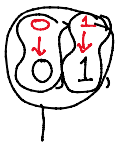
Class 18

Sunday, December 27, 2020 9:41 PM

$f(n) = f(n-1) + f(n-2)$



0 1 2 3 4 5

1, 1, 2, 3, 5, 8, 13, 21, ...

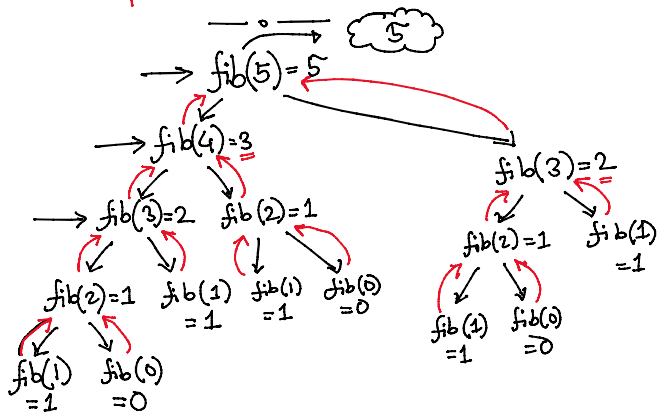
$f(n) = f(n-1) + f(n-2)$

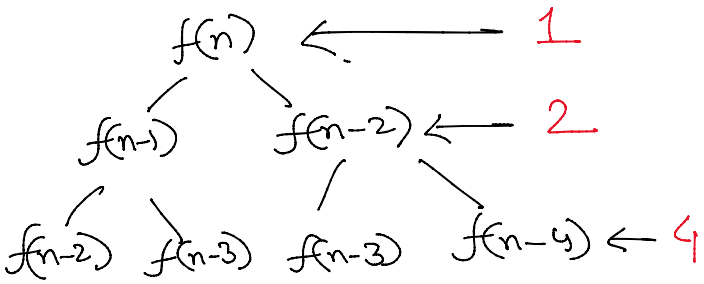
fib(1) fib(0)

```
int fib(int n)
{
  if(n < 2) return n;
  return fib(n-1) + fib(n-2);
}
```

1 + 0 = 1

$O(2^n)$



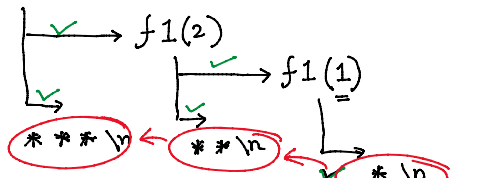


5 4 3 2 1

$f_1(5) \rightarrow f_1(4) \rightarrow f_1(3) \rightarrow f_1(2) \rightarrow f_1(1)$

5* 4** 3*** 2**** 1*****

f1(3)

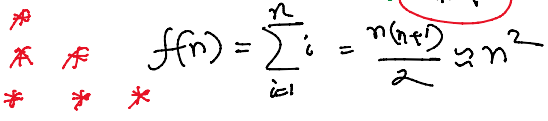


total # call → 5

1st 2nd 3rd 4th 5th

1 + 2 + 3 + 4 + 5

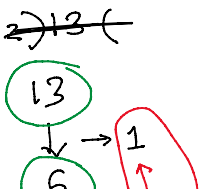
= 15



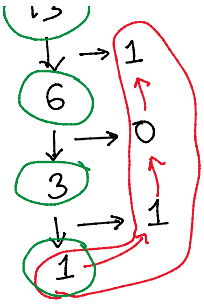
$f(n) = \sum_{i=1}^{n} i = \frac{n(n+1)}{2} \simeq n^2$

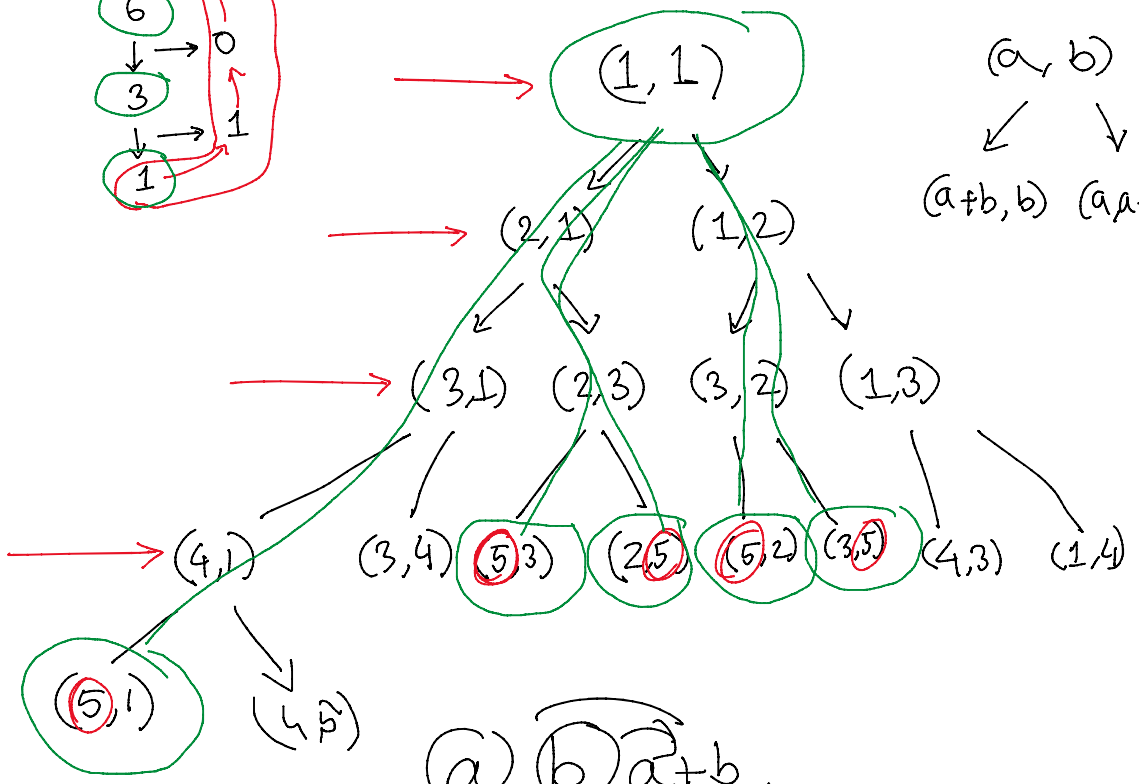
Dec → Bin

13 → 1101



13 → 1101



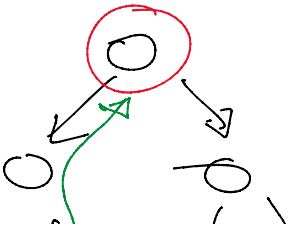
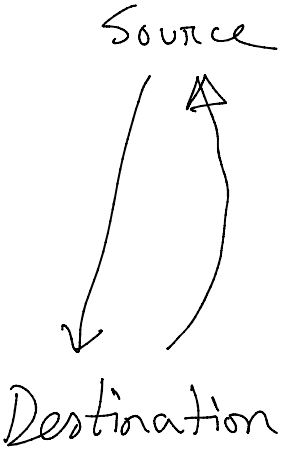
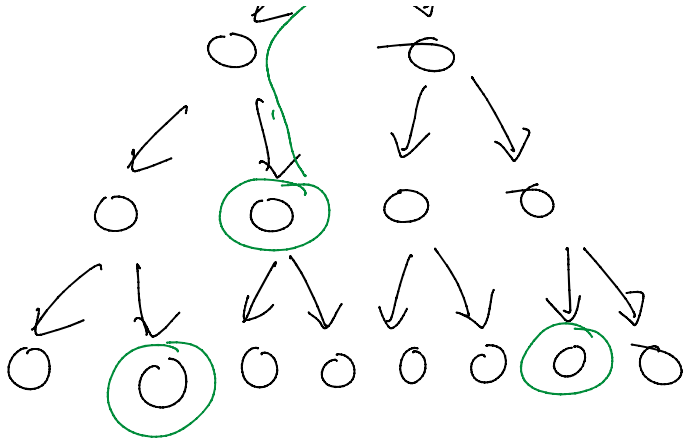


(a, b)

(a+b, b) (a, a+b)

a, b, a+b,

(a, b)

(a+b, b) (a, a+b)

1, 1, 2, 3, 5, 8, 13, 21,