1. Balanced strings are those that have an equal quantity of 'L' and 'R' characters.

Given a balanced string s, split it in the maximum amount of balanced strings.

Return the maximum amount of split balanced strings.

Example 1:

Input:

RLRRLLRLRL

Output:

4

Explanation: s can be split into "RL", "RRLL", "RL", "RL", each substring contains same number of 'L' and 'R'.

Example 2:

Input:

RLLLLRRRLR

Output:

3

Explanation: s can be split into "RL", "LLLRRR", "LR", each substring contains same number of 'L' and 'R'.

Example 3:

Input:

LLLLRRRR

Output:

1

Explanation: s can be split into "LLLLRRRR".

Constraints:

1 <= s.length <= 1000

s[i] is either 'L' or 'R'.

s is a balanced string.

Program:

```
def BalancedStrings(s,l=0,r=0,count=0):
```

```
    for i in s :
        if i=='L' :
            l+=1
        elif i=='R' :
            r+=1
        if l==r :
            count+=1
    return count
```

	Test	Expected	Got	
✔	`print(BalancedStrings('RLRRLLRLRL'))`	4	4	✔
✔	`print(BalancedStrings('RLLLLRRRLR'))`	3	3	✔

Passed all tests! ✔

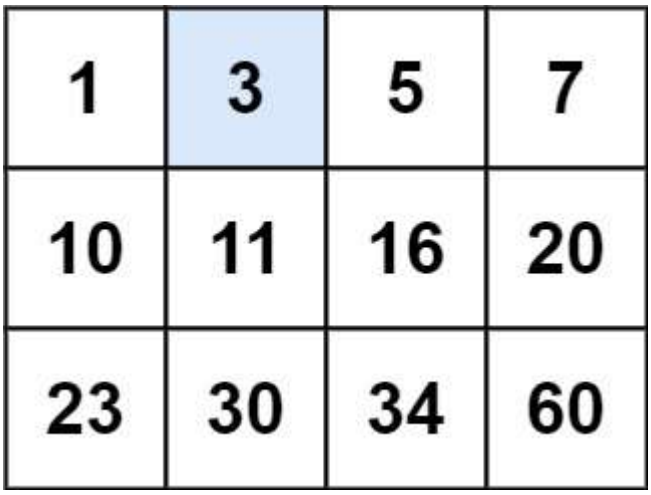
2. You are given an `m x n` integer matrix `matrix` with the following two properties:

- Each row is sorted in non-decreasing order.
- The first integer of each row is greater than the last integer of the previous row.

Given an integer `target`, return `True` *if* `target` *is in* `matrix` *or* `False` *otherwise*.

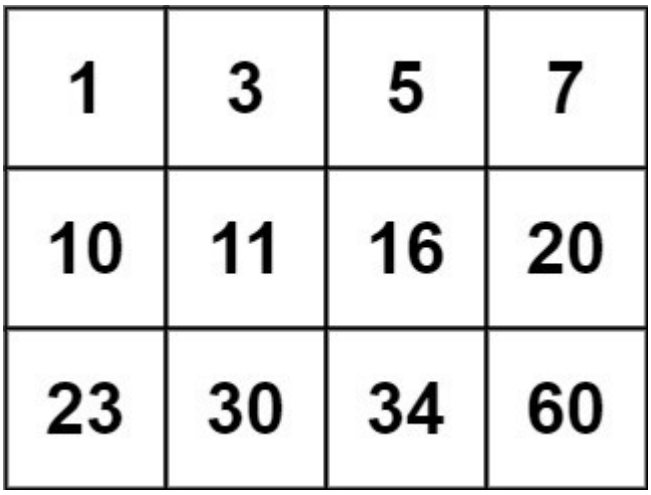
You must write a solution in `O(log(m * n))` time complexity.

Example 1:



Input: matrix = [[1,3,5,7],[10,11,16,20],[23,30,34,60]], target = 3
Output: True

Example 2:



Input: matrix = [[1,3,5,7],[10,11,16,20],[23,30,34,60]], target = 13
Output: False

Program:

```
def searchMatrix(matrix:list[list[int]], target: int) -> bool:
    for i in range(len(matrix)):
        for j in range(len(matrix)):
            if matrix[i][j]==target:
                return True
    return False
```

	Test	Expected	Got	
✔	print(searchMatrix([[1,3,5,7],[10,11,16,20],[23,30,34,60]], 13))	False	False	✔
✔	print(searchMatrix([[1,3,5,7],[10,11,16,20],[23,30,34,60]], 3))	True	True	✔

Passed all tests! ✔

3. An list contains N numbers and you want to determine whether two of the numbers sum to a given number K. For example, if the input is 8, 4, 1, 6 and K is 10, the answer is yes (4 and 6). A number may be used twice.

Input Format

The first line contains a single integer n , the length of list

The second line contains n space-separated integers, list[i].

The third line contains integer k.

Output Format

Print Yes or No.

Sample Input

7

0 1 2 4 6 5 3

1

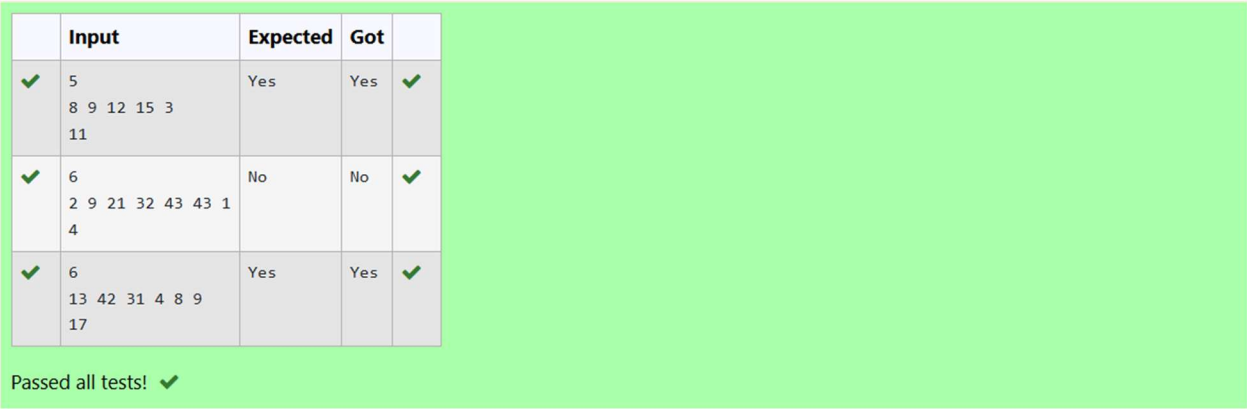
Sample Output

Yes

Program:

```
a=int(input())

p=input()

b=list(map(int,p.split()))

count=0

c=int(input())

for i in range(len(b)):

    for j in range(i+1,len(b)):

        if (b[i]+b[j])==c:

            print("Yes")

            count=1
```

```
        break
    if count==1:
        break
if count==0:
    print("No")
```



	Input	Expected	Got	
✔	5 8 9 12 15 3 11	Yes	Yes	✔
✔	6 2 9 21 32 43 43 1 4	No	No	✔
✔	6 13 42 31 4 8 9 17	Yes	Yes	✔

Passed all tests! ✔

4. Given an array `nums` containing `n` distinct numbers in the range `[0, n]`, return *the only number in the range that is missing from the array.*

Example 1:

```
Input: nums = [3,0,1]
Output: 2
Explanation: n = 3 since there are 3 numbers, so all numbers are in the range [0,3].
2 is the missing number in the range since it does not appear in nums.
```

Example 2:

```
Input: nums = [0,1]
Output: 2
Explanation: n = 2 since there are 2 numbers, so all numbers are in the range [0,2].
2 is the missing number in the range since it does not appear in nums.
```

Example 3:

```
Input: nums = [9,6,4,2,3,5,7,0,1]
Output: 8
Explanation: n = 9 since there are 9 numbers, so all numbers are in the range [0,9].
8 is the missing number in the range since it does not appear in nums.
```

program:

```
    def missingNumber(n):
```

```
    count=0
    flag=0
    p=len(n)-1
    for i in range(p):
        count+=1
        if count not in n:
            flag=1
        if flag==1:
            break
    if flag==1:
        return count
    else:
        return n[p]+1
```

	Test	Expected	Got	
✔	`print(search([-1,0,3,5,9,12],9))`	4	4	✔
✔	`print(search([-1,0,3,5,9,12],2))`	-1	-1	✔

Passed all tests! ✔

5. Given an array of integers `nums` which is sorted in ascending order, and an integer `target`, write a function to search `target` in `nums`. If `target` exists, then return its index. Otherwise, return `-1`.

You must write an algorithm with `O(log n)` runtime complexity.

Example 1:

```
Input: nums = [-1,0,3,5,9,12], target = 9
Output: 4
Explanation: 9 exists in nums and its index is 4
```

Example 2:

```
Input: nums = [-1,0,3,5,9,12], target = 2
Output: -1
Explanation: 2 does not exist in nums so return -1
```

Constraints:

- `1 <= nums.length <= 10⁴`
- `-10⁴ < nums[i], target < 10⁴`
- All the integers in `nums` are **unique**.
- `nums` is sorted in ascending order.

Programdef search(num: list[int], target: int) -> int:

```
    count=0
    flag=0
    for i in range(len(num)):
        if num[i]==target:
            count=i
            flag=1
            break
    if flag==1:
        return count
    else:
        return -1
```

	Test	Expected	Got	
✔	`print(missingNumber([3,0,1]))`	2	2	✔
✔	`print(missingNumber([0,1]))`	2	2	✔
✔	`print(missingNumber([9,6,4,2,3,5,7,0,1]))`	8	8	✔

Passed all tests! ✔

6. Write a Python program for binary search.

For example:

Input	Result
1,2,3,5,8 6	False
3,5,9,45,42 42	True

Program:

```
a=list(map(int,input().split(',')))
b=int(input())
c=0
flag=0
d=len(a)
a.sort()
while c<d:
    p=(c+d)//2
    if a[p]==b:
        print("True")
        flag=1
        break
    elif b<a[p]:
        d=p
    else:
        c=p+1
```

if flag==0:

print("False")

	Input	Expected	Got	
✔	1,2,3,5,8 6	False	False	✔
✔	3,5,9,45,42 42	True	True	✔
✔	52,45,89,43,11 11	True	True	✔

Passed all tests! ✔

7. Given an list, find peak element in it. A peak element is an element that is greater than its neighbors.

An element a[i] is a peak element if

A[i-1] <= A[i] >=a[i+1] for middle elements. [0<i<n-1]

A[i-1] <= A[i] for last element [i=n-1]

A[i]>=A[i+1] for first element [i=0]

Input Format

The first line contains a single integer n , the length of A .
The second line contains n space-separated integers,A[i].

Output Format

Print peak numbers separated by space.

Sample Input

5

8 9 10 2 6

Sample Output

```
10 6
```

Program:

```
a=int(input())

b=list(map(int,input().split()))

c=[]
```

```
d=len(b)-1
if a>1:
    if b[0]>b[1]:
        c.append(b[0])
    if b[d]>b[d-1]:
        c.append(b[d])
for i in range(1,d-1):
    m=i-1
    n=i+1
    if b[i]>b[m] and b[i]>b[n]:
        c.append(b[i])
c.sort(reverse=True)
print(*c)
```

	Input	Expected	Got	
✔	7 15 7 10 8 9 4 6	15 10 9 6	15 10 9 6	✔
✔	4 12 3 6 8	12 8	12 8	✔

Passed all tests! ✔

8. Two string values S1, S2 are passed as the input. The program must print first N characters present in S1 which are also present in S2.

Input Format:

The first line contains S1.
The second line contains S2.
The third line contains N.

Output Format:

The first line contains the N characters present in S1 which are also present in S2.

Boundary Conditions:

2 <= N <= 10
2 <= Length of S1, S2 <= 1000

Example Input/Output 1:

Input:

abcbde
cdefghbb
3

Output:

bcd

Note:

b occurs twice in common but must be printed only once.

Program:

```
a=input()
```

```
b=input()
c=int(input())
d=""
count=0
for i in a:
    if count>=c:
        break
    if i in b and i not in d:
        d+=i
        count+=1
print(d)
```

	Input	Expected	Got	
✔	abcbde cdefghbb 3	bcd	bcd	✔

Passed all tests! ✔

9. String should contain only the words are not palindrome.

Sample Input 1

Malayalam is my mother tongue

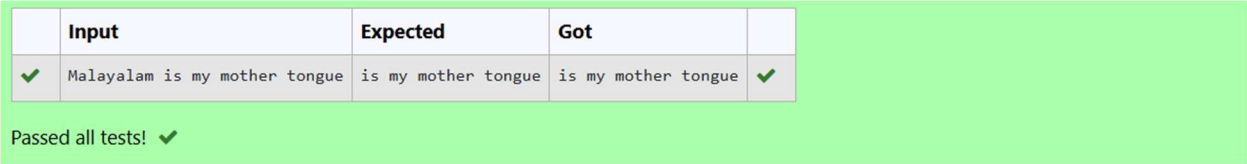
Sample Output 1

is my mother tongue

program:

```
w=input().split(' ')
u=""
```

```
for i in w:
    i=i.lower()
    if i!=i[::-1]:
        u+=i+" "
print(u)
```



	Input	Expected	Got	
✔	Malayalam is my mother tongue	is my mother tongue	is my mother tongue	✔

Passed all tests! ✔

10. Given two Strings s1 and s2, remove all the characters from s1 which is present in s2.

Constraints

1<= string length <= 200

Sample Input 1

```
experience
enc
```

Sample Output 1

```
xpri
```

program:

```
a=input()
b=input()
c=""
for i in a:
    if i not in b:
        c+=i
```

print(c)

	Input	Expected	Got	
✔	experience enc	xpri	xpri	✔

Passed all tests! ✔