CS 241 - Week 2 Tutorial

Assembly Language Programming

Winter 2015

The Fibonacci numbers are a sequence of integers in which each number in the sequence is derived from the recursive formula

$$f_n = f_{n-1} + f_{n-2}$$

Where $f_0 = 0$ and $f_1 = 1$ and $n \geq 2$

Summary

- How to write a MIPS loop
- How to print to standard output and Using the stack
- How to create and use procedures

1 Problem 1 - How to write a MIPS loop

- \$1 contains a non-negative number n
- Find the n^{th} Fibonacci number and place it in \$3

2 Problem 2 - How to create and use procedures

- Convert Problem 1 into a procedure named `fib` which expects \$1 to be n and outputs the result in \$3
- Apart from \$3, upon return every register should contain the same value as when the procedure was called

3 Problem 3 - Printing to stdout and using the stack

- $1 contains an integer $n \geq 1$
- Using the procedure `fib` from problem 2, print the first n Fibonacci numbers in reverse

4 Problem 4 - Various skills

- Using the procedure `fib` from Problem 2, check if the array with starting address in $1 and number of items in $2 is a Fibonacci sequence