Problem A. 76644. Bad WI-FI connection

Input file:	standard input
Output file:	standard output
Time limit:	1 second
Memory limit:	256 megabytes

Unfoturnetely, when one of the assistant hast been setting up marks for midterm, WIFI connection was cut off. After reconnection, he realized that list of all students and theirs marks were mixed. He knows that students were in alphabetical order and marks in ascending order. Help assistant to resotre all marks.

Input

The first line contains single integer N - amount of students. In the next N lines will be given pairs of student name(string) and mark(int).

Output

Print required list. Each student should be in own line.

Examples

standard input	standard output
5 Azamat 5 Eldar 15 Temirlan 30 Assyl 25 Yerdaulet 15	Assyl 5 Azamat 15 Eldar 15 Temirlan 25 Yerdaulet 30
10 Dina 40 Bagdat 35 Aldiyar 25 Assyl 15 Dauren 30 Rayan 20 Aldikk 35 Dauzee 40 Askar 45 Derbes 15	Aldikk 15 Aldiyar 15 Askar 20 Assyl 25 Bagdat 30 Dauren 35 Dauzee 35 Derbes 40 Dina 40 Rayan 45

Note

Use sort in algorithm. Read about on cplusplus.com . You should note that first letter of name is in Upper case.

Problem B. 77392. Generate power

Input file:	`standard input`
Output file:	`standard output`
Time limit:	1 second
Memory limit:	256 megabytes

Most of mathematician say that function f(x) = pow(x,x) has an interesting behavior. However, it hard to calculate such function for the value n, that is why you shoud help them to create sequence of n power n , where n is indeces of element. Make mathematicians life easier.

Input

Input will contain only one integer N, where N is last index of sequence.

Output

Create sequence of n power n, separate elements by single empty space.

Examples

standard input	standard output
5	1 1 4 27 256 3125
4	1 1 4 27 256

Note

You have write function that will find n powern n and use it via function generate() in <algorithm>. You may use long long to save generated number.

Problem C. 77686. Squack

Input file:	`standard input`
Output file:	`standard output`
Time limit:	1 second
Memory limit:	256 megabytes

Bagdat does not like two-digit squares in a sequence. She would like to erase all of them. Help Bagdat to do it.

Input

In the first line you will be given integer n.

Output

Print the reversed number n after required operations. If sequence is empty, just print "Stack is empty".

Examples

standard input	standard output
161496	Stack is empty
110256	6011

Note

That is no even enough to use long long type. You should use string to save value of number. You have to use stack to solve this problem. Hint: type of elements in the stack is char.

Problem D. 77721. Hard-sort

Input file:	`standard input`
Output file:	`standard output`
Time limit:	3 seconds
Memory limit:	256 megabytes

We hope from previous tasks you learn how to use sort and write comparator. Now, you will be given task to sort non-static 2D-array. Sizes of row are undefined. Sort all of parameters in non-decreasing order. First of all, sort rows by sum of all elements in row, if they are equal, sort by size, if they are equal, sort by elements(in which row corresponded elements are greater that row will be "greater"), if they are equal it means that they are in the right order.

Input

The first line contains single integer N, which is number of row. The next N lines will contain number M, which is size of column, and M number separated by single empty space.

Output

Print sorted "non-static 2D-array". Print each given row in own line. Separate elements of row by single empty space.

Example

standard input	standard output
5 4 9 8 7 6 4 5 4 3 2 4 1 1 1 1 4 1 7 6 7 4 5 4 7 8	1 1 1 1 5 4 3 2 1 7 6 7 5 4 7 8 9 8 7 6

Note

Write comparator to make sort. Hint: you should use vector that contains vectors.

Problem E. 77723. Where are students from?

Input file:	standard input
Output file:	standard output
Time limit:	1 second
Memory limit:	256 megabytes

Every year, at summer time, selection commitee takes documents of students, who are from different place of KZ. Now, they want to know percentage of students from each place. Help them to calculate it.

Input

In the first line number N - amount of days that commitee worked. In next rows will given number M, how may places in this day. After M rows will be given simultaneous information about next day. (1<=N<=40),(1<=M<=300).

Output

Each printed row should contain name of place and percentage separated by single empty space. Sort places alphabetically.

Example

standard input	standard output
2 15 Almaty 80 Kostanai 243 Oskemen 243 Oral 219 Turkistan 93 Karagandy 159 Aktobe 36 Kostanai 136 Oskemen 116 Aktau 92 Turkistan 26 Taraz 196 PetroPavlsk 62 Aktobe 56 Aktobe 95 2 Astana 112 Pavlodar 2	Aktau 4.67955 Aktobe 9.5117 Almaty 4.06918 Astana 5.69685 Karagandy 8.08749 Kostanai 19.2777 Oral 11.1394 Oskemen 18.2604 Pavlodar 0.101729 PetroPavlsk 3.15361 Taraz 9.96948 Turkistan 6.0529

Problem F. 77731. GPA

Input file:	`standard input`
Output file:	`standard output`
Time limit:	1 second
Memory limit:	256 megabytes

Unfortunetely, after finals our uninets was damaged again. But one of the students managed to write points for the first and second attestation and final, amount of credit. Help to calculate student's GPA.

Input

The first line contains integer n, which amount of subjects that were taken in previous semester. The next N lines contain four integers: 1st attestation, 2nd attestation, final and credits.(separated by space).

Output

Print single double number - GPA.

Examples

standard input	standard output
6 26 28 8 4 17 12 36 4 25 27 6 3 13 16 15 2 30 15 30 4 6 11 10 4	0.507937
5 30 21 22 4 23 26 8 2 21 12 12 4 9 9 16 1 22 5 40 2	0.717949

Problem G. 77736. Competition

Input file:	`standard input`
Output file:	`standard output`
Time limit:	1 second
Memory limit:	256 megabytes

A few day ago, in KBTU was a hackathon. In hackathon could participate 2 persons as a team. Jury marked each student individually, but then they will get sum of scores. There were some problems, when competition was ended. All of students had written only theirs nickname at register time. Moreover, some students registered twicely(may be more). Jury decided : if they each of student in pair has same names, same scores - they are same team, that registered two times. But if they have different scores they are different team. Shortly, to be same information has to be completely same. Help Jury create a list of students.

Input

In the first line given integer N - amount of registered teams. Next N lines contain information about team in the next pattern: first-student-nickname, score-1,second-student-nickname-2.

Output

Print unique teams(by decision of jury) in own lines. Each line should contain names of first and second and their total score.

Examples

standard input	standard output
2 Assyl 40 Azamat 40 Assyl 40 Azamat 50	Assyl and Azamat 80 Assyl and Azamat 90
2 Assyl 40 Azamat 40 Assyl 40 Azamat 40	Assyl and Azamat 80

Note

Use only map and pair. No one of vectors, sets or other STL containers.

Problem H. 76658. Next permutation

Input file:	`standard input`
Output file:	`standard output`
Time limit:	1 second
Memory limit:	256 megabytes

Askar likes course of discrete structures. Now, he is trying to solve given homework that is about next permutation. In the task was said that he needs find all possible next permutation of the given sequence. Some of numbers in the sequence were duplicated. Help Askar to solve homework.

Input

In the first line given single number N - amount of numbers in sequence. The second line contains of N numbers.

Output

Print all possible next permutation of the sequence. Elements should be separated by single empty space. Print each of permutaion in own row.

Examples

standard input	standard output
3 1 2 3	1 2 3 1 3 2 2 1 3 2 3 1 3 1 2 3 2 1
10 10 10 10 10 10 10 10 10 10 10	10
6 6 5 4 3 2 1	6 5 4 3 2 1

Note

Use function for next permutations in algortihm. Read about it on cplusplus.com

Problem I. 76967. Instead of ...

Input file:	standard input
Output file:	standard output
Time limit:	1 second
Memory limit:	256 megabytes

It will be obvious to say that most of FIT student like to solve intersting problems. Aldiayar told Assyl to said one of such problems. He wrote sequence of numbers on paper and showed it via mirror. As you can mention, Assyl sees reversed sequence. Give hints for Assyl in which places were numbers originally.

Input

In the first row given single number N - amount of numbers in the sequence. The next line contains N numbers.

Output

Print hints as in examples. If values are equal print OK only for that case.

Examples

standard input	standard output
5 5 4 3 2 1	Instead of 5 here was 1 Instead of 4 here was 2 OK Instead of 2 here was 4 Instead of 1 here was 5
3 2 1 3	Instead of 2 here was 3 OK Instead of 3 here was 2
5 1 2 3 2 1	OK OK OK OK OK

Note

Just simply use function reverse in <algorithm>

Problem J. 77054. Instead of ... 2

Input file:	`standard input`
Output file:	`standard output`
Time limit:	1 second
Memory limit:	256 megabytes

I hope previous problem was easy for you. If previouly sequence was just reversed. Right now, sequence is firstly rotated then reversed. Restore initial sequence again.

Input

In the first line given numbers N and M point of rotation. Second line contains of N numbers.

Output

Print original sequence in one row separated by single empty space.

Example

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

Note

Use function reverse and rotate in <algorithm>. Read on http://www.cplusplus.com/reference/algorithm/rotate/?kw

Problem K. 77065. New Rules

Input file:	`standard input`
Output file:	`standard output`
Time limit:	1 second
Memory limit:	256 megabytes

From course of math we know that the number is called prime if and only if number is greater that 1 and divisible by 1 and itself. But one of the students tried to apply this rule for negatives and zero. He thinks, if positive of number is prime, number is prime too. Zero is not prime. You task is to calculate all primes by new rules.

Input

In the first row given single number N amount of numbers. Second line contains sequence of integers.

Output

Find how many primes are in sequence.

Examples

standard input	standard output
8 3 4 5 7 9 -9 -7 0	4
4 17 -17 1 3	3

Note

Write function to find prime numbers, you have to use function count if in "algorithm".

Problem L. 77327. Arithmetic progression in a nutshell

Input file:	`standard input`
Output file:	`standard output`
Time limit:	1 second
Memory limit:	256 megabytes

Dina loves her young brother. She wants to teach him arithmetic progression. To show what is the arithmetic progression and it's sum, she decided to write sequence like 1 2 2 3 3 3. Help Dina to teach him.

Input

Input contains only one single integer N(the last number of the sequence).

Output

Create required sequence. All members should be in the same row separated by single empty space.

Examples

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

Note

Use vector for this task. Think about size of the vector(what it might be?).You have to use function fill() in <algorithm>.

Problem M. 77330. unique x set

Input file:	`standard input`
Output file:	`standard output`
Time limit:	1 second
Memory limit:	256 megabytes

We know that it is easy to find all unique elements in sorted order via set. But also, there are exist such functions as unique that will give iterator without consecutive duplicates as a result. In this task you will be given two sequences. Erase all consequent duplicates for both vectors. Then merge them to the new vector(Turn by turn,first element will be first of first, second element of the new vector will be first of the second). Do the same thing with a new vector(Use unique again).

Input

The first line will contain numbers N and M.(Number of elements of the corresponded vectors). Next two lines contain sequences of integers.

Output

Print sequence separated by single empty space.

Examples

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

Note

You have to use only vector and function unique() in <algorithm>. Read about it on cplusplus.com. It is guaranteed that difference between size of two "unique"vectors no more than 1.

Problem N. 77351. Possible palindromes

Input file:	`standard input`
Output file:	`standard output`
Time limit:	1 second
Memory limit:	256 megabytes

Aibek likes palindromes. He always gets any sequence and try make palindrome. If it is possible to make many palindromes, prefers first in "ascending"order(Even when sequence is already palindrome). Help Aibek to create palindrome.

Input

In the first line you are given single number N, which number of elements. Second line contains N numbers.

Output

Print first possible palindrome.If it is not possible, print "Impossible".

Examples

standard input	standard output
5 3 1 2 1 3	1 3 2 3 1
3 1 2 3	Impossible
4 2 1 1 2	1 2 2 1

Note

You have to write function that will check is the sequence is palindrome. Use function in <algorithm> that will find all combination of the sequence(previously you used it). Moreover, in <algorithm> exist 2 such functions. You may use both, but methods will differ only in using sort.

Problem O. 77388. Binary for each

Input file:	`standard input`
Output file:	`standard output`
Time limit:	1 second
Memory limit:	256 megabytes

All of computer in the world use binary system for any operation. Let try to simulate it. Represent each elements of given vector as binary.

Input

In the first line you are given single number N, where N is amount of elements in the vector. The second line contains of N elements.

Output

Print binary representation for each element of vector in own row.

Example

standard input	standard output
5 1 2 3 4 5	1 10 11 100 101

Note

You have to write function that will convert number to binary and you must use function foreach in "algorithm". Think about to use take you function as argument for foreach.