



acm International Collegiate
Programming Contest

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ACM International Collegiate Programming Contest 2015

Latin American Regional Contests

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Warmup Session

This problem set contains 3 problems; pages are numbered from 1 to 3.

This problem set is used in simultaneous contests hosted in the following countries:

Argentina, Bolivia, Brasil, Chile, Colombia, Cuba,
México, Panamá, Perú, República Dominicana and Venezuela

General information

Unless otherwise stated, the following conditions hold for all problems.

Program name

1. Your solution must be called `codename.c`, `codename.cpp` or `codename.java`, where *codename* is the capital letter which identifies the problem.

Input

1. The input must be read from standard input.
2. The input consists of a single test case, which is described using a number of lines that depends on the problem. No extra data appear in the input.
3. When a line of data contains several values, they are separated by *single* spaces. No other spaces appear in the input. There are no empty lines.
4. The English alphabet is used. There are no letters with tildes, accents, diaereses or other diacritical marks (ñ, Ã, é, Ì, ô, Ü, ç, etcetera).
5. Every line, including the last one, has the usual end-of-line mark.

Output

1. The output must be written to standard output.
2. The result of the test case must appear in the output using a number of lines that depends on the problem. No extra data should appear in the output.
3. When a line of results contains several values, they must be separated by *single* spaces. No other spaces should appear in the output. There should be no empty lines.
4. The English alphabet must be used. There should be no letters with tildes, accents, diaereses or other diacritical marks (ñ, Ã, é, Ì, ô, Ü, ç, etcetera).
5. Every line, including the last one, must have the usual end-of-line mark.
6. To output real numbers, round them to the closest rational with the required number of digits after the decimal point. Test case is such that there are no ties when rounding as specified.

Development team

The following persons helped to develop the problem set by creating and improving statements, solutions, test cases and input and output checkers:

Alejandro Strejilevich de Loma, Argentina

Bruno Junqueira Adami, Brazil

Fidel I. Schaposnik Massolo, Argentina

Guilherme Albuquerque Pinto, Brazil

Pablo Ariel Heiber, Argentina

Problem A – The fellowship of the ring

Author: Pablo Ariel Heiber, Argentina

Box is a really violent sport. To compensate, there is a code of conduct to maintain chivalry and fellowship atop the ring in friendly matches. One of the most well known rules of this code of conduct is to avoid hitting the opponent below the waist or above the neck.

Given the heights of the waist and neck of an opponent, and the heights of a set of punches, calculate how many of those punches are fair according to the rule above.

Input

The first line contains three integers W , N and P , representing respectively the height of the waist of the opponent, the height of his neck, and the number of thrown punches ($1 \leq W < N \leq 200$ and $1 \leq P \leq 100$). The second line contains P integers H_1, H_2, \dots, H_P ($1 \leq H_i \leq 200$ for $i = 1, 2, \dots, P$) indicating the heights of the punches. All heights are given in centimeters.

Output

Output a line with an integer representing the number of punches that are fair, according to the code of conduct.

Sample input 1 80 150 3 10 100 160	Sample output 1 1
Sample input 2 80 150 3 80 100 150	Sample output 2 3
Sample input 3 2 199 5 2 1 200 199 1	Sample output 3 2

Problem B – The return of the King

Author: Pablo Ariel Heiber, Argentina

The prolific author Stephen King was entering the grades of his literature students in an on-line general average calculator. When he finished, he noticed his return key was broken so instead of entering the grades of a student in a separate line each, he entered them in a single line without any separation. Since Mr. King does not have the skills to fix his return key right away, he needs you to calculate the average of the grades of the student from the non-separated input.

Each grade is an integer between 1 and 10. All grades were entered written in base 10 without leading zeros. For example, if the grades of Mr. King’s student were 3, 10, 1 and 10 they would be entered as “310110”.

Input

The input consists of a single line that contains a non-empty string S of at most 100 base 10 digits. There is a unique way to partition S into a list of substrings such that each substring represents an integer between 1 and 10 in base 10 without leading zeros.

Output

Output a line with a rational number representing the average of the grades of the student whose grades Mr. King entered as S . The result must be output as a rational number with exactly two digits after the decimal point, rounded if necessary.

Sample input 1 310110	Sample output 1 6.00
Sample input 2 10910	Sample output 2 9.67
Sample input 3 222222223	Sample output 3 2.11

Problem C – Competition

Author: Bruno Junqueira Adami, Brazil

Bob and Alice are participating in a programming contest as a team.

The contest has N problems which must be solved in order. Naturally there are some problems that they cannot solve, in that case they can skip it. There may be also problems that only Bob or Alice alone can solve.

They want to solve all the problems possible switching as few times as possible who is at the computer programming the solution.

Given the number of problems and the problems that Bob and Alice can solve, calculate the minimum number of switches between the usage of the computer. Anyone can start using it.

Input

The first line contains three integers N ($1 \leq N \leq 10^9$), A ($1 \leq A \leq \min(N, 5 * 10^4)$) and B ($1 \leq B \leq \min(N, 5 * 10^4)$). The next line contains A unique integers denoting the problems Alice can solve. The following line contains B unique integers denoting the problems Bob can solve. The first problem is denoted by the number 1, the second by number 2, the N -th by N , and so on.

Output

Print the minimum number of switches between the usage of the computer.

<p>Sample input 1</p> <pre>5 2 3 2 4 1 5 3</pre>	<p>Sample output 1</p> <pre>4</pre>
<p>Sample input 2</p> <pre>4 3 3 1 2 3 2 3 4</pre>	<p>Sample output 2</p> <pre>1</pre>
<p>Sample input 3</p> <pre>4 3 3 1 3 4 4 3 1</pre>	<p>Sample output 3</p> <pre>0</pre>