

## CSci 330, Fall 2006, Quiz 2

Name: \_\_\_\_\_

1. [10 pts] The MIPS calling convention includes some caller-save registers, such as  $\$t0$  and  $\$t1$ , whereas the calling conventions for the 8080 and the IA-32 have no caller-save registers. Explain why caller-save registers helps to improve program performance.
  
2. [30 pts] Answer any **three** of the following, based on the indicated presentations from class — but *do not answer a question based on your own presentation*. Be sure to label each answer clearly with the letter of which question you are answering. (Don't attempt more than three questions: If you attempt more, I'll grant credit only for the *worst* three.)
  - a. [Itanium/IA-64] Explain how the IA-64 uses the fact that three instructions can fit into each 128-bit “bundle.”
  - b. [PowerPC] The PowerPC instruction set allows only 32 general-purpose registers, yet the PowerPC 970MP chip has space for 80 general-purpose registers. Explain why this is (at least as we hypothesized during class).
  - c. [microcontrollers] What does the term “boundary scan” mean? (The SAM7X includes several pins for this, using the JTAG standard.)
  - d. [picoJava] Describe what is meant by a “stack architecture,” as is used for the JVM.
  - e. [PDP-11] Describe two of the PDP-11's 12 addressing modes, other than the register and immediate modes.