Skip to main content

CS23336-Introduction to Python Programming

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State	Finished
Completed on	Monday, 21 October 2024, 9:17 PM
Time taken	38 mins 40 secs
Marks	10.00/10.00
Grade	**100.00** out of 100.00

Question 1

Correct
Mark 1.00 out of 1.00
Flag question

Question text

The program must accept **N** integers and an integer **K** as the input. The program must print every K integers in descending order as the output.

-

Note: If **N % K != 0**, then sort the final N%K integers in descending order.

Boundary Condition(s):

1 <= N <= 10^4
-99999 <= Array Element Value <= 99999

Input Format:

The first line contains the values of N and K separated by a space.
The second line contains N integers separated by space(s).

Output Format:

The first line contains N integers.

Example Input/Output 1:

Input:

7 3
48 541 23 68 13 41 6

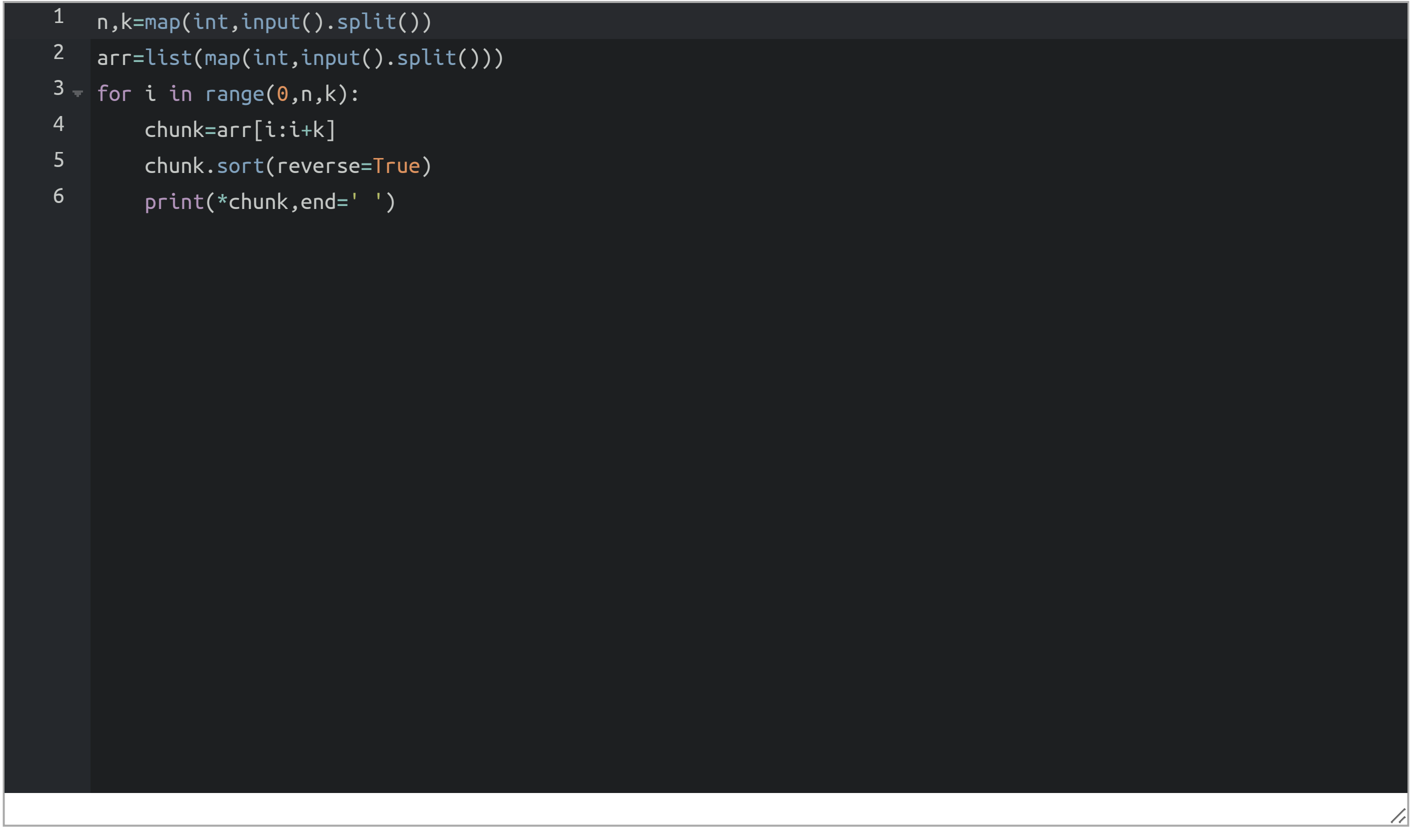
Output:

541 48 23 68 41 13 6

Explanation:

The first three integers are 48 541 23, after sorting in descending order the integers are **541 48 23**.
The second three integers are 68 13 41, after sorting in descending order the integers are **68 41 13**.
The last integer is **6**.
The integers are **541 48 23 68 41 13 6**
Hence the output is **541 48 23 68 41 13 6**.

Answer:(penalty regime: 0 %)



```python
n,k=map(int,input().split())
arr=list(map(int,input().split()))
for i in range(0,n,k):
    chunk=arr[i:i+k]
    chunk.sort(reverse=True)
    print(*chunk,end=' ')
```

Feedback

Input	Expected	Got

`7 3`
`48 541 23 68 13 41 6`
	`541 48 23 68 41 13 6`	`541 48 23 68 41 13 6`

Passed all tests!

Correct
Marks for this submission: 1.00/1.00.

Question 2

Correct
Mark 1.00 out of 1.00
Flag question

Question text

Assume you have an array of length ***n*** initialized with all **0**'s and are given ***k*** update operations.

Each operation is represented as a triplet: **[startIndex, endIndex, inc]** which increments each element of subarray **A[startIndex ... endIndex]** (startIndex and endIndex inclusive) with **inc**.

Return the modified array after all ***k*** operations were executed.

Example:

Input:

5

3

1 3 2

2 4 3

0 2 -2

Output:

-2 0 3 5 3

Explanation:

Initial state:

length = 5, updates = [[1,3,2],[2,4,3],[0,2,-2]]

[0,0,0,0,0]

After applying operation [1,3,2]:

[0,2,2,2,0]

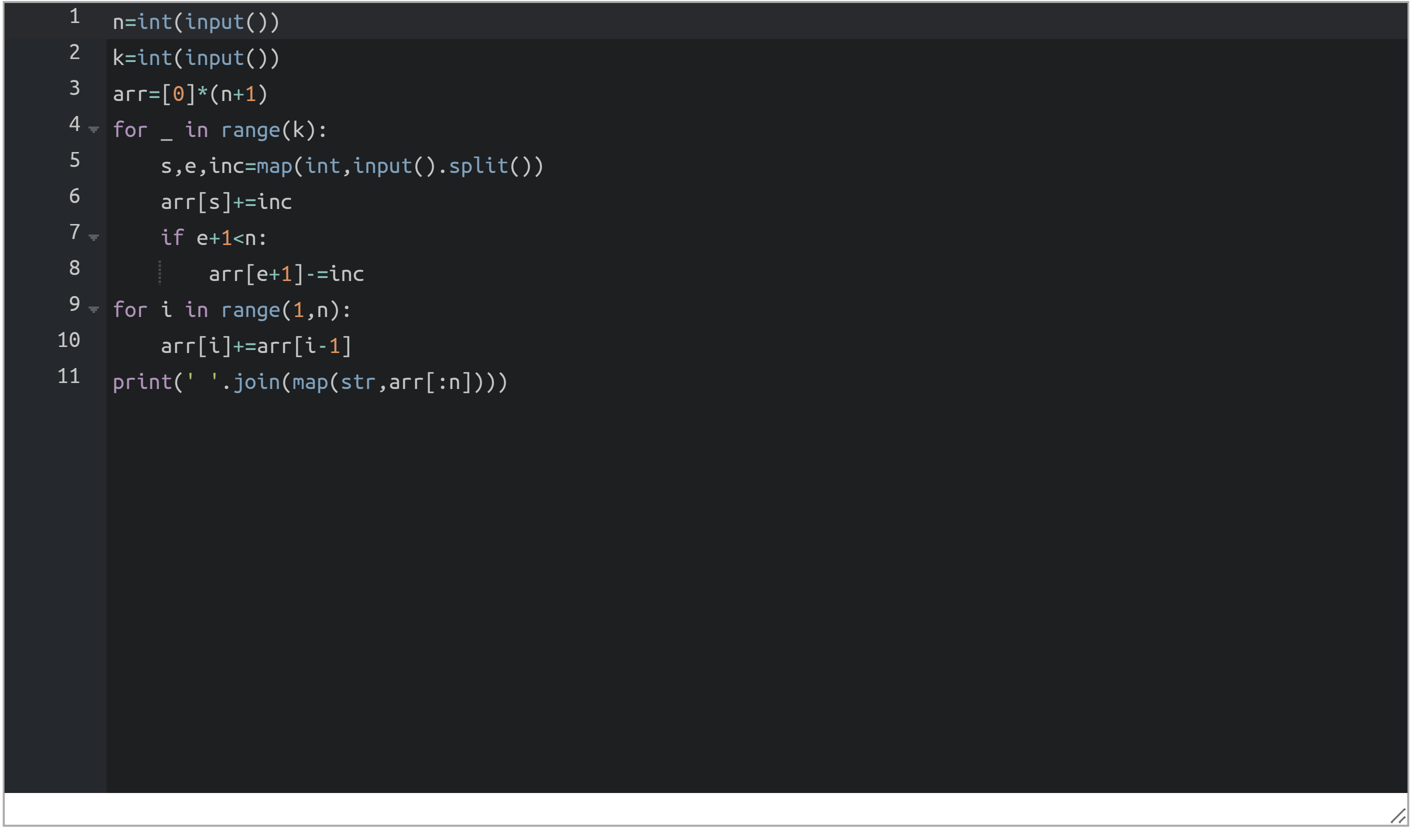
After applying operation [2,4,3]:

[0,2,5,5,3]

After applying operation [0,2,-2]:

[-2,0,3,5,3]

Answer:(penalty regime: 0 %)



```python
n=int(input())
k=int(input())
arr=[0]*(n+1)
for _ in range(k):
    s,e,inc=map(int,input().split())
    arr[s]+=inc
    if e+1<n:
        arr[e+1]-=inc
for i in range(1,n):
    arr[i]+=arr[i-1]
print(' '.join(map(str,arr[:n])))
```

Feedback

Input	Expected	Got

5
3
1 3 2
2 4 3
0 2 -2
	-2 0 3 5 3	-2 0 3 5 3

Passed all tests!
Correct
Marks for this submission: 1.00/1.00.

Question 3

Correct
Mark 1.00 out of 1.00
Flag question

Question text

Program to print all the distinct elements in an array. Distinct elements are nothing but the unique (non-duplicate) elements present in the given array.

Input Format:

First line take an Integer input from stdin which is array length n.

Second line take n Integers which is inputs of array.

Output Format:

Print the Distinct Elements in Array in single line which is space Separated

Example Input:

5

1

2

2

3

4

Output:

1 2 3 4

Example Input:

6

1

1

2

2

3

3

Output:

1 2 3

For example:

Input	Result
5 1 2 2 3 4	1 2 3 4
6 1 1 2 2 3 3	1 2 3

Answer:(penalty regime: 0 %)

```
n=int(input())
array=[int(input()) for i in range(n)]
ele=set(array)
print(" ".join(map(str,ele)))
```

Feedback

Input	Expected	Got
5 1	1 2 3 4	1 2 3 4

Input	Expected	Got
2 2 3 4		
6 1 1 2 2 3 3	1 2 3	1 2 3

Passed all tests!
Correct
Marks for this submission: 1.00/1.00.

Question 4

Correct
Mark 1.00 out of 1.00
Flag question

Question text

Given an integer n, return an list of length n + 1 such that for each i (0 <= i <= n), ans[i] is the number of 1's in the binary representation of i.

Example:

```
Input: n = 2
Output: [0,1,1]
Explanation:
0 --> 0
1 --> 1
2 --> 10
```

Example2:

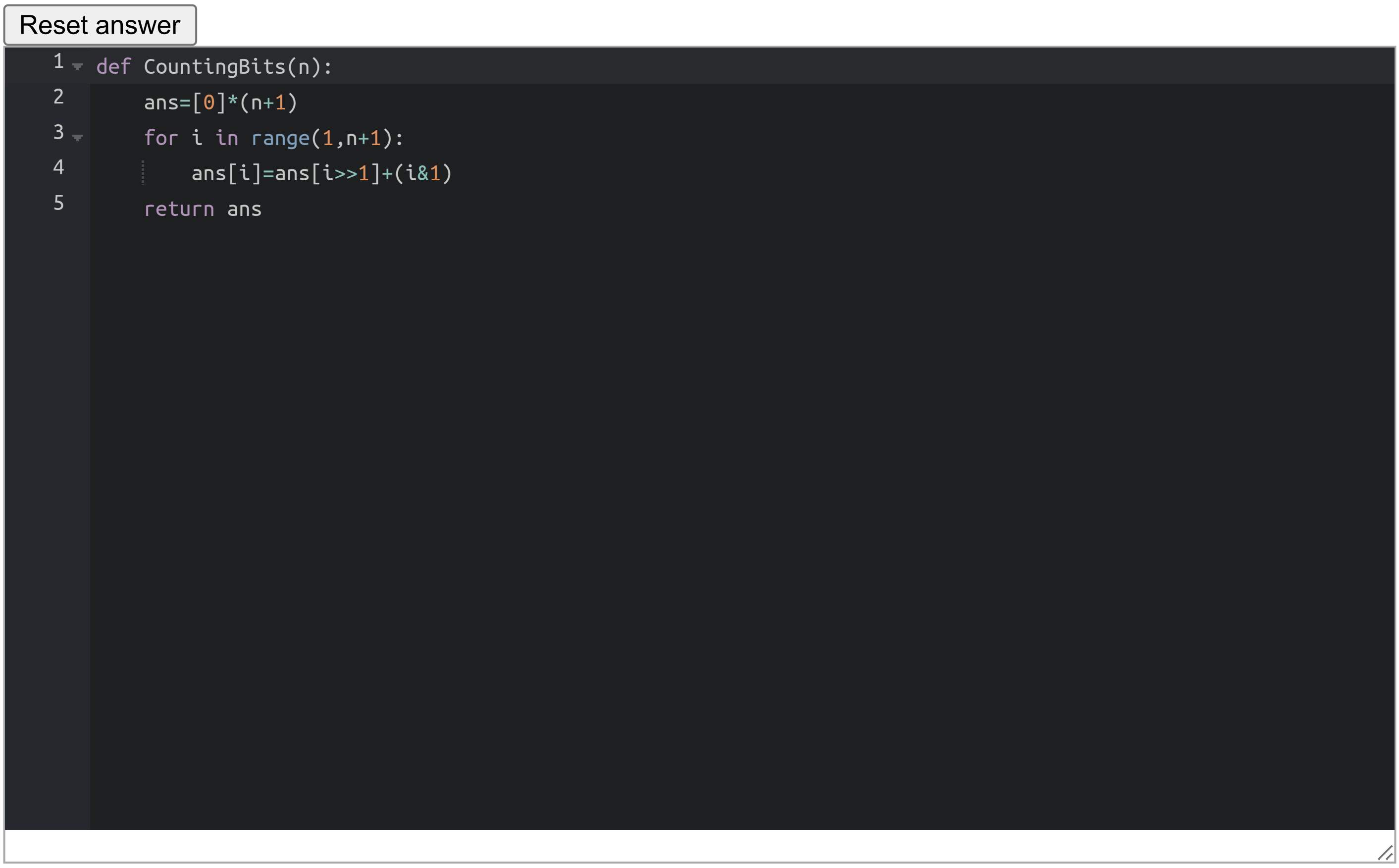
```
Input: n = 5
Output: [0,1,1,2,1,2]
Explanation:
0 --> 0
1 --> 1
2 --> 10
3 --> 11
4 --> 100
5 --> 101
```

Note: Complete the given function alone

For example:

Test	Result
`print(CountingBits(5))`	`[0, 1, 1, 2, 1, 2]`

Answer:(penalty regime: 0 %)



```
def CountingBits(n):
    ans=[0]*(n+1)
    for i in range(1,n+1):
        ans[i]=ans[i>>1]+(i&1)
    return ans
```

Feedback

Test	Expected	Got
`print(CountingBits(2))`	`[0, 1, 1]`	`[0, 1, 1]`
`print(CountingBits(5))`	`[0, 1, 1, 2, 1, 2]`	`[0, 1, 1, 2, 1, 2]`

Passed all tests!

Correct
Marks for this submission: 1.00/1.00.

Question 5

Correct
Mark 1.00 out of 1.00
Flag question

Question text

Given an array A of sorted integers and another non negative integer k, find if there exists 2 indices i and j such that A[i] - A[j] = k, i != j.

Input Format

1. First line is number of test cases T. Following T lines contain:

2. N, followed by N integers of the array

3. The non-negative integer k

Output format

Print 1 if such a pair exists and 0 if it doesn’t.

Example

Input

1

3

1

3

5

4

Output:

1

Input

1

3

1

3

5

99

Output

0

For example:

Input	**Result**
1 3 1 3 5 4	1
1 3	0

Input	Result
1 3 5 99	

Answer:(penalty regime: 0 %)

```
T=int(input())
for test in range(T):
    n=int(input())
    a=[int(input()) for _ in range(n)]
    k=int(input())
    res=0
    for i in range(n):
        for j in range(n):
            if i!=j:
                d=a[i]-a[j]
                if d == k:
                    res=1
    print(res)
```

Feedback

Input	Expected	Got
1 3 1 3 5 4	1	1
1 3 1 3 5 99	0	0

Passed all tests!

Correct
Marks for this submission: 1.00/1.00.

Question 6

Correct
Mark 1.00 out of 1.00
Flag question

Question text

Given two arrays of positive integers, for each element in the second array, find the total number of elements in the first array which are *less than or equal to* that element. Store the values determined in an array.

For example, if the first array is *[1, 2, 3]* and the second array is *[2, 4]*, then there are *2* elements in the first array *less than or equal to 2*. There are *3* elements in the first array which are *less than or equal to 4*. We can store these answers in an array, *answer = [2, 3]*.

Program Description

The program must return an array of *m* positive integers, one *for each maxes[i]* representing the total number of elements *nums[j]* satisfying *nums[j] ≤ maxes[i]* where *0 ≤ j < n* and *0 ≤ i < m*, in the given order.

The program has the following:

nums[nums[0],...nums[n-1]]: first array of positive integers
maxes[maxes[0],...maxes[n-1]]: second array of positive integers

Constraints

- $2 \leq n, m \leq 10^5$
- $1 \leq nums[j] \leq 10^9$, where $0 \leq j < n$.
- $1 \leq maxes[i] \leq 10^9$, where $0 \leq i < m$.

Input Format For Custom Testing

Input from stdin will be processed as follows and passed to the program.

The first line contains an integer *n*, the number of elements in *nums*.
The next *n* lines each contain an integer describing *nums[j]* where *0 ≤ j < n*.
The next line contains an integer *m*, the number of elements in *maxes*.
The next *m* lines each contain an integer describing *maxes[i]* where *0 ≤ i < m*.

Sample Case 0

Sample Input 0

```
4
1
4
2
4
2
```

```
3
5
```

Sample Output 0

```
2
4
```

Explanation 0

We are given *n = 4*, *nums = [1, 4, 2, 4]*, *m = 2*, and *maxes = [3, 5]*.

1. For *maxes[0] = 3*, we have *2* elements in *nums* (*nums[0] = 1* and *nums[2] = 2*) that are *≤ maxes[0]*.
2. For *maxes[1] = 5*, we have *4* elements in *nums* (*nums[0] = 1*, *nums[1] = 4*, *nums[2] = 2*, and *nums[3] = 4*) that are *≤ maxes[1]*.

Thus, the program returns the array *[2, 4]* as the answer.

Sample Case 1

Sample Input 1

```
5
2
10
5
4
8
4
3
1
7
8
```

Sample Output 1

```
1
0
3
4
```

Explanation 1

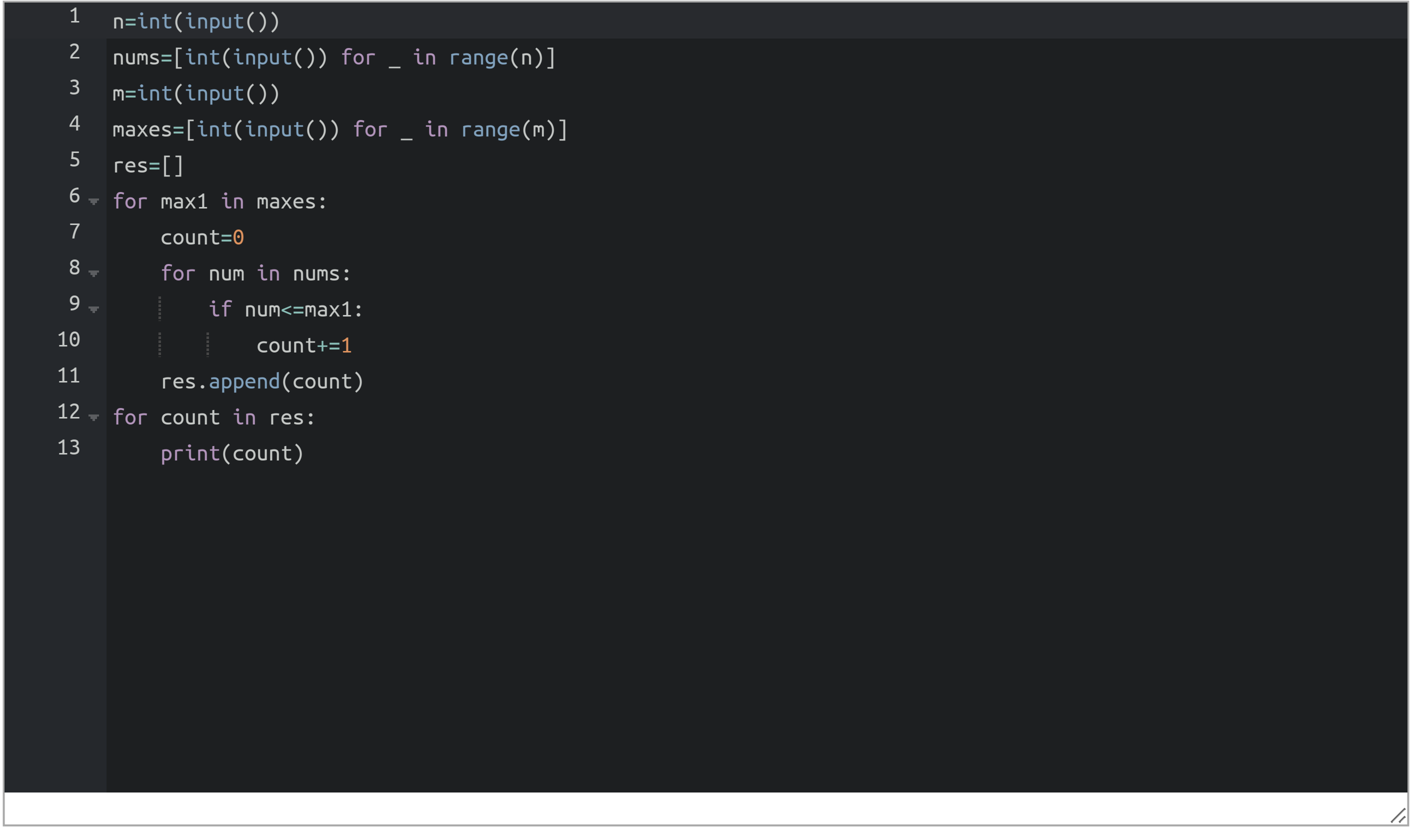
We are given, *n = 5*, *nums = [2, 10, 5, 4, 8]*, *m = 4*, and *maxes = [3, 1, 7, 8]*.

1. For *maxes[0] = 3*, we have *1* element in *nums* (*nums[0] = 2*) that is *≤ maxes[0]*.

2. For *maxes[1] = 1*, there are *0* elements in *nums* that are ≤ *maxes[1]*.
3. For *maxes[2] = 7*, we have *3* elements in *nums* (*nums[0] = 2*, *nums[2] = 5*, and *nums[3] = 4*) that are ≤ *maxes[2]*.
4. For *maxes[3] = 8*, we have *4* elements in *nums* (*nums[0] = 2*, *nums[2] = 5*, *nums[3] = 4*, and *nums[4] = 8*) that are ≤ *maxes[3]*.

Thus, the program returns the array *[1, 0, 3, 4]* as the answer.

Answer:(penalty regime: 0 %)



```
n=int(input())
nums=[int(input()) for _ in range(n)]
m=int(input())
maxes=[int(input()) for _ in range(m)]
res=[]
for max1 in maxes:
    count=0
    for num in nums:
        if num<=max1:
            count+=1
    res.append(count)
for count in res:
    print(count)
```

Feedback

Input	Expected	Got
4 1 4 2 4 2 3 5	2 4	2 4
5 2 10 5 4 8 4 3 1 7 8	1 0 3 4	1 0 3 4

Passed all tests!
Correct
Marks for this submission: 1.00/1.00.

Question 7

Correct
Mark 1.00 out of 1.00
Flag question

Question text

Determine the factors of a number (i.e., all positive integer values that evenly divide into a number) and then return the pth element of the list, sorted ascending. If there is no pth element, return 0.

Example

n = 20

p = 3

The factors of 20 in ascending order are {1, 2, 4, 5, 10, 20}. Using 1-based indexing, if p = 3, then 4 is returned. If p > 6, 0 would be returned.

Constraints

$1 \leq n \leq 10^{15}$

$1 \leq p \leq 10^{9}$

The first line contains an integer n, the number to factor.

The second line contains an integer p, the 1-based index of the factor to return.

Sample Case 0

Sample Input 0

10

3

Sample Output 0

5

Explanation 0

Factoring n = 10 results in {1, 2, 5, 10}. Return the p = 3rd factor, 5, as the answer.

Sample Case 1

Sample Input 1

10

5

Sample Output 1

0

Explanation 1

Factoring n = 10 results in {1, 2, 5, 10}. There are only 4 factors and p = 5, therefore 0 is returned as the answer.

Sample Case 2

Sample Input 2

1

1

Sample Output 2

1

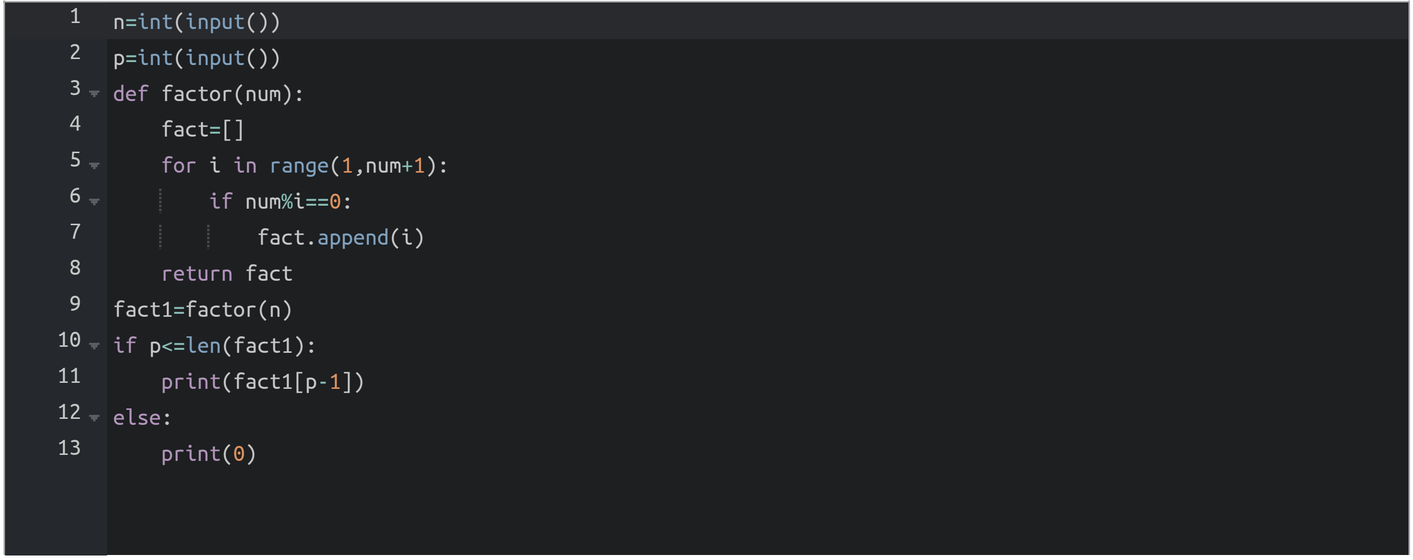
Explanation 2

Factoring n = 1 results in {1}. The p = 1st factor of 1 is returned as the answer.

For example:

Input	Result
10 3	5
10 5	0
1 1	1

Answer:(penalty regime: 0 %)



```
n=int(input())
p=int(input())
def factor(num):
    fact=[]
    for i in range(1,num+1):
        if num%i==0:
            fact.append(i)
    return fact
fact1=factor(n)
if p<=len(fact1):
    print(fact1[p-1])
else:
    print(0)
```

Feedback

Input	Expected	Got
10 3	5	5
10 5	0	0
1 1	1	1

Passed all tests!

Correct
Marks for this submission: 1.00/1.00.

Question 8

Correct
Mark 1.00 out of 1.00
Flag question

Question text

Complete the program to count frequency of each element of an array. Frequency of a particular element will be printed once.

Sample Test Cases

Test Case 1

Input

7

23

45

23

56

45

23

40

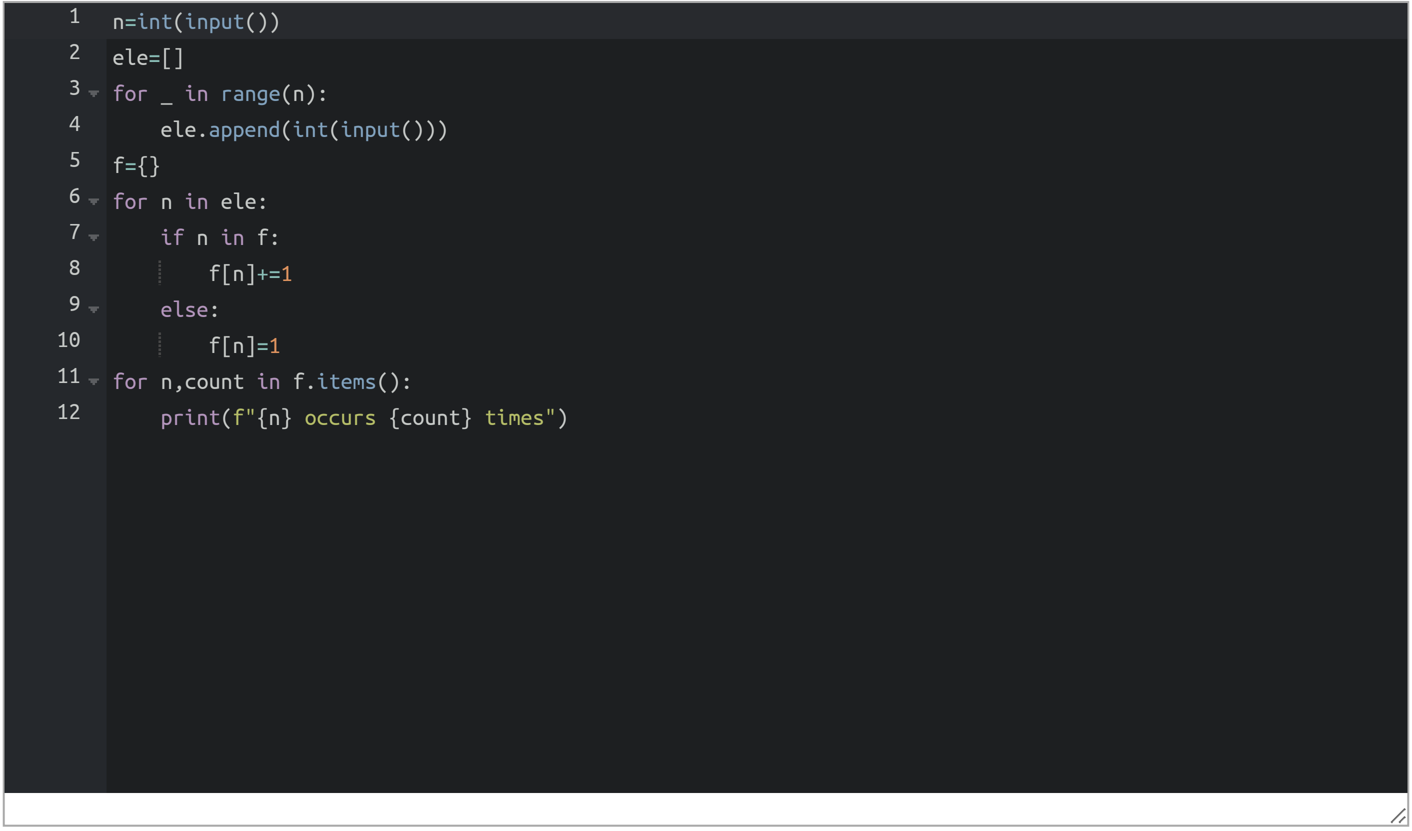
Output

23 occurs 3 times

45 occurs 2 times

56 occurs 1 times

40 occurs 1 times
Answer:(penalty regime: 0 %)



```python
n=int(input())
ele=[]
for _ in range(n):
    ele.append(int(input()))
f={}
for n in ele:
    if n in f:
        f[n]+=1
    else:
        f[n]=1
for n,count in f.items():
    print(f"{n} occurs {count} times")
```

Feedback

Input	Expected	Got
7 23 45	23 occurs 3 times 45 occurs 2 times	23 occurs 3 times 45 occurs 2 times

Input	Expected	Got
23 56 45 23 40	56 occurs 1 times 40 occurs 1 times	56 occurs 1 times 40 occurs 1 times

Passed all tests!
Correct
Marks for this submission: 1.00/1.00.

Question 9

Correct
Mark 1.00 out of 1.00
Flag question

Question text

Given a matrix mat where every row is sorted in **strictly increasing** order, return the **smallest common element** in all rows.

If there is no common element, return -1.

Example 1:

Input:

4 5

1 2 3 4 5

2 4 5 8 10

3 5 7 9 11

1 3 5 7 9

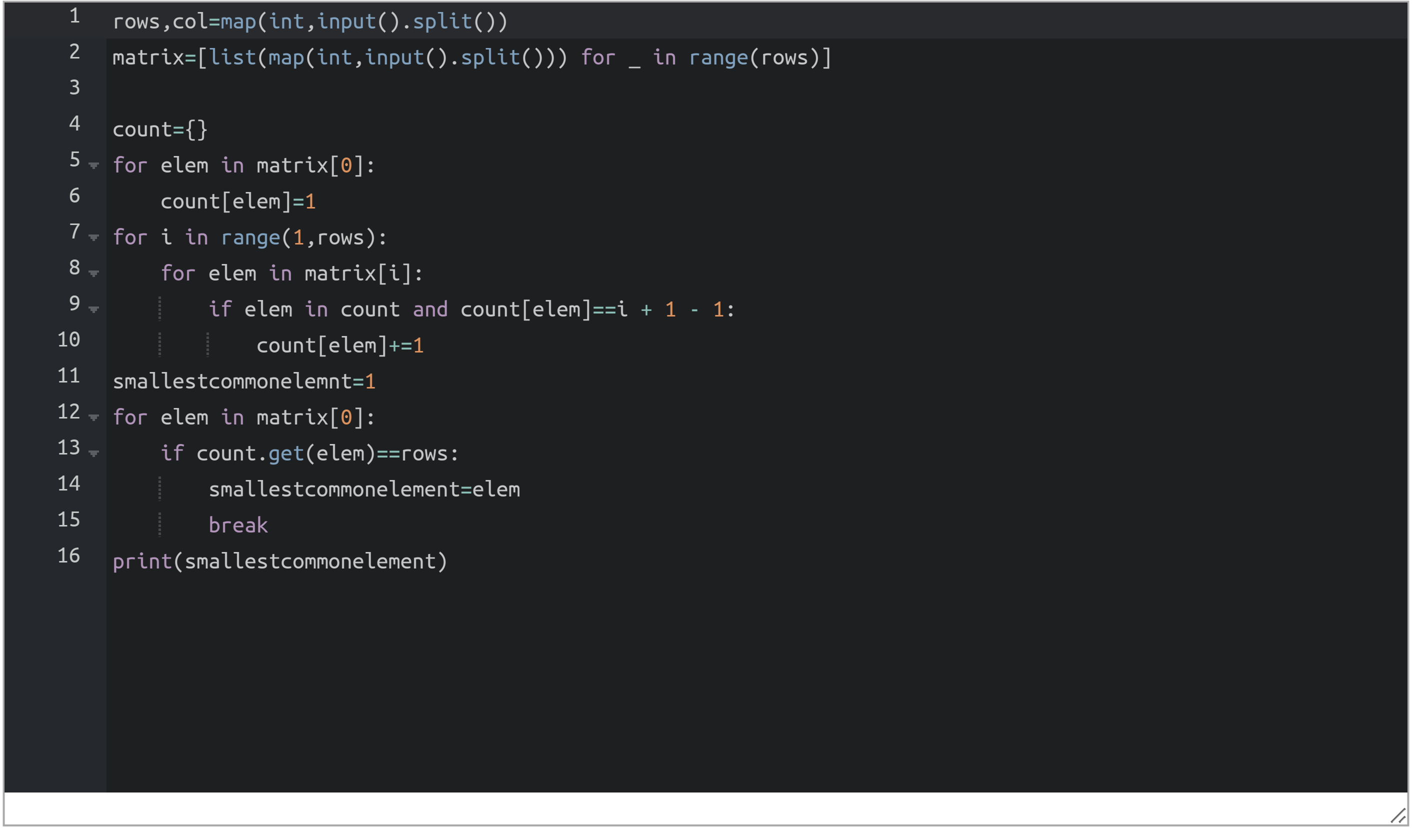
Output:

5

Constraints:

- 1 <= mat.length, mat[i].length <= 500
- 1 <= mat[i][j] <= 10^4
- mat[i] is sorted in strictly increasing order.

Answer:(penalty regime: 0 %)



```
rows,col=map(int,input().split())
matrix=[list(map(int,input().split())) for _ in range(rows)]

count={}
for elem in matrix[0]:
    count[elem]=1
for i in range(1,rows):
    for elem in matrix[i]:
        if elem in count and count[elem]==i + 1 - 1:
            count[elem]+=1
smallestcommonelemnt=1
for elem in matrix[0]:
    if count.get(elem)==rows:
        smallestcommonelement=elem
        break
print(smallestcommonelement)
```

Feedback

Input	Expected	Got

4 5
1 2 3 4 5
2 4 5 8 10
3 5 7 9 11
1 3 5 7 9
	5	5

Passed all tests!

Correct
Marks for this submission: 1.00/1.00.

Question 10

Correct
Mark 1.00 out of 1.00
Flag question

Question text

An array is monotonic if it is either **monotone increasing** or **monotone decreasing**.
An array A is monotone increasing if for all i <= j, **A[i] <= A[j]**. An array A is monotone decreasing if for all i <= j, **A[i] >= A[j]**.

Write a program if n array is monotonic or not. Print "True" if is monotonic or "False" if it is not. Array can be monotone increasing or decreasing.

Input Format:

First line n-get number of elements

Next n Lines is the array of elements

Output Format:

True ,if array is monotone increasing or decreasing.

otherwise False is printed

Sample Input1

4

5

6

7

8

Sample Output1

True

Sample Input2

4

6

5

4

3

Sample Output2

True

Sample Input 3

4

6

7

8

7

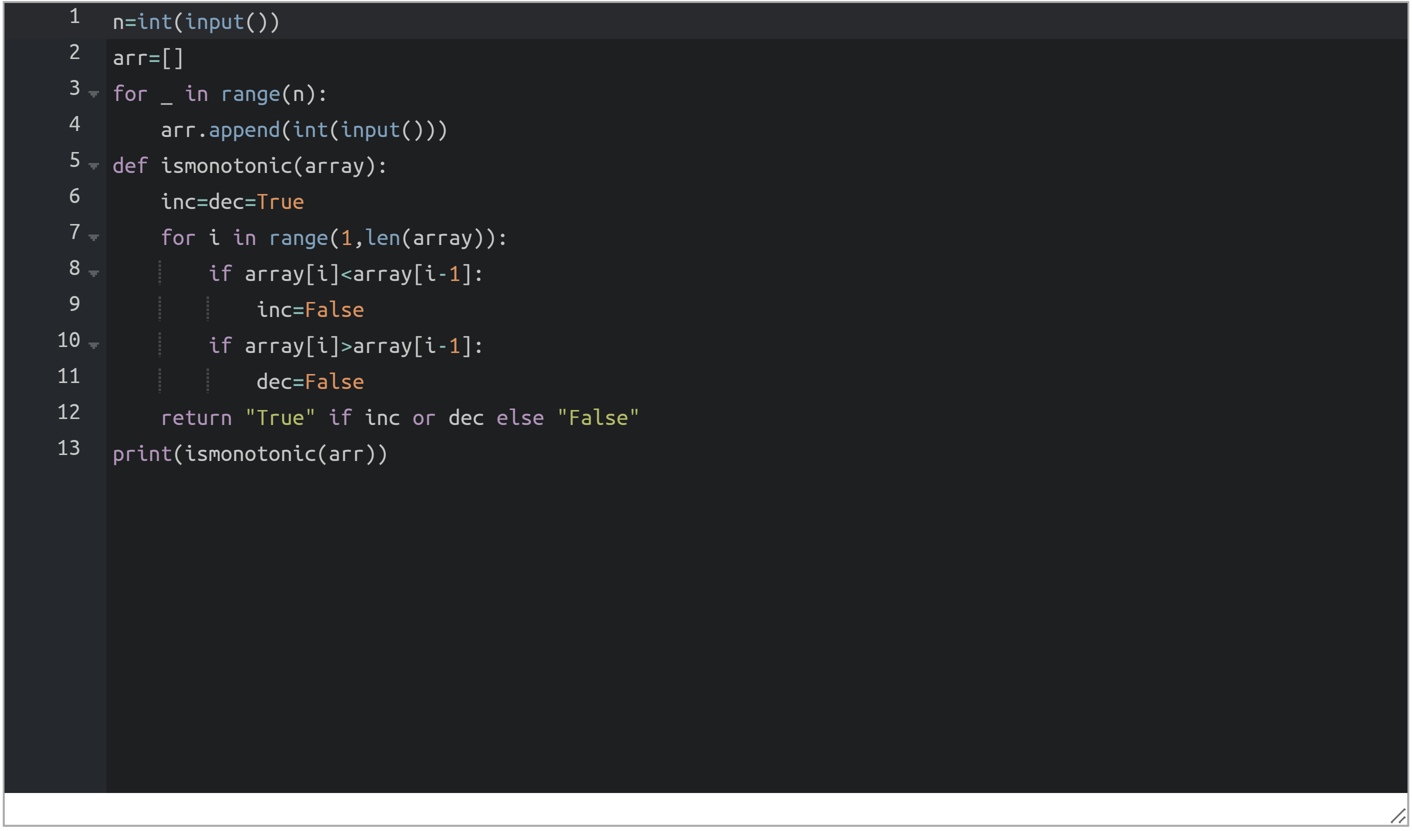
Sample Output3

False

For example:

Input	Result
4 6 5 4 3	True

Answer:(penalty regime: 0 %)



```
n=int(input())
arr=[]
for _ in range(n):
    arr.append(int(input()))
def ismonotonic(array):
    inc=dec=True
    for i in range(1,len(array)):
        if array[i]<array[i-1]:
            inc=False
        if array[i]>array[i-1]:
            dec=False
    return "True" if inc or dec else "False"
print(ismonotonic(arr))
```

Feedback

Input	Expected	Got
4 6 5 4 3	True	True

Input	Expected	Got
4 3 5 7 4	False	False
4 1 6 9 2	False	False
4 9 6 4 2	True	True
3 2 1 4	False	False

Passed all tests!
Correct
Marks for this submission: 1.00/1.00.
Finish review