SOEN228/SOEN298 Lab Final Report Guidelines

1 Overview

As part of the SOEN228/SOEN298 Lab, students are required to write a final report that discusses the project computer. The focus is on the computer and its functionality. Discussion of the computer's components should be limited to the functional contribution to the computer and not how the components work internally.

This document seeks to shed some light on what is recommended for content. Ultimately, the goal of the final report is for the students to demonstrate their knowledge of the assembled computer, how it works and to gain experience in producing a professional document. A good indicator of a report's quality is that a person should be able to read through the report, construct a replica of the author's computer and understand how it works. This report is worth **40%** of the lab grade and must be done in teams. There is to be no content present about what was learned or anything associated with the preliminary labs. This report is not to be treated as a regular report, meaning that there should be no discussion about difficulties, errors when building the project and any additional content that may be present in previous submissions.

The audience of this document should be somebody with some technical knowledge of how to wire circuits. It should be assumed that the reader of this document is aspiring to clone the students' computer. With this in mind, the document should be able to provide all the knowledge necessary to know how to assemble the computer, how it works and what expected outputs should be present.

2 What Should Go Into the Document?

The content is to be determined by the students. Previously written work from lab reports can be used but it is assumed that students are placing correct or corrected work. Students are required to have the following items present:

- Five timing diagrams, one for each instruction. Complete execution cycles must be shown for IncA, IncB, MovAB, MovBA and NOP.

- Complete Schematic

- Program Listing

- Block Diagram of the Computer

Students should consider this report as a short technical manual for their computer. Details are expected but students are to exercise caution so that the content is not verbose (too long, too wordy or overly detailed). With this in

mind, students are expected to include sections that are dedicated for each portion of the computer (timing signal generator, bus and so on). Students are expected to determine what content they should place in their reports.

That being said, below is a rough, incomplete and non-ordered suggestion of sections to include. Following this order may result in a poor grade due to how the report is organized and a potential lack of content.

- Introduction

- Memory

- Timing Signal Generator

- The Data Bus

- Program Counter

- Onboard Registers

- Control Signal Generator

- Overview of the Computer

- Operation of the Computer

Copying and pasting text directly from lab reports is not tolerated. Photos are acceptable. Discussion of parts used, circuits, and specifications is considered proper content. *Issues faced in the lab and what concepts or lessons students learned are not to be discussed since these topics were covered throughout the previously submitted reports.*

3   Diagrams, Formatting and Professionalism

Students are expected to produce a final report that comes across as professional. This implies that the document is well formatted and easy to read. It should be easily noticeable that some effort has been made for the layout and presentation. Included diagrams are to be computer generated, legible and properly annotated. *Additionally, students are to produce their own diagrams. Diagrams, schematics and figures copied from elsewhere will not be accepted even if their respective sources have been cited.*

All written content is to be original as well. Tables, diagrams and figures are to be referenced in the text. An example would be: *"When the 7404 Hex Inverter is used, the functionality shown in Table 1 is obtained."*

Lastly, a professional document is proofread and checked for typographical errors, legibility, grammar, spelling and consistency. This lab report is not intended to be a writing exercise, and students are expected to take these things into consideration. The document is also not to be written in the first or second person. (No "we"s, "I"s, "you"s, "our"s ...etc) **Professionalism and adherence to these rules is worth 10% of the final report grade.**

X	F
0	1
1	0

Table 1: Truth Table of a Logic Inverter

4 Wait! What About Page Limits?

There are no page limits for this final report. That being said, students should treat this report in a similar manner as the lab reports submitted throughout the semester. The number of pages in the lab report does not correlate with the marks provided for the report. Students are encouraged to write how much they need to without dragging on. Do not include definitions and lengthy explanations that do not contribute much to the actual content or the understanding of the computer. Before proceeding with writing an explanation, a student should first decide if what they wish to write is within the scope of the project. Some examples are:

- "The 555 Timer is operated in the astable mode. This mode is the desired mode of operation because the 555 Timer will generate an alternating clock signal that is needed for the shift register used in the Timing Signal Generator."

  This is acceptable because it adds value to the understanding of how the computer works.

- "The 7404 used is a 74HCT04. The HCT code in the name means that it is a CMOS circuit that operates at TTL levels. It has six inverters on board and is in a dual inline package with 14 pins. The 74LS08 is a low power Schottky IC that provides four AND gates. The 74LS08 has a maximum current draw of $20\mu A$, which means that the maximum power is $100\mu W$."

  This is undesirable because it does not add any value to learning how the computer works and the content is not in the scope of the project. Writing something like this would not even necessarily be appropriate for one of the five lab reports submitted.