**ARITHMETIC**

**1**

**Print name**

Read a name as input and print "Hello {name}"

**Input**

One line containing a string, i.e. name

**Output**

Hello {name}

**Example**

**Input:** Ravi

**Output:** Hello Ravi

2

### Arithmetic Progression

Given first 3 number of a arthimetic progression, predict the next number.

For details about arithmetic progression, you can visit the following link <https://en.wikipedia.org/wiki/Arithmetic_progression>

### Input

3 integers, each should be taken as a input

### Output

single integer

### Example

**Input:**

2

5

8

**Output:**

11

3

### Simple interest

Simple interest formula is given by: Simple Interest = (P x T x R)/100 Where, P is the principle amount T is the time and R is the rate. Compute simple interest for given P, T and R.

### Input

Three lines containing integer each.

### Output

One line containing integer.

### Example

**Input:**

1000

10

5

**Output:** 500

4

### Geometric Progression

Given first 3 numbers of a geometric progression, predict the next number.

You can refer to the following link for information about geometric preogression

<https://en.wikipedia.org/wiki/Geometric_progression>

### Input

3 integers should be taken as a input

### Output

single integer.

**Note:** Convert the output to the nearest integer

### Example

**Input:**

2

4

8

**Output:**

16

5

### Travel Time

Bharath is travelling from Hyderabad to Banglore on a car. Assume the distance from Hyderabard to Banglore is 600kms, you will be given the average speed of Bharath's car and you have to calculate the travel time.

### Input

single integer - speed of car in km/hr

### Output

single integer

**Note:** return only the integer part, incase the time is decimal.

### Example

**Input-1:**

60

**Output-1:**

10

**Input-2:**

80

**Output-2:**

7

6

**Arithmetics**

Given two integers a and b, print the following three lines as output.

1. The first line contains the sum of the two numbers.
2. The second line contains the difference of the two numbers (first - second).
3. The third line contains the product of the two numbers.

**Input**

The first line contains the first integer, a. The second line contains the second integer, b.

**Output**

Print the three lines as explained above.

**Example**

**Input:**

3

2

**Output:**

5

1

6

**Explanation:**

3+2 => 5

3-2 => 1

3\*2 => 6

7

### natural-numbers-sum

Given a natural number n as input, find the sum of first n natural numbers.

### Input

One Integer, denoting n.

### Output

One Integer, denoting the required sum.

### Example

**Input:** 5

**Output:** 15

**Explanation:**

1+2+3+4+5 = 15

8

### Square Sum

Given a natural number n as input, find the sum of squares of first n natural numbers.

### Input

One Integer, denoting n.

### Output

One Integer, denoting the required sum.

### Example

**Input:** 3

**Output:** 14

**Explanation:**

1\*1+2\*2+3\*3 = 14

9

### Triangle Angle

Given two integers a and b denoting the two angles of triangles (in degrees), find the third angle of the triangle (in degrees).

Note: The given angles will always be of a valid triangle.

### Input

First line contains an integer denoting a, the first angle.

Second line contains an integer, denoting b, the seocnd angle.

### Output

One Integer, denoting the third angle of the triangle.

### Example

**Input:**

30

110

**Output:**

40

10

**Mean**

Given the marks of N students in an Array A, calculate the mean.

Note: If result is a Decimal Value, find it's floor Value.

**Constraints:**

* 1 <= N <= 6

**Input**

One integer, denoting N, the length of the array A. Next line denotes N space seperated integers, denoting the elements of the array

**Output**

One Integer, denoting the required mean.

**Example**

**Input:**

4

56 67 30 79

**Output:**

58

**Explanation:**

56+67+30+79 = 232; 232/4 = 58.

So, the Output is 58.

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### Armstrong

For a given 3 digit number, find whether it is armstrong number or not. An Armstrong number of three digits is an integer such that the sum of the cubes of its digits is equal to the number itself. Print Yes if it is a armstrong number else print No.

### Input

One integer, denoting the 3 digit number.

### Output

One string, denoting Yes or No.

### Example

**Input1:**

153

**Output1:**

Yes

**Explanation:**

1^3 + 5^3 + 3^3 = 1 + 125 + 27 = 153

CONTROL FLOW

12

### Area of rectangle

Given length and breadth of a rectangle, compute the area of the rectangle.

### Input

Two lines containing one integer each. First line contains the length and second line contains the breadth.

### Output

One line containing one integer, which is the area of the given rectangle.

Print **0** if no such rectangle exists.

### Example

**Input:**

5

3

**Output:**

15

13

### Perimeter of a Rectangle

Given the length and breadth of a rectangle, compute and print its perimeter. If no such rectangle exists print **0**.

### Input

Two lines containing one integer each

### Output

One line containing one integer

### Example

**Input:**

7

3

**Output:**

20

14

### Predict the quadrant

Given a point on a two dimensional plane, predict the quadrant to which it belongs. Quadrants are named as Q1, Q2, Q3 and Q4. Given a point P(x, y), quadrant of P is defined as follows.

Q1, if x > 0 and y > 0

Q2, if x < 0 and y > 0

Q3, if x < 0 and y < 0

Q4, if x > 0 and y < 0

### Input

First line contains a positive integer n, denoting the number of test cases. It is followed by n lines. Each of the n lines contains two space separated integers x and y. Assume that neither x nor y is 0.

### Output

n lines containing the quadrant to which the corresponding point belongs.

### Example

**Input:**

2

2 -9

1 3

**Output:**

Q4

Q1

First line is 2, which means there are 2 test cases. Next 2 lines will contain one point each.

First point is (2, -9). It belongs to fourth quadrant, so we should print Q4.

Second point is (1, 3). It belongs to first quadrant, so we should print Q1.

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### Life, the Universe, and Everything

Your program is to use the brute-force approach in order to find the Answer to Life, the Universe, and Everything. More precisely... rewrite small numbers from input to output. Stop processing input after reading in the number 42. All numbers at input are integers of one or two digits.

### Example

**Input:**

1

2

88

42

99

**Output:**

1

2

88

16

### Input

First line contains three space seperate values denoting, a1, a2, a3 respectively. Second line contains three space seperate values denoting, b1, b2, b3 respectively.

### Output

Print 1 if they are parallel to each other, 2 if they are perpendicular to each other or 0 otherwise.

### Example

**Input1:**

3 2 1

6 4 2

**Output1:**

1

**Explanation:**

|A X B| = 0

17

**Dice**

You are given a cubic dice with 6 faces. All the individual faces have a number printed on them. The numbers are in the range of 1 to 6, like any ordinary dice. You will be provided the number on the top face of this cube, your task is to guess the number on the opposite face of the cube.

[Interactive 3-D Image of a dice](http://www.magicmgmt.com/gary/dice/one_die_image.html)

**Constraints:**

* 1 <= N <= 6

**Input**

One integer, denoting the number on the top face.

**Output**

One Integer, denoting the number on the opposite face.

**Example**

**Input1:**

6

**Output1:**

1

**Input2:**

2

**Output2:**

5

18

### Product & SUM

Given an integer number N, return the difference between the product of its digits and the sum of its digits. Assume that the number N can never be negative number.

### Input

One line containing the number N

### Output

One line for the difference between product and sum

### Example

**Input:** 234

**Output:** 15

Product of digits = 2 3 4 = 24 Sum of digits = 2 + 3 + 4 = 9 Result = 24 - 9 = 15

**Input:** 4421

**Output:** 21

Product of digits = 4 4 2 \* 1 = 32 Sum of digits = 4 + 4 + 2 + 1 = 11 Result = 32 - 11 = 21

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### reverse integer

Given an integer, reverse digits of an integer

### Input

1 line containing the integer to reverse

### Output

1 line containing the reversed integer

### Example

**Input:** 123

**Output:** 321

**Input:** 120

**Output:** 21 because starting 0 can be removed

**Input:** -123

**Output:** -321

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### Palindrome Number

Determine whether an integer is a palindrome. An integer is a palindrome when it reads the same backward as forward

### Input

1 containing integer

### Output

1 line containing Boolean value

### Example

**Input:** 121

**Output:** True

**Input:** 10

**Output:** False

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### Rating Contest

A programming competition site regularly holds programming contests at different levels.

The first level contest is called ABC, which is open for contestants with ratings less than 1200.

The contest level after the ABC is called ARC, which is open for contestants with ratings less than 2800.

The contest level after the ARC is called AGC, which is open for all contestants.

Help Ramesh in figuring out which is the next level for him given his current rating score 'R'.

### Input

One Integer, denoting R.

### Output

Print the name of the next contest rated for Ramesh (ABC, ARC or AGC).

### Example

**Input1:**

1199

**Output1:**

ABC

**Explanation1:**

1199 is less than 1200, so ABC will be rated.

**Input2:**

1200

**Output2:**

ARC

22

### Eating Symbols

There is always an integer in Rakesh's mind.

Initially, the integer in Rakesh's mind is 0. Rakesh is now going to eat some symbols, each of which is + or -. When he eats +, the integer in his mind increases by 1; when he eats -, the integer in his mind decreases by 1.

The symbols Rakesh is going to eat are given to you as a string S. The i-th character in S is the i-th symbol for him to eat.

Find the integer in Rakesh's mind after he eats all the symbols.

### Input

One String, denoting S.

### Output

One Integer, denoting the result.

### Example

**Input1:**

+-++

**Output1:**

2

**Explanation1:**

Initially, the integer in Rakesh's mind is 0.

The first integer for him to eat is +. After eating it, the integer in his mind becomes 1.

The second integer to eat is -. After eating it, the integer in his mind becomes 0.

The third integer to eat is +. After eating it, the integer in his mind becomes 1.

The fourth integer to eat is +. After eating it, the integer in his mind becomes 2.

Thus, the integer in Rakesh's mind after he eats all the symbols is 2.

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**Multiple**

You are given a positive integer N. Find the minimum positive integer divisible by both 2 and N.

**Constraints**

* 1 <= N <= 109

**Input**

One Integer, denoting N.

**Output**

One Integer, denoting the minimum positive integer divisible by both 2 and N.

**Example**

**Input1:**

3

**Output1:**

6

**Explanation1:**

6 is divisible by both 2 and 3. Also, there is no positive integer less than 6 that is divisible by both 2 and 3. Thus, the answer is 6.

**Input2:**

999999999

**Output2:**

1999999998

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### Crackers

Kumar has decided to distribute N Crackers to K users of as evenly as possible. When all the crackers are distributed, find the minimum possible (absolute) difference between the largest number of crackers received by a user and the smallest number received by a user.

### Input

Two space seperated Integers, denoting N, K respectively.

### Output

One integer, denoting result.

### Example

**Input1:**

7 3

**Output1:**

1

**Explanation1:**

When the users receive two, two and three crackers, respectively, the (absolute) difference between the largest number of crackers received by a user and the smallest number received by a user, is 1.

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**abc odd**

You are given integers A and B, each between 1 and 3 (inclusive).

Determine if there is an integer C between 1 and 3 (inclusive) such that A×B×C is an odd number.

**Constraints**

* 1 <= A,B <= 3

**Input**

Two space seperated integers, denoting A,B respectively.

**Output**

If there is an integer C between 1 and 3 that satisfies the condition, print Yes; otherwise, print No.

**Example**

**Input1:**

3 1

**Output1:**

Yes

**Explanation1:**

Let C = 3. Then, A×B×C = 3×1×3 = 9, which is an odd number..

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### Reduce to 1

Given a number n. You are required to reduce the given number to 1. To do this you can substract any number greater than equal to 2 from the given number. You can perform this operation any times. You are required to tell the minimum number of operations required to do this or report its not possible.

### Input

First line contains n. Then next n lines contain a number each.

### Output

Print the required result number of operations if possible or print -1 if not possible.

### Example

**Input:**

2

1

3

**Output:**

-1

1

## Explanation

Testcase1: Since the number is already 1 thus you cant reduce it further.

TestCase 2: substract 2 from 3 and we get 1 the number of operations used are 1.

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**Train**

There is an N-car train.

You are given an integer i. Find the value of j such that the following statement is true: "the i-th car from the front of the train is the j-th car from the back."

**Constraints**

* 1 <= i <= N

**Input**

Two space seperated integers, denoting N,i respectively.

**Output**

One integer, denoting j.

**Example**

**Input1:**

4 2

**Output1:**

3

**Explanation1:**

The second car from the front of a 4-car train is the third car from the back.

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### Extreme Product

You have been given n integer values. You have to find their extreme product.

Extreme product is defined as the product of the two extreme values in the given input, that is maximum and minimum.

### Input Format:

First line denotes n, the number of inputs. The next n lines contains one integer in each line.

### Output Format:

One integer denoting the extreme product of the given n values.

### Example:

**Input:**

5

10

20

30

40

50

**Output:**

500

**Explanation:**

From the given 5 integers, the maximum is 50, and the minimum is 10. So the extreme product is 10x50 = 500.

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### Iterate

Given an integer n. You need to print first n natural numbers which are divisible by n (excluding zero).

### Input Format:

First line denotes n.

### Output Format:

Print the desired result. One integer in one line.

### Example:

**Input:**

5

**Output:**

5

10

15

20

25

**Explanation:**

5, 10, 15, 20, 25 are the first 5 natural numbers divisible by 5.

30

### Min Occurence

You have been given n integer values. Lets say the given values are a1, a2, a3, a4 ...

You need to find the number of occurence of the first value in the given inputs.

### Input Format:

First line denotes n, the number of inputs. The next n lines contains one integer in each line.

### Output Format:

One integer denoting the result, as mentioned above.

### Example:

**Input:**

5

10

20

30

40

10

**Output:**

2

**Explanation:**

From the given 5 integers, the number of occurence of the first number (10) is 2.

31

### Plus Minus

You have been given n integer values. Lets say the given values are a1, a2, a3, a4 ...

You need to find a1 - a2 + a3 - a4 ... as the result.

### Input Format:

First line denotes n, the number of inputs. The next n lines contains one integer in each line.

### Output Format:

One integer denoting the result, as mentioned above.

### Example:

**Input:**

5

10

20

30

40

50

**Output:**

30

**Explanation:**

From the given 5 integers, the result will be: 10-20+30-40+50 = 30

32

### Amazing Sum

You have been given n integer values. Lets say the given values are a1, a2, a3, a4 ...

If the sum of two consecutive input values is greater than 100, then the given values have amazing sum

### Input Format:

First line denotes n, the number of inputs. The next n lines contains one integer in each line.

### Output Format:

One string, either True or False, denoting whether the given values has amazing sum or not.

### Example:

**Input:**

5

10

20

30

40

50

**Output:**

False

**Explanation:**

The maximum sum of two consecutive values here is 90, which is not greater than 100, so the answer is False.

33

### Series

Given a number N, find the N-th term in the series 1, 3, 6, 10, 15, 21...

### Input

One integer, denoting N.

### Output

One Integer, denoting the N-th term in the series 1, 3, 6, 10, 15, 21....

### Example

**Input1:**

4

**Output1:**

10

**Input2:**

3

**Output2:**

6

34

### Predict the seat

A typical sleeper coach in Indian Railways contains 72 berths. The coach is divided into different blocks. Each block has the following pattern of berths: Lower - Middle - Upper - Lower - Middle - Upper - Side Lower - Side Upper. Berth number 1 is Lower, berth number 2 is Middle and so on. Write a program that predicts the berth type from the berth number.

### Input

First line contains a positive integer n, denoting the number of test cases. It is followed by n lines. Each of the n lines contains two space separated positive integers c and b. c is the total number of berths in a coach and b is a berth number.

### Output

n lines containing the type of berth of the corresponding test case. Berth type is defined as follows.

L for Lower

M for Middle

U for Upper

SL for Side Lower

SU for Side Upper

Invalid for invalid berth number

### Example

**Input:**

3

72 8

72 42

56 28

**Output:**

SU

M

L

First line is 3, i.e. 3 test case.

First test case is 72 8. There are 72 berths and we are querying for berth number 8, which is a Side Upper. So we should print SU.

Second test case is 72 42. There are 72 berths and we are querying for berth number 42, which is a Middle. So we should print M.

Third test case is 56 28. There are 56 berths and we are querying for berth number 28, which is a Lower. So we should print L.

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### Red or Green

Given a string, made up of only uppercase characters 'R' and 'G', where 'R' stands for Red and 'G' stands for Green. Find out the minimum number of characters you need to change to make the whole string of the same colour.

### Input

One String.

### Output

One Integer, denoting the minimum number of characters you need to change to make the whole string of the same colour.

### Example

**Input1:**

RGRGR

**Output1:**

2

**Explanation:**

We need to change only the 2nd and 4th(1-index based) characters to 'R', so that the whole string becomes the same colour.

36

### Find if given number is prime

Find if the given integer is prime number.

### Input

FirstLine contains an interger specifying no. of test cases. Each line contains integers specifying value of number in each test case.

### Output

Yes if number is prime. No is not for each testcase.

### Example

**Input:** 3

2

4

5

**Output:** Yes

No

Yes

37

### Count odd even numbers

Count number of odd and even number in given list.

### Input

First line contains length of the list. Each line contains integer specifying each element in list.

### Output

2 integers in each line specifying count of odd and even numbers respectively.

### Example

**Input:**

5

12

14

15

13

18

**Output:**

2

3

38

### Macbook

You have been given n integer values. Lets say the given values are a1, a2, a3, a4 ...

Each of these values represents the remaining lifespan of different macbooks. (Negative values denotes that the particular macbook has already expired.)

You need to find the total lifespan of the macbooks which are still functional.

### Input Format:

First line denotes n, the number of inputs. The next n lines contains one integer in each line.

### Output Format:

One integer denoting the result, as mentioned above.

### Example:

**Input:**

5

10

-20

30

40

50

**Output:**

130

**Explanation:**

From the given 5 integers, the result will be: 10+30+40+50 = 130

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### GCD: Iterative

### Description

Write a program that computes the GCD of two positive integers using Euclid's algorithm. Your implementation should be iterative in nature.  
Given two positive integers a, b (a >= b), Euclid's algorithm is defined as follows.

GCD(a, b) = b, if b is a divisor of a

= GCD(b, a%b), otherwise

### Input format

First line contains n, the number of test cases.  
Next n lines contain two positive integers each. The two integers are separated by a space.

### Output format

n lines containing one integer each, which is the greatest common divisor of the corresponding pair of integers from input.

### Sample input

2

180 48

105 1001

### Sample output

12

7

### Explanation

First line contains 2, meaning there are 2 test cases.  
First test case is 180 48. The greatest common divisor of 180 and 48 is 12. So, the first line of output is 12.  
Second test case is 105 1001. The greatest common divisor of 105 and 1001 is 7. So, the second line of output is 7.

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### Factorial: Iterative

### Description

Write a program that computes the factorial of a given integer. Your implementation should be iterative in nature. Factorial of an integer n is defined as Factorial(n) = 1\*2\*3\*....\*(n-2)\*(n-1)\*n. Factorial(0) is defined as 1. Factorial of a negative integer is undefined.

### Input format

One line containing an integer n.

### Output format

One line containing the factorial of n.

### Sample input

5

### Sample output

120

### Explanation

Factorial of 5 is 1\*2\*3\*4\*5 which is 120.

### Sample input

-4

### Sample output

undefined

### Explanation

Factorial of a negative integer is undefined.

LISTS

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### Count occurrences

Given a sequence of integers and a query integer, count the number of times the query integer occurs in the sequence.

### Input

First line contains the number of integers in the sequence, say n (n>0).

Next n lines contain one integer each.

Next 1 line contains one integer, which is the query integer.

### Output

One line containing one integer, which is the number of times query integer occurs in the given sequence.

### Example

**Input:**

5

2

3

4

3

5

3

**Output:2**

**42**

**Swap K**

Given an array Arr of size N, swap the K-th element from beginning with K-th element from end.

**Constraints:**

* 1 <= K <= N

**Input**

First line contains two space seperated integers, denoting N and K respectively. The next line contains N space seperated values, denoting the elements of the array Arr.

**Output**

N space seperated values, denoting the elements of the resultant array.

**Example**

**Input1:**

8 3

1 2 3 4 5 6 7 8

**Output1:**

1 2 6 4 5 3 7 8

**Explanation:**

Kth element from beginning is 3 and from end is 6.

**43**

### Alternate 101

You have been given an array of size N. You need to find the sum of alternate values in the given array, starting from the first element.

### Input

One integer, denoting N, the size of the array. The next line contains N space seperated integers, denoting the elements of the given array.

### Output

One Integer, denoting the required sum.

### Example

**Input1:**

7

1 4 6 8 9 0 -34

**Output1:**

-18

**Explanation:**

1 + 6 + 9 - 34 = -18

**44**

### Frequency 101

You have been given an array of size N, and a target integer k. You need to find the frequency (number of occurences) of the target k in the given array.

### Input

First line contains two space seperated integers, denoting N and k respectively. The next line contains N space seperated integers, denoting the elements of the given array.

### Output

One Integer, denoting the required frequency.

### Example

**Input1:**

7 0

1 0 6 8 9 0 -34

**Output1:**

2

**Explanation:**

0 is occuring two times in the given array.

**45**

### Every ith element

### Description

Given a sequence of n, n > 0, integers and an integer i, 1 <= i <= n, compute the sum containing every ith element in the given sequence.

### Input format

First line contains n, n > 0, denoting the length of the given sequence. It is followed by n lines, containing one integer each. This is followed by i, 1 <= i <= n.

### Output format

One integer, which is the sum containing every ith element in the given sequence.

### Sample input

10

1

2

3

4

5

60

77

8

9

0

2

### Sample output

74

### Explanation

First line contains 10, which means the given sequence contains 10 integers. The following 10 lines is the given sequence, viz. [1, 2, 3, 4, 5, 60, 77, 8, 9, 0]. This is followed by 2, which means we need to compute the sum of every 2nd element in the given sequence, which is (2 + 4 + 60 + 8 + 0), i.e. 74. So, the expected output is 74.

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### Restaurant Orders

You are managing a restaurant. The restaurant contains t tables. Each time a table orders food, you receive a tuple containing the table number and cost of the item. In total you are given n orders. You add the cost to their bill. Given a list of orders, find the table that has the highest bill. If there are multiple tables with the same bill number, print out all of the restaurants with highest bill line by line in ascending order

### Input

First line contains n, n >= 0, denoting the number of total orders in the restaurant. Next line contains t denoting the number of tables in the restaurant. It is followed by 2n lines The first n lines denote the table number of the order. Each table number is i >= 1 Next n lines denote the bill amount for the corresponding order

### Output

m lines. Each line an integer, denoting the table number with the highest bill values

### Example

**Input:**

5

4

1

2

3

4

3

100

200

300

500

200

**Output:**

3

4

The first line is 5, denoting the number of orders in the list 1,2,3,4,3 are the table numbers of the orders in sequence 100, 200, 300, 500, 200 are the bill values for the orders The highest bill is 500 for the table 3 and 4, so both of them are printed out one after the other in ascending order

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### Matrix 101

You have been given a matrix (2D array) of size n x m (n rows and m columns).

You need to find the sum of all odd numbers in the given matrix.

### Input

The first line contains two integers denoting n and m respectively. The next line n lines contains m space seperated integers each, denoting the elements of the given matrix.

### Output

One Integer, denoting the required sum.

### Example

**Input1:**

3 4

1 2 3 4

5 6 7 8

9 0 5 3

**Output1:**

33

**Explanation:**

matrix = [[1, 2, 3, 4],

[5, 6, 7, 8],

[9, 0, 5, 3]]

Sum of all odd elements = 1 + 3 + 5 + 7 + 9 + 5 + 3 = 33

**48**

### Vowels 101

You have been given a string s as input. You need to find the number of vowels present in this given string.

### Input

One line containing the string s. (The string will only contain lowercase letters)

### Output

One Integer, denoting the result.

### Example

**Input1:**

academy

**Output1:**

3

**49**

**Max by now**

You have been given n, denoting the number of input values. For each input, you have to print the maximum input taken so far.

**Note:**

* You don't need to consider n in taking out this maximum.
* For the first input of n values, the max value will be that value itself.

**Input Format**

First line denotes the number of inputs n. The next n lines contains one integer each, denoting input values.

**Output Format**

There will be n lines in the output, containing one integer in each line, ith line denotes the maximum of the i inputs taken so far.

**Sample Input**

5

3

2

5

10

8

**Sample Output**

3

3

5

10

10

**Explanation**

The first line contains 5, denoting there will be 5 input values, in next 5 lines.

Those inputs are 3,2,5,10,8.

Corresponding to each of them, the maximum value received so far becomes 3,3,5,10,10.

**50**

### Growth

You have been given n integer values. Lets say the given values are a1, a2, a3, a4 ...

If the average of all these input values is greater than 100, then the given values are excellent.

### Input Format:

First line denotes n, the number of inputs. The next n lines contains one integer in each line.

### Output Format:

One string, either Excellent! or Not Excellent!, denoting whether the given values are excellent or not.

### Example:

**Input:**

5

10

20

30

40

50

**Output:**

Not Excellent!

**Explanation:**

The average of these values is 30, which is less than 100. Hence, they are not excellent.ß

**51**

### Number occurring maximum times

Given a list of N integers sorted in ascending order, Please find the number which occurs 4 times in the array

### Input

First number is N (the number of integers given) Followed by the N numbers

### Output

Print the number which occurs 4 times. print -1 if such a number doesnt exist

### Example

**Input:** 10

1

2

3

4

4

4

4

5

6

6

**Output:** 4

**52**

### Add lists

On a far off planet called Imoohb, there is an intelligent life form called Aran. Arans use a number system called Lamiced which is similar to our decimal system. Lamiced uses same digits as decimal system, i.e., 0 to 9. But Lamiced arithmetic is different. When adding two integers, humans follow right-to-left approach. For example when adding 51 and 6, humans add the units place and then move on to tens place, i.e., 1 is added with 6, resulting in 7 and then 5 is added with 0 resulting in 5 and the final result is 57. Same is demonstrated below.

51

6

--

57

Arans do the reverse, i.e., they align the digits left-to-right and start adding from left-to-right, as follows.

51

6

--

12

Write a program that reads two integers and prints the output of Aran addition of the two integers.

### Input

First line contains a positive integer n, denoting the number of test cases. It is followed by 2n lines. Each line contains space separated digits denoting Aaran integers. Each pair of lines constitutes one test case.

### Output

n lines where each line contains an integer, denoting the result of Aran addition of the corresponding test case.

### Example

**Input:**

3

2 5 2

4 2

1 4

2 9 5

1

9 9 9

**Output:**

672

336

0001

First line is 3, i.e. 3 test cases.

2 5 2 and 4 2 are the first test case. Adding 252 and 42 as per Aaran addition gives 672. So the first output line is 672.

1 4 and 2 9 5 are the second test case. Adding 14 and 295 as per Aaran addition gives 336. So the second output line is 336.

1 and 9 9 9 are the third test case. Adding 1 and 999 as per Aaran addition gives 0001. So the third output line is 0001.

**53**

### Max occurrences

Given a sorted list of n non negative integers. Find the integer which is occurring the maximum number of times. If no such number exists, please print -1. If there are multiple numbers with the same maximum occurrence count. Print all of them in ascending order.

### Input

First line n denoting the length of the list Following n lines contains the elements of the list

### Output

m lines containing the numbers which are occurring the maximum number of times

### Example

**Input:**

5

1

2

2

2

3

**Output:**

2

5 denotes the length of the list. 1 is occurring once and so is 3. 2 is occurring 3 times which is the maximum. So 2 is the output

**Input:**

5

1

2

2

3

3

**Output:**

2

3

5 denotes the length of the list. 1 is occuring only once. 2 is occuring 2 times and 3 is also occuring 2 times which is the maximum times a number is occuring in the given list. So 2 and 3 both are in the output.

**54**

### Image Icon Match

You are given a 1D image. The image is a sequence of pixel values. You are also given an icon of a particular size. The icon is a sequence of 2 pixels. Find the number of times this icon appears in the image.

### Input

First line contains n, the number of pixels in the image. This is followed by n lines, each containing one positive integer denoting a pixel, j, 0 <= j <= 255. This is followed by m, the number of pixels in the icon. This is follwoed by m lines, each containing one positive interger denoting a pixel k, 0 <= k <= 255.

### Output

An integer i i >= 0, denoting the number of times the icon appears in the image.

### Example

**Input:**

10

7

27

31

8

9

10

25

8

9

11

2

8

9

**Output:**

2

The first line is 10 i.e. 10 pixels in the given image 7, 27, 31, 8, 9, 10, 25, 8, 9, 11 is the given image After this, the line contains 2, i.e. 2 pixels in the icon 8, 9 is the given icon. 8, 9 appears twice in the image. So 2 is the answer.

**55**

### Max\_Triple\_Product

Given an integer array, find three numbers whose product is maximum and output the maximum product.

### Input

The first line denotes n, the size of the array. The next n lines denotes the n elements of the array.

### Output

Output a single integer denoting the result.

### Example

**Input:** 4

1

2

3

4

**Output:** 24

#### Note:

The length of the given array will be in range [3,10^4] and all elements are in the range [-1000, 1000].

**56**

### Steep array

Given a list of integers. The steepness score of an index i is computed in the following way-

Steepness Score(i) = (maximum element to the right of index i (including i) )- A[i]

Find out the total steepness score of the array, i.e - sum of steepness scores of each index in the array.

### Constraints

1<= length of array<= 100000

### Input

First line of the input contains N, the size of the array. the second line contains the N space separated integers representing the N elements of the array.

### Output

print the total steepness score of the array.

### Example

**Input:**

5

1 2 3 5 4

**Output:**

9

**Explanation:**

for 1-> greatest element to right of 1 including 1 is 5, SS= 5-1=4

for 2-> greatest element to right of 2 including 2 is 5, SS= 5-2=3

for 3-> greatest element to right of 3 including 3 is 5, SS= 5-3=2

for 5-> greatest element to right of 5 including 5 is 5, SS= 5-5=0

for 4-> greatest element to right of 4 including 4 is 4, SS= 4-4=0

hence total SS= 4+3+2=9

**57**

**Bulb**

There is a bulb. Just like other bulbs, this bulb can be either ON or OFF at a time. You can provide 3 types of instruction to the bulb-

* "ON"-> turn the bulb on.(no matter the previous state)
* "OFF"-> turn the bulb off.(no matter the previous state)
* "Toggle"-> If the bulb was initially on, turn it off. If the bulb was initially off, turn it on.

You provide the bulb with 'N' number of Queries, each containing either of the above 3 instructions. Count the number of times bulb was turned ON from a OFF position.(ON->OFF)

Note- Intially assume that the bulb was OFF.

**Input**

First line of the input contains N, representing the number of instructions. The following N lines contain one of the 3 types of instructions "ON","OFF","Toggle".

**Output**

Finally print the number of times the bulb was turned ON from a OFF position.

**Example**

**Input:**

5

Toggle

Toggle

OFF

Toggle

ON

**Output:**

2

**Explanation:**

Intially : OFF

| BEFORE | INSTRUCTION | RESULT |

------------------------------------

| OFF | TOGGLE | ON |

| ON | TOGGLE |OFF|

| OFF | OFF | OFF |

| OFF | TOGGLE | ON |

| ON | ON | ON |

As we can see that the bulb has been switched from OFF to ON 2 times once during the first(TOGGLE) instruction and then during the 4th(TOGGLE) instruction. So the output is 2

**FUNCTIONS**

**58**

### signum

A signum function returns 1 for numbers greater than zero and -1 for numbers less than zero and 0 for an input of 0. Write a signum implementation that takes a float N and returns an integer.

### Input

One line containing a decimal number.

N

### Output

One integer, denoting the output value.

### Example

**Input:**

-0.87

**Output:**

-1

**59**

### print with index

You are given a function print\_with\_index that takes a number and a string to print a message. You are also given a list that contains n strings. Write a function named printer that uses print\_with\_index to print the list elements with their indices.

### Input

First line contains n denoting the number of strings given, 0 <= n <= 100

This is followed by n lines, each denoting one string element of the lit

### Output

The output must contain n lines.

Each line starts with the index value of the element, followed by a space then the element itself

### Example

**Input:** 4

hello

cat

dog

raining

**Output:**

0 hello

1 cat

2 dog

3 raining

The first line is 4, denoting that there are 4 elements in the list. Th eelements are hello, cat, dog, raining. The output should be 4 lines. Each line has the index first, followed by the element itself. Index of hello is 0, index of cat is 1 and so on:

**60**

### prime checker function

Write a function that takes a positive integer n and returns either True or False. It should return True when n is prime and False whenn` is not prime.

### Input

One positive integer N

### Output

One Boolean, denoting whether or not the given N is prime

### Example

You have fill in a function. That function takes N as input

**Input:**

def is\_prime(number)

**Output:**

Function should return True or False

**61**

### Difference of sum of Even Odd Index numbers

Write a function which takes a list of positive integers and returns the difference of sum of numbers and even and odd index positions.

Your function should take the list, sum all the numbers which are located at even index poistion of list and sum all the which are located at odd index poistion of list and subtract odd postion sum from even position sum.

you should name the function as difference\_sum\_even\_odd\_index and it should take a list.

Index of the list starts from 0.

If list has only one element, then sum of odd = 0

### Input

list of positive intergers

### Output

Integer

### Example

**Input:**

[1,2,3,4,5,6]

**Output:**

-3

**62**

### Brick Volume

A brick manufacturer approached us to help him develop a program which calculates cost to manufacture bricks for him. Default dimensions of the block are length = 100 units, width = 60 units and height = 40 units. And to manufacture 1 cubic unit costs him 0.00005 rupees. Sometimes the customers might ask him to manufacture custom bricks. Customer can ask either to change width or height or both of them.

Now we have to take total bricks count and dimensions of the brick and return the cost to manufacture them.

First line contains bricks count.

Second line contains y z dimensions of brick, which are width and height.

y z can be any positive integer, if he chooses default values then he chooses -1 for that dimension.

### Input

10

-1 50

First line N positive intger. Total number of bricks.

Here he choose width default value which is 60, and for height he choose 50

### Output

Single line returning the cost. This will be integer rounded to the closest integer.

### Example

**Input:**

10

-1 30

**Output:**

90

Length will always be 100. If first element is -1 then width is 60, if second element is -1 then height is 40. He can choose one of them as -1 or both of them.

**63**

### Swap Function

Given two integers a and b, you need to write a function to swap the their values.

Note: Write a function, and do the swapping operation in the function only.

### Input

First line contains an integer denoting a

Second line contains an integer, denoting b

### Output

First line denoting the value of a after swapping.

Second line denoting the value of b after swapping.

### Example

**Input:**

30

110

**Output:**

110

30

64

### Sum of Multiples

Write a function which takes a list L of positive intergers and a positive integer N(N > 0) and returns the sum of all the intergers of the list L which are multiples of N.

### Input

Write a function sum\_of\_multiples which takes a list and an integer

### Output

integer

### Example

**Input:**

[1,2,3,4,5,6,7], 3 inputs for function

**Output:**

9

65

### College

Everyone is missing college these days. So the college admin has decided a digital reunion.

Just as a fun event, everyone is asked to find the sum of the divisors of your roll number (given).

Complete the given function to compute and return the sum of the divisors of the integer n.

### Input

One integer, denoting n.

### Output

One Integer, denoting the result.

### Example

**Input1:**

15

**Output1:**

24

**Explanation1:**

Divisors of 15 are 1,3,5,15.

So, 1 + 3 + 5 + 15 = 24

66

### Modiji

Modiji wants to estimate the fund that can be gathered in a month, if he applies a special rule for the funding of covid patients treatments. As per the rule, everyone should pay ceil(7% of their monthly salary) to this scheme.

Given a positive integer n. And the monthly salary of these n people. Help modiji find the fund that can be gathered in a month, through this scheme.

Write a function to do this calculation.

### Input

First line contains one integer, denoting n. The next line contains n space seperated integers, denoting the monthly salary of the n people.

### Output

One Integer, denoting the result.

### Example

**Input1:**

5

100 200 300 400 555

**Output1:**

113

67

### Floor Expression

Given a positive integer n. Find the sum of product of x and y such that floor(n/x) = y .

You just need to complete the given function (n is given as argument, and return required sum), in the template code. Don't worry about input and output.

### Input

One integer, denoting n.

### Output

One Integer, denoting the result.

### Example

**Input1:**

5

**Output1:**

21

**Explanation1:**

Following are the possible pairs of (x, y): (1, 5), (2, 2), (3, 1), (4, 1), (5, 1).

So, 1\*5 + 2\*2 + 3\*1 + 4\*1 + 5\*1

= 5 + 4 + 3 + 4 + 5

= 21.

68

**min max range**

Given 3 lists of positive integers. From the first list get the minimum value m1 and second list get the maximum value m2. From the third list get all the values that lies between m1 and m2 including m1 and m2.

If m1 <= m2 then we should consider all the values x from third list which stisifies m1 <= x <= m2

If m1 > m2 then we should consider all the values x from third list which stisifies m1 >= x >= m2

You have write 3 functions.

1. Takes list as input and returns a minimum value.
2. Takes list as input and returns a maximum value.
3. Takes a list, m1 and m2 and returns list of intergers which lies between m1 and m2. If no such numbers exist return a list with -1 i.e [-1]

You have to return the list of numbers in the same order they are present.

You will be provided with function template, you have to fill those functions.

**Input**

[3,5,4,5,7]

[7,6,4,4,23,2]

[6,5,1,3,8,9,2]

**Output**

[6,5,3,8,9]

CLASSES

69

**Shape**

Define a class named Rectangle:

* It should have length and width as the properties.
* It should have a method, named calculatePerimeter, which should return the perimeter of the rectangle.
* It is given that, length and width will always be valid.

You don't need to worry about input/output and object of the class. The given template will take care of it.

The input will contain the length and width.

**Input**

One line containing two space seperated integers, denoting length and width respectively.

**Output**

Print perimeter of the given rectangle.

**Example**

**Input1:**

10 20

**Output1:**

60

70

### Area and Perimeter of the Circle - Classes Practice Problems

Design a class with has 2 methods. One which calculates area of the circle and one which calculates the circumference of a circle given the radius r. Please use the pi value as 3.14. For any infeasible radius r, please return the area and circumference as 0.0

Your class should be named Circle. Method to get area should be named getArea. Method to get circumference should be named getCircumference.

### Input

One line containing a floating point number denoting the radius r.

### Output

2 lines containing floating point numbers. First one containing the area of the circle. second line containing the circumference of the circle.

### Example

**Input:**

5

**Output:**

78.5

31.4

First line in input is radius r which is 5. Area is 5\*5\*3.14 which is 78.5 which is the first line of the output. Circumference is 2\*3.14\*5 which is 31.4 which is the second line of the output.

71

### area and perimeter of rectangle -- Classes Practice Problems

Design a class which has 2 methods. One which computes the Area of the Rectangle. The other computes the Perimeter of the Rectangle. You should be able to pass the length l and width w while creating the object for the class. For all infeasible values of length l and width w, print area and perimeter as 0

Your class should be named as Rectangle. Method to get area should be named as rectangle\_area. Method to get perimeter should be named as rectangle\_perimeter.

### Input

First line contains an integer for the length l Second line contains an integer for the width w

### Output

Two lines containing integers. First line containing the Area of the Rectangle Second line containing the Perimeter of the Rectangle

### Example

**Input:**

3

2

**Output:**

6

10

First line is 3 representing the length. Second line is 2 representing the width. Area is 3\*2 which is 6 as represented in the first line of the output. Perimeter is 2\*(3 + 2) which is 10 as represented in the second line of the output.

72

### Car Sale Customer -- Classes Practice Problems

You are moving to a different country and you want to sell your car. You bought your car for 10,00,000 Rs (10 Lakhs). You are not willing to sell the car if the customers offer you less than 90% of what you paid. You have customers lined up offering you what they are willing to pay and you have to come up with the list of customers who you can sell your car to. Each customer will submit one proposal.  
Design a class CarSell which has 1 method.  
getCustomerInput -- This method should get the indices of all the customers whose proposals are greater than or equal to 90% of the car value.  
If all the customers are only willing to pay less than 90%, print -1

### Input

First line contains n, an integer denoting the number of customers 0<n<=100.  
Next n lines will contain n integer one for each of the proposals received from n customers.

### Output

m denoting the index of the prospective customers whose proposals are greater than or equal to 90% of car value.

### Example

**Input:**

3

1000000

100000

900000

**Output:**

0

2

First line is 3, i.e. 3 test cases.  
Second line contains customer at 0th index whose proposal is 10Lakhs.  
Third line contains customer at index 1 whose proposal is 1Lakh.  
Fourth line contains customer at index 2 whose proposal is 9Lakhs.  
As the proposals of 0th and 2nd customer are the only ones greater than or equal to 90% of the car value. We print the output as 0 and 2

73

### Print Movie Description -- Classes Practice Problems

Write a Movie class for which you can create movie objects. The objects should have the following variables: integer length\_in\_minutes, integer num\_characters, string language. Each object should also have a run method which prints out: "This is a movie with characters and is minutes long."

### Input

First line is a string, denoting the language of the movie Second line is an integer, denoting the number of characters Third line is an integer, denoting the length in minutes

### Output

The output should be the return statement of run: "This is a movie with characters and is minutes long."

### Example

**Input:**

French

4

200

**Output:**

This is a French movie with 4 characters and is 200 minutes long.

First line is French indicating the movie's language is French Second line is 4, indicating that the movie has 4 characters Third line is 200, indicating that the movie is 200 minutes long

74

### Flight

There is a class named Flight, which has the upTime and downTime as the properties. The class should also have a method named calculateFlight, which will return the calculated flying time. You need to complete this method.

Here, upTime denotes the time at which a given bird starts flying, and downTime is the time at which the bird lands somewhere.

You don't need to worry about input/output and object of the class. The given template will take care of it. Also, it is given the bird will fly in the morning, and will land before night of the same day.

The input will contain the upTime and downTime, in 24 hr notation as hh:mm (h is hour, and m is min). You need to calculate the flying time of the given bird (in minutes), as output.

### Input

First line contains upTime in the given notation. Second line contains downTime in the given notation.

### Output

One Integer denoting the flying time in minutes.

### Example

**Input1:**

10:55

22:55

**Output1:**

720

**Explanation:**

Flying time will be 12 hrs = 720 min.

75

**Car**

Define a class named Car, which should have the name and model as the properties. You don't need to worry about input/output and object of the class. The given template will take care of it.

The input will contain the name and model. Their default values should be Audi and A4 respectively.

**Input**

First line contains an integer, either 1 or -1. If the first line is 1, then:

* One line containing two space seperated values, denoting name and model respectively.

**Output**

Print name and model in newline each.

**Example**

**Input1:**

1

Ford C4

**Output1:**

Ford

C4

**Input2:**

-1

**Output2:**

Audi

A4

75

### Person

Define a class named Person, which should have the name and age as the properties. You don't need to worry about input/output and object of the class. The given template will take care of it.

The input will contain the name and age. The same will be printed in seperate lines as output.

### Input

One line containing two space seperated values, denoting name and age respectively.

### Output

Print name and age in newline each.

### Example

**Input1:**

Jonny 15

**Output1:**

Jonny

15

ARRAYS

76

### Pascal Triangle

Pascal’s triangle is a triangular array of the binomial coefficients. Write a function that takes an integer value n as input and prints first n lines of the Pascal’s triangle.

Following is the representation of a pascal triangle of depth 5

1

1 1

1 2 1

1 3 3 1

1 4 6 4 1

Refer to below link for more information

<https://en.wikipedia.org/wiki/Pascal%27s_triangle>

### Input

You will be given N, depth of the traingle

### Output

Print pascal triangle cofficients at depth N

### Example

**Input:**

4

**Output:**

1

3

3

1

At depth 4 the elements are 1 3 3 1.

77

### Noble Integer

Given a list of integers A, find if an integer P exists in the list such that the number of integers greater than P in the list equals P.

### Input

N number of elements in the list (N >= 2).

N lines each line representing a single interger in the list

### Output

1 if such integer exists

-1 if no such integer exists

### Example

**Input:**

4

3

2

1

3

**Output:**

1

Here number of elements greater than 2 is 2.

78

### Maximum Product

You are given a list of integers. Find the maximum product that can be obtained from multiplying adjacent integers in the list.

### Input

First line contains n, indicating the number of elements in the list, 2 <= n <= 10

This is followed by n lines each containing an integer

### Output

One integer indicating the maximum product achievable from adjacent elements of the list

### Example

**Input:**

4

1

3

4

10

**Output:**

40

**Explination:**

First line of input contains 4 indicating there are 4 elements in the list

The next four lines contain the elements of the list: 1,3,4,10

The possible products we can obtains is 1x3=3, 3x4=12, 4x10=40 where 40 is the maximum

79

### Fold Array

You are given an array of size n, 0 <= n <= 100. Imagine the array as a length of rope. You have to fold the rope at the middle. You are also given an input integer num\_folds that specifies the number of times you should fold your array.

To illustrate more, say the given array is 1,4,9. Folding it in the middle results in 10, 4 as 9 and 1 get combined by the fold.

Say the given array is 1,10,20,21,2. Folding it would lead to: 3, 31, 20 as 2, 1 have combined and 10, 21 have combined.

Based on the num\_folds repeat folding.

### Input.

The first line contains n, the number of elements in the array. 0 <= n <= 200

This is followed by n lines, each containing one integer

The last line contains m, the number of folds to do. 0 <= m <= 6

### Output

The first line contains k, the number of elements in the final array

This is followed by k lines, each containing one integer element of the output array

### Example

#### Odd length array

**Input:**

5

-1

4

2

3

1

1

**Output:**

3

0

7

2

#### Even length array

**Input:**

6

3

1

6

7

2

3

1

**Output:**

3

6

3

13

### Explanation

#### Odd number n

The first line contains 5 indicating 5 elements in the input array

The next 5 lines contain the array elements: -1, 4, 2, 3, 1

The last line contains 1 indicating one fold to be made

The first and last element merge: -1 + 1 = 0

The second and 4th element merge: 4 + 3 = 7

The middle element is 2. It remains unchanged because of the fold

So the result is 0, 7, 2

#### Even number n

The first line contains 6 indicating 6 elements in the input array

The next 6 lines contain the array elements: 3, 1, 6, 7, 2, 3

The last line contains 1 indicating one fold to be made

The first and last element merge: 3 + 3 = 6

The second and 5th element merge: 1 + 2 = 3

The third and 4th element merge: 6 + 7 = 13

So the result is 6, 3, 13

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**Reduce Array**

You are given a list of integers. Your task is to reduce the list to a single integer. Following are the rules to do this reduction:

* [ADD] Sum first two numbers and result is m
* [SUB] Say third number is e3, subtract e3 from this: m-e3
* [ADD] Say fourth number is e4, add to previous result: m-e3+e4
* [SUB] Subtract next number from the previous result
* [ADD] Add next number to previous result and so on
* until you reach the end of the list
* the result at this point is the output of the problem

**Input**

First line is n, 1 <= n <= 100, denoting the number of elements in the list

This is followed by n lines, one integer on each line

**Output**

One integer indicating the output

**Example**

**Input:**

5

1

2

-1

5

10

**Output:**

-1

**Explanation**

First line is 5, indicating 5 elements in the list

The 5 elements follow in the next 5 lines: 1,2,-1,5,10

First add, 1+2=3

Next subtract, 3-(-1)=4

Next add, 4+5=9

Next subtract, 9-10=-1

No more elements, result is -1

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### Shuffle array

### Description

Given an array consisting of 2n elements in the form [x1, x2, ..., xn, y1, y2, ..., yn], suffle the array into [x1, y1, x2, y2, ... , xn, yn]. Assume that n is never 0.

### Input format

First line contains a positive integer, denoting n. It is followed by 2n lines. Each line contains one integer.

### Output format

2n lines where each line contains one element of the shuffled array.

### Sample input

3

2

5

1

3

4

7

### Sample output

2

3

5

4

1

7

### Explanation

First line is 3, i.e. Following 6 lines are the elements of the array.  
The first 3 lines contains the first half of the array and the 2nd set of 3 elements contain the second half of the array.  
First 2 lines of output will be first element of first half, first element of second half so the first 2 lines of the output are 2 and 3.  
Next 2 lines of output will be second element of first half and second element of second half, so the next 2 lines of output will be 5 and 4  
Next 2 lines of output will be third element of first half and third element of second half, so the next 2 lines of output will be 1 and 7

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### Min Absolute Diff

Given a list find the minimum absolute difference between any to elements.

### Input

First line is N Then follows a line consisting of N numbers. (N >= 2)

### Output

Print a single number the min difference.

### Example

**Input:**

4

5 2 1 3

**Output:** 1

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### Good Pairs

Given an array of integers nums (length of nums > 1).

A pair (i,j) is called good if nums[i] == nums[j] and i < j.

Return the number of good pairs.

### Input

Single line containing a list of numbers separated by spaces

### Output

Single integer representing total number of good pairs

### Example

**Input:**

1 2 3 1 1 3

**Output:**

4

#### Explanation:

(0,3), (0,4), (3,4), (2,5) index position elements

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### Right to Left Diagonal

Write a function right\_to\_left\_diagonal which a matrix as a list of lists of size mxm and returns a list of numbers containing elements of diagonal from right to left.

### Input

M size of matrix

M lines containing M elements in each line separated by space

### Output

list of m elements 1 per each line.

### Example

**Input:** 4

1 2 3 4

5 6 7 8

9 10 11 12

13 14 15 16

**Output:**

4

7

10

13

CODING TEST

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### Clock

Given two positive integers num1 and num2, the task is to find the sum of the two numbers on a 12 hour clock rather than a number line.

### Input

Two space seperated values denoting num1, num2 respectively.

### Output

One integer, denoting the required result.

### Example

**Input1:**

5 7

**Output1:**

12

**Input2:**

5 10

**Output2:**

3

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### Special Range

Given a range, as [m, n] both inclusive, print all non-negative integers in the range.

### Input

First line contains an integer which is starting value of range, say m

Second line contains an integer which is ending value of range, say n

### Output

Print all non-negative integers in that range. One integer per line.

If no such integers exist, print -1.

### Example

**Input:**

-5

4

**Output:**

0

1

2

3

4

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### Peak Element

### Description

A peak element in an array is the one that is not smaller than its neighbours. For corner elements, we need to consider only one neighbour. Given an array of integers of size N, find the index of its first peak elements.

### Input format

First line contains a positive integer t, denoting the number of test cases. For every test case there are two lines. First line contains a positive integer n denoting the number of elements in the array and second line contains n space separated elements of array.

### Output format

Output t lines. For each test case print the 1 based index (1<=i<=n) for the first peak element in the array and -1 if there is no peak element.

### Sample input

4

5

1 3 6 4 9

5

1 2 3 4 5

5

6 4 3 5 1

3

1 1 1

### Sample output

3

5

1

-1

### Explanation

In the first test case, element on index 3 that is 6 is the first peak element as it is greater than both of its neighbours, 3 and 4.

In the second test case, element on index 5 is the first peak element. As it is a corner element, it has only one neighbour 4 which is smaller than 5.

In the third test case, we have two peak elements at index 1 and at index 4. As 1<4 so element at index 1 is first peak element.

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### Single Number

Given a list of N integers, every element appears twice except for one. Find that single one.

### Input

First number is N (the number of integers given) Followed by the N numbers

### Output

One line containing the output integer

### Example

**Input:** 3

2

2

1

**Output:** 1

**Input:** 5

2

2

1

1

3

**Output:** 3

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### Tribonacci

Nth Tribonacci number is defined as:

Tribonacci[N] = Tribonacci[N-1] + Tribonacci[N-2] + Tribonacci[N-3]

Tribonacci[0] = Tribonacci[1] = 0

Tribonacci[2] = 1

Given an integer N, print the Nth Tribonacci Number.

### Input

One integer, denoting N.

### Output

One Integer, denoting the result.

### Example

**Input1:**

5

**Output1:**

2

**Explanation:**

Series will be: 0,0,1,1,2...

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### Largest

Given an array A of size n.

The task is to complete the largestElement function. It should return the largest element present in the given array.

#### Note:

* DO NOT use any inbuilt function.
* Array may contain duplicate elements.

### Input

First line contains one integer, denoting n. The next line contains n space seperated integers, denoting the elements of the given array.

### Output

One Integer, denoting the result.

### Example

**Input1:**

5

1 8 7 56 90

**Output1:**

90

**Explanation1:**

The largest element of given array [1, 8, 7, 56, 90] is 90.

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