EE 3921 Lab 4: NIOS Introduction

1 dedicated lab period, 2 lab periods to complete

Name:_____

Objectives

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

Prelab **student check off**

- Review the NIOS II class notes ☐

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 – output~~

Specification:

1) Create a NIOS system
2) The system must include a single 16 bit PIO output
3) The system will implement an 8-bit counter (SOFTWARE)
4) The system will output the count to 2 seven segment displays in hex (SOFTWARE)
5) Inputs:
    a. clk
6) Outputs:
    a. 2 – seven segment displays

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

Part 3: NIOS II / DE10_lite interaction – I/O

Specification:

1) Create a NIOS system
2) Include all the functionality from Part 2
3) The system must mirror 8 switches to 2 seven segment displays in hex format (SOFTWARE)
4) Inputs:
    a. clk
    b. 8 switches
5) Outputs:
    a. 2 seven segment displays (count)
    b. 2 seven segment displays (switch value)

Additional Requirements:

1) Display the hex values of the switches on seven segment displays HEX3 and HEX2.

Check Off

You must demonstrate your working design(s) prior to the end of the 2nd lab period

- Demo your “hello world” program 30% _____
- ~~Demo your counting program 30% _____~~
- Demo your switch display program 70% _____

Lab Report (informal)

- Due at 4:00 pm, 1 day after 2nd lab – in the box
- Include a properly documented informal lab report. 20% _____