Arrays

A. Print Array In Reverse

1 second, 256 megabytes

You are given an array of integers.

Print the elements of the array in reverse order.

Input

- First line contains integer N $(1 \le N \le 10^5)$ — size of the array.
- Second line contains N integers $A_1, A_2, \ldots, A_N$ $(-10^9 \le A_i \le 10^9)$.

Output
Print the elements of the array in reverse order.

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

B. Sum of Array

1 second, 256 megabytes

You are given an array of integers.

Find the sum of all elements of the array.

Input

- First line contains integer N $(1 \le N \le 10^5)$ — size of the array.
- Second line contains N integers $A_1, A_2, \ldots, A_N$ $(-10^9 \le A_i \le 10^9)$.

Output
Print a single integer — the sum of the array elements.

input
5 1 2 3 4 5
output
15

C. Minimum Element and Its Position

1 second, 256 megabytes

You are given an array of integers. Find the minimum element in the array and its position.

If multiple positions contain the minimum value, print the smallest position.

Input

- First line contains integer N $(1 \le N \le 10^5)$ — size of the array.
- Second line contains N integers $A_1, A_2, \ldots, A_N$ $(-10^9 \le A_i \le 10^9)$.

Output
Print two integers — the minimum value and its position (1-based index).

input
6 7 3 4 5 3 10
output
3 2

D. Maximum Element with Position

1 second, 256 megabytes

Given an array of integers, find the maximum element in the array and its position.

If multiple maximum elements exist, print the position of the first occurrence.

Input

- First line contains integer N $(1 \le N \le 10^5)$ — size of the array.
- Second line contains N integers $A_1, A_2, \ldots, A_N$ $(-10^9 \le A_i \le 10^9)$.

Output

Print two integers: the maximum element and its 1-based position in the array.

input
5 1 2 4 3 1
output
4 3

E. Search Element in Array

1 second, 256 megabytes

Given an array of integers and a value X, determine whether X is present in the array.

Print "YES" if it is present, otherwise print "NO".

Input

- First line contains two integers N and X $(1 \le N \le 10^5,\ -10^9 \le X \le 10^9)$.
- Second line contains N integers $A_1, A_2, \ldots, A_N$ $(-10^9 \le A_i \le 10^9)$.

Output

Print "YES" if X is present in the array, otherwise print "NO".

input
5 7 1 7 5 3 2
output
YES

input
4 2 1 4 3 7
output
NO

F. Count Occurrences

1 second, 256 megabytes

You are given an array of integers and an integer X.

Find how many times X appears in the array.

Input

- First line contains two integers N and X $(1 \le N \le 10^5,\ -10^9 \le X \le 10^9)$.
- Second line contains N integers $A_1, A_2, \ldots, A_N$ $(-10^9 \le A_i \le 10^9)$.

Output

Print a single integer — the number of times X appears in the array.

input
6 3 1 5 2 3 7 3

output
2

G. Check If Array is Sorted

1 second, 256 megabytes

Given an array of N integers, determine whether it is sorted in ascending order.

Input

An array $A_1, A_2, \ldots, A_N$ is sorted in ascending order if $A_i \leq A_{i+1}$ for all $1 \leq i < N$.

Output

Print `YES` if the array is sorted in ascending order, otherwise print `NO`.

Any letter case is accepted, so `yEs`, `YeS`, `nO`, etc. are also valid.

input
5 1 2 3 4 5
output
YES

input
4 5 3 4 1
output
NO

H. Sort 01

3 seconds, 256 megabytes

You have been given an integer array of size N that contains only integers 0 and 1.

Print the sorted array of 01.

Input

- $1 \leq t \leq 10^2$
- $0 \leq N \leq 10^5$

Output

Print the expected array.

input
1 7 0 1 1 0 1 0 1
output
0 0 0 1 1 1 1

input
2 8 1 0 1 1 0 1 0 1 5 0 1 0 1 0
output
0 0 0 1 1 1 1 1 0 0 0 1 1

I. Reverse

1 second, 256 megabytes

You are given an array of integers.

Reverse the array in the same array (in-place) and then print it.

Input

- First line contains integer N ($1 \le N \le 10^5$) — size of the array.
- Second line contains N integers $A_1, A_2, \ldots, A_N$ ($-10^9 \le A_i \le 10^9$).

Output
Print the array after reversing it in-place.

input
5 1 3 7 9 10
output
10 9 7 3 1

J. Arrange the Numbers

1 second, 256 megabytes

You are given a single integer n.

Construct an array of length n containing the integers from 1 to n (each exactly once) in the following order:

- $1, 3, 5, \ldots$ (increasing order from the left)
- $2, 4, 6, \ldots$ (decreasing order from the right)

Input
The first line contains a single integer t ($1 \le t \le 100$) — the number of test cases.

Each of the next t lines contains a single integer n ($1 \le n \le 10^4$).

Output
Print n integers — the required array.

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

K. Swap Alternate

1 second, 256 megabytes

You are given an array A of size n. Your task is to **swap every pair of alternate elements** in the array.

Input
The first line contains a single integer t ($1 \le t \le 100$) — the number of test cases.

Each test case consists of two lines:

- The first line contains an integer n ($0 \le n \le 10^5$) — the size of the array.
- The second line contains n integers $a_1, a_2, \ldots, a_n$ ($1 \le a_i \le 10^9$).

It is guaranteed that the sum of n over all test cases does not exceed 10^5.

Output
For each test case, print the modified array after performing all swaps.

input
1 6 9 3 6 12 4 32
output
3 9 12 6 32 4

input
2 9 9 3 6 12 4 32 5 11 19 4 1 2 3 4
output
3 9 12 6 32 4 11 5 19 2 1 4 3

L. Missing Number

1 second, 256 megabytes

You are given an integer array of size n, where $n = 2m + 1$.

In this array, exactly m numbers appear **twice**, and exactly one number appears **only once**. Your task is to find and return that unique number.

Input

The first line contains an integer t $(1 \le t \le 100)$ — the number of test cases.

Each test case consists of two lines:

- The first line contains a single integer n $(1 \le n \le 1000$, n is always odd).
- The second line contains n integers $a_1, a_2, \ldots, a_n$ $(1 \le a_i \le 10^6)$ — the elements of the array.

It is guaranteed that in each test case there is exactly one element that appears once, and all others appear exactly twice.

Output

For each test case, print a single integer, the unique element.

input
1 7 2 3 1 6 3 6 2
output
1

input
2 5 2 4 7 2 7 9 1 3 1 3 6 6 7 10 7
output
4 10

M. Find Duplicate Number

1 second, 256 megabytes

You have been given an integer array of size N which contains numbers from 0 to $(N-2)$. Each number is present at least once. Among these, there is a single integer value that is present twice.

You need to find the duplicate number present in the array.

Input

The first line contains a single integer t $(1 \le t \le 100)$ — the number of test cases.

The first line of each test case contains an integer N $(0 \le N \le 1000)$. The second line contains N integers representing the array/list.

Output

For each test case, print the duplicate number in the array.

input
1 9 0 7 2 5 4 7 1 3 6
output
7

input
2 5 0 2 1 3 1 7 0 3 1 5 4 3 2
output
1 3

N. Intersection of Arrays

1 second, 256 megabytes

You have been given two integer arrays of size N and M, respectively. You need to print their intersection.

Input

The first line contains an integer t $(1 \leq t \leq 100)$ — the number of test cases.

For each test case: The first line contains an integer N $(0 \leq N \leq 1000)$, the size of the first array. The second line contains N integers. The third line contains an integer M $(0 \leq M \leq 1000)$, the size of second array. The fourth line contains M integers.

Output

For each test case, print the intersection in one line. Elements must follow the order they appear in the first array.

input
2 6 2 6 8 5 4 3 4 2 3 4 7 2 10 10 1 10
output
2 4 3 10

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

O. Pair Sum

1 second, 256 megabytes

You have been given an integer array of size N and a number X. You need to find the total number of pairs in the array which sum to X.

Two pairs are considered different if they involve different indices of the array, even if the values are the same.

Input

The first line contains an integer t $(1 \leq t \leq 100)$ — the number of test cases.

For each test case: The first line contains an integer N $(0 \leq N \leq 1000)$ — the size of the array. The second line contains N integers. The third line contains an integer X $(0 \leq X \leq 10^9)$.

Output

For each test case, print a single integer — the number of pairs in the array whose sum is equal to X.

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

input
2 9 1 3 6 2 5 4 3 2 4 12 6 2 8 10 5 -2 5 10
output
0 2

- The given array can contain duplicate elements.

P. Triplets

1 second, 256 megabytes

You have been given an integer array of size N and a number X. Find the total number of triplets in the array which sum to X.

Two triplets are considered different if they involve different indices of the array, even if the values are the same.

Input

- $1 \leq t \leq 50$
- $0 \leq N \leq 10^2$
- $0 \leq X \leq 10^9$

Output

Print the number of triplets.

input
1 7 1 2 3 4 5 6 7 12
output
5

input
2 7 1 2 3 4 5 6 7 19 9 2 -5 8 -6 0 5 10 11 -3 10
output
0 5

For the 2nd Example: Since there doesn't exist any triplet with sum equal to 19 for the first testcase, we print 0. For the second testcase, we have 5 triplets in total that sum up to 10. They are, (2, 8, 0), (2, 11, -3), (-5, 5, 10), (8, 5, -3) and (-6, 5, 11)

Q. Count Quadraplets

1 second, 256 megabytes

You are given an array A of length n and an integer x (the target). Your task is to count the number of quadruplets (i, j, k, l) such that:

$$A[i] - 2 * A[j] + 3 * A[k] - 4 * A[l] = x,$$

where $0 < i < j < k < l < n$.

Input

The first line contains two integers n and x ($1 \le n \le 100,\ |x| \le 10^6$).

The second line contains n integers $A_1, A_2, \ldots, A_n$ ($|A_i| \le 1000$).

Output

Print a single integer, the number of quadruplets (i, j, k, l) that satisfy the given condition.

input
4 -2 3 2 1 1
output
1

input
8 -10 1 2 3 4 5 6 5 6
output
5

For the 2nd Example, The valid quadruplets (i, j, k, l) (1-indexed) are:

[(1,3,5,7): 1 - 2 * 3 + 3 * 5 - 4 * 5 = -10]

[(1,3,5,8): 1 - 2 * 3 + 3 * 5 - 4 * 6 = -10]

[(1,3,7,8): 1 - 2 * 3 + 3 * 7 - 4 * 6 = -10]

[(2,3,6,7): 2 - 2 * 3 + 3 * 6 - 4 * 5 = -10]

[(2,3,6,8): 2 - 2 * 3 + 3 * 6 - 4 * 6 = -10]

So the answer is **5**.

Two quadruplets are considered different if they have at least one different index among them.