Lab Assignment 8 – Real Life Simulation

Lab 8.0 Introduction

It is not uncommon that during an interview, you are asked to prove your programming skill on the spot. As a Northeastern University student, your course instructor truly believes that you have what it takes to face that challenge. In a situation like this, it is important to remain calm, take a deep breath and start tackling the issues one at a time. Do not try to over complicate the problem but rather focus on dissecting the problem into smaller pieces and then piece them together. Have a plan, do not try to program everything at once, write a small program then builds upon that. This is called *progress*.

Scenario:
During an interview, you are asked by a group of engineers to write a program that will interface DE1-SoC to a monitor/TV.

Having been trained by Prof. Marpaung, you immediately asked for the DE1-SoC data sheet titled *DE1-SoC_Computer_System_with_ARM_Cortex_A9.pdf* and figured out that the C program to connect the DE1-SoC to a Monitor/TV is found starting on page 63. You were also able to find the relevant information about the *Video-out Port* starting on page 19. Having gone through prior lab assignments, you know for a fact that you cannot just copy and paste the code on page 63 to Linux as you know the difference between Physical address and Virtual Memory address. It appears that modifications need to be made in order to make the program work.

Pre-Lab Assignment

Find the range of the physical address that you want to map to virtual address.
Clearly mention the lower and upper physical address.
Provide a thorough technical explanation behind the reason why you want to select the lower and upper physical address.

Submit a **single PDF** file with your responses to Canvas before coming to the lab. The name of your prelab report needs to be **prelab8.pdf**.

Group

This assignment is intended to be completed individually but you are allowed to form a group of two to complete this assignment.

Quick Note:
As this assignment is treated as a real-life simulation, you will only receive a limited help from the course instructor or teaching assistants. Your course instructor and TAs will not debug your program for you. Welcome to real life.

Lab 8.1 Interview Question: Interfacing DE1-SoC to a Monitor/TV

Modify the code found on page 63. Once you are able to get the program to work, you need to:

1. Change the text from "Intel FPGA" to "EECE 2160 - *Current Semester* - *Year*" where you need to change the *Current Semester* to either Spring, Summer, or Fall, and you need to change the *Year* to current year.
2. Change the text from "Computer Systems" to "Your First Name and Last Name" (please include your lab partner's name if you work as a group)
3. Put a yellow box around the new text. (Information about the hex value for the new color can be done by surfing the web: *16-bit color generator*)

Assignment 1

1. Submit all the files needed to complete this assignment to Canvas. Include these files with your report submission.

Laboratory Report

You need to follow the lab report outline provided on Canvas.
Submit your final and working version of all the files needed to complete Assignment 1.
Your grader will run your code.

For individual submission:
Submit a document with the following naming convention: FirstNameLastName-Lab8.docx (for example: JohnDoe-Lab8.docx) that contains all the files needed to complete Assignment 1. Turnitin will check the genuineness of your work.

For a group of two submission:
Submit a document with the following naming convention: YourFirstNameLastName-YourLabPartnerFirstNameLastName-Lab8.docx (for example: JohnDoe-JaneDoe-Lab8.docx) that contains all the files needed to complete Assignment 1. Turnitin will check the genuineness of your work. Each individual is responsible to submit their own file(s)/document(s).