

ELE 3510 Lab 7: NIOS Introduction

1 dedicated lab period, 1 lab period to complete

Objectives

- Introduce NIOS II hardware design
- Introduce NIOS II software design

Prelab

- Review the NIOS II class notes

student
check off

Assignment

Part 1: Basic NIOS II system

- 1) Create a Nios II based system that prints **“hello world”**
- 2) Inputs:
 - a. clk

Part 2: NIOS II / DE10_lite interaction – Input

Specification:

- 1) Create a NIOS system
- 2) The system must **mirror 8 switches to 8 LEDS** (via SOFTWARE)
- 3) Inputs:
 - a. clk
 - b. 8 switches
- 4) Outputs:
 - a. 8 LEDs (switch value)

Part 3: NIOS II / DE10_lite interaction – Output

Specification:

- 1) Create a NIOS system
- 2) Include the functionality from part 2 (SW/LED)
- 3) The system must use a single additional 16 bit PIO output for the 2 sseg displays
- 4) The system will implement an 8-bit counter (via SOFTWARE)
- 5) The system will **output the count to 2 seven segment displays in hex** (conversion via SOFTWARE)
- 6) Inputs:
 - a. clk
 - b. 8 switches
- 7) Outputs:
 - a. 8 LEDs (switch value)
 - b. 2 seven segment displays (count)

Additional Requirements:

1. Display the bottom nibble of the count to HEX 0 in Hex format
2. Display the top nibble of the count to HEX 1 in Hex format

Check Off

You must demonstrate your working design(s) prior to the beginning of the next lab period

- Demo your “hello world” program 10%
- Demo your switch display program 30%
- Demo your counting program 40%

Lab Report (informal)

- Due at 4:00 pm, the day of the next lab period – in the box
- Include a properly documented informal lab report. 20%