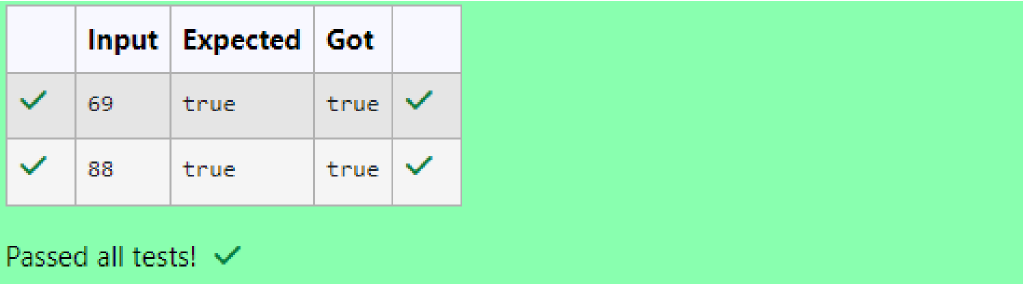
WEEK-04-CODING-Iteration control

1.A strobogrammatic number is a number that looks the same when rotated 180 degrees (looked at upside down).
Write a program to determine if a number is strobogrammatic. The number is represented as a string.
Example 1:
Input:
69
Output:
true
Example 2:
Input:
88
Output:
true
Example 3:
Input:
962
Output:
false
Example 4:
Input:
1
Output:
true

Coding:

```
x={'0' : '0', '1': '1', '6' : '9', '8': '8' , '9' : '6'}
num = input()
l,r=0,len(num) - 1
res=True
while l <= r:
    if num[l] not in x or x[num[l]] != num[r]:
        res=False
        break
    l +=1
    r -=1
if res:
    print("true")
else:
    print("false")
```

Output:



	Input	Expected	Got	
✓	69	true	true	✓
✓	88	true	true	✓

Passed all tests! ✓

2.Write a program to find the count of the number of prime numbers in a specified range.

The starting and ending number of the range will be provided as input to the program.

Assumption: 2 <=starting number of the range<= ending number of the range<=7919

Example1: If the starting and ending number or the range is given as 2 and 20, the program must return 8, because there are 8 prime numbers in the specified range from 2 to 20. namely (2. 3. 5, 7, 11, 13, 17, 19)

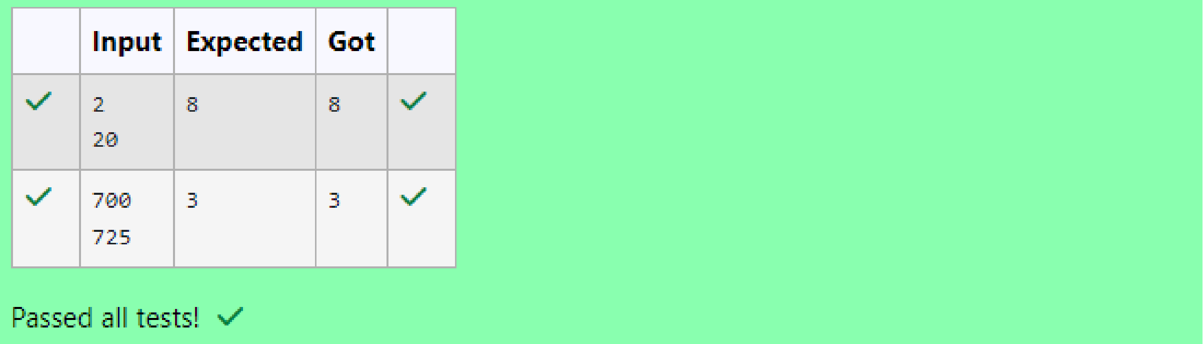
Example2: If the starting and ending number of the range is given as 700 and 725, the program must return 3, because there are 3 prime numbers in the specified range from 700 to 725, namely (701, 709, 719)

Coding:

```
s = int(input())
e = int(input())
if 2 <= s <= e <= 7919:
    count = 0
    for num in range(s,e + 1):
        if num > 1:
            p=True
            if num <=3:
               p= True
            elif num % 2 == 0 or num % 3 ==0:
                  p=False
            else:
                  i = 5
                  while i * i <= num:
                      if num % i == 0 or num % (i + 2) ==0:
                          p= False
                          break
                      i +=6
            if p:
               count += 1

    print(count)
```

Output:



	Input	Expected	Got	
✓	2 20	8	8	✓
✓	700 725	3	3	✓

Passed all tests! ✓

3. Write python program to print the following pattern based on input size.

Input:

3

Output:

```
    1
  2  3
4  5  6
```

For example:

Input	Result

4	1
	2 3
	4 5 6
	7 8 9 10

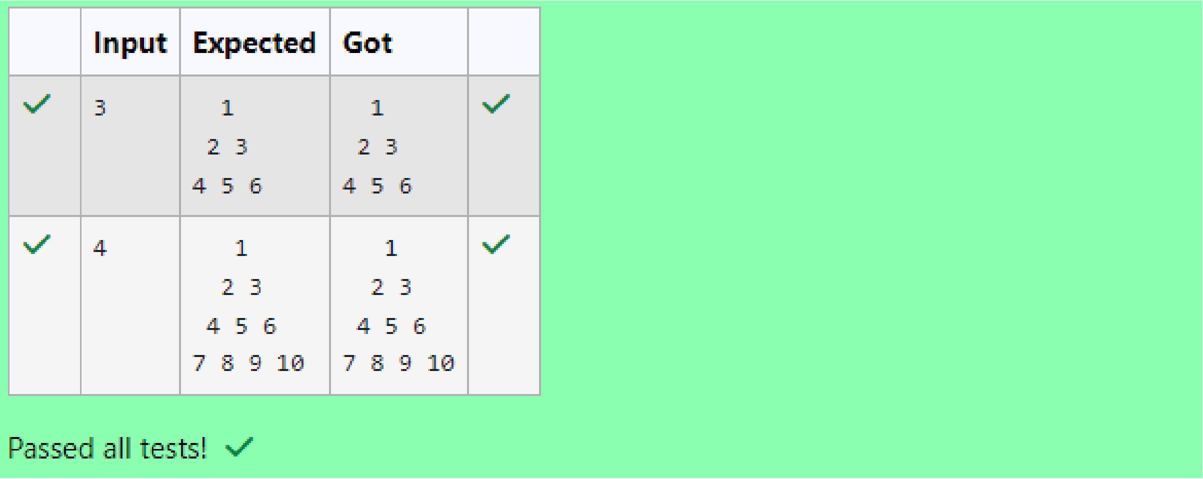
Coding:

```
def show(s):
    a=1
    for i in range(1,s+1):
        for j in range(s-i):
            print(end=" ")

        for j in range(i):
           print(a,end=' ')
           a +=1
        print()

s=int(input())
show(s)
```

Output:



	Input	Expected	Got	
✓	3	1 2 3 4 5 6	1 2 3 4 5 6	✓
✓	4	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10	✓

Passed all tests! ✓

4. An e-commerce company plans to give their customers a special discount for Christmas. They are planning to offer a flat discount. The discount value is calculated as the sum of all the prime digits in the total bill amount.

Write an algorithm to find the discount value for the given total bill amount.

Input

The input consists of an integer order value, representing the total bill amount.

Output

Print an integer representing the discount value for the given total bill amount.

Example Input

578

Output

12

Explanation:

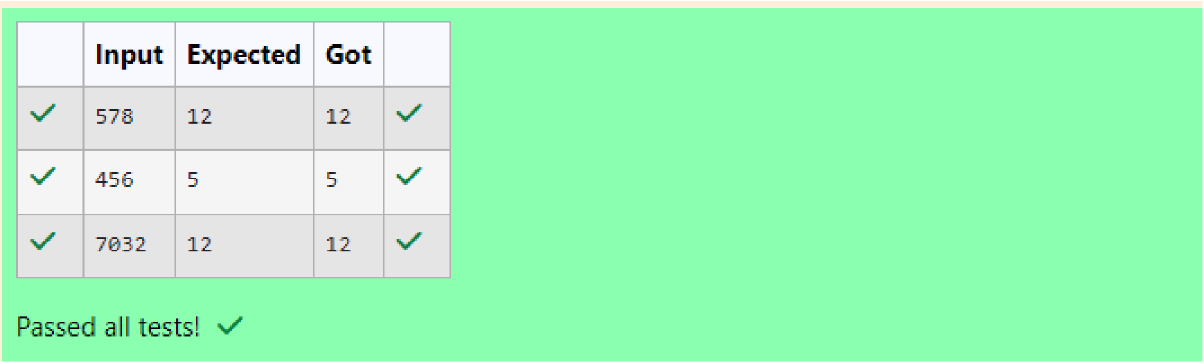
Since 5 and 7 are the prime digits,then sum of 5+7=12

Coding:

```
num={2,3,5,7}
i=input()
res=0
for char in i:
    if char.isdigit():
        d=int(char)
        if d in num:
            res +=d

print(res)
```

Output:



	Input	Expected	Got	
✓	578	12	12	✓
✓	456	5	5	✓
✓	7032	12	12	✓

Passed all tests! ✓

5. You are choreographing a circus show with various animals. For one act, you are given two kangaroos on a number line ready to jump in the positive direction.

•The first kangaroo starts at position x1 and moves at a speed v1 meters per jump.

•The second kangaroo starts at position x2 and moves at a speed of v2 meters per jump and x2 > x1

•You have to figure out to get both kangaroos at the same position at the same time as part of the show before k jumps. If it is possible, return YES, otherwise return NO.

Input Format:
x1-position of kangaroo1
v1-Speed of kangaroo1
x2-position of kangaroo2
v2-Speed of kangaroo2
k-jumps

Output Format:
Both kangaroos are at the same position within k jumps, YES, otherwise NO.

For example:

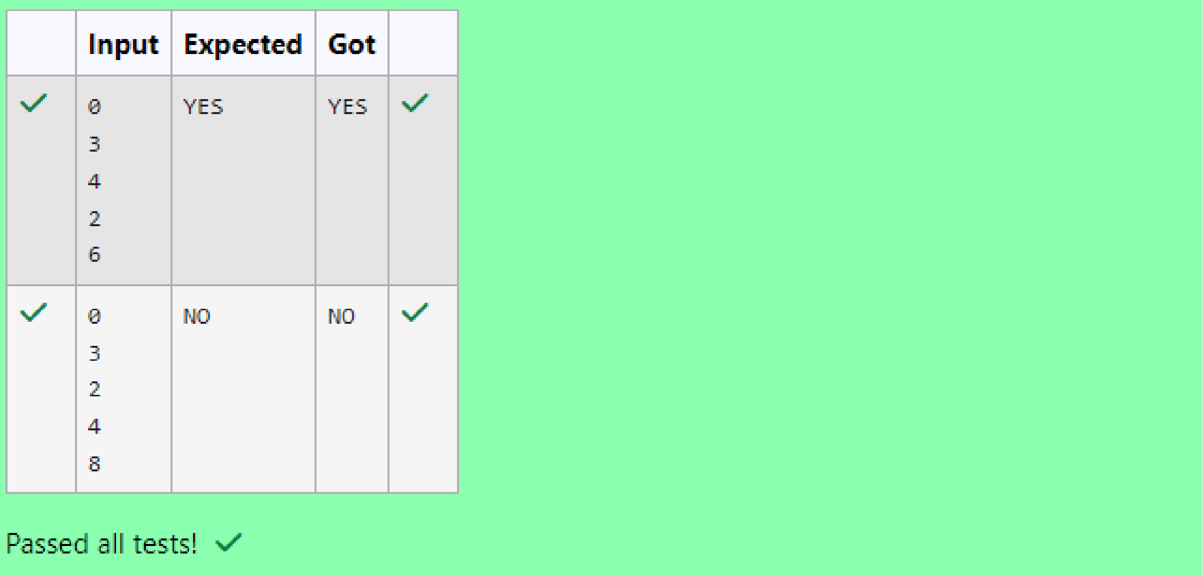
Input	Result
0 3 4 2 6	YES

Coding:

```
a1=int(input())
b1=int(input())
a2=int(input())
b2=int(input())
c=int(input())

if b1 == b2:
    if a1 == a2:
        print("YES")
    else:
        print("NO")
else:
    if (a2-a1) % (b1-b2) == 0:
        j = (a2-a1) // (b1-b2)
        if j >= 0 and j <= c:
            print("YES")
        else:
            print("NO")
    else:
        print("NO")
```

Output:



	Input	Expected	Got	
✓	0 3 4 2 6	YES	YES	✓
✓	0 3 2 4 8	NO	NO	✓

Passed all tests! ✓

6. Write a program to find the count of non-repeated 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.

Some examples are as below.

If the given number is 292, the program should return 1 because there is only 1 non-repeated digit '9' in this number

If the given number is 1015, the program should return 2 because there are 2 non-repeated digits in this number, '0', and '5'.

If the given number is 108, the program should return 3 because there are 3 non-repeated digits in this number, '1', '0', and '8'.

If the given number is 22, the function should return 0 because there are NO non-repeated digits in this number.

For example:

Input	Result
292	1
1015	2
108	3
22	0

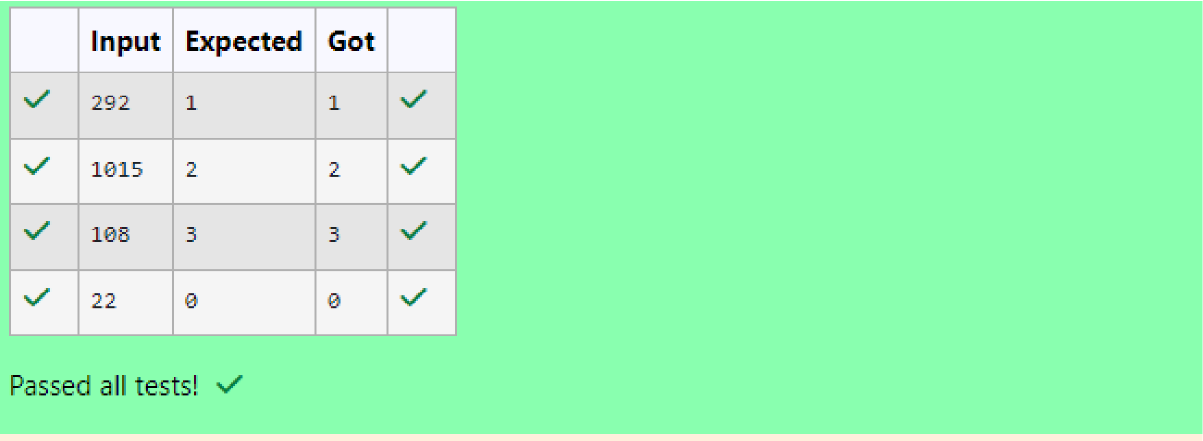
Coding:

```
def show(n):
    s=str(n)
    count={}
    for d in s:
        if d in count:
            count[d] +=1
        else:
            count[d] =1

    a=sum(1 for c in count.values() if c==1)
    return a

i=int(input())
print(show(i))
```

Output:



	Input	Expected	Got	
✓	292	1	1	✓
✓	1015	2	2	✓
✓	108	3	3	✓
✓	22	0	0	✓

Passed all tests! ✓

7. Let's print a chessboard!

Write a program that takes input:

Integer N(represents the rows and columns of a chessboard) and also the starting character of the chessboard

Output Format

Print the chessboard as per the given examples

Sample Input / Output

Input:

2

W

Output:

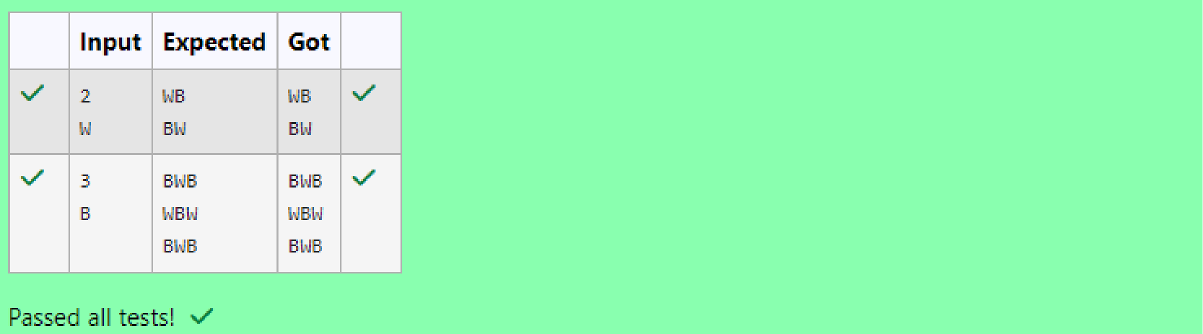
WB

BW

Coding:

```
n=int(input())
c=input()
if c == 'W':
    w='W'
    b='B'
else:
    w='B'
    b='W'
for i in range(n):
    row=[]
    for j in range(n):
        if (i+j)%2 == 0:
            row.append(w)
        else:
            row.append(b)
    print(''.join(row))
```

Output:



	Input	Expected	Got	
✓	2 W	WB BW	WB BW	✓
✓	3 B	BWB WBW BWB	BWB WBW BWB	✓

Passed all tests! ✓

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

Input Format:

Single integer input.

Output Format:

Yes or No.

Example Input:

24

Output:

Yes

Example Input:

26

Output:

No

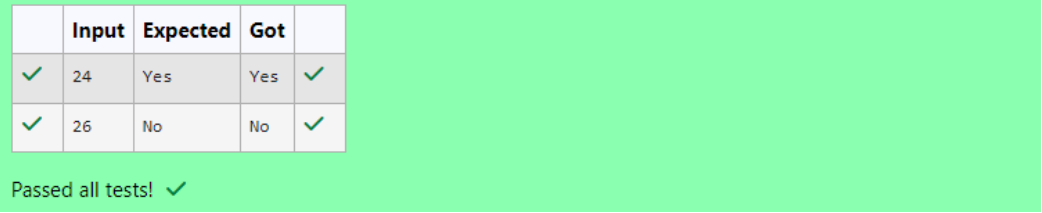
For example:

Input	Result
24	Yes

Coding:

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

Output:



	Input	Expected	Got	
✓	24	Yes	Yes	✓
✓	26	No	No	✓

Passed all tests! ✓

9. Write a program to find the count of the number of prime numbers in a specified range.

The starting and ending number of the range will be provided as input to the program.

Assumption: 2 <=starting number of the range<= ending number of the range<=7919

Example1: If the starting and ending number or the range is given as 2 and 20, the program must return 8, because there are 8 prime numbers in the specified range from 2 to 20. namely (2. 3. 5, 7, 11, 13, 17, 19)

Example2: If the starting and ending number of the range is given as 700 and 725, the program must return 3, because there are 3 prime numbers in the specified range from 700 to 725, namely (701, 709, 719)

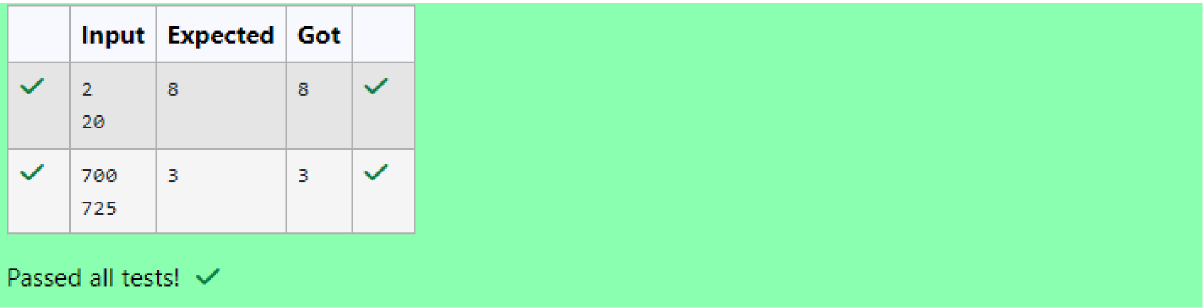
For example:

Input	Result
2 20	8
700 725	3

Coding:

```
s= int(input())
e= int(input())
if 2 <= s <= e <= 7919:
   c=0
   for num in range(s,e+1):
      if num > 1:
         p=True
         if num <= 3:
            p=True
         elif num % 2 ==0 or num % 3 ==0:
            p = False
         else:
            i=5
            while i * i <= num:
               if num % i ==0 or num % (i + 2)==0:
                  p= False
                  break
               i +=6
         if p:
            c +=1    print(c)
```

Output:



	Input	Expected	Got	
✓	2 20	8	8	✓
✓	700 725	3	3	✓

Passed all tests! ✓

10. Write a program that given an integer ‘n’, prints the number of integers that are less than or equal to ‘n’ and co-prime to ‘n’

Two integers a and b are said to be relatively prime or co-prime if the only positive integer that evenly divides both of them is 1. That is, the only common positive factor of the two numbers is 1. This is equivalent to their greatest common divisor being 1.

Input Format:

One line containing the value of 'n', where 1<=n<=10,000

Output Format:

One line containing the number of integers that are co-prime to n and less than or equal to 'n'

Sample Test Cases

Test Case 1

Input
10

Output
4

Test Case 2

Input
23

Output
22

Test Case 3

Input
11

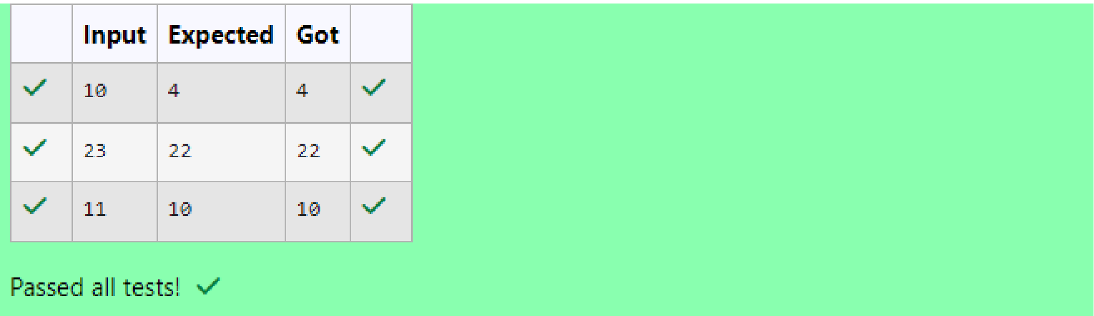
Output

10

Coding:

```
def show(n):
    res =n
    p=2
    while p*p <= n:
        if n % p == 0:
            while n%p ==0:
                n //=p
            res -= res //p
        p += 1
    if n > 1:
        res -= res //n
    return res
n=int(input())
print(show(n))
```

Output:



	Input	Expected	Got	
✓	10	4	4	✓
✓	23	22	22	✓
✓	11	10	10	✓

Passed all tests! ✓