acmASCIS Session 3

A. Hannibal

time limit per test: 1 second
memory limit per test: 64 megabytes
input: standard input
output: standard output

Hannibal Lectar is a well known serial… "painter", that has "drawn" many people. His drawings have a very specific kind of design that never changes: given that we represent his drawings using numbers, his odd numbered drawings are always represented with odd numbers and his even numbered drawings are always represented with even numbers.

Now, we have a problem! Another "painter" out there is copying Hannibal's design, but because he doesn't have Hannibal's skills and talent for "painting", he can't copy him exactly. The FBI doesn't have any programmers skilled enough to solve this problem. That's why they have hired you.

Given N paintings, can you write a program that can find out if the paintings are by Hannibal or by the copycat "painter"?

Input
The input starts with an integer T ($1 \le T \le 100$), which represents the number of test cases.

Each test case starts with an integer N ($1 \le N \le 10^4$), which represents the number of "paintings". Then, N integers follow ($1 \le Ai \le 10^9$), which are the representations of the "paintings".

Output
If you are certain the "paintings" are by Hannibal, then print "YES".

If you suspect that it is by the copycat "painter", then print "NO".

Each answer should be on a separate line.

Sample test(s)

input
2 3 1 2 3 4 12 7 16 11
output
YES NO

B. Red Zone

time limit per test: 1 second
memory limit per test: 64 megabytes
input: standard input
output: standard output

The long anticipated zombie apocalypse is finally here! Rick Grimes is a sheriff's deputy. He is also the leader of his group of survivors, which means he is responsible for his group's supply of food, water and ammunition.

Along with Daryl Dixon, Michonne and Carl, Rick went scavenging for supplies. Only to fall into the red zone. The red zone is an area completely overrun with zombies. Luckily, Carl noticed that zombies like either the really small houses or the really big ones. For some reason, they do not like the medium ones. For example, if the sizes of the houses are {1,2,3,4,5}, then the houses {1,2,4,5} will be completely overrun. The house with size 3, however, will be empty and safe. Can you help Rick's group get to a safe house?

Input

The input consists of one line containing 5 non-sorted integers N, (0 < N < 100), which represent the size of each house.

Output

Print one line containing the size of the house that is safe.

Sample test(s)

input
1 2 3 4 5
output
3

input
59 23 41 29 78
output
41

C. Egypt Roads

time limit per test: 1 second
memory limit per test: 64 megabytes
input: standard input
output: standard output

John just came to Egypt from Honululu with his family and his car. Unfortunately, roads in Honululu are straight, so his car can't turn right or left.

John is afraid of riding his car in Egypt, so he asks for your help. You will be given the map of Cairo and you should determine if there is a vertical or horizontal straight road or not.

The road is indicated by '*' and the pavement is indicated by '/'.

Input
The input consists of a (10*10) map.

Output
Your program should print "YES", if one or more straight roads exist. Print "NO", if no straight road exists.

Sample test(s)

input
////////* ////////* ////////* ////////* ////////* ////////* ////////* ////////* ////////* ////////*
output
YES

input
********** ////////// ////////// ////////// ////////// ////////// ////////// ////////// ////////// //////////
output
YES

D. Rep. Rep. Repetition.

time limit per test: 1 second
memory limit per test: 64 megabytes
input: standard input
output: standard output

Don't you like repetitions?

Don't you like repetitions?

Don't you like repetitions?

As you don't like repetitions, you are given a sequence of N numbers. Write a program that prints the sequence, sorted and with no repetitions.

Input
The input consists of two lines:

The first line has one integer N ($1 \le N \le 10^5$), which is the length of the sequence. The second line consists of N numbers. The i-th number is within the range ($0 \le i \le 10^5$).

Output
Print two lines. The length of the desired sequence should be on the first line and the desired sequence on the second line, sorted and with no repetitions.

Sample test(s)

input
2 1 1
output
1 1

input
6 1 2 3 3 2 1
output
3 1 2 3

E. Alphabet Soup

time limit per test: 1 second
memory limit per test: 64 megabytes
input: standard input
output: standard output

Our friend Sameh loves soup, but when it comes to the alphabet soup, he has a weird tradition. He loves to eat the letters in a lexicographical order. You are given the letters in Sameh's soup. Can you tell Sameh in what order he should eat them?

Input

The input consists of two lines. The first line contains an integer N (1 ≤ N ≤ 500), which is the number of the letters in the soup. The second line contains N upper-case letters representing the letters in the soup.

Output

Print N separated integers. The I-th integer (1 ≤ I ≤ N) represents the order in which the I-th letter is eaten. If the same letter exists more than once, then the one that comes first is eaten first.

Sample test(s)

input
3 CAB
output
3 1 2

input
3 VSS
output
3 1 2

F. Calculator again... xP

time limit per test: 1 second
memory limit per test: 64 megabytes
input: standard input
output: standard output

There are lots of ways to get input... One of those ways is to input all of the operators first, then input your numbers.

Input

The input consists of 3 lines:

The first line denotes the number of operators that will be used N, (0 < N < 11).

The second line contains the operators that will be used (+, -, /, *).

The third line contains the numbers, which must be smaller than 2^{32}.

Output

Print the result in a line. The result should be a single float number and should be rounded to two numbers after the decimal point.

Sample test(s)

input
6 ++*+/+ 3 8 9 110 26 38 1
output
59.58

G. Sort

time limit per test: 0.25 seconds
memory limit per test: 64 megabytes
input: standard input
output: standard output

You will be given N numbers (A1, A2, A3, ..., AN) sorted in ascending order of their value. You will have to sort the N numbers in descending order of their modulo-2 value.

If there is a tie between two odd numbers (that is, their modulo-2 value is the same), then the larger odd number should precede the smaller odd number. If there is a tie between two even numbers (that is, their modulo-2 value is the same), then the smaller even number should precede the larger even number.

Input

The input consists of two lines. The first line consists of one integer N ($1 \le N \le 10^5$). The second line consists of N space-separated integers ($-10^5 \le A1,A2,A3,...,AN \le 10^5$).

Output

Print N space-separated integers sorted according to the rules mentioned above.

Sample test(s)

input
5 1 2 3 4 5
output
5 3 1 2 4

H. Grades

time limit per test: 1 second
memory limit per test: 64 megabytes
input: standard input
output: standard output

Your programming teacher gave you a task to do. You should make a program that takes the grades of the teacher's students and adds the grades of the students together, according to the first letter of the students' names.

For example, the grades of Omar, Ola and Omneya should be added together because their names start with letter 'O'.

Input
The first line consists of the number of students (1 ≤ n ≤ 1000).

The n following lines consist of 2 things: the name (1 ≤ (Name Length) ≤ 100) and the grade (0 ≤ grade ≤ 500) of each student.

The last line consists of one capital letter, which refers to the specific group of added grades to be shown.

Output
Print one line representing the added grade.

Sample test(s)

input
3 Omar 150 AbdAllah 100 Ola 100 O
output
250

Note
The students' names always start with a capital letter.

I. Make Space

time limit per test: 1 second
memory limit per test: 64 megabytes
input: standard input
output: standard output

Ehab is a teacher. Everyday in school in the morning, he must arrange the students in a queue in ascending order, according to their IDs.

Write a program to help Ehab.

Input
The input consists of two lines.

The first line contains an integer N (1 ≤ N ≤ 2000), which denotes the number of students.

The second line contains N integers (1 ≤ ID ≤ 10^5), which represent the IDs of the students.

Output
Print "Ordered" if the students' IDs are sorted.

Otherwise, sort the IDs and print all IDs separated by spaces. Also, print the number of swaps.

Sample test(s)

input
4 1 4 3 2
output
1 2 3 4 3

input
3 50 60 70
output
Ordered 0

Note
-In the first sample, Ehab makes three swaps:

• swap 4 with 3.

• swap 4 with 2.

• swap 3 with 2.

J. Assassin's Creed: Escape

time limit per test: 1 second
memory limit per test: 64 megabytes
input: standard input
output: standard output

Surely, you have played Assassin's Creed before. But just in case you haven't played it before, here is the story.

Ezio Auditore da Firenze is the Grandmaster of the Assassin's order. His memories are being reanimated by his descendant Desmond Miles, who uses the Animus to relive his memories in order to locate the Apple of Eden, which is a strong weapon that shouldn't fall into the wrong hands. The Assassin's order is a secret order that is trying to save the world from tyranny and monopoly. Ezio has just executed a successful assassination, but now it's runaway time. He's being chased by guards. So Ezio tried to use his eagle vision to locate a safe hiding place. Unfortunately, he can't do that while running. So Desmond contacted you - his tech support - to write a computer program for the animus to use, to locate the safe hiding places. Help him find the safe hiding places.

Input

The input consists of two lines, the first line contains a number N ($1 \le N \le 50$) which denotes the size of the grid that Ezio is in.

The second line contains a NxN matrix consisting only of '.'s and '#'s. The '#'s resemble the safe hiding places (that is highlighted in blue in eagle vision), while the '.'s resemble anything else.

Output

Print the coordinates of the safe hiding places on the grid each on a separate line like the sample output. Then print the total number of safe hiding places that Ezio can use.

If there is no hiding place on the grid, then print "No hiding places", without the double quotes.

Sample test(s)

input
4 .... #... .#.. ...#
output
2 1 3 2 4 4 3

input
5 ....
output
No hiding places

K. Moataz's (Mis)fortunes

time limit per test: 1 second
memory limit per test: 64 megabytes
input: standard input
output: standard output

Moataz is a student in FCIS and he is lazy. Today, he was late for the lecture but he was lucky, because the lecturer was late too. So Moataz had time to choose an optimal seat.

The optimal seat, in Moataz's opinion, is the seat that is closest to the origin point.

Write a program to help Moataz.

Input

The first line consists of two numbers R, C ($1 \le R,C \le 10^3$), which denote the number of rows and columns, respectively.

The second line consists of R*C characters. Each character can be either 'O' or 'E', where 'O' denotes an occupied seat and 'E' denotes an empty seat.

Output

Print the optimal seat.

If there is more than one optimal seat, then print the first one.

If there is no optimal seat, then print "-1" without the double quotes.

Sample test(s)

input
3 3 OEO OOO EOE
output
1 2

input
5 5 OOOOO OOOEO EOOOE EEEEE OOEOO
output
3 1

Note

-Origin point denotes the first element in the first row.

L. Kindergarten

time limit per test: 1 second
memory limit per test: 64 megabytes
input: standard input
output: standard output

Nadia is a girl in kindergarten. She learned counting recently, so her mother gave her a problem to solve, but the problem is too hard for Nadia. So we want to help her figure it out.

Her mother gave her a sequence of numbers and wants Nadia to find a specific number and find how many times that number appears in the sequence.

Input

There can be multiple test cases.

Test cases consist of 2 integers N and M (1 ≤ N, M ≤ 1000) the number of elements in the sequence and the number to search for.

Then N non negative numbers follow (1 ≤ Ai ≤ 10000).

The input is terminated by a test case where N = 0 and M = 0.

Output

If the number M exists in the sequence print the number of times it appears and the first index it appears, else if the number can't be found print "-1".

Sample test(s)

input
7 5 7 2 3 5 9 3 5 10 15 2 4 8 5 7 9 12 15 16 3 0 0
output
2 3 1 7

M. Automate the Grades

time limit per test: 2 seconds
memory limit per test: 64 megabytes
input: standard input
output: standard output

The teachers of “Anguri Begam Uccha Biddalya”, a school located in the western region of Sylhet, currently follows a manual system for grading their students. The manual process is very time consuming and error prone. From the next semester they have decided to purchase some computers so that the whole grading process can be automated. And yes, you guessed it - they have hired you to write a program that will do the job.

The grading of each course is based on the following weighted scale:

- Term 1 – 20%

- Term 2 – 20%

- Final – 30%

- Attendance – 10%

- Class Tests – 20%

The letter grades are given based on the total marks obtained by a student and is shown below:

· A ≥ 90%

· B ≥ 80% & < 90%

· C ≥ 70% & < 80%

· D ≥ 60% & < 70%

· F < 60%

Term 1 and Term 2 exams are out of 20 each, Final is out of 30 and Attendance given is out of 10. Three class tests are taken per semester and the average of best two is counted towards the final grade. Every class test is out of 20. Example: Say Tara obtained marks of 15, 18, 25 and 8 in Term 1, Term 2, Final and Attendance respectively. Her 3 class test marks are 15, 12 and 17. Since average of best 2 will be counted, her class test mark will be equal to (15 + 17) / 2 = 16. Therefore, total marks = 15 + 18 + 25 + 8 + 16 = 82 and she will be getting a B.

Input
The input contains seven integers on a line in the order Term1 Term2 Final Attendance Class_Test1 Class_Test2 Class_Test3.

All these integers will be in the range (0, total marks possible for that test).

Output
Print the grad letter "A", "B", "C", "D" or "F".

Sample test(s)

input
15 18 25 8 15 17 12
output
B

input
20 20 30 10 20 20 20
output
A

input
20 20 30 10 18 0 0
output
B