

# Time - Complexity

⇒ Analysis of Time

## Algorithm Analysis

Time-Complexity

Space Complexity

Time on  
Algorithm

Extra  
Space  
Taken  
by  
Algorithm

RAM

CPU

Storage

Processing

→ An Algorithm Takes 2 Sec.

(A) on CPU  $\Rightarrow X = 2 \text{ sec} \checkmark$

B on CPU  $\Rightarrow Y = 4 \text{ sec} \checkmark$

(A) > (B) why?

→ CPU  $\Rightarrow 2.4 \text{ ghz} \Rightarrow$

→ CPU  $\Rightarrow 4 \text{ ghz} \Rightarrow$

we measure Algorithms speed  
based on input parameter

def X(n):

→ for i in range(n):

print(i) ←

A

B

→ n = 10 , 10 times

→  $n = 100$ , 100 times

→  $C(x) = \textcircled{5} \leftarrow$

Big O

Omega

$$O(n^k)$$

$$\Omega(n^k)$$

↓  
worst time Complexity

⇒ Highest power of  $n$

⇒  $\boxed{n^1 + n^0 + c}$   
    ↳ 1

⇒  $O(n)$

⇒ Alg ⇒

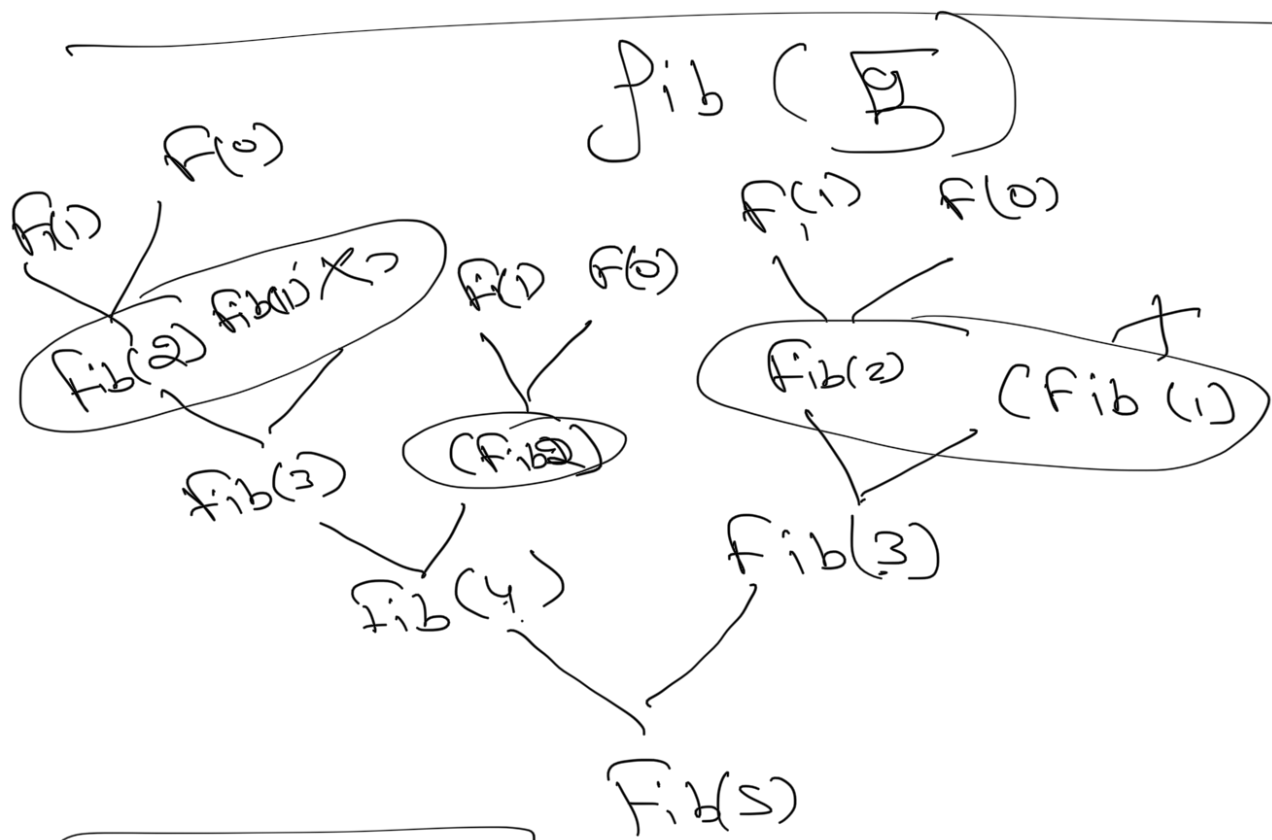
$$n^2 + (2n + c)$$

⇒

↳ 2  
 $O(n^2)$

x

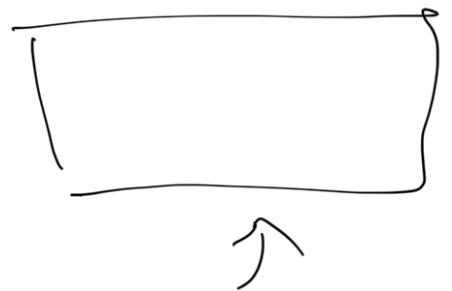
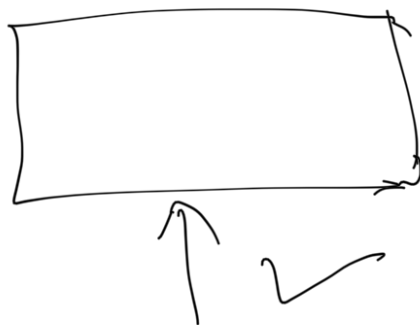
⇒ 11

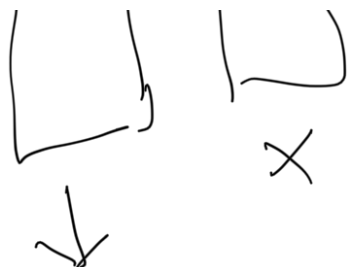


⇒ Subset

⇒ [ 1, 2, 3, 4, 5, 6 ]

↓  
mid





D1