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# **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  $(i_1, j_1)$ ,  $(i_2, j_2)$ , ...,  $(i_M, j_M)$  of length **M** are there in which the following holds:

•  $f(i_1, j_1) + f(i_2, j_2) + ... + f(i_M, j_M)$  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!

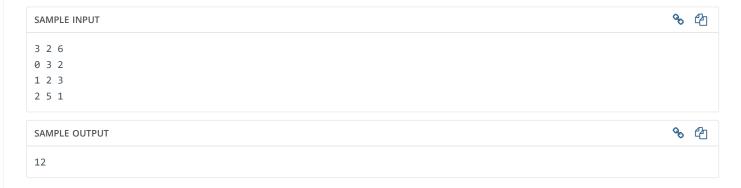
## Input

The first line contains 3 integers N (1  $\leq$  N  $\leq$  5,000), M (1  $\leq$  M  $\leq$  1,000,000,000), and K (1  $\leq$  K  $\leq$  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  $10^9+7$ .



### **Explanation**

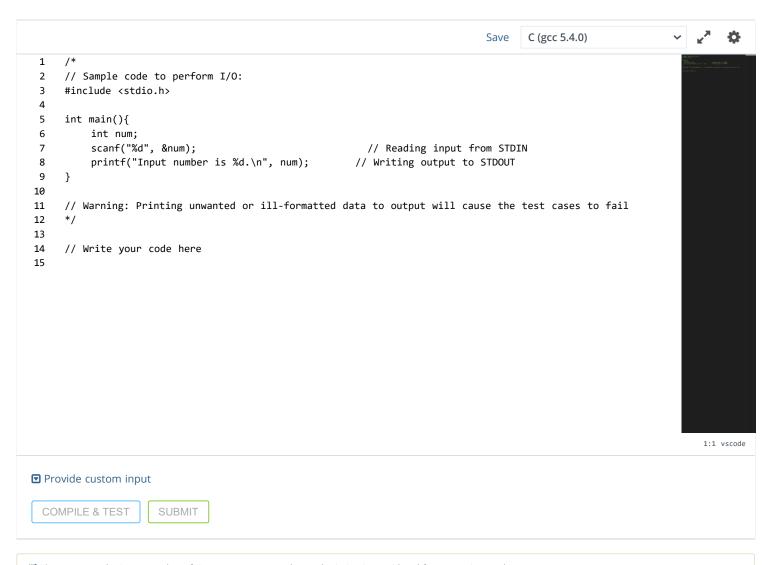
Below are all the possible sequences:

1. (1, 1), (1, 1)

2. (1, 1), (1, 2)

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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 when all the testcases pass.
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
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### **CODE EDITOR**



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

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