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CODING BLOCKS

Dynamic Programming

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Why is it named so??

ALGO++

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Recurrence Programming

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Recursion

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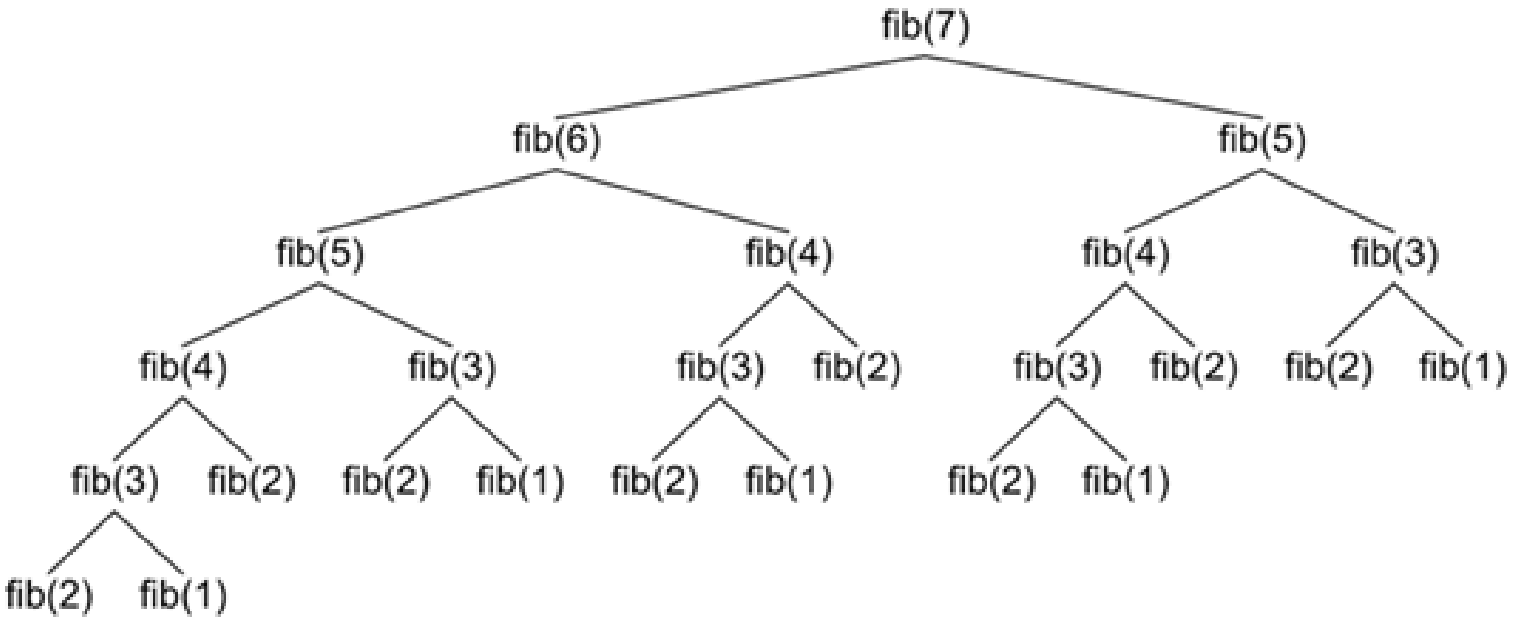
Fibonacci Series : The classical Example



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Print numbers in increasing order

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Back to Fibonacci

- Slow
- Really really Slow!!!

Can we do better ???

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Those who cannot **remember** the past are condemned to **repeat** it.

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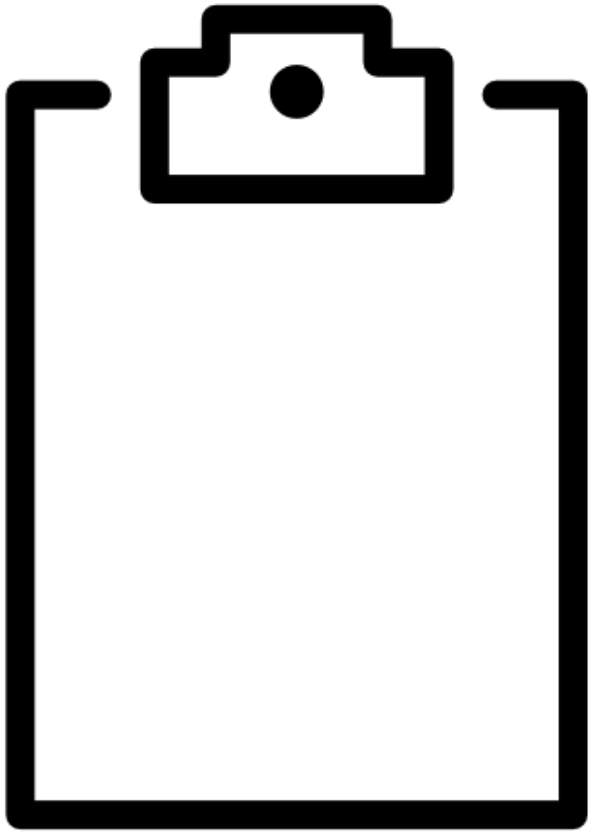
Memoization



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Back to Fibonacci

- Fast
- Function Overhead

Can we do still better ???

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Coin Change Problem

John went to a currency exchange shop with **infinite** supply of **few** denominations. What is the **minimum** number of coins required to make change.

Example

Den[] = {1, 2, 5}

Change = 18

Minimum coins required are **5** {5(3) + 2(1) + 1(1)}

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Maximum Profit

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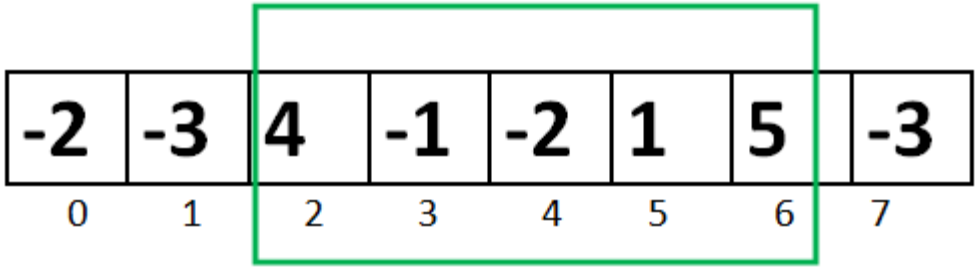
Max ID Range Sum

Largest Subarray Sum Problem



4 + (-1) + (-2) + 1 + 5 = 7

Maximum Contiguous Array Sum is 7

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Edit Distance

Cot	Coat	Insertion
Cost	Coat	Replacement
Coat	Cot	Deletion

What is the minimum amount of operation you would require to modify Sunday into Saturday?

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Cutting Sticks

Given a rod of length n inches and an array of prices that contains prices of all pieces of size smaller than n. Determine the maximum value obtainable by cutting up the rod and selling the pieces.

LEN	1	2	3	4	5	6	7	8
COST	1	5	8	9	10	17	17	20

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Lets move ahead, Team!

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Book Fair

It is the Annual Book Fair. There are thousands of book stalls and this year the organizers introduced a new scheme. In every stall either you can collect a coupon bearing a number but then you must skip next k stalls or you can simply go to the next stall without collecting the coupon. At the end, your prize is free books worth the sum of the numbers on the coupon you have collected.

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Wedding Shopping

Given different options for each garment (e.g. 3 shirt models, 2 belt models, 4 shoe models etc…) and a certain **limited** budget, our task is to buy one model of **each** garment. We **cannot** spend more money than the given budget, but we want to spend the **maximum** possible amount.

Budget = 20, Variety of Garment = 3
Gar 0 -> 6 4 *8*
Gar 1 -> 5 *10*
Gar 2 -> *1* 5 3 5

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Happy Programming!

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