

We Chall-Prime Factory-Writeup

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题目链接: http://www.wechall.net/challenge/training/prime_factory/index.php

网站打开较慢, 所以把题目放在下方:

Prime Factory (Training, Math)

Your task is simple:

Find the first two primes above 1 million, whose separate digit sums are also prime.

As example take 23, which is a prime whose digit sum, 5, is also prime.

The solution is the concatenation of the two numbers,

Example: If the first number is 1,234,567

and the second is 8,765,432,

your solution is 12345678765432

大意就是找到两个数, 这两个数符合: 是大于**1000000**的质数, 并且数字的每一位加起来仍是质数, 如: 23 是质数, $2+3=5$ 仍是质数;

因为没有时间的限制, 所以用C++写了一个暴力循环的代码:

```

1 #include<iostream>
2 #include<cmath>
3 using namespace std;
4 typedef long long LL;
5 const LL MILLION = 1000000;
6
7 bool IsPrime_1(LL num)
8 {
9     for(int i = 2; i <= sqrt(num); i++)
10         if(!(num % i))
11             return 0;//num不是质数
12
13     return 1;//num是质数
14 }
15
16 bool IsPrime_2(LL num)
17 {
18     LL sum = 0;
19     while(num)
20     {
21         sum += num % 10;
22         num /= 10;
23     }
24
25     if(IsPrime_1(sum))
26         return 1;//各位数字的和仍为质数
27     else
28         return 0;
29 }
30
31 int main()
32 {
33     // LL num;
34     // cin>>num;
35     // if(IsPrime_1(num))
36     //     cout<<1<<endl;
37     // if(IsPrime_2(num))
38     //     cout<<2<<endl;
39     for(LL i = MILLION+1 , cnt = 0 ; cnt < 2 ; i++)
40     {
41         if(IsPrime_1(i))
42             if(IsPrime_2(i))
43             {
44                 cnt++;
45                 cout<<i<<endl;
46             }
47     }
48
49     return 0;
50 }

```

运行结果如下：

□
根据要求的形式得flag为:**10000331000037**

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