Python / C++ algorithm exercises: Project Euler

**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 1000.**

import numpy as np

x = np.arange(0, 1000, 3)  
y = np.arange(0, 1000, 5)  
z = np.union1d(x, y)  
  
print(z)  
print(z.sum())

**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.**

a = [1,2]  
while a[-1] < 4000001:  
 a.append(a[-1]+a[-2])  
print(sum([i for i in a if not i % 2]))

**3. The prime factors of 13195 are 5, 7, 13 and 29. What is the largest prime factor of the number 600851475143 ?**

import math  
for i in range(2, int(math.sqrt(600851475143))):  
 while (x % i == 0):  
 x = x / i  
 last = i  
 i += 1  
  
print (last)