

Coin Change :- <https://leetcode.com/problems/coin-change-2/>

coins = [1, 2, 5], amt = 5

- 1+1+1+1+1 4 Ways
- 1+1+1+2
- 1+2+2 9
- 5 Combination

coins = [2, 3, 4, 5], amt = 10

dp = [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10]

$$9 - 5 = 5$$

```
for(i=0 to coins.length-1){  
    for(j=coins[i] to dp.length-1){  
        dp[j] += dp[j-coins[i]];  
    }  
}
```

(j>1) × [amount <= i]

H.W. - Permutation of the Above

LIS :- Longest Increasing Subsequence

<https://leetcode.com/problems/longest-increasing-subsequence/>

[10, 9, 2, 5, 3, 7, 101, 18]

[0, 1, 0, 3, 2, 3]

2, 5, 3, 101
2, 5, 7, 101
2, 3, 7, 101
2, 3, 7, 18

0, 1, 2, 3 → 4

arr = [10, 9, 2, 5, 3, 7, 101, 18]

↳

$\text{dp} = [0, 1, 2, 3, 4, 5, 6, 7]$

$\text{ans} = \text{arr}[j] = 18$

$j = 7$

[0, 1, 0, 3, 2, 3]

i = 0 1 2 3 4 5

ans = 3

cL = 3 4

i = 4 3 2

0 1 3

4

[1, 2, 1, 3, 3, 4]

```
int[] dp = new int[nums.length];
1 for (int i = 0; i < nums.length; i++) {
    int curr = nums[i];
    int currLis = 1;
    2 for (int j = i - 1; j >= 0; j--) {
        if (nums[j] < curr) {
            currLis = Math.max(currLis, dp[j] + 1);
        }
    }
    3 dp[i] = currLis;
}
```

[10, 20, 30, 40, 5, 4, 3]
1 2 3 4 5 1 1 1