Shopee Programming Contest #1

LIVE INVITE ONLY ACCESS

Jun 27, 2020, 01:00 PM WIB - Jun 27, 2020, 02:00 PM WIB

Sequences

Max. score: 30

You are on a company visit to Shopee. During the office tour, you noticed that there seems to be a random scribbling on one of the walls. After looking at it closely, you noticed it is actually an algorithm question! Below is the question:

> You are given **N** functions f(i, j) with parameters $\mathbf{A_i}$, $\mathbf{B_i}$, $\mathbf{C_i}$, where the value of f(i, j) is equal to $\mathbf{A_i} \times j^2 + \mathbf{B_i}$ for each $1 \le j \le \mathbf{C_i}$. Find how many sequences $(i_1, j_1), (i_2, j_2), \ldots, (i_M, j_M)$ of length **M** are there in which the following holds:
>
> - $f(i_1, j_1) + f(i_2, j_2) + \ldots + f(i_M, j_M)$ is divisible by **K**
>
> Two sequences are different if there is at least one index k, such that $i_k \neq i_{k'}$ or $j_k \neq j_{k'}$

You quickly take note of the question, as maybe it is a draft for an interview question. Solve the question to increase your chance of acing the future interview at Shopee!

Input

The first line contains 3 integers **N** ($1 \le \mathbf{N} \le 5{,}000$), M ($1 \le \mathbf{M} \le 1{,}000{,}000{,}000$), and **K** ($1 \le K \le 2{,}000$).

The next **N** lines each contains 3 integers $\mathbf{A_i}$, $\mathbf{B_i}$, ($0 \le \mathbf{A_i}, \mathbf{B_i} < \mathbf{K}$) and $\mathbf{C_i}$ ($1 \le \mathbf{C_i} \le 1{,}000{,}000{,}000$), denoting the parameters for the i-th function.

Output

One line containing a single integer, the number of the sequence. Since this number can be very large, output its value modulo 10^9+7.

SAMPLE INPUT

```
3 2 6
0 3 2
1 2 3
2 5 1
```

SAMPLE OUTPUT

```
12
```

Explanation

Below are all the possible sequences:

1. (1, 1), (1, 1)
2. (1, 1), (1, 2)
3. (1, 1), (2, 1)
4. (1, 2), (1, 1)
5. (1, 2), (1, 2)
6. (1, 2), (2, 1)
7. (2, 1), (1, 1)
8. (2, 1), (1, 2)
9. (2, 1), (2, 1)
10. (2, 2), (2, 2)
11. (2, 3), (3, 1)
12. (3, 1), (2, 3)

Time Limit:	5.0 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#, 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, R(RScript), Racket, Ruby, Rust, Scala, Swift-4.1, Swift, TypeScript, Visual Basic

CODE EDITOR

Save C (gcc 5.4.0)

```c
/*
// Sample code to perform I/O:
#include <stdio.h>

int main(){
    int num;
    scanf("%d", &num);                          // Reading input from STDIN
    printf("Input number is %d.\n", num);       // Writing output to STDOUT
}

// Warning: Printing unwanted or ill-formatted data to output will cause the test cases to fail
*/

// Write your code here

```

LIVE EVENTS

Provide custom input

COMPILE & TEST SUBMIT

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

Your Rating:

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