Practical Work 3

Loops (for, while, repeat)

Exercise 1: (for loop)

1. Write the C program that asks for a number N, and calculates the sum of the integers up to this number.
2. Write the C program that asks for a number N, then calculates the N^{th} term U_N of the Fibonacci sequence given by the recurrence relation:

   $U_1=1$
   $U_2=1$
   $U_N=U_N\text{-}1 + U_{N-2}$ (where N>2).

Exercise 2: (while loop)

Write the C program 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, with a limit of 10 consecutive entered numbers.

Exercise 3: (do .. while loop)

Write the C program that asks the user to enter a number, until the entered number is bigger to 10 or is odd. The user has a finite number of attempts (N=10).

Exercise 4: (nested loop)

Write the C program that prints N levels of Floyd triangle, defined as:

1
01
101
0101
10101

Exercise 5 : Guess a number

a. Write the C program 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, where the user is allowed to enter up to 5 attempts.
c. Write the extension, where with each attempt, the program guides the user whether the suggested number is bigger or lower than the number to guess.