**Recursion [ 11 exercises with solution]**

[*An editor is available at the bottom of the page to write and execute the scripts.*]

**1.** Write a Python program to calculate the sum of a list of numbers. [Go to the editor](https://www.w3resource.com/python-exercises/data-structures-and-algorithms/python-recursion.php#EDITOR)  
[Click me to see the sample solution](https://www.w3resource.com/python-exercises/data-structures-and-algorithms/python-recursion-exercise-1.php)

**2.** Write a Python program to converting an Integer to a string in any base. [Go to the editor](https://www.w3resource.com/python-exercises/data-structures-and-algorithms/python-recursion.php#EDITOR)  
[Click me to see the sample solution](https://www.w3resource.com/python-exercises/data-structures-and-algorithms/python-recursion-exercise-2.php)

**3.** Write a Python program of recursion list sum. [Go to the editor](https://www.w3resource.com/python-exercises/data-structures-and-algorithms/python-recursion.php#EDITOR)  
Test Data: [1, 2, [3,4], [5,6]]  
Expected Result: 21  
[Click me to see the sample solution](https://www.w3resource.com/python-exercises/data-structures-and-algorithms/python-recursion-exercise-3.php)

**4.** Write a Python program to get the factorial of a non-negative integer. [Go to the editor](https://www.w3resource.com/python-exercises/data-structures-and-algorithms/python-recursion.php#EDITOR)  
[Click me to see the sample solution](https://www.w3resource.com/python-exercises/data-structures-and-algorithms/python-recursion-exercise-4.php)

**5.** Write a Python program to solve the Fibonacci sequence using recursion. [Go to the editor](https://www.w3resource.com/python-exercises/data-structures-and-algorithms/python-recursion.php#EDITOR)  
[Click me to see the sample solution](https://www.w3resource.com/python-exercises/data-structures-and-algorithms/python-recursion-exercise-5.php)

**6.** Write a Python program to get the sum of a non-negative integer. [Go to the editor](https://www.w3resource.com/python-exercises/data-structures-and-algorithms/python-recursion.php#EDITOR)  
*Test Data*:   
sumDigits(345) -> 12  
sumDigits(45) -> 9   
[Click me to see the sample solution](https://www.w3resource.com/python-exercises/data-structures-and-algorithms/python-recursion-exercise-6.php)

**7.** Write a Python program to calculate the sum of the positive integers of n+(n-2)+(n-4)... (until n-x =< 0). [Go to the editor](https://www.w3resource.com/python-exercises/data-structures-and-algorithms/python-recursion.php#EDITOR)  
*Test Data*:   
sum\_series(6) -> 12  
sum\_series(10) -> 30   
[Click me to see the sample solution](https://www.w3resource.com/python-exercises/data-structures-and-algorithms/python-recursion-exercise-7.php)

**8.** Write a Python program to calculate the harmonic sum of n-1. [Go to the editor](https://www.w3resource.com/python-exercises/data-structures-and-algorithms/python-recursion.php#EDITOR)  
*Note*: The harmonic sum is the sum of reciprocals of the positive integers.   
Example :   
harmonic series  
[Click me to see the sample solution](https://www.w3resource.com/python-exercises/data-structures-and-algorithms/python-recursion-exercise-8.php)

**9.** Write a Python program to calculate the geometric sum of n-1. [Go to the editor](https://www.w3resource.com/python-exercises/data-structures-and-algorithms/python-recursion.php#EDITOR)  
*Note*: In mathematics, a geometric series is a series with a constant ratio between successive terms.   
Example :   
harmonic series

[Click me to see the sample solution](https://www.w3resource.com/python-exercises/data-structures-and-algorithms/python-recursion-exercise-9.php)

**10.** Write a Python program to calculate the value of 'a' to the power 'b'. [Go to the editor](https://www.w3resource.com/python-exercises/data-structures-and-algorithms/python-recursion.php#EDITOR)  
*Test Data* :   
(power(3,4) -> 81   
[Click me to see the sample solution](https://www.w3resource.com/python-exercises/data-structures-and-algorithms/python-recursion-exercise-10.php)

**11.** Write a Python program to find  the greatest common divisor (gcd) of two integers. [Go to the editor](https://www.w3resource.com/python-exercises/data-structures-and-algorithms/python-recursion.php#EDITOR)  
[Click me to see the sample solution](https://www.w3resource.com/python-exercises/data-structures-and-algorithms/python-recursion-exercise-11.php)