

Kerry Ojakian's CSI 32 Class Class Assignment #8

General Instructions:

- You may work in a group of at most 3 students.
- Classwork must be put in a your dropbox folder; if there are multiple parts, create a single folder for the class assignment. Make sure you give clear names to your files and folders. Make sure that you indicate all the people in your group.
- When you are done, *email me* to tell me who's folder the class work is in; also, tell me who is in your group. Without this email, you may not get credit for the assignment!

The Assignment

1. Write a function that computes the n^{th} Fibonacci with $\text{Fibonacci}(1) = \text{Fibonacci}(2) = 1$. Do it in two ways: First with loops and then with functional recursion. For the recursive approach model your program after the recurrence.
2. Consider the efficiency of your recursive program from part 1. To calculate $\text{Fibonacci}(102)$, show that you make more than 2^{50} calls to the Fibonacci function!
3. **Extra Credit:** Write a recursive function for Fibonacci which is efficient, i.e. to calculate $\text{Fibonacci}(n)$ it makes at most n calls to the Fibonacci function. You may not use loops.