

```

message = 'Everybody like to play cricket'
x = message.split()
print(x)
x[4] = 'soccer'
print(x)
for i in x:
    print(i, end= ' ')

['Everybody', 'like', 'to', 'play', 'cricket']
['Everybody', 'like', 'to', 'play', 'soccer']
Everybody like to play soccer

```

```

n = int(input("Enter the value of n: "))
all_lap = 0

for i in range(1,n+1):
    # 1 2 3
    # print(i)
    all_lap = all_lap+i
    # all_lap = 1+2 = 3
print(all_lap)

```

```

Enter the value of n: 3
6

```

```

for x in range(3):
    # x = 0 1 2
    print('Hello World')

Hello World
Hello World
Hello World

```

```

x = 0
# x = 0
while x<3:
    # while 0<3:
    print('Hello world')
    # x = x + 1
    # x = 2 + 1 => x = 3

```

✓ 1:Write a program that will print the string “Hello World!” n times.

```

n = int(input("How many times you want to print it!\nAns.\t"))
# n = 3

for x in range(n):
    print("Hello World!")

How many times you want to print it!
Ans. 3
Hello World!
Hello World!
Hello World!

```

✓ 2:Write a program that will print all integers between l and n

```

l = int(input('Starting: '))
n = int(input('Ending: '))

if l !=0:
    for x in range(l,n+1):
        print(x)

Starting: 1
Ending: 3
1
2
3

n = int(input('Ending: '))

for x in range(1,n+1):
    print(x)

```

```
Ending: 3
1
2
3
```

#Wrong

```
l = int(input("Enter the lower bound: "))
n = int(input("Enter the upper bound: "))
```

```
for num in range(l + 1, n):
    print(num, end=" ")
```

```
Enter the lower bound: 1
Enter the upper bound: 3
2
```

✓ 3: Write programs that will print the all the numbers of the following series up to n (i.e. the last term cannot exceed n).

1.series: 1,2,3,4,5....

```
n = int(input('Ending: '))      # n = 3
i = 1

for x in range(1,n+1):          #      1 2 3
    print(i,end=' ')
    i+=1
```

#output: 1 2 3

```
Ending: 3
1 2 3
```

2.series: 1,3,5,7,9....

```
n = int(input('Ending: '))
```

```
for x in range(1,n+1,2):
    print(x,end=' ')
```

```
Ending: 2
1
```

3.series: 2,4,6,8,10, ...

```
n = int(input('Ending: '))
```

```
for x in range(2,n+1,2):
    print(x,end=' ')
```

```
Ending: 8
2 4 6 8
```

```
n = int(input('Ending: '))
```

```
x = 2
while x<=n:      # while 10 < 8 :
    print(x,end=' ')
    x = x+2      # x = 2 4 6 8
```

Ending: 8  
2 4 6 8

4.series: 3,6,9,12,15, ...

```
n = int(input('Ending: '))
```

```
for x in range(n-2,n-1):
    print(x,end=' ')
```

Ending: 10  
8

3,6,9,12,15,18,21,24,27,30 # n = 5

```
n = int(input('Ending: '))
```

```
for x in range(n-2,n,5):
    print(x,end=' ')
# for x in range( 3 , 5 , 3 ):
# print(x) output: 3
```

```
n = int(input('Ending: '))
```

```
print(n-2)
```

5.series: 1,2,4,8,16, ...

#Wrong

```
n = int(input('Ending: '))
```

```
for x in range(1,n+1,):
    print(x,end=' ')
```

```
n = int(input("Enter the value of n: "))
```

```
term = 1
```

# Iterate through the series until the input number is reached

```
for i in range(n):
    if term <= n:
        print(term, end=" ")
        term *= 2
    else:
        break
```

Enter the value of n: 5  
1 2 4

```
n = int(input("Enter the value of n: "))
```

```
term = 1
```

```
for i in range(n):
    if term <= n:
        print(term,end=' ')
        term = term*2
```

output: # 1 2 4

Enter the value of n: 5  
1 2 4

```
n = int(input("Enter the value of n: "))
```

```
for x in range(1,n*2):
    print(x*2)
```

Enter the value of n: 5  
2  
4

```
6
8
10
12
14
16
18
```

```
n = int(input("Enter the value of n: "))    # n = 5
```

```
term = 1
```

```
for i in range(n):    # for i in range(5)
    if term <= n:      # if 8<=5
        print(term, end=" ")
        term *= 2      #term = 4*2=8          #output: 1 2 4

Enter the value of n: 5
1 2 4
```

6.series: 5,10,20,40,80 ...

```
n = int(input("Enter the value of n: "))    # n = 100

term = 5    # term = 5

for i in range(n):    # for i in range(100):
    if term <= n:      #if term <=n:          5<=100
        print(term, end=" ")
        term *= 2      # term = term * 2
    else:
        break          #output: 5

Enter the value of n: 100
5 10 20 40 80
```

7.series: 10,30,90,270,810, ...

```
n = int(input("Enter the value of n: "))

term = 10

for i in range(n):
    if term <= n:
        print(term, end=" ")
        term = term*3
    else:
        break

Enter the value of n: 100
10 30 90
```

#### ✓ 4:Write programs that will print the first n terms of the following series.

1.series: 1,2,3,4,5 ...

```
n = int(input("Enter the value of n: "))

for x in range(1,n+1):
    print(x,end=' ')

Enter the value of n: 8
1 2 3 4 5 6 7 8
```

2.series: 1,3,5,7,9, ...



```
n = int(input("Enter the value of n: "))

term = 5

for i in range(n):
    print(term, end=" ")
    term *= 2
```

```
Enter the value of n: 5
5 10 20 40 80
```

7.series: 10,30,90,270,810, ...

```
n = int(input("Enter the value of n: "))      # n = 5

term = 10

for i in range(n):          # 3 4
    print(term)             # output: 10
    term = term*3
```

```
Enter the value of n: 5
10
30
90
270
810
```

```
n = int(input("Enter the value of n: "))

# Print the sequence directly within the range function
for i in range(n):
    print(10 * (3 ** i))
```

```
Enter the value of n: 5
10
30
90
270
810
```

```
n = int(input("Enter the value of n: "))

term = 10

for i in range(n):
    print(term, end=" ")
    term = term*2+term
```

```
Enter the value of n: 5
10 30 90 270 810
```

## ✓ 5:Write programs that will calculate the sum of each series up to its n terms.

1.series: 1 + 2 + 3 + 4 + 5 ...

```
total = 0
for number in [1, 2, 3, 4, 5]:
    total = total + number
print(total)
```

```
n = int(input("Enter the value of n: "))
total =0

for x in list(range(n+1)):
    total=total+x
print(total)
```

```
Enter the value of n: 5
10
```

```
n = int(input("Enter the value of n: "))
total = 0
```

```
for x in list(range(n)):
    total=total+x
print(total)
```

```
Enter the value of n: 5
10
```

```
print(list(range(5)))
```

```
[0, 1, 2, 3, 4]
```

```
n = int(input("Enter the value of n: "))
total = 0
```

```
for x in range(n+1):
    total=total+x
print(total)
```

```
Enter the value of n: 5
15
```

2.series: 1 + 3 + 5 + 7 + 9 + ...

```
n = int(input("Enter the value of n: ")) # n =5
total = 0
```

```
for x in range(1,2*n,2):          # for x in range(1,5+(5-1),2)      range(1,9,2)
    total=total+x                # total = 0+1 = 1 # total = 1 +
print(total)
```

```
Enter the value of n: 8
64
```

```
for x in range(1,2*5,2):
    print(x)
```

```
1
3
5
7
9
```

#logically Wrong

```
n = int(input("Enter the value of n: "))
total = 0
```

```
for x in range(n):
    total=n**2
print(total)
```

```
Enter the value of n: 8
64
```

3.series: 2 + 4 + 6 + 8 + 10 + ...

```
n = int(input("Enter the value of n: ")) # n =5
total = 0
```

```
for x in range(2,2*n+1,2):
    total=total+x
print(total)
```

```
Enter the value of n: 8
72
```

4.series: 3 + 6 + 9 + 12 + 15 + ...

```
n = int(input("Enter the value of n: ")) # n =5
total =0

for x in range(3,3*n+1,3):
    total=total+x
print(total)

Enter the value of n: 8
108
```

```
n = int(input("Enter the value of n: ")) # n =5
total =0
term = 3
for x in range(n):
    total=total+term
    term+=3
print(total)

Enter the value of n: 8
108
```

5.series: 1 + 2 + 4 + 8 + 16 + ...

```
n = int(input("Enter the value of n: ")) # n =5

total = 0

for x in range(n):

    term = 2 ** x          #term = 2**x = 2**0=1    #term = 2**1 = 2    #term = 2**2 =4

    # Add the x th term to the sum
    total += term          #total = total + term = 0+1=1    #total = 1+2=3 #total = 3+4=7

# Print the sum of the series
print(total)

Enter the value of n: 5
31
```

#Wrong way

```
n = int(input("Enter the value of n: "))

# Calculate the sum of the series
total = 1 * ((2 ** n) - 1)

# Print the sum of the series
print("Sum of the series up to", n, "terms:", total)

Enter the value of n: 5
Sum of the series up to 5 terms: 31
```

6.series: 5 + 10 + 20 + 40 + 80 + ...

```
n = int(input("Enter the value of n: "))

term = 5

for i in range(n):
    print(term, end=" ")
    term *= 2
```



```
n = int(input("Enter the value of n: "))    # n =5
```

```
total = 0
```

```
term = 5
```

```
for x in range(n):
```

```
    total = total + term
```

```
    term = 2 * term
```

```
print(total)
```

```
Enter the value of n: 8
1275
```

7.series: 10 + 30 + 90 + 270 + 810 + ...

```
n = int(input("Enter the value of n: "))    # n =5
```

```
total = 0
```

```
term = 10
```

```
for x in range(n):
```

```
    total = total + term
```

```
    term = term + (term*2)
```

```
print(total)
```

```
Enter the value of n: 8
32800
```

8.  $1^2 + 2^2 + 3^2 + 4^2 + 5^2 + \dots$

Sample input	Sample output
5	55
8	204

```
n = int(input("Enter the value of n: "))    # n =5
```

```
total = 0
```

```
term = 1
```

```
for x in range(n):
```

```
    total = total + term**2    #Or, total = total + term*term
```

```
    term = term + 1
```

```
print(total)
```

```
Enter the value of n: 8
204
```

9.series: 1.2 + 2.3 + 3.4 + 4.5 + 5.6 + ...

```
print(1*2+2*3+3*4+4*5+5*6)
```

```
70
```

```
print(1.2 + 2.3 + 3.4 + 4.5 + 5.6 )
```

```
17.0
```

```
n = int(input("Enter the value of n: "))    # n =5
```

```
total = 0
```

```
for x in range(n):
```

```
    term = (x+1)*(x+2)
```

```
    total = total + term
```

```
print(total)
```

```
Enter the value of n: 8
240
```

10.series: 2.5 + 4.8 + 8.11 + 16.14 + 32.17 + ...

```
n = int(input("Enter the value of n: "))
```

```
total = 0
```

```
term1 = 2
```

```
term2 = 5
```

```
for i in range(n):
```

```
    total = total + (term1*term2)
```

```
    term1 = term1*2
```

```
    term2 = term2+3
```

```
print(total)
```

```
Enter the value of n: 8
11778
```

#Wrong

```
n = int(input("Enter the number of terms: "))
```

```
sum_series = 0
```

```
start_value = 2
```

```
common_difference = 3
```

```
for i in range(n):
```

```
    term_value = start_value * (i * common_difference + 5)
```

```
    sum_series += term_value
```

```
print("Sum of the series up to the", n, "terms:", sum_series)
```

```
Enter the number of terms: 5
Sum of the series up to the 5 terms: 110
```

#Wrong

```
n = int(input("Enter the number of terms: "))
```

```
sum_series = 0
```

```
start_value = 2.5
```

```
for i in range(n):
```

```
    term_value = start_value + (i * 2.3)
```

```
    sum_series += term_value
```

```
print("Sum of the series up to the", n, "terms:", sum_series)
```

```
Enter the number of terms: 5
Sum of the series up to the 5 terms: 35.5
```

## ✓ 6: Write a program that will take as input an integer, and calculate its factorial.

```

n = int(input("Enter the value of n: "))  # n = 3

factorial = 1

for x in range(1,n+1):          #for x in range(1,4)
    factorial = factorial*x      # factorial = factorial*x = 1*1      # factorial = 1*2      # factorial = 1*2*3
print(factorial)

    Enter the value of n: 4
    24

n = int(input("Enter the value of n: "))  # n = 4
fact = 1

for i in range(1,n):            # for i in range(1,4):
    total = i*n                  # total = 1*4
    factorial = fact*total       #
print(factorial)

    Enter the value of n: 4
    12

_NUMBER = 5
fact = 1

for i in range(1, _NUMBER+1):
    fact = fact * i

print("The factorial of 23 is : ", end="")
print(fact)

    The factorial of 23 is : 120

```

## ✓ 7:

2. Write a C program that will take as input two integers n and r, and calculate  ${}^n P_r$ .

Sample input	Sample output
6 2	30
8 3	336

```

n = int(input("Enter the value of n: "))

factorial = 1

for x in range(1,n+1):
    factorial = factorial*x
print(factorial)

n = int(input("Enter the value of n: "))
r = int(input("Enter the value of n: "))

d = n-r

n_factorial = 1
d_factorial = 1

for x in range(1,n+1):
    n_factorial = n_factorial*x
for x in range(1,d+1):
    d_factorial = d_factorial*x
print(n_factorial/d_factorial)

    Enter the value of n: 3
    Enter the value of n: 3

```

6.0

8: Write a program that will take as input two integers a and n, and calculate  $a^n$ . (You cannot use math.h)

```
a = int(input("Enter the value of a: "))
n = int(input("Enter the value of n: "))

print(a**n)

Enter the value of a: 3
Enter the value of n: 5
243

a = int(input("Enter the value of a: ")) # a = 2
n = int(input("Enter the value of n: ")) # n = 3

result = 1

for i in range(n):          # for i in range(3):
    result *= a              # result = result*2 =1*2=2 # result = 2*2=4 # result = 4*2
print(result)

Enter the value of a: 2
Enter the value of n: 3
8
```

9: Write a program that will find out if an input integer is prime or not.

```
number = int(input('Enter any number: '))
f = 0
if number == 1 or number == 0:
    f = 1
for i in range(2, number):
    if number%i == 0:
        f=1
if f==1:
    print('Number is not prime')
else:
    print('number is prime')

Enter any number: 2
number is prime

# number = 6
# f = 0
# False because number is not equal to 1 or 0
# not happening
# if the any divisor before the number return a 0 remainder it is not a prime

# Input an integer from the user
num = int(input("Enter an integer: "))

# Check if the input integer is prime or not
if num <= 1:
    is_prime = False
else:
    is_prime = True
    for i in range(2, int(num**0.5) + 1):
        if num % i == 0:
            is_prime = False
            break

# Print the result
if is_prime:
    print(f"{num} is a prime number.")
else:
    print(f"{num} is not a prime number.")

Enter an integer: 2
2 is a prime number.
```

✓ 10: Find the sum of the following series by considering that 25, 50, and 75 are absent in the series. Also

show the sum value on monitor.

$1+3+5+\dots+100$

```
sum_odd = 0

for i in range(1, 101, 2):
    if i != 25 and i != 50 and i != 75:
        sum_odd += i

# Display the sum
print("Sum of the series (excluding 25, 50, and 75):", sum_odd)

Sum of the series (excluding 25, 50, and 75): 2400
```