

Problem 0002

Problem

Each new term in the Fibonacci sequence is generated by adding the previous two terms. By starting with 1 and 2, the first 10 terms will be:

1, 2, 3, 5, 8, 13, 21, 34, 55, 89, ...

By considering the terms in the Fibonacci sequence whose values do not exceed four million, find the sum of the even-valued terms.

Solution

Variables

- Let l be the inclusive upper limit for even values of j .
- Let s be the sum of all even-valued terms.
- Let i be the previous term in the Fibonacci sequence.
- Let j be the current term in the Fibonacci sequence.
- Let k be the next term in the Fibonacci sequence.

Approach

Initially, s is equal to 0, i is equal to 1 and j is equal to 2, as specified by the problem.

Each value of j will be added to s if $j \bmod 2$ is equal to 0 (j is even).

To generate the next term in the Fibonacci sequence (k), i and j will be summed. Then, i will be set to the value of j , and j will be set to the value of k .

The program will continue generating terms of the Fibonacci sequence until a value of j is calculated that is greater than l .

Code

The code to produce this solution is in `solution.py`.

Output

For $l = 4 \cdot 10^6$, the program outputs 4613732, which is correct.