CS 170 Lecture Notes, Fall 2020

Algorithms and Intractable Problems

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§1.1 Example: Fibonacci Numbers

Consider the sequence $0, 1, 1, 2, 3, 5, 8, ...$ defined by $F_0 = 0, F_1 = 1, F_n = F_{n-1} + F_{n-2}$ for $n \geq 2$. We might write a function for calculating the n-th Fibonacci number as follows:

Listing 1: N-th Fibonacci Number

```
#include <iostream>

using namespace std;

int fib(int n)
{
    if (n == 0) return 0;
    if (n == 1) return 1;
    else return fib(n-1) + fib(n-2);
}
```