Project 2. 5-Stage Pipelined Processor

Due date: 5/31 23:59

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1. Overview

In the Project 2, you will design a 5-stage pipelined processor, which is compatible with Cortex-M0. ***You only need to implement the functions included in the Project 1.*** The instruction set simulator you made in the Project 1 will be useful when you debug the processor.

2. Attached Files

(1) Processor
   A. CortexM0.v – 5-stage pipelined processor **(You will modify and submit)**
   B. MemModel.v – Memory functional model for main memory
   C. RegisterFileModel.v –Registerfile functional model in the processor
   D. tb.v – Testbench file
   E. tb.f – File list for your test
   F. test.hex – Simple program that initializes registers and increases r0 register value
   G. test.dis – Corresponding disassembly

(2) Instructions for Verilog Simulation
   A. Contains instructions for Verilog simulation using 'Icarus Verilog' software in Window environment.
   B. You can use 'Icarus Verilog' if you do not have Verilog compile environment.
   C. Otherwise, you can use your compiler if you have one.

3. Requirements

(1) Put all the relevant codes in 'CortexM0.v'
   A. Do not make other source files.

(2) Only the annotated part of 'your code here*' is allowed to be modified in 'CortexM0.v'
   A. Do not change in/out ports of CortexM0.v.
   B. Use given 'RegisterFileModel.v' for registerfile, and 'MemModel.v' for main memory.

(3) Do not include the Verilog System Tasks and Functions such as '$display' in 'CortexM0.v'

(4) Report file, {Student_ID}_{Name}_report.pdf, which explains your hardware including block diagram of its data-path, your test results, and reasons why you make such test program (*10 pages or less allowed)

4. Submission

1. **Due date: 5/31 23:59**
2. Submit following 2 files on the KLMS :
   'CortexM0.v', '{Student_ID}_{Name}_report.pdf'
3. Assessment
   A. Correctness of operation – Several test programs will be executed and the results will be checked
   B. Quality of the source code including annotations
   C. Quality of the report
   D. **NOTE**: If you submit past the due date, your grade will be deducted
   E. **NOTE:** If you do not satisfy the requirements, your grade will be deducted
   F. **NOTE**: If you copy other's work, you will not receive any credit