A. Super Agent

time limit per test: 2 seconds
memory limit per test: 256 megabytes
input: standard input
output: standard output

There is a very secret base in Potatoland where potato mash is made according to a special recipe. The neighbours from Porridgia decided to seize this recipe and to sell it to Pilauland. For this mission they have been preparing special agent Pearlo for many years. When, finally, Pearlo learned all secrets of espionage, he penetrated into the Potatoland territory and reached the secret base.

Now he is standing at the entrance, but to get inside he need to pass combination lock. Minute ago one of the workers entered the password on the terminal and opened the door. The terminal is a square digital keyboard 3×3 with digits from 1 to 9.

Pearlo knows that the password consists from distinct digits and is probably symmetric with respect to the central button of the terminal. He has heat sensor which allowed him to detect the digits which the worker pressed. Now he wants to check whether the password entered by the worker is symmetric with respect to the central button of the terminal. This fact can Help Pearlo to reduce the number of different possible password combinations.

Input

Input contains the matrix of three rows of three symbols each. Symbol «X» means that the corresponding button was pressed, and «.» means that is was not pressed. The matrix may contain no «X», also it may contain no «.».

Output

Print YES if the password is symmetric with respect to the central button of the terminal and NO otherwise.

Sample test(s)

input
XX. XX

output
YES

input
X.X X.. ...

output
NO

Note

If you are not familiar with the term «central symmetry», you may look into http://en.wikipedia.org/wiki/Central_symmetry

B. Correct Solution?

One cold winter evening Alice and her older brother Bob was sitting at home near the fireplace and giving each other interesting problems to solve. When it was Alice's turn, she told the number n to Bob and said:

—Shuffle the digits in this number in order to obtain the smallest possible number without leading zeroes.

—No problem! — said Bob and immediately gave her an answer.

Alice said a random number, so she doesn't know whether Bob's answer is correct. Help her to find this out, because impatient brother is waiting for the verdict.

Input
The first line contains one integer n ($0 \leq n \leq 10^9$) without leading zeroes. The second lines contains one integer m ($0 \leq m \leq 10^9$) — Bob's answer, possibly with leading zeroes.

Output
Print `OK` if Bob's answer is correct and `WRONG_ANSWER` otherwise.

Sample test(s)

input
3310 1033
output
OK

input
4 5
output
WRONG_ANSWER

C. Fruits

time limit per test: 1 second
memory limit per test: 256 megabytes
input: standard input
output: standard output

The spring is coming and it means that a lot of fruits appear on the counters. One sunny day little boy Valera decided to go shopping. He made a list of m fruits he wanted to buy. If Valera want to buy more than one fruit of some kind, he includes it into the list several times.

When he came to the fruit stall of Ashot, he saw that the seller hadn't distributed price tags to the goods, but put all price tags on the counter. Later Ashot will attach every price tag to some kind of fruits, and Valera will be able to count the total price of all fruits from his list. But Valera wants to know now what can be the smallest total price (in case of the most «lucky» for him distribution of price tags) and the largest total price (in case of the most «unlucky» for him distribution of price tags).
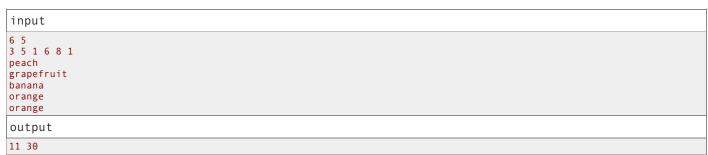
Input

The first line of the input contains two integer number n and m ($1 \le n, m \le 100$) — the number of price tags (which is equal to the number of different kinds of fruits that Ashot sells) and the number of items in Valera's list. The second line contains n space-separated positive integer numbers. Each of them doesn't exceed 100 and stands for the price of one fruit of some kind. The following m lines contain names of the fruits from the list. Each name is a non-empty string of small Latin letters which length doesn't exceed 32. It is guaranteed that the number of distinct fruits from the list is less of equal to n. Also it is known that the seller has in stock all fruits that Valera wants to buy.

Output

Print two numbers a and b ($a \le b$) — the minimum and the maximum possible sum which Valera may need to buy all fruits from his list.

Sample test(s)

input
```
5 3
4 2 1 10 5
apple
orange
mango
```
output
```
7 19
```

input
```
6 5
3 5 1 6 8 1
peach
grapefruit
banana
orange
orange
```
output
```
11 30
```

D. Ball

N ladies attend the ball in the King's palace. Every lady can be described with three values: beauty, intellect and richness. King's Master of Ceremonies knows that ladies are very special creatures. If some lady understands that there is other lady at the ball which is more beautiful, smarter and more rich, she can jump out of the window. He knows values of all ladies and wants to find out how many probable self-murderers will be on the ball. Lets denote beauty of the i-th lady by B_i, her intellect by I_i and her richness by R_i. Then i-th lady is a probable self-murderer if there is some j-th lady that $B_i < B_j$, $I_i < I_j$, $R_i < R_j$. Find the number of probable self-murderers.

Input

The first line contains one integer N ($1 \leq N \leq 500000$). The second line contains N integer numbers B_i, separated by single spaces. The third and the fourth lines contain sequences I_i and R_i in the same format. It is guaranteed that $0 \leq B_i, I_i, R_i \leq 10^9$.

Output

Output the answer to the problem.

Sample test(s)

```
input
```

```
3
1 4 2
4 3 2
2 5 3
```

```
output
```

```
1
```

E. Start of the season

time limit per test: 2 seconds
memory limit per test: 256 megabytes
input: standard input
output: standard output

Before the start of the football season in Berland a strange magic ritual is held. The most experienced magicians have to find a magic matrix of the size $n \times n$ (n is even number). Gods will never allow to start the championship without it. Matrix should contain integers from 0 to $n - 1$, main diagonal should contain only zeroes and matrix should be symmetric. Moreover, all numbers in each row should be different. Magicians are very tired of the thinking process, so they ask you to write a program to find such matrix.

Input

The first line contains one integer n ($2 \le n \le 1000$), n is even.

Output

Output n lines with n numbers each — the required matrix. Separate numbers with spaces. If there are several solutions, output any.

Sample test(s)

input
2
output
0 1
1 0

input
4
output
0 1 3 2
1 0 2 3
3 2 0 1
2 3 1 0