An algorithm example in LaTeX and Eq

Pavel Zaichenkov
Compiler Technology and Computer Architecture Group
University of Hertfordshire
Hatfield, United Kingdom

October 17, 2011

1 Formulation of a 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.

2 Algorithm

$main(\ ):\ \rightarrow \mathbb{Z}$
$a^{[0]} \leftarrow 1, b^{[0]} \leftarrow 2, x^{[0]} \leftarrow 0$
$c^{[i]} \leftarrow a^{[i-1]} + b^{[i-1]}, a^{[i]} \leftarrow b^{[i-1]}, b^{[i]} \leftarrow c^{[i-1]}$
if $a^{[i]} \mod 2 = 0$ **then**
$x^{[i]} \leftarrow x^{[i-1]} + a^{[i]}$
end if
return $(\mathbf{filter}(x^{[i]} | a : a^{[i]} > 4 \cdot 10^6))$

3 Answer

The answer is **4613732**