04 - Iteration Control Structures

For example:

Input	Result
20	1 2 4 5 10 20

Ex. No. : 4.1 **Date: 09.06.2024**

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Factors of a number

Determine the factors of a number (i.e. def factor(n):

```
def factors(x):
 for i in range(1, x + 1):
 if x % i == 0:
 print(i)
input=int(input())
print(factors(num))
```

For example:

Input	Result
292	1
1015	2
108	3
22	0

Ex. No. : 4.2 **Date: 09.06.2024**

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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 >= 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.

Program:

```
n=int(input())
temp=n
n=n%12
if(n==8):
 print("%d is the year of the Dragon."%temp)
elif(n==9):
 print("%d is the year of the Snake."%temp)
if(n==10):
 print("%d is the year of the Horse."%temp)
if(n==11):
 print("%d is the year of the Sheep."%temp)
if(n==0):
 print("%d is the year of the Monkey."%temp)
if(n==1):
```

```
 print("%d is the year of the Rooster."%temp)
if(n==2):
 print("%d is the year of the Dog."%temp)
if(n==3):
 print("%d is the year of the Pig."%temp)
if(n==4):
 print("%d is the year of the Rat."%temp)
if(n==5):
 print("%d is the year of the Ox."%temp)
if(n==6):
 print("%d is the year of the Tiger."%temp)
if(n==7):
 print("%d is the year of the Hare."%temp)
```

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 **Date: 09.06.2024**

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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 <= N <=5000, where N is the given number.

```
n=int(input())
sum=0
for i in range(1,5000):
if(n%i==0):
sum+=1
if(sum==2):
print("2")
else:
print("!")
```

Input Format:

Integer input from stdin.

Output Format:

Perfect square greater than N.

Example Input:

10

Output:

16

Ex. No. : 4.4 **Date: 09.06.2024**

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Next Perfect Square

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

```
n=int(input())
for i in range(1,10000):
if(i%(i**0.5)==0):
print(i)
break
```

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 **Date: 09.06.2024**

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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.

```
n=int(input())
if n<=0:
print("Invalid input")
elif n=1:
print(0)
elif n==2:
print(1)
else:
a=0
b=1
for i in range(2,n):
temp=a+b
a=b
b=temp
print(b)
```

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: 09.06.2024**

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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.

```
N=int(input())
D= str(n)
J=len(d)
Sum=0
For I in range(0,j):
    Sum = sum + (int(d[i]))**(i+1)
If(sum==n):
    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: 09.06.2024**

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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)

```
n=int(input())
sum=0
temp=1
for i in range(n):
sum+=temp
temp=temp*10+1
print(sum)
```

For example:

Input	Result
292	2
1015	3

Ex. No. : 4.8 **Date: 09.06.2024**

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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 >= 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'.

```
n=int(input())
digits=set()
while n>0:
digit=n%10
digits.add(digit)
n=n//10
unique=len(digits)
print(unique
```

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: 09.06.2024**

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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.

```
n=int(input())
 0=False
.for i in range(1,10):
if (n%i==0 and n//i<10):
o=True
 if(o):
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: 09.06.2024**

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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.

```
i=int(input())
i=i+1
if(i%(i**0.5)==0):
  print("Yes")
else:
print("No")
```