Ex. No. : 4.5 **Date:**

Register No.: 230701363 **Name: THEEPAK PALANI KUMAR D**

Nth Fibonacci

Write a program to return the nth number in the fibonacci series. The value of N will be passed to the program as input.

Program:

```
n=int(input())

if n==1:

    print("0")

else:

    fib=[0,1]

    for i in range(2,n):

        fib.append(fib[-1]+fib[-2])

    print(fib[-1])
```

Input Format:

Single Integer Input from stdin.

Output Format:

Yes or No.

Example Input:

175

Output:

Yes

Explanation

1^1 + 7^2 +5^3 = 175

Example Input:

123

Output:

No

For example:

Input	Result
175	Yes
123	No

Ex. No. : 4.6 **Date:**

Register No.: 230701363 **Name: THEEPAK PALANI KUMAR D**

Disarium Number

A Number is said to be Disarium number when the sum of its digit raised to the power of their respective positions becomes equal to the number itself. Write a program to print number is Disarium or not.

Program:

```
a=input()

b=0

c=1

for i in a:

    b+=int(i)**c

    c+=1

if b==int(a):

   print("Yes")

else:

    print("No")
```

Sample Test Cases

Test Case 1

Input

4

Output

1234

Explanation:

as input is 4, have to take 4 terms.

1 + 11 + 111 + 1111

Test Case 2

Input

6

Output

123456

For example:

Input	Result
3	123

Ex. No. : 4.7 **Date:**

Register No.: 230701363 **Name: THEEPAK PALANI KUMAR D**

Sum of Series

Write a program to find the sum of the series 1 +11 + 111 + 1111 + . . . + n terms (n will be given as input from the user and sum will be the output)

Program:

```
a=int(input())
b=c=1
for i in range(1,a):
    a=b
    b=(a*10)+1
    c+=b
print(c)
```

For example:

Input	Result
292	2
1015	3

Ex. No. : 4.8 **Date:**

Register No.: 230701363 **Name: THEEPAK PALANI KUMAR D**

Unique Digit Count

Write a program to find the count of unique digits in a given number N. The number will be passed to the program as an input of type int.
Assumption: The input number will be a positive integer number >= 1 and <= 25000.
For e.g.
If the given number is 292, the program should return 2 because there are only 2 unique digits '2' and '9' in this number
If the given number is 1015, the program should return 3 because there are 3 unique digits in this number, '1', '0', and '5'.

Program:

```
a=int(input())
b=set()
c=str(a)
for digit in c:
    b.add(digit)
print(len(b))
```

Input Format:

Single Integer input.

Output Format:

Output displays Yes if condition satisfies else prints No.

Example Input:

14

Output:

Yes

Example Input:

13

Output:

No

Ex. No. : 4.9 **Date:**

Register No.: 230701363 **Name: THEEPAK PALANI KUMAR D**

Product of single digit

Given a positive integer N, check whether it can be represented as a product of single digit numbers.

Program:

```
r=int(input())
flag=0
for i in range(1,10):
    if r%i==0:
        if r//i<10:
            flag=1
if flag:
    print("Yes")
else:
    print("No")
```

Input Format:

Single integer input.

Output Format:

Yes or No.

Example Input:

24

Output:

Yes

Example Input:

26

Output:

No

For example:

Input	Result
24	Yes

Ex. No. : 4.10 **Date:**

Register No.: 230701363 **Name: THEEPAK PALANI KUMAR D**

Perfect Square After adding One

Given an integer N, check whether N the given number can be made a perfect square after adding 1 to it.

Program:

```
n=int(input())
n+=1
a=int(n**0.5)
if(a**2==n):
    print("Yes")
else:
    print("No")
```

05 - List in Python

Sample Case 0
Sample Input 0
4
1
2
3
3
Sample Output 0
2

Explanation 0
- The sum of the first two elements, 1+2=3. The value of the last element is 3.
- Using zero based indexing, arr[2]=3 is the pivot between the two subarrays.
- The index of the pivot is 2.

Sample Case 1
Sample Input 1
3
1
2
1
Sample Output 1
1
Explanation 1
- The first and last elements are equal to 1.
- Using zero based indexing, arr[1]=2 is the pivot between the two subarrays.
- The index of the pivot is 1.

For example:

Input	Result
4 1 2 3 3	2
3 1 2 1	1

Ex. No. : 5.1 **Date:**

Register No.: 230701363 **Name: THEEPAK PALANI KUMAR D**

Balanced Array

Given an array of numbers, find the index of the smallest array element (the pivot), for which the sums of all elements to the left and to the right are equal. The array may not be reordered.

Example
arr=[1,2,3,4,6]

- the sum of the first three elements, 1+2+3=6. The value of the last element is 6.
- Using zero based indexing, arr[3]=4 is the pivot between the two subarrays.
- The index of the pivot is 3.

Constraints

- $3 \leq n \leq 10^5$
- $1 \leq arr[i] \leq 2 \times 10^4$, where $0 \leq i < n$
- It is guaranteed that a solution always exists.

The first line contains an integer n, the size of the array arr.
Each of the next n lines contains an integer, arr[i], where $0 \leq i < n$.

Program:

```
def find(arr):
    total_sum = sum(arr)
    left_sum = 0
    for i in range(len(arr)):
        total_sum -= arr[i]
        if left_sum == total_sum:
            return i
        left_sum += arr[i]
    return -1
n = int(input())
arr = []
for _ in range(n):
    arr.append(int(input()))
p= find(arr)
print(p)
```

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 1 3 5 99	0

Ex. No. : 5.2 **Date:**

Register No.: 230701363 **Name: THEEPAK PALANI KUMAR D**

Check pair with difference k

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.

Program:

```
a=int(input())
for i in range(a):
    b=int(input())
    c=[]
    flag=0
    for i in range(b):
        c.append(int(input()))
    k=int(input())
    for i in c:
        for j in c:
            if i!=j:
                if i-j==k or j-i==k:
                    flag=1
    print(flag)
```

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

Ex. No. : 5.3 **Date:**

Register No.: 230701363 **Name: THEEPAK PALANI KUMAR D**

Count Elements

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

Program:

```
n = int(input())
frequency = {}
for _ in range(n):
    num = int(input())
    frequency[num] = frequency.get(num, 0) + 1
for num, freq in frequency.items():
    print(f"{num} occurs {freq} times")
```

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

Ex. No. : 5.4 **Date:**

Register No.: 230701363 **Name: THEEPAK PALANI KUMAR D**

Distinct Elements in an Array

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

Program:

```
n = int(input())
arr = [int(input()) for i in range(n)]
d= set()
for num in arr:
    d.add(num)
print(*d)
```

Sample Test Cases

Test Case 1

Input

1
3
4
5
6
7
8
9
10
11
2

Output

ITEM to be inserted:2
After insertion array is:
1
2
3
4
5
6
7
8
9
10
11

Test Case 2

Input

11
22
33
55
66
77
88
99
110
120
44

Output

ITEM to be inserted:44
After insertion array is:
11
22
33
44
55
66
77
88
99
110
120

Ex. No. : 5.5 **Date:**

Register No.: 230701363 **Name: THEEPAK PALANI KUMAR D**

Element Insertion

Consider a program to insert an element / item in the sorted array. Complete the logic by filling up required code in editable section. Consider an array of size 10. The eleventh item is the data is to be inserted.

Program:

```
a=[]
for i in range(10):
    a.append(int(input()))
c=int(input())
for i in range(10):
    if c<a[i]:
        a.insert(i,c)
        break
print("ITEM to be inserted:", end="")
print(c)
print("After insertion array is:")
for i in a:
    print(i)
```

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

Ex. No. : 5.6 **Date:**

Register No.: 230701363 **Name: THEEPAK PALANI KUMAR D**

Find the Factor

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

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.

Program:

```
n = int(input())

p = int(input())

factors = []

for i in range(1, n + 1):

    if n % i == 0:

        factors.append(i)

factors.sort()

if p <= len(factors):

    print(factors[p - 1])

else:

    print(0)
```

Sample test case

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

Sample Output

[[1, 3, 2, 4], [5, 7, 6, 8]]

Ex. No. : 5.7 **Date:**

Register No.: 230701363 **Name: THEEPAK PALANI KUMAR D**

Merge List

Write a Python program to Zip two given lists of lists.

Input:
m : row size
n: column size
list1 and list 2 : Two lists
Output
Zipped List : List which combined both list1 and list2

Program:

```
a=int(input())
b=int(input())
a1=[]
b1=[]
a2=[]
b2=[]
c2=[]
for i in range(a*b):
    a1.append(int(input()))
for i in range(b*a):
    b1.append(int(input()))
a2.extend(a1[:b])
a2.extend(b1[:b])
b2.extend(a1[b:])
b2.extend(b1[b:])
c2.append(a2)
c2.append(b2)
print(c2)
```

Sample Input 1

```
5
1
2
3
6
9
4
2
4
5
10
```

Sample Output 1

```
1 2 3 4 5 6 9 10
```

Ex. No. : 5.8 **Date:**

Register No.: 230701363 **Name: THEEPAK PALANI KUMAR D**

Merge Two Sorted Arrays Without Duplication

Output is a merged array without duplicates.

Input Format
N1 - no of elements in array 1
Array elements for array 1
N2 - no of elements in array 2
Array elements for array2
Output Format
Display the merged array

Program:

```
n1 = int(input())
array1 = [int(input()) for i in range(n1)]
n2 = int(input())
array2 = [int(input()) for j in range(n2)]
a= []
for num in array1:
    if num not in a:
        a.append(num)
for num in array2:
    if num not in a:
        a.append(num)
a.sort()
print(*a)
```

For example, if there are 4 elements in the array:
5
6
5
7

If the element to search is 5 then the output will be:
5 is present at location 1
5 is present at location 3
5 is present 2 times in the array.
Sample Test Cases

Test Case 1
Input

4
5
6
5
7
5

Output

5 is present at location 1.
5 is present at location 3.
5 is present 2 times in the array.

Test Case 2
Input
5
67
80
45
97
100
50

Output
50 is not present in the array.

Ex. No. : 5.9 **Date:**

Register No.: 230701363 **Name: THEEPAK PALANI KUMAR D**

Print Element Location

Write a program to print all the locations at which a particular element (taken as input) is found in a list and also print the total number of times it occurs in the list. The location starts from 1.

Program:

```
n = int(input())
arr = [int(input()) for _ in range(n)]
element = int(input())
count = 0
for i in range(n):
    if arr[i] == element:
        count += 1
        print(f"{element} is present at location {i+1}.")
if count > 0:
    print(f"{element} is present {count} times in the array.")
else:
    print(f"{element} is not present in the array.")
```