Lab 4 for COMP 2280

Dates: March 28-Apr. 1, 2022

Objectives

Learn to work with the run---time stack.

Question 1

Using the sample programs as guides write an LC---3 assembly language program that computes a Fibonacci number. The program must consist of a main program and one recursive subroutine. A stack pointer and a frame pointer **must** be used.

The value of Fibonacci(n) is defined as follows:

- Fibonacci(1) = 1
- Fibonacci(2) = 1
- Fibonacci(n) = Fibonacci(n---1) + Fibonacci(n---2)

Write a recursive subroutine named *Fibonacci* that is passed the integer value n and returns the integer value of Fibonacci(n) as described above.

The main program must establish the stack pointer, get the character value of n from the user and call *Fibonacci* with the integer value of n. Store the result returned by *Fibonacci* at a memory location labeled ***fibNum***. End your program by displaying a termination message that includes your name.

You may assume the input *n* consists of a single character digit between '1' and '9' inclusive. To convert a character digit from a character into an integer, subtract 48_{10} or 30_{16} (x30) from the character.

A sample run of the program might be:

```
Enter the value of n for Fibonacci(n):
9
Programmed by Stew Dent
End of processing.
```