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HRS MIN SEC

## August Easy '21

LIVE

Aug 07, 2021, 09:30 AM IST - Aug 07, 2021, 12:30 PM IST

INSTRUCTIONS

PROBLEMS

SUBMISSIONS

LEADERBOARD

ANALYTICS

JUDGE

← Problems / Binary sequences

### Binary sequences

Max. score: 100

You are given three integers  $Z, O, K$ .

Your task is to determine the number of distinct sequences of length  $Z + O$  that contains exactly  $Z$  zeroes and  $O$  ones. Also, the length of longest non-decreasing subsequence in the sequence is of length  $\geq K$ .

#### Note

- Two sequences are said to be distinct if there exists at least one index where the value of element present is different in both sequences.
- A non-decreasing subsequence of  $a$  is a sequence of integers  $a_{p_1}, a_{p_2}, \dots, a_{p_k}$  where  $p_1 < p_2 < \dots < p_k$  and  $a_{p_1} \leq a_{p_2} \leq \dots \leq a_{p_k}$ .

#### Input format

- The first line contains an integer  $T$  that denotes the number of test cases.
- For each test case:
  - The first line contains three space-separated integers  $Z, O, K$ .

#### Output format

For each test case, print the number of distinct sequences that satisfy the provided conditions.

**Note:** The result can be a large value, print the output in modulo  $10^9 + 7$  format.

#### Constraints

$$1 \leq T \leq 10$$

$$1 \leq K \leq 10^2$$

$$1 \leq Z, O \leq 50$$

?

## SAMPLE INPUT



```
2
2 2 3
1 4 4
```

## SAMPLE OUTPUT



```
4
5
```

## Explanation

## For test case 1:

- Following are the valid sequences:
  - **1001** : Length of longest non-decreasing subsequence is **3**
  - **0011** : Length of longest non-decreasing subsequence is **4**
  - **0101** : Length of longest non-decreasing subsequence is **3**
  - **0110** : Length of longest non-decreasing subsequence is **3**

## For test case 2:

- Following are the valid sequences:
  - **01111** : Length of longest non-decreasing subsequence is **5**
  - **10111** : Length of longest non-decreasing subsequence is **4**
  - **11011** : Length of longest non-decreasing subsequence is **4**
  - **11101** : Length of longest non-decreasing subsequence is **4**
  - **11110** : Length of longest non-decreasing subsequence is **4**

**Time Limit:** 1.0 sec(s) for each input file.

**Memory Limit:** 256 MB

**Source Limit:** 1024 KB

**Marking Scheme:** Score is assigned if any testcase passes.

**Allowed Languages:** Bash, C, C++, C++14, C++17, Clojure, C#, D, Erlang, F#, Go, Groovy, Haskell, Java, Java 8, Java 14, JavaScript(Rhino), JavaScript(Node.js), Julia, Kotlin, Lisp, Lisp (SBCL), Lua, Objective-C, OCaml, Octave, Pascal, Perl, PHP, Python, Python 3, Python 3.8, Racket, Ruby, Rust, Scala, Swift-4.1, Swift, TypeScript, Visual Basic

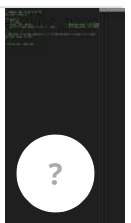
## CODE EDITOR

Save

C (gcc 5.4.0)



```
1  /*
2  // Sample code to perform I/O:
3  #include <stdio.h>
4
5  int main(){
```



```
6      int num;
7      scanf("%d", &num);                // Reading input from STDIN
8      printf("Input number is %d.\n", num); // Writing output to STDOUT
9  }
10
11 // Warning: Printing unwanted or ill-formatted data to output will cause
12 // the test cases to fail
13
14 // Write your code here
15
```

1:1 vscode

☒ Provide custom input

COMPILE &amp; TEST

SUBMIT

 **Tip:** You can submit any number of times you want. Your best submission is considered for computing total score.

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