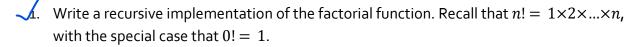
Recursion

Practice problems:

Common problems



Write a recursive program to calculate the power of $x(x^y)$, where y is a non-negative integer.

Write a recursive program to print the nth Fibonacci number.

Write a recursive program to check if a given string is a palindrome or not (not case sensitive, ignore whitespaces)

Sample input	Sample output
Evil olive	True
Too bad	False

Numbers

Write a recursive program to print the even numbers in a given range.

Sample input	Sample output
3 10	46810

1D array:

—6. Write a recursive program to print an array of size n in given order.

✓ Write a recursive program to print an array of size n in reverse order.

Write a recursive program to find the sum of the elements of an array of size n.

Write a recursive program to find the products of the elements of an array of size n.

16. Write a recursive program to find the maximum of the elements of an array of size n.

Write a recursive program to find the minimum of the elements of an array of size n

12. Write a recursive program to find the average of the elements of an array of size n

3. Write a recursive program to print the odd/even numbers of an array of n integers

Write a recursive program to print the prime numbers of an array of n integers

- 15. Write a recursive program to count the odd/even numbers of an array of n integers
- →6. Write a recursive program to count the prime numbers of an array of n integers.

2D array

- 17. Write a recursive program to find the maximum of a 2d array.
- 18. Write a recursive program to count the prime numbers of a given 2d array.

Series

- 29. Find the sum of the following series up to nth position / Print the following series up to nth position.
 - o 1 + 2 + 3 + ...
 - $0.1^2 + 2^2 + 3^2 + \dots$
 - o 1 * 3 + 2 * 5 + 3 * 7 + 4 * 9 + ...
 - o 2 * 3 + 4 * 5 + 8 * 7 + 16 * 9 +...
 - o 2 * 3 * 4 + 4 * 5 * 3 + 8 * 7 * 2 + 16 * 9 * 1 +...

GCD/LCM

- \sim 2 σ . Write a recursive program to find the GCD of x and y where x, y are positive integers.
 - (Hint: <u>use Euclid's algorithm</u>. Two ways to solve this.)
- Write a recursive program to find the LCM of x and y where x, y are positive integers. (Two ways to solve this)

Digits

- 22. Write a recursive program to count the number of digits of an integer.
- 23 Write a recursive program to find the sum of digits of an integer.
- Write a recursive program to check if a given positive integer is a palindrome or not. An integer is a palindrome when it reads the same backward as forward.
 - Try solving it <u>here</u>.

Subset

- 25. Write a recursive program to print all subsets of a set of n elements.
- 26. Write a recursive program to print all subsequences of a string.

Miscellaneous:

- 27. Write a recursive implementation of binary search in a sorted array.
- -28. Given a set of parentheses check if they are balanced or not using a recursive function.
- 29. Implement DFS using recursion to traverse a graph.