

Quelques problèmes issus du site : <https://projecteuler.net>

1. Problème 9

A Pythagorean triplet is a set of three natural numbers, $a < b < c$, for which, $a^2 + b^2 = c^2$

There exists exactly one Pythagorean triplet for which $a + b + c = 1000$.

Find the product abc .

- boucle for
- test ==
- puissance
- pour continuer liste, liste.append

2. Problème 1

If we list all the natural numbers below 10 that are multiples of 3 or 5, we get 3, 5, 6 and 9. The sum of these multiples is 23.

Find the sum of all the multiples of 3 or 5 below 1 000. (*below* signifie *strictement inférieur à*)

- boucle for
- test if / or
- modulo (%)

3. Problème 2

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. (*even* = *pair*)

- boucle while / break (ruse en Python)
- test if
- modulo
- liste : append
- affectation en parallèle

4. Problème 4

A palindromic number reads the same both ways. The largest palindrome made from the product of two 2-digit numbers is 9009 = 91 × 99. Find the largest palindrome made from the product of two 3-digit numbers.

- boucle for, range pas négatif
- test if
- copie de chaîne
- conversion de typage

5. Problème 20

Find the sum of the digits in the number 100!

- fonction / fonction récursive
- boucle for
- conversion de typage

6. Problème 40

An irrational decimal fraction is created by concatenating the positive integers :

0.123456789101112131415161718192021...

It can be seen that the 12th digit of the fractional part is 1.

If d_n represents the n^{th} digit of the fractional part, find the value of the following expression :

$$d_1 \times d_{10} \times d_{100} \times d_{1\,000} \times d_{10\,000} \times d_{100\,000} \times d_{1\,000\,000}$$

- boucle while (ruse en Python)
- conversion de typage