**CS 312** **Computer Organization and Architecture**

Assignment # 7 (Bonus assignment) Due Date: May 08, 2003

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## SPIM and Assembly language

1. [50 pts] Write a function in assembly language to allocate space for $n$ words on the stack. The parameter $n$ is to be specified in register `$a0`. If the function fails to allocate specified space, return $-1$ in register `$v0`. Otherwise, populate the array with a sequence of Fibonacci numbers, by looping $n$ times. If there is an overflow in computation of Fibonacci numbers, return $-2$ in `$v0`, otherwise, return 0 in `$v0` and return the last computed Fibonacci number in `$v1`. Make sure that no other registers are to be disturbed, that is, save the value of each register in your function and restore it before you return from function. Deallocate memory before you return from function.

   Write a driver program to call your function.

   Clearly identify the statements with comments, as well as sections of code as you write those.

**What to handin**

Handin an electronic copy of all the sources and results. Create your programs in a directory called *username*.7 where *username* is your user name on `solar`. Once you are done with everything, *remove the executables and object files*, and issue the following commands:

```
% cd
% ~skb/bin/handin cs312 7
```

There is no paper submission for this assignment. If needed, give any comments in a file called README.