Lab 1

DUE: Wednesday, May 15, 2019

Objectives:

- Review tools needed to compile and test programs

Description

For each of the function descriptions below:

- Define all given functions in the attached C++ file (**`w1_lab.cpp`**). You need to submit this file to complete the lab requirement.
- Write the function in an **iterative** manner (**use loops, no recursion allowed**)

Factorial Function:

- in the **factorial.cpp** file write the following function:

```
unsigned int factorial (unsigned int n);
```

This function returns n! (read n factorial). n! is calculating by multiplying every number between 1 and n:

n! = n * (n-1) * (n-2) * ... * 3 * 2 * 1

Example: factorial(4)

4! = 4 * 3 * 2 * 1 = 24

Testing your function

- Comment out the lines that call functions power and fibonacci since they have not defined yet.
- Compile your program: (g++ -Wall w1_lab.cpp)
- Run (a.out)
- There should be no errors for factorial() function.

Power Function:

- in the w1_lab.cpp file write the following function:

```
double power (double base, unsigned int n);
```

This function returns base^n = base * base * base *... * base (n base values multiplied together) Ex. power(2.0, 4) = 2^4 = 2 * 2 * 2 * 2 = 16

Testing your function

- Comment out the line that calls function fibonacci since it has not been defined yet.
- Compile your program: (g++ -Wall w1_lab.cpp)
- Run tester
- There should be no errors for factorial() or power() function.

Fibonacci Function:

- in the w1_lab.cpp file write the following function:

```
unsigned int fibonacci (unsigned int n);
```

This function returns the nth fibonacci number in the fibonacii sequence (denoted Fn below)

- F0 (fibonacci(0)) = 0
- F1 (fibonacci(1)) = 1
- F2 sum of F0 and F1 = 0+1 = 1
- F3 sum of F1 and F2 = 1 + 1 = 2
- F4 sum of F2 and F3 = 1 + 2 = 3
- F5 sum of F3 and F4 = 2 + 3 = 5

Testing your function

- Compile your program: (g++ -Wall w1_lab.cpp)
- There should be no errors.

Submission:

If not on matrix already, upload your **`w1_lab.cpp`** file to your matrix account. Compile and run your code and make sure that everything works properly.

Then, run the following script from your account:
`~nasim.razavi/submit 555_w1_lab <ENTER>`

and follow the instructions.