Lab report

Digitalteknik-syntes (EDA321)

Writing Guidelines

Group XX

Student1
Student2

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Contents

1 Introduction

(max: 1 page)

This part will introduce the reader to the report.

At the beginning, describe what the purpose of this lab report is. Then describe briefly what each section discusses and finally summarize briefly the most important conclusions.

2 Method

2.1 Arithmetic and Logic Unit (ALU)

(max: 2 pages)

Describe briefly what you did in the second lab and what you have learnt. In addition, discuss your findings and observations during this lab. Describe how you implemented the comparator and how your ALU performs subtraction using the adder. Make also a comparison between the two different adders (if you have implemented both of them).

Summarize your answers to the questions (if any) of the lab PM. Discuss briefly some synthesis results. Remember to always explain your design choices. Finally, make use of figures and tables.

2.2 Top-level design

(max: 2 pages)

Describe what you did in lab3. More specifically, describe how you implemented the bus using the mux and any extra logic, or using tri-state buffers.

Describe also briefly how you implemented the register and the memory. Show one snapshot of the simulation waveform where you write something to a memory location and then read from it.

2.3 Controller

(max: 2 pages)

Describe what you did in lab4. More specifically, show the *Finite-state machine* (FSM) of the controller by presenting the diagram you drew. Also include a few waveforms, where you show that the controller runs correctly for some particular instructions.

Explain how you selected the set of the tested instructions.

2.4 Lab5

(max: 2 pages)

Describe what you did in lab5. More specifically, describe how you made the testbench to verify that your processor design was functionally correct. For example, you can specify how you generated inputs to the processor during the testing, how you were reading the expected outputs and how you compare the expected outputs with the actual outputs. Also mention if your processor design was working correctly from the beginning and if not describe how you backtrack the bugs.

2.5 Lab6 *(Optional)*

(max: 2 pages)

Describe how you verified the correctness of your FPGA implementation. Note that the code that is executed on the implementation is the same code used for testing in Lab 5. You should compare sequences of values on various signals observed on the seven-segment displays to values seen in Modelsim simulation of the design. Please include in the report the sequence of program counter (PC) and display register values you observed during a successful trial on the FPGA.

2.6 Lab7 *(Optional)*

(max: 2 pages)

To be announced in the Lab7PM.

3 Analysis

(max: 1 page)

Summarize your results after performing all the labs (2, 3, 4 and 5).

Mention and discuss interesting findings and observations, as well as difficulties in completing some of the tasks of the four last labs.

After looking at your results, draw conclusions and describe briefly the learning outcome, that is what have you learnt by performing these labs?

A Appendix

(max: 4 pages)

In the appendix, you can include extra figures or tables that don't fit in the main body of the lab report.