

Variant 1: You have N taka and you want to make change with K coins Assuming that number of K coins are infinite. Is it possible to change N taka with the coins?



Variant 2: You have N taka and you want to make change with K coins. Assuming that number of coins are infinite. How many ways it is possible to change N taka with the coins?

Variant 3: You have N taka and you want to make change with K coins. Now, you can take a coin only once. Is it possible to change N taka with the coins?



Variant 4: You have N taka and you want to make change with K coins. Now, you can take a coin only once. How many ways it is possible to change N taka with the coins?

Variant 5: You have N taka and you want to make change with K coins. Assuming that number of K coins are infinite. But, any two ways are same if the frequency of the coins are equal. How many ways it is possible to change N taka with the coins?

Variant 6: You have N taka and you want to make change with K coins with value [V1, V2, V3, ..., V_k] with frequency of each coin [F1, F2, F3, ..., F_k]. Is it possible to change N taka with the coins?

Variant 1: You have N taka and you want to make change with K coins. Assuming that number of K coins are infinite. Is it possible to change N taka with the coins?

$$N = 10$$

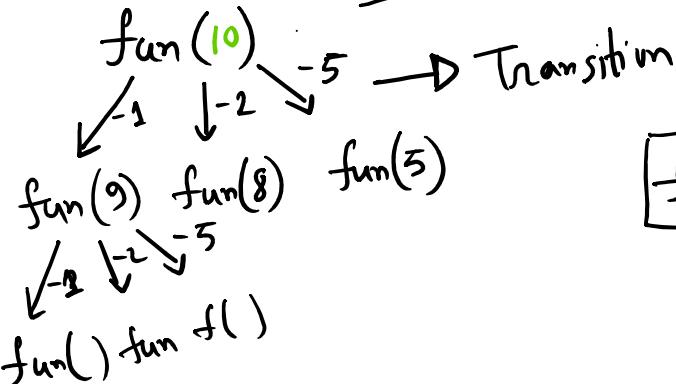
$\text{fun}(N) \rightarrow$ Is it possible to make
Total Amount

Definition →

yes / no
0 / 1

N ^{2 root}
[K coin]

① ② ⑤
N = 11



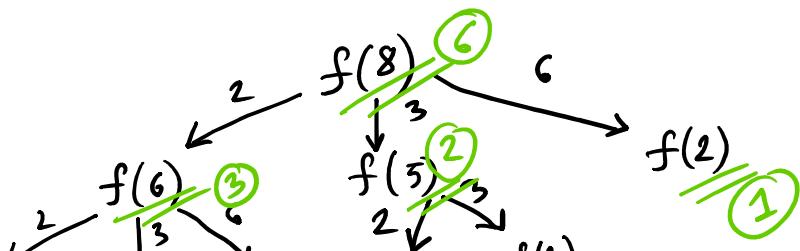
$\boxed{\text{fun}(0) = 1/\text{true}}$ → Base Case

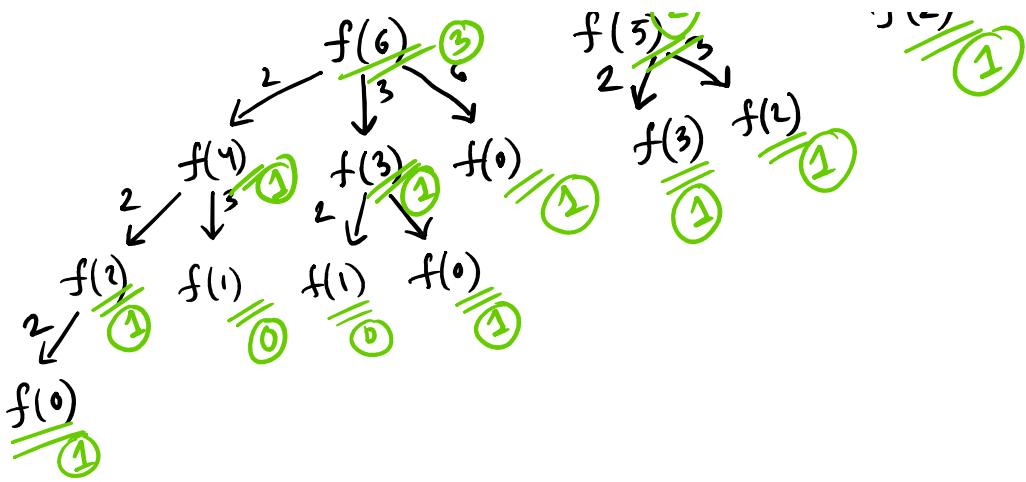
Variant 2: You have N taka and you want to make change with K coins. Assuming that number of coins are infinite. How many ways it is possible to change N taka with the coins?

$f(N) \rightarrow$ returns the number of ways
it is possible to make N

coins = 2, 3, 6

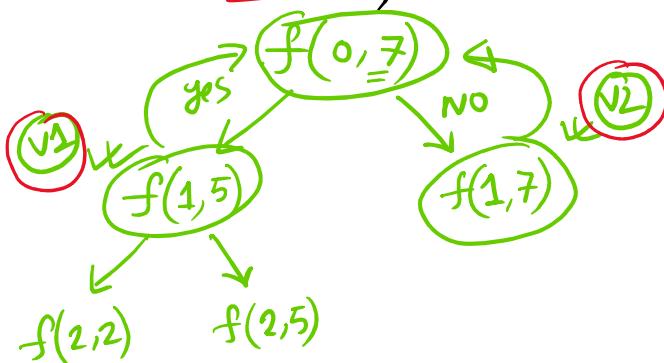
$$\text{f}(0) = 1$$



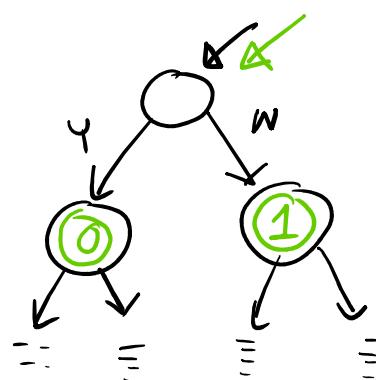
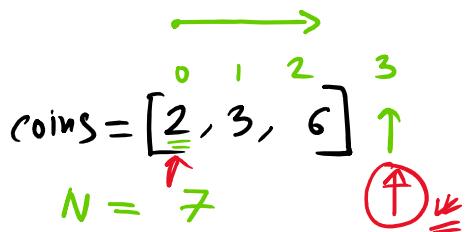
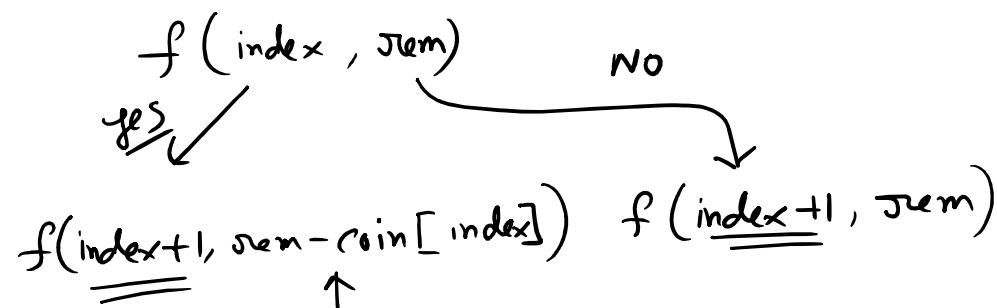


Variant 3: You have N taka and you want to make change with K coins. Now, you can take a coin only once. Is it possible to change N taka with the coins?

$$f(\text{index}, \underline{\text{remaining}}) \Rightarrow 0/1$$

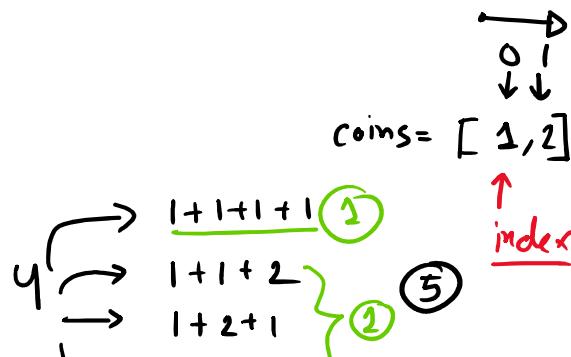


$$f(0, 7) = \underline{V1} + \underline{V2} / \underline{V1} - \underline{V2} / (\underline{V1} / \underline{V2})$$

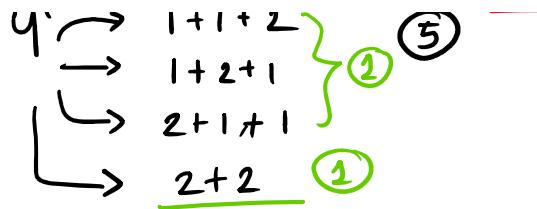


Variant 4: You have N taka and you want to make change with K coins. Now, you can take a coin only once. How many ways it possible to change N taka with the coins?

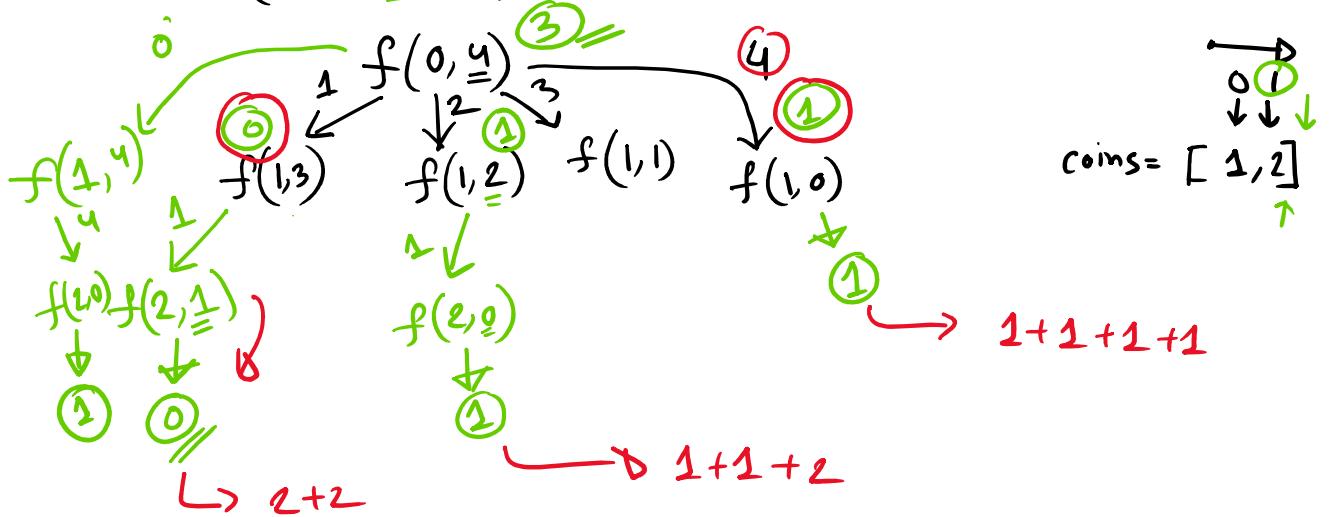
Variant 5: You have N taka and you want to make change with K coins. Assuming that number of K coins are infinite. But, any two ways are same if the frequency of the coins are equal. How many ways it is possible to change N taka with the coins?



infinite. But, any two ways are same if the frequency or the coins are equal. How many ways it is possible to change N taka with the coins?



$f(\text{index}, \underline{\text{remaining}}) \rightarrow \text{number of ways}$



Variant 6: You have N taka and you want to make change with K coins with value $[V_1, V_2, V_3, \dots, V_k]$ with frequency of each coin $[F_1, F_2, F_3, \dots, F_k]$. Is it possible to change N taka with the coins?

$$\text{coins} = [2, 3, 5]$$

$$\text{Freq} = [1, 2, 1]$$

$$\text{Amount} = 10$$

$$(2 \times 1) + (3 \times 1) + (5 \times 1) \Rightarrow 10 \checkmark$$

$$\Rightarrow 12 \times$$

$$\Rightarrow 13 \checkmark$$