

# HW #9: Functions

Due date: Sunday March 20<sup>th</sup>, 11:59 pm through Handin (<https://secure.cse.msu.edu/handin>)

## ***Lab Assignment***

### **Getting started**

Change into the cse220 directory. Create a new directory called lab09

Change into the new directory. Implement the programs below in your lab09 directory.

### ***Fibonacci Sequence***

The Fibonacci sequence is the series of numbers: 0, 1, 1, 2, 3, 5, 8, 13, ....

The next number is found by adding up the two numbers before:

$$F(n) = F(n-1) + F(n-2) \quad \text{and}$$

$$F(0) = 0 \quad \text{and}$$

$$F(1) = 1$$

Write a recursive function that takes an integer  $n$  as input and returns the  $n$ th number in the Fibonacci series. Write a program fibonacci.c that asks the user to enter an integer and uses the function above to print out the corresponding Fibonacci number. Your program must validate the input is positive.

### ***Array Reversal***

Write a recursive function that takes an array of decimals as input and prints its content in reverse order, each value on a separate line, always showing the sign.

Write a program arrayReverse.c that asks the user to enter a number corresponding to the number of decimal values to be stored. Your program should then ask the user to enter those values and store them in an array. Use the function you wrote to print the array in reverse order.

### ***Integer Reversal***

Write a recursive function that takes an integer as input and prints its digits in reverse order.

Write a program intReverse.c that asks the user to enter an integer use the function you wrote to print the digits in reverse order.

Submit through handin the 3 C programs you wrote: fibonacci.c, arrayReverse.c, intReverse.c

## **Handin**

*The “handin” system has options to allow you to review your files online and to download them. You Should always verify that you submitted the correct files and they were received by the handin system. You can submit files as many times as you like for a particular assignment. Handin will only keep the last version of each file. Remember to submit your files prior to the deadline as you won't be able to use handin if the deadline has passed.*