Question: What is the default logic value of the push buttons when the push button is NOT being pressed (i.e.,BTN0, BTN1, BTN2, or BTN3)?

* Pushbutton inputs are normally low, and they are driven high only when the pushbutton is pressed.

Question: What digital logic level is needed to turn on one of the LEDs (i.e., LD0-LD7)?

* A logic ‘1’ output will illuminate LEDs.

Question: What is the purpose of the series resistor used by the buttons and switches?

* For protection against short circuits.

Question: What FPGA pin is connected to the switch input SW4 signal?

* L14

Question: What FPGA pin is connected to the LED LD5 output signal? (the version of the Nexys2 board in our lab uses the -500 die)?

* P15

Question: What is the resistance, in Ohms, of the resistor used between the FPGA and the LEDs?

* 390 ohms

Question: If the voltage level of the FPGA pin is 3.3V (for a digital ’1’) and the forward bias voltage of the LED is 1.7V, how much current will ﬂow through the LED when the FPGA pin is high asserted? (This is a simple application of Ohm’s law: V=IR)?

* (3.3-1.7)/390 = 4.1 mA

Question: What time does the “Simulation Done” message occur when using this testbench?

* 3919 ns

Question: Review the synthesis report and determine the “Maximum combinational path delay”.

* 9.176ns

Question: Review the synthesis report and determine the number of “slices”

* 14

Personal Exploration

Design summary can be very useful because it made me sure that my inputs and outs are connected correctly. It will save me much time in the future because I don’t have to synthesize first to check my input and output relationships. Learning about the board was interesting as well. Through the detailed schematic of the board taught me to understand more about entity and port in VHDL.