Sewing Buttons With Grandma Solution

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Check Problem statement here: Link to problem statement..

And check several solutions in python, C++ and java.

In this solution b_i is the amount of buttons of color i, and $kinds$ is the different colors types.

Given this restrictions:

- $1 \leq m \leq 50$
- $1 \leq kinds \leq 50$
- $1 \leq b_i \leq 50$ for i in $[0, kinds - 1]$

Recurrence relation that solves the problem

$$f(m,t) = \sum_{i=0}^{min(m,b_t)} \binom{m}{i} \times f(m-i, t+1)$$

With the following base cases:

- $f(0,t) = 1$
- $f(m,t) = 0$ if $t \geq kinds$

Remember $\binom{n}{k}$ is the binomial coefficient function:

$$\binom{n}{k} = \binom{n-1}{k-1} + \binom{n-1}{k}$$

With the base cases:

- $\binom{n}{k} = 1$ if $k = 0$ or $k = n$
- $\binom{n}{k} = 0$ if $k > n$