

04 - Iteration Control Structures

Ex. No. : 4.1

Date: 14/04/2024

Register No.: 231401007

Name: Ananya Sriram

Factors of a number

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

For example:

Input	Result
20	1 2 4 5 10 20

Program:

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

	Input	Expected	Got	
✓	20	1 2 4 5 10 20	1 2 4 5 10 20	✓
✓	5	1 5	1 5	✓
✓	13	1 13	1 13	✓

Passed all tests! ✓

Ex. No. : 4.2

Date: 14/04/2024

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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.

For example:

Input	Result
292	1
1015	2
108	3
22	0

Program:

```
def count(n):
    digits=str(n)
    unique=list()
    for i in digits:
        if i not in unique:
            unique.append(i)
    return len(unique)
n=int(input())
print(count(n))
```

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

Passed all tests! ✓

Ex. No. : 4.3

Date: 14/04/2024

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

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

Program:

```
N=int(input())
if N==1:
    print("1")
elif N>1:
    for i in range(2,n):
        if(N%i)==0:
            print("1")
            break
    else:
        print("2")
```

	Input	Expected	Got	
✓	7	2	2	✓
✓	10	1	1	✓

Passed all tests! ✓

Ex. No. : 4.4

Date: 14/04/2024

Register No.: 231401007

Name: Ananya Sriram

Next Perfect Square

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

Input Format:

Integer input from stdin.

Output Format:

Perfect square greater than N.

Example Input:

10

Output:

16

Program:

```
from math import sqrt
n=int(input())
while int(sqrt(n))!=sqrt(n):
    n=n+1
print(n)
```

	Input	Expected	Got	
✓	10	16	16	✓

Passed all tests! ✓

Ex. No. : 4.5

Date: 14/04/2024

Register No.: 231401007

Name: Ananya Sriram

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.

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

Program:

```
n=int(input())
if n<2:
    print(n-1)
else:
    n=n-1
    fs=[0,1]
    for i in range(1,n):
        fs.append(fs[i]+fs [i-1])
    print(fs [n])
```


	Input	Expected	Got	
✓	1	0	0	✓
✓	4	2	2	✓
✓	7	8	8	✓

Passed all tests! ✓

Ex. No. : 4.6

Date: 14/04/2024

Register No.: 231401007

Name: Ananya Sriram

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.

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:

InputResult

175 Yes

123 No

Program:

```
n=int(input())
digits=str(n)
sum=0
power=1
for i in digits:
    sum+=int(i)**power
```

```
power+=1
if sum==n:
    print("Yes")
else:
    print("No")
```

	Input	Expected	Got	
✓	175	Yes	Yes	✓
✓	123	No	No	✓

Passed all tests! ✓

Ex. No. : 4.7

Date: 14/04/2024

Register No.: 231401007

Name: Ananya Sriram

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)

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

Program:

```
def sum_of_series(n):  
    sum = 0  
    current_term = 0  
    for i in range(1, n + 1):  
        current_term = current_term * 10 + i  
        sum += current_term  
    return sum  
  
# Taking input from user  
n = int(input("Enter the number of terms: "))  
result = sum_of_series(n)  
print(f"The sum of the series for {n} terms is: {result}")
```

	Input	Expected	Got	
✓	4	1234	1234	✓
✓	6	123456	123456	✓

Passed all tests! ✓

Ex. No. : 4.8

Date: 14/04/2024

Register No.: 231401007

Name: Ananya Sriram

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'.

For example:

Input	Result
292	2
1015	3

Program:

```
N = int(input())
```

```
unique_digits = set(str(N))
```

```
print(len(unique_digits))
```

	Input	Expected	Got	
✓	292	2	2	✓
✓	1015	3	3	✓
✓	123	3	3	✓

Passed all tests! ✓

Ex. No. : 4.9

Date: 14/04/2024

Register No.: 231401007

Name: Ananya Sriram

Product of single digit

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

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

Program:

```
a=int(input())
if a%2==0 or a%3==0 or a%5==0 or a%7==0 or a%9==0:
    print("Yes")
else:
    print("No")
```

	Input	Expected	Got	
✓	14	Yes	Yes	✓
✓	13	No	No	✓

Passed all tests! ✓

Correct

Ex. No. : 4.10

Date: 14/04/2024

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Name: Ananya Sriram

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.

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

Program:

```
import math
a=int(input())
b=math.sqrt(a+1)
if b.is_integer():
    print("Yes")
else:
    print("No")
```

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

Passed all tests! ✓