

Problem 1

Write three functions that compute the sum of the numbers in a given list using a for-loop, a while-loop, and recursion.

Problem 2

Write a function that combines two lists by alternately taking elements. For example: given the two lists `[a, b, c]` and `[1, 2, 3]`, the function should return `[a, 1, b, 2, c, 3]`.

Problem 3

Write a function that computes the list of the first 100 Fibonacci numbers. By definition, the first two numbers in the Fibonacci sequence are 0 and 1, and each subsequent number is the sum of the previous two. As an example, here are the first 10 Fibonacci numbers: 0, 1, 1, 2, 3, 5, 8, 13, 21, and 34.

Problem 4

Write a function that given a list of non negative integers, arranges them such that they form the largest possible number. For example, given `[50, 2, 1, 9]`, the largest formed number is 95021.

Problem 5

Write a program that outputs all possibilities to put + or - or nothing between the numbers 1, 2, ..., 9 (**in this order**) such that the result is always 100.

For example: $1 + 2 + 34 - 5 + 67 - 8 + 9 = 100$.