CS 232 – Computer Architecture I
Rose-Hulman Institute of Technology
Computer Science and Software Engineering Department

Lab 3 - MIPS Procedures I

1 Objectives

Following completion of this lab you should be able to:

- Call and pass arguments to procedures in MIPS programs.
- Return from procedures.
- Save and restore registers.
- Correctly manage the stack.
- Discuss register allocation strategies.

2 General

- Your grade for this lab will be based on your answers to some questions.
- Be sure to follow the MIPS procedure calling conventions as described in your book (Section 3.6 and Appendix A.6).
- You must remain in lab until you complete the lab exercise or the end of the lab period.
- Bring your text book to labs.
- Read the lab instructions completely before beginning.
- Don't hesitate to ask for help.

3 Procedures

Work through the procedure call example on page A-26 of the book using this handout.

4 The Fibonacci Sequence

The Fibonacci sequence[1] is defined over nonnegative integers as follows:

$$\begin{aligned} \mathrm{F}(0) &= 0 \\ \mathrm{F}(1) &= 1 \\ \mathrm{F}(i) &= \mathrm{F}(i-1) + \mathrm{F}(i-2), \quad i \geq 2 \end{aligned}$$

[1] See also page 137 of the text.

Examine the file `fib.asm` using your favorite editor. It contains a recursive implementation of the Fibonacci sequence. Trace the execution of the program and answer the questions on the handout.