CSE 370 Spring 1996

Introduction to Digital Design

Laboratory Assignment #1

Due April 12, 1996

Objectives

This lab will introduce you to Synario, in particular its built-in testing capabilities. After completing this assignment, you should understand how to draw circuit schematics and simulate simple combinational circuits.

How to get started

Synario has been installed on the PCs in lab 327. If you do not have a code to enter the lab yet please contact Stephen Lee (slee@cs) as soon as possible. There are ten copies of the Synario tutorial in the lab; you can find them on the short brown table in front of the white board. Please put them back there when you are done with them.

Synario allows to specify the behavior of hardware systems in different formats (Abel, schematics, ..) and to map those descriptions onto particular hardware components. Moreover it allows to test your design and implementation.

This handout is not a tutorial. Use the tutorials in the lab for precise details about how to proceed with the Synario package.

A few things to know about Synario

Synario allows you to manage "projects". A "project" is a kind of virtual workspace that allows you to group all the files that you need to design and eventually implement a particular hardware system. You will need to create one "project" for each of the two exercises proposed in this lab. In order to work on one "project" you are going to apply different operations to the files in this "project". By selecting a file in the left part of the main window you will see in the right part of the window the list of operations that you can apply to this file. Applying such an operation (by clicking on its name in the right part of the window) might well results in generating files or allowing different operations. The sequence of operations to execute is described starting on page $4-1$ of the tutorial.

Synario can be found in the "Hardware Design Tool" folder. Go through the tutorial.

You will then draw circuit schematics for some simple circuits.

1. Draw the schematic for a 2-input AND gate. Label the 2 inputs and the output. Give some Test Stimulus to the two inputs. Run the simulation and observe the output waveform. Verify that it is correct.

   Turn in a copy of your Synario schematic and the waveform viewer output.

2. Repeat the same for a 2-input OR gate.

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Summary Sheet

(Include this as the cover for what you hand in)

NAME : _____

1. Hardcopy of the labelled 2-input AND gate circuit and the timing waveform for the simulation.
2. Hardcopy of the labelled 2-input OR gate circuit and the timing waveform for the simulation.