

Write a Function fib(n) that takes in a number as an argument. The function should return the nth number of fibonacci sequence

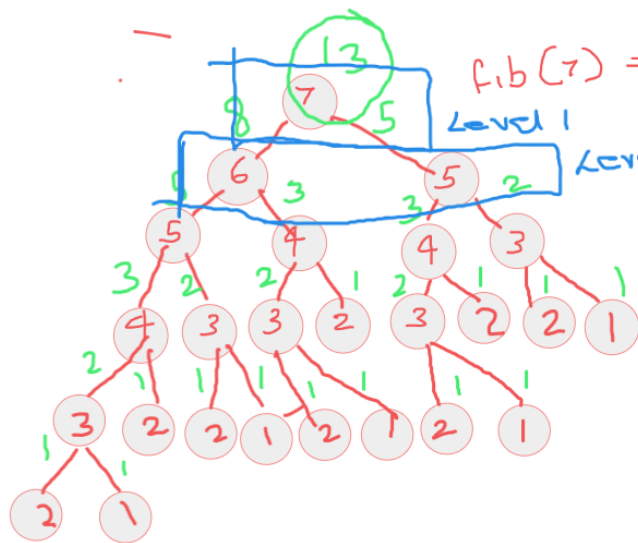
1. First and second number is 1

2. To generate the next number of fibonacci sequence, we sum previous 2 numbers

$n = 1 \ 2 \ 3 \ 4 \ 5 \ 6 \ 7 \ 8 \ 9$   
 $\text{fib}(n) = 1 \ 1 \ 2 \ 3 \ 5 \ 8 \ 13 \ 21 \ 34$

$\text{fib}(7) = 13$   
 $\text{fib}(9) = 34$

$\text{fib}(7) = \text{fib}(5) + \text{fib}(6)$



Time complexity =  $2^n$   
 Space complexity =  $n$  (height of the tree)

Level - 0 - 1  
 Level - 1 - 2  
 Level - 2 - 4  
 Level - 3 - 8 }  $2^n$

The subtrees are all duplicated so we could see that the larger problem is a smaller subset of multiple sub problems