

Day 11 DSA

Excercise 1

Problem: any number of coin type
minimum # of coins for D

D is the amount we want to make

$[1, 3, 4]$ for $6 \leftarrow$

$6 \leftarrow 4$

$2 \leftarrow \rightarrow$ best option

$1 \leftarrow 4, 2 \leftarrow 4$

\rightarrow Trying each combination, then determine smallest out of all of them

- in this case: look at 1 coin denom., then removed \times -denom - # of coin denom.

might need	D	Process	Minimum	\leftarrow If $D=6$
to add 1	0	base	0	
1	$1 \rightarrow 1 + 1 - 1 = 0$		1	
2	$1 + D(1)$		2	
3	$1 + D(2) \rightarrow 1 + 2 - 1$		2	$\rightarrow 1$
4	$1 + D(3)$		3	
5	$1 + D(4)$		4	
6	$1 + D(5)$		5	

\rightarrow Try using each coin once, how many coins needed for smaller amount, then add one

Excercise 2

$$A = [A B C D G H]$$

$$B = [A E D F H R]$$

$$LCS = [A D H] \text{ length} = 3$$

Base Case: If $[]$ is empty, $LCS = \emptyset$

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A E D F H R

O O O O O O O Diagonal Relationship

A O 1 1 1 1 1 1

B O 1 1 1 1 1 1

C O 1 1 1 1 1 1

D O 1 1 2 2 2 2

E O 1 1 2 2 2 2

F O 1 1 2 2 3 3

$$L(i, j) = \begin{cases} L(i-1, j-1) + 1 & \text{when } = \\ \max & \text{when } \neq \end{cases}$$

terms in
string A, B