

CSc 130 Assignment 1

Fibonacci Numbers

Dr. Jinsong Ouyang

1 Requirements

1. Directly based upon the definition of Fibonacci numbers, develop a recursive program to compute Fibonacci numbers.
2. Using a single for loop, develop a non-recursive program to compute Fibonacci numbers.
3. For each program, please do the following:
 - Declare two variables of 32-bit and 64-bit unsigned integers respectively to hold the Fibonacci numbers.
 - Use the 32-bit variable to compute a Fibonacci number until it becomes greater than 2^{31} . After that, switch to the 64-bit variable.
 - Measure the running time of your program.

2 Deliverables

1. Source code
2. Performance evaluation. Run your program a number of times to compute a large enough N^{th} Fibonacci number and record the running time for each round. Represent in a table the running times by the two solutions, then compare and explain the differences in terms of complexity.

Table 1: Performance Measurement

	Round 1	Round 2	Round 3	Round 4	Round 5	Average
Recursive						
Non-recursive						