

GEORGIA INSTITUTE OF TECHNOLOGY

College of Computing

CS6290/CS4290 — High-Performance Computer Architecture

Fall 2000

CS6290/CS4290
Homework 4

Issued: September 29, 2000
Due: October 6, 2000

Purpose: This homework is a short homework covering inter-operation dependencies and pipeline hazards from the point of view of source and assembly code.

Reading: H&P Section 4.1, primarily.
H&P Chapter 3 for background.
[Fisher91] is helpful reading, also.

Problem 1: Dependencies

A: Problem 4.1 in the book.

B: Problem 4.2 in the book.

C: Problem 4.3 in the book. Also note any statements that are unused (“dead”) in the code.

Problem 2: Instruction Scheduling

In each problem, show the stall cycles incurred in the original code before you unroll the loop.

A: Problem 4.4 in the book.

B: Problem 4.5 in the book.

The next homework will pick up from this point by looking at *hardware* mechanisms for producing the same improvements you’ve made manually here.