Georgia Institute of Technology

School of Computer Science

CS3220: Fall, 2014

Project 3: Pipelining

Version 1.0

Due: Wednesday, November 5th, 2014 at 11:55pm

Project description:

In this project, you will design a two-stage pipelined processor and synthesize it on your FPGA board. The processor should be able to support the entire set of instructions described in the project-isa.pdf on the course webpage (http://www.cc.gatech.edu/~hadi/teaching/cs3220/01-2014fa/doc/project/project-isa.pdf). You can start from your own single-cycle processor or the one we have provided. You should consider all the hazards and insert bubbles if necessary. Implementing forwarding is not mandatory but will lead to 10 points of extra credit.

Do not procrastinate. To get you started, we have provided you with a Project2 in the *cs3220-examples* repository with settings, timing requirements, and some of the Verilog codes for the design. It is highly recommended to begin work on the processor design immediately.

What to hand in via T-Square:

There are two things you have to submit.

(1) A brief 1-page report (PDF). You should write this report by yourself (your partner will write his/her own report and submit it). The report should describe the approach taken, which problems were encountered and how they were fixed, and what the student's own contribution (i.e. which member of the group did what) to the project was. Note that it is fine if the two members of the group worked together (as in, sat together and got something working), and it is OK to say so in the report. If your report is missing, you will lose 50% of the points that you would otherwise earn. You should follow the following specific naming format:

SCProc[Student's Full Name].pdf (e.g. SCProcJongsePark.pdf).

(2) Quartus Project that includes Verilog files (ZIP file)

You should also submit zip file containing the entire Quartus project directory that includes your Verilog codes. The project directory name and the zip file name

should comply with the following naming formats:

Directory: SCProc[Student's Full Name] (e.g. SCProcJongsePark)
Zip file: SCProc[Student's Full Name].zip (e.g. SCProcJongsePark.zip)

Finally, you should submit the **two** files through t-square. (PDF file + ZIP file)

Rules:

This project is a team project so you should work together with your teammate. The project file you submit should be the same as the one submitted by your teammate but you should write your own report by yourself (your partner will write his/her own report and submit it).