03 : 09 : 10   Finish Test
HRS   MIN   SEC

Shopee Programming Contest #1

LIVE   INVITE ONLY ACCESS

Jun 27, 2020, 02:00 PM CST - Jun 27, 2020, 03:00 PM CST

INSTRUCTIONS   PROBLEMS   SUBMISSIONS   LEADERBOARD   ANALYTICS   JUDGE

← Problems / Sequences

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

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 ($1 \le N \le 5,000$), M ($1 \le M \le 1,000,000,000$), and K ($1 \le K \le 2,000$).

The next N lines each contains 3 integers A_i, B_i, ($0 \le A_i, B_i < K$) and C_i ($1 \le C_i \le 1,000,000,000$), 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

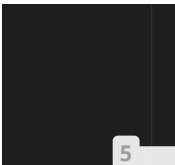Save   C (gcc 5.4.0)

```c
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 the test
     cases to fail
12   */
13
14   // Write your code here
15
```

5

1:1 vscod

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.

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