

# Barcode Counting

Problem Code	hw04b_barcode
Running Time Limit	1 sec
Memory Limit	16 mb

## Objective

- Be able to solve a problem using dynamic programming approach or better

## Introduction

A barcode consists of black and white vertical lines in different arrangement. For simplicity, we use a string of "0" and "1" to identify barcode such that "0" represents a black line while "1" represents a white line. For example, 0100011 represent the barcode in fig. 1.

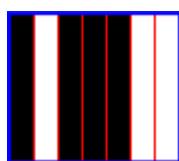


Fig. 1: Barcode example

A barcode is designed to be resistive to error thus it has to follow some specific rules:

- 1) A barcode must consists of exactly  $N$  lines
- 2) There can be no more than  $M$  consecutive lines of same color. For example, when  $M = 3$ , the barcode 01100001 is illegal because it consists of four white lines. However, 1001100 is legal.
- 3) Color changing occurs when two consecutive lines have different color. For example, 1001100 has 3 color changing. A barcode must have exactly  $K$  color changing.
- 4) The first line is always black.

We interest in knowing the number of possible barcode with respect to given values of  $N$ ,  $M$  and  $K$ .

## Task

You task is to count the number of possible barcodes from the value of  $N$ ,  $M$  and  $K$ .

## Input

The first line contains 3 integers  $N$ ,  $M$  and  $K$  where  $1 \leq N, M \leq 30$  and  $0 \leq K \leq 30$ .

## Output

The output must contain exactly one line giving the number of possible barcode.

## Example

### Ex1

Input	Output
4 3 1	3

## Ex2

Input	Output
5 2 2	3