COMP206 **Homework 3** Assigned: October 9, 2002
Prof. Montek Singh Due: October 16, 2002

Note: This homework assignment is in two parts, Part I and Part II. Part I consists of problems from the textbook (Hennessy/Patterson 3rd ed., or "HP3") whose solutions appear at the end of the book. These problems are for self-study only, and will not be graded, and therefore need not be submitted as part of your written work. Part II consists of problems that will count towards your grade for this homework.

Part I (not graded):

1. **Basic Tomasulo Algorithm.** Do HP3 Problem 3.5.
2. **Branch Prediction Buffers.** Do HP3 Problem 3.9.
3. **Branch Target Buffers.** Do HP3 Problem 3.14.
4. **Superscalar MIPS.** Do HP3 Problem 3.17.
5. **Speculation: Impact on Performance.** Do HP3 Problem 3.20.

Part II (to be graded):

1. (25 points) **Scoreboarding: RAW vs. WAR hazards.** Do HP3 Problem A.13.
2. (30 points) **Tomasulo's Algorithm.** Do HP3 Problem 3.7.
3. (20 points) **Branch Prediction.** Do HP3 Problem 3.10.
4. (25 points) **Dynamic Scheduling vs. Speculation.** Do HP3 Problem 3.18.