acm International Collegiate Programming Contest 2017 | icpc.foundation

ACM International Collegiate Programming Contest 2017

Latin American Regional Contests

November 10th-11th, 2017

Warmup Session

This problem set contains 3 problems; pages are numbered from 1 to 6.

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

Argentina, Bolivia, Brasil, Chile, Colombia, Costa Rica, 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`, *codename*`.java`, *codename*`.py2` or *codename*`.py3`, 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

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Problem A – Secret Chamber at Mount Rushmore

Author: World Finals 2017

By now you have probably heard that there is a spectacular stone sculpture featuring four famous U.S. presidents at Mount Rushmore. However, very few people know that this monument contains a secret chamber. This sounds like something out of a plot of a Hollywood movie, but the chamber really exists. It can be found behind the head of Abraham Lincoln and was designed to serve as a Hall of Records to store important historical U.S. documents and artifacts. Historians claim that the construction of the hall was halted in 1939 and the uncompleted chamber was left untouched until the late 1990s, but this is not the whole truth.

In 1982, the famous archaeologist S. Dakota Jones secretly visited the monument and found that the chamber actually was completed, but it was kept confidential. This seemed suspicious and after some poking around, she found a hidden vault and some documents inside. Unfortunately, these documents did not make any sense and were all gibberish. She suspected that they had been written in a code, but she could not decipher them despite all her efforts.

Earlier this week when she was in the area to follow the ACM-ICPC World Finals, Dr. Jones finally discovered the key to deciphering the documents, in Connolly Hall of SDSM&T. She found a document that contains a list of translations of letters. Some letters may have more than one translation, and others may have no translation. By repeatedly applying some of these translations to individual letters in the gibberish documents, she might be able to decipher them to yield historical U.S. documents such as the Declaration of Independence and the Constitution. She needs your help.

You are given the possible translations of letters and a list of pairs of original and deciphered words. Your task is to verify whether the words in each pair match. Two words match if they have the same length and if each letter of the first word can be turned into the corresponding letter of the second word by using the available translations zero or more times.

Input

The first line of input contains two integers M ($1 \leq M \leq 500$) and N ($1 \leq N \leq 50$), where M is the number of translations of letters and N is the number of word pairs. Each of the next M lines contains two distinct letters A and B, indicating that the letter A can be translated to the letter B. Each ordered pair of letters (A, B) appears at most once. Following this are N lines, each containing a word pair to check. Translations and words use only lowercase letters "`a`"–"`z`", and each word contains at least 1 and at most 50 letters.

Output

For each pair of words, output "`YES`" if the two words match, and "`NO`" otherwise.

Sample input 1	**Sample output 1**
9 5 c t i r k p o c r o t e t f u h w p we we can the work people it of out the	YES NO NO YES YES

Sample input 2	**Sample output 2**
3 3 a c b a a b aaa abc abc aaa acm bcm	YES NO YES

Problem B – Mean Median Problem

Author: Pablo Ariel Heiber, Argentina

The *mean* of three integers A, B and C is $(A + B + C)/3$. The *median* of three integers is the one that would be in the middle if they are sorted in non-decreasing order.

Write a program that, given two distinct integers A and B, determines the minimum possible integer C such that the mean and the median of A, B and C are equal.

Input

The input consists of a single line that contains two integers A and B ($1 \leq A \leq B \leq 10^9$).

Output

Output a single line with the minimum possible integer C such that the mean and the median of A, B and C are equal.

Sample input 1	**Sample output 1**
`1 2`	`0`

Sample input 2	**Sample output 2**
`6 10`	`2`

Sample input 3	**Sample output 3**
`1 1000000000`	`-999999998`

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Problem C – Pangram

Author: Inés Kereki, Uruguay

"Pangram Show" is an exciting new television quiz show which offers very large cash prizes for contestants who correctly detect if a sentence is a *pangram*. A pangram is a sentence that contains at least once each of all 26 letters of the English alphabet. Here are some pangram examples:

- the quick brown fox jumps over a lazy dog
- jackdaws loves my big sphinx of quartz
- pack my box with five dozen liquor jugs

Each contestant in the Pangram Show is given a sentence and he/she must indicate within fifteen seconds if the given sentence is a pangram or not. When a contestant fails he/she is eliminated from the competition, otherwise he/she continues for the next round.

During the ICPC Latin American Regional you will be able to play along with actual contestants from the show. You'll be given the same sentences as they appear on the show. Can you do as well as the contestants?

Input

The input consists of a single line that contains a string S containing at least one and at most 200 characters. The only characters in S are lowercase letters of the English alphabet and spaces.

Output

Output a single line with the uppercase letter "`Y`" if the sentence is a pangram and the uppercase letter "`N`" otherwise.

Sample input 1	**Sample output 1**
`jackdawf loves my big quartz sphinx`	`Y`

Sample input 2	**Sample output 2**
`hello world`	`N`

Sample input 3	**Sample output 3**
`abcdefghijklmnopqrstuvwxyz`	`Y`

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