The deliverable for this assignment is the following file:

proj03.netlist.c – the source code file containing your solution

Be sure to use the specified file name and to submit it for grading via the CSE handin system before the project deadline.

Assignment Specifications

The design requirements are the same as for Computer Project #2.

Your implementation will be formalized by creating a C++ source code file which represents the minimized version of each function in your circuits and serves as input to the "sim" package.

You will execute the simulator using "sim proj03.netlist.c".

Assignment Notes

1. To implement your circuits, you will create two functions: "simnet" and "circuits". A skeleton for the C++ source code for those two functions is available on the system:

/user/cse320/Projects/project03.netlist.c

2. Function "simnet" will serve as a test fixture which allows the user to produce hexadecimal digits and observe the resulting outputs. The input will be generated using a four-bit counter (controlled by pulsers), and the results will be displayed using eight probes.

The pulsers used to control the four-bit counter will be placed vertically on the left edge of the "sim" window.

The eight probes will be placed near the right edge of the "sim" window. The "Present" probe will be placed at the top of the "sim" window, while the probes for the other seven functions ("a", "b", and so on) will be placed below the "Present" probe in the "Figure 8" pattern used by a seven-segment display.

All pulsers and probes will be appropriately labeled in the "sim" window.

3. Function "circuits" will serve as the implementation of your eight Boolean functions ("Present", and "a" through "g"). You will use "Not", "And" and "Or" components to construct the Boolean functions.