Fibonacci sequence

Software Documentation

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Introduction

This software documentation includes: description of the application's operation, what is needed for use, algorithms used, interface description and source code description. This application is used to calculate the value of elements from the Fibonacci sequence for a non-negative n.

Describing of the application's operation

When the script runs, the application prompts you to enter n. It then checks that the entered value is non-negative. If so, it calculates values for items in the given range and displays them. If the condition is not met, it notifies the user about it.

What is needed for use?

The application does not require installation. It only needs the Windows operating system.

Some about Fibonacci sequence

Fibonacci Sequence - a sequence of natural numbers defined recursively as follows. The first term is 0, the second is 1, and each subsequent term is the sum of the previous two. The next terms of this sequence are called Fibonacci numbers. Formally:

$F_0 = 0$ for n = 0

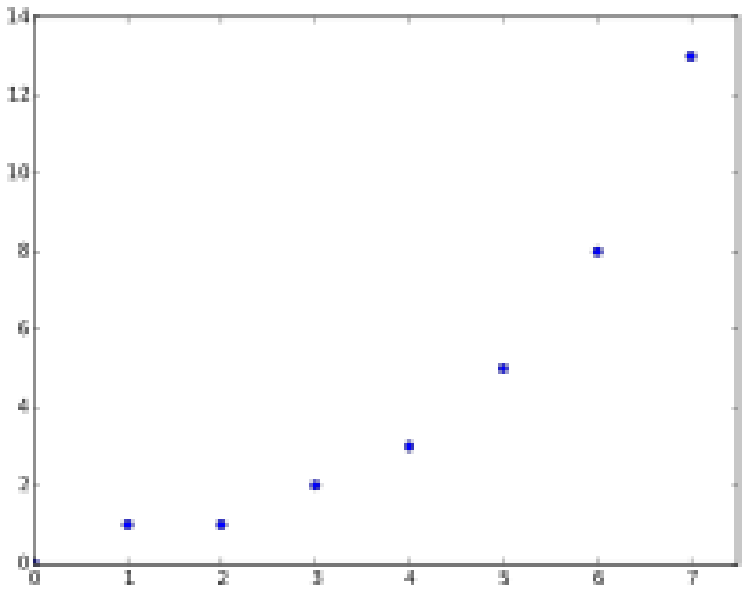
$F_1 = 1$ for n = 1

$F_n = F_{n-1} + F_{n-2}$ for n>1

Including zero in the elements of the Fibonacci sequence depends on the agreement - some authors define the sequence from $F_1 = F_2 = 1$.[1]

F_0	F_1	F_2	F_3	F_4	F_5	F_6	F_7	F_8	F_9	F_{10}	F_{11}	F_{12}	F_{13}	F_{14}	F_{15}	F_{16}	F_{17}	F_{18}	F_{19}
0	1	1	2	3	5	8	13	21	34	55	89	144	233	377	610	987	1597	2584	4181

Drawing 1: The first twenty words of the Fibonacci sequence [1]



Drawing 2: The function graph for the first eight words of the Fibonacci sequence [2]

Source code description

The project was made in the Python programming language, in the PyScripter programming environment. All work was done on the Windows 10 operating system. The application's source code looks like this.

```
'''Fibonacci sequence'''

n=int(input("Enter n: "))
if n<0:
    print("The number must be greater than or equal to zero!")
else:
    #Calculating
    fib=[0,1]
    i=-1
    while i<n:
        i+=1
        if i>=2:
            fib.append(int(fib[i-1]+fib[i-2]))
        '''Write'''
        print("F("+str(i)+")="+str(fib[i]))
```

Listing 1: Source code [own study]

List of drawings

List of listings

Bibliography

[1] https://pl.wikipedia.org/wiki/Ci%C4%85g_Fibonacciego
[2] https://pl.wikipedia.org/wiki/Plik:First_members_of_Fibonacci_sequence.svg