

## **04 - Iteration Control Structures**

**For example:**

Input	Result
20	1 2 4 5 10 20

**Ex. No. : 4.1**

**Date:**

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### **Factors of a number**

Determine the factors of a number (i.e., all positive integer values that evenly divide into a number).

**PROGRAM:**

```
n=int(input( ))
for i in range(1,n+1):
    if n%i == 0:
        print( i, end=" ")
```

**For example:**

<b>Input</b>	<b>Result</b>
292	1
1015	2
108	3
22	0

Ex. No. : 4.2

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### **Non Repeated Digit Count**

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  $\geq 1$  and  $\leq 25000$ . 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.

#### **PROGRAM:**

```
n=input
)m={}
for i in n:
    if i in m:
        m[i]+=1
p = 0
for i in m.values():
    if i == 1:
        p = p + 1
print(p)
```

Example1: if the given number N is 7, the method must return 2 Example2: if the given number N is 10, the method must return 1

**For example:**

Input	Result
7	2
10	1

Ex. No. : 4.3

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### **Prime Checking**

Write a program that finds whether the given number N is Prime or not. If the number is prime, the program should return 2 else it must return 1.

Assumption:  $2 \leq N \leq 5000$ , where N is the given number.

**PROGRAM:**

```
n=int(input())
temp= 2
if n >= 2 and n <= 5000 :for i in
    range (2, n):
        if n% * i ==0 :
            temp= 1
            break

if temp=-1:
    print (1)
else:
    print(2)|
```

Input Format:

Integer input from stdin. Output

Format:

Perfect square greater than N.

Example Input:

10

Output:

16



Ex. No. : 4.4

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### **Next Perfect Square**

Given a number N, find the next perfect square greater than N.

**PROGRAM:**

```
n=int(input())
m=0
for i in range (1, n):if (i *
    i>n) :
        m=i* i
        break
print(m)
```

NOTE: Fibonacci series looks like –

0, 1, 1, 2, 3, 5, 8, 13, 21, 34, 55, . . . and so on.

i.e. Fibonacci series starts with 0 and 1, and continues generating the next number as the sum of the previous two numbers.

- first Fibonacci number is 0,
- second Fibonacci number is 1,
- third Fibonacci number is 1,
- fourth Fibonacci number is 2,
- fifth Fibonacci number is 3,
- sixth Fibonacci number is 5,
- seventh Fibonacci number is 8, and so on.

**For example: Input:**

**7**

**Output 8**

**Ex. No. : 4.5**

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### **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())
temp= 0
a = 1
s = 0
for i in range (0, n) :
    s =temp+a
    a=temp
    temp= s
print(a)
```

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:**

<b>Input</b>	<b>Result</b>
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175	Yes
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123	No
-----	----

Ex. No. : 4.6

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### 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:**

```
n=int(input())
num = len(str(n))
p = num
q = n
r = 0
sum=0
for i in range(0,num):
    r = n% 10
    sum = sum + r **p
    p = p - 1
    n =n//10
if sum ==q :
    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

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### **Sum of Series**

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

**PROGRAM:**

```
n=int(input())
sum = 1
C = 1
for i in range (1, n) :
    sum =sum * 10+1
    C = C + sum
print(C)
```

**For example:**

Input	Result
292	2
1015	3



Ex. No. : 4.8

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### **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  $\geq 1$  and  $\leq 25000$ . 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:**

```
n=int(input())
a=[]
while n >0:
    if n%10 not in a:
        a.append(n%10)
    n =n//10
print(len(a))
```

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

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### **Product of single digit**

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

**PROGRAM:**

```
n=int(input())
if( n%2 ==0 or n%3 ==0 or n%5 ==0 or n%7 ==0) :
    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

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### **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())+1
a = 0
if(n==0 or n ==1) :
    a = 1
for i in range ( 2 ,(n//2)) :if
    (n==i*i) :
        a = 1
        break
if a ==1 :
    print("Yes"
) else:
    print (" No ")
```