

Tutorial 4

Loops (for, while, repeat)

Exercise 1:

1. Write the algorithm that asks for a starting number n , and displays the three following numbers.
2. Write the algorithm that asks for a number N , and calculates the sum of the integers up to this number.
3. Write the algorithm that asks for a number N , then calculates the N^{th} term U_N of the Fibonacci sequence given by the recurrence relation:
$$U_1=1$$
$$U_2=1$$
$$U_N=U_{N-1} + U_{N-2} \quad (\text{where } N>2).$$

Exercise 2:

- a. Write an algorithm that asks the user to enter a sequence of positive numbers, it computes their sum, when the user enters a negative number, the algorithm stops.
- b. Write the extension of this algorithm, with a limit of 10 consecutives numbers, if no negative number is entered.

Exercise 3:

- a. Write the algorithm that asks the user to guess a number. The user can make suggestions until he comes up with the right number.
- b. Write the extension of the algorithm, where the user is allowed to enter up to 5 attempts.
- c. Write the extension, where with each attempt, the algorithm guides the user whether the suggested number is bigger or lower than the number to guess.