

20th Iran Internet Programming Contest

Asia Region, Tehran Site, Qualification Round
Sharif University of Technology 30 April 2024



Problem A : Covid Medication

Two countries Shekarastan and Namakestan have roughly the same population. They have used different medications for their covid patients. Both countries announced the number of their covid patients and covid deaths. We want to know which country had better medications for Covid. The country with more recovered patients, is considered to have better medications. The number of recovered patients is the difference between the number of covid patients and covid deaths.

Input

The input consists of four lines. The first and second lines contains two integers n and k , denoting the number of patients and deaths of Shekarestan, respectively. The third and fourth lines contains two integers p and q , denoting the number of patients and deaths of Namakestan, respectively.

Output

In the only line of output, print the country with the better covid medication, *Shekarastan* or *Namakestan*, or print *Equal* if both countries have the same number of recovered patients.

- $1 \leq k \leq n \leq 1000$
- $1 \leq q \leq p \leq 1000$

Example

Standard Input	Standard Output
2 1 4 1	Namakestan

Standard Input	Standard Output
3 1 4 2	Equal

Standard Input	Standard Output
5 1 4 2	Shekarestan

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Problem B : Common Students

Shekarestan University of Technology has n students whose IDs numbered from 1 to n . Each student can register for some of the courses in the current semester (possibly none). Write a program that answers q query. Each query contains a set of course numbers and the program should output the number of registered students at each class.

Input

The first line of input contains three integers n (number of students), k (number of courses) and q (number of queries).

The i th line of the next k lines starts with the number of students that signed up for course i , followed by the IDs of those students.

The next q lines contains a query each. Each query starts with the number of courses, followed by course numbers.

Output

In the i th line, print the number of the students that signed up for the all courses in query i .

- $1 \leq n \leq 200$
- $1 \leq k \leq 500$
- $1 \leq q \leq 500$

Standard Input	Standard Output
4 4 3 3 1 2 3 3 1 2 4 1 4 2 2 4 2 1 2 3 1 2 3 2 2 4	2 0 2



Problem C : Well-Ordered Pillars

A meticulous artist has built n pillars and put it on display in an art gallery. The pillars are placed in a straight line. After the placement, the artist noticed that the pillars are not *well-ordered*. A line of pillars is well-ordered, if and only if every two adjacent pillars have different heights.

Unfortunately the meticulous artist can't change the order of pillars, or decrease their heights. He can only increase the heights of some of the pillars by a positive integer amount. Note that the material used to build each pillar is different, therefore the cost of increasing the pillars' heights is different and unique for each pillar. The artist wants to increase the heights of some of the pillars (possibly none) to make them well-ordered, and needs your help to minimize the cost of doing it.

Input

The first line of input contains an integer n , the number of the pillars. The next n lines describe the pillars. The i th line, contains two integers a_i and b_i , denoting the height of i th pillar, and the cost of increasing its height by one unit, respectively.

Output

Print the minimum cost of making the pillars well-ordered.

- $1 \leq n \leq 10^5$
- $1 \leq a_i, b_i \leq 10^4$

Standard Input	Standard Output
6 2 5 3 4 3 20 3 3 4 2 6 10	9

Standard Input	Standard Output
3 11 10 10 4 10 10	8