Written Homework 1

Due: 10월 12일 오후 9시

How to submit Hand in this homework as a PDF file using "`submit`" system on the linux server.

1. Python can handle arbitrarily big integers.[3] Write a python program to calculate $t(n)$ = "the number of binary tree with n nodes", and make a table of $t(n)$, $n = 0, \ldots, 100$. Hand in the printout of your program and the output.
   Hint: If you are not familiar with Python, study the following program for computing Fibonacci numbers (Or, search the web with "fibonacci python" :) :

```
def memoize(f):
    memo = {}
    def helper(x):
        if x not in memo:
            memo[x] = f(x)
        return memo[x]
    return helper

def fib(n):
    if n==0 or n==1:
        return 1
    else:
        return fib(n-1)+fib(n-2)

fib=memoize(fib)
```

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[3] Of course, other programming environments can handle big integers in principle. However, the *built-in* integer type of Python can hold arbitrarily big numbers, while, for example, `int` type of C or C++ can hold numbers in a limited range. Think about how you can make C deal with big numbers.