Add

Input file:	`standard input`
Output file:	`standard output`
Time limit:	1 second
Memory limit:	64 megabytes

Given two numbers X and Y, Print their **summation**.

Note: Solve this problem using function.

Input

Only one line contains two numbers X and Y $(0 \leq X, Y \leq 10^5)$.

Output

Print the **summation** value.

Example

standard input	standard output
5 2	7

Print

Input file:	`standard input`
Output file:	`standard output`
Time limit:	1 second
Memory limit:	64 megabytes

Given a number N. Print all numbers from **1** to N.

Note: Solve this problem using function.

Input

Only one line contains a number N ($1 \leq N \leq 10^3$).

Output

print numbers form **1** to N separated by a single space.

Example

standard input	standard output
5	1 2 3 4 5

Note

Don't use any leading or trilling spaces.

Wonderful Number

Input file:	standard input
Output file:	standard output
Time limit:	1 second
Memory limit:	64 megabytes

Given a number N. Determine whether N is **wonderful** or **not**.

Note:

- A number is **wonderful** if this number is **odd** and its **binary representation** is **palindrome**.
- Solve this problem using two functions.

Input

Only one line contains a number N ($0 \le N \le 10^9$).

Output

Print "**YES**" if the number is wonderful otherwise, print "**NO**".

Examples

standard input	standard output
3	YES
4	NO

Note

For more information visit Palindrome Number: https://en.wikipedia.org/wiki/Palindromic_number

Prime Function

Input file:	`standard input`
Output file:	`standard output`
Time limit:	2 seconds
Memory limit:	256 megabytes

A **prime** number is a number that is greater than **1** and has only two factors which are **1** and itself. The first few prime numbers are **2, 3, 5, 7, 11, 13, 17, 19, 23** and **29**.

Given a number N. Determine whether N is **prime** or **not**.

Note: Solve this problem using function.

Input

First line will contain a number T ($1 \leq T \leq 10^3$) number of test cases.

Next T lines will contain a number N ($1 \leq N \leq 10^9$).

Output

Print "**YES**" if the N_{th} number is prime otherwise, print "**NO**".

Example

standard input	standard output
3 2 4 8	YES NO NO

Note

Don't use an array.

Swap

Input file:	`standard input`
Output file:	`standard output`
Time limit:	1 second
Memory limit:	64 megabytes

Given two numbers X and Y. Print X and Y after **swapping** them.

Note: Solve this problem using function.

Input

Only one line contains two numbers X and Y $(0 \leq X, Y \leq 10^5)$.

Output

Print X and Y separated by a space after swapping.

Example

standard input	standard output
5 2	2 5

Equation

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

Given two numbers X and N. Print the result of the following equation:

$S = (X^0 - 1) + (X^2) + (X^4) + (X^6) + ... + (X^N)$

Note: Solve this problem using function and don't use built-in function.

Input

Only one line contains two numbers X and N $(0 \leq X, N \leq 10)$

Output

Print the equation result S.

Example

standard input	standard output
5 5	650

Note

First Test :

$(5^0$ - 1) + 5^2 + 5^4 = 0 + 25 + 625 = 650.

Max and MIN

Input file:	`standard input`
Output file:	`standard output`
Time limit:	1 second
Memory limit:	64 megabytes

Given an array A of size N. Print the **minimum** and the **maximum** number in the array.

Note: Solve this problem using function.

Input

First line will contain a number N $(1 \leq N \leq 10^3)$ number of elements.

Second line will contain N numbers $(0 \leq X_i \leq 10^5)$.

Output

Print the **minimum** and the **maximum** number separated by a space.

Example

standard input	standard output
5 10 13 95 1 3	1 95

N Times

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

Given a number N and a character C. Print the character(C) N times.

Note: Solve this problem using function.

Input

The first line contains a number T ($1 \leq T \leq 50$) the number of test cases.

Next T lines contains a number N and a character C ($1 \leq N \leq 100$).

Output

Print T lines, for every line print the character(C) N times separated by space.

Examples

standard input	standard output
2 1 n 5 0	n 0 0 0 0 0
1 8 z	z z z z z z z z

Swapping With Matrix

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

Given a matrix A of size $N * N$. Print the Matrix after doing the following operations:

1. swap row X with row Y.
2. swap column X with column Y.

Note: Solve this problem using function.

Input

First line contains three numbers N, X and Y $(1 \leq N \leq 500, 1 \leq X, Y \leq N)$.

Next N lines contain N numbers $(-10^4 \leq A_{i,j} \leq 10^4)$.

Output

Print the answer required above.

Example

standard input	standard output
4 3 1 1 2 3 -5 -5 4 0 3 7 7 1 2 40 6 5 11	1 7 7 2 0 4 -5 3 3 2 1 -5 5 6 40 11

Average

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

Given an array A of size N. Print the **average**(**mean**) of the array numbers.

Note: Solve this problem using function.

Input

First line will contain a number N ($1 \leq N \leq 10^4$) length of the array.

Second line will contain N numbers ($1 \leq A_i \leq 10^3$).

Output

Print the **average**(**mean**) of the array with 6 digits after the decimal point.

Examples

standard input	standard output
3 1.0 2.0 5.0	2.6666667
4 1.0 7.0 4.0 9.0	5.2500000

Shift Right

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

Given an array A of size N and a number X. Print the array elements after shifting right the elements X times.

For example: if A = **[1, 2, 3]** then after shifting it to the right for **1** time A = **[3, 1, 2]**.

Note: Solve this problem using function.

Input

First line will contain two number N and X ($1 \leq N \leq 10^4, 1 \leq X \leq 100$).

Second line will contain N number ($1 \leq A_i \leq 10^5$).

Output

Print the array after shifting right its elements X times.

Examples

standard input	standard output
2 2 2 1	2 1
5 21 1 2 3 4 5	5 1 2 3 4

New Array

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

Given two arrays A and B of size N. Print a new array C that holds the concatenation of array B followed by array A.

Note: Solve this problem using function.

Input

First line will contain a number N ($1 \leq N \leq 10^3$).

Second line will contain N numbers ($1 \leq A_i \leq 10^5$) array A elements.

Third line will contain N numbers ($1 \leq B_i \leq 10^5$) array B elements.

Output

Print array C elements separated by space.

Example

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

Distinct Numbers

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

Given an array A of size N. Print the number of distinct numbers in the array.

Note: Solve this problem using function.

Input

First line will contain a number N ($0 \leq N \leq 10^3$) number of elements.

Second line will contain N numbers ($-10^3 \leq A_i \leq 10^3$).

Output

Print the number of distinct numbers in the array.

Examples

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

Shift Zeros

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

Given an array A of size N. Print the array elements after shifting all zeroes in array A to the right.

Note: Solve this problem using function.

Input

First line will contain a number N ($1 \leq N \leq 10^3$) number of elements.

Second line will contain N numbers ($0 \leq A_i \leq 10^3$).

Output

Print the array after shifting right all its zeros.

Examples

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

Five in One

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

Given an array A of size N. write five functions that do the following:

1. Get the value of the **maximum** number in the array.
2. Get the value of the **minimum** number in the array.
3. Count the **prime numbers** in the array.
4. Count the **palindrome numbers** in the array.
5. Get the number that has the **maximum number** of **divisors**, and if there are more than one number that has the maximum number of divisors , **print the maximum of them**.

Note:

*A **palindrome number** is a number that reads the same forward or backward.

For example: 12321, **101** are **palindrome numbers**, while **1201**, **221** are **not**.

*A **prime** number is a number that is greater than **1** and has only two factors which are **1** and **itself**.

In other words : **prime number divisible only by 1 and itself**.

Be careful that 1 is not prime .

The first few **prime** numbers are

Input

First line will contain a number N $(1 \leq N \leq 100)$ number of elements.

Second line will contain N numbers $(1 \leq A_i \leq 100)$.

Output

Print five lines as following:

"The maximum number : **X** " where **X** is the maximum number.

"The minimum number : **X** " where **X** is the minimum number.

"The number of prime numbers : **X** " where **X** is the number of prime numbers.

"The number of palindrome numbers : **X** " where **X** is the number of palindrome numbers.

"The number that has the maximum number of divisors : **X** " where **X** is the number that has the

maximum number of divisors.

Don't print any extra spaces.

Examples

standard input	standard output
4 1 2 5 8	The maximum number : 8 The minimum number : 1 The number of prime numbers : 2 The number of palindrome numbers : 4 The number that has the maximum number of divisors : 8
5 8 2 14 1 83	The maximum number : 83 The minimum number : 1 The number of prime numbers : 2 The number of palindrome numbers : 3 The number that has the maximum number of divisors : 14

Note

In the second example :

the minimum number is **1**.

the maximum number is **83** .

the prime numbers are **[2,83]**.

the palindrome numbers are **[1,2,8]**.

1 has one divisor **[1]**, **2** has two divisors are **[1,2]**,

8 has four divisors **[1,2,4,8]**,**14** has also four divisors **[1,2,7,14]**,and **83** has two divisors **[1,83]**.

then **8** and **14** have the **maximum number of divisors** so we print the maximum one **14**.