Algorithm Design

1086 Cryptography

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Introduction

Introduction

Problem

1086. Cryptography

Time Limit: 2.0 second

Memory Limit: 64 MB

Difficulty: 114

Introduction

Description

- The problem wanted us to find the n-th order of prime number.

- The maximum number is not exceeding 15,000

- First line of input will state the numbers of input

- Where the remaining lines are the input that is needed to be converted.

Introduction

Input

First line contains a positive integer k. Then k positive integers follow (one in each line). The numbers don't exceed 15000.

Output

For each number n you should output the n-th by order prime number. Each number should be in its line.

Introduction

Sample

Input	Output
4 3 2 5 7	5 3 11 17

Solution

Solution

Sieve of Eratosthenes

Sieve of Eratosthenes is a procedure for separating out the composite numbers and show only the primes.

Solution

Sieve of Eratosthenes: Pseudocode

Input: an integer n > 1.

Let A be an array of Boolean values, indexed by integers 2 to n, initially all set to true.

for i = 2, 3, 4, ..., not exceeding $\sqrt{n}$:

   if A[i] is true:

      for j = i2, i^2+i, i^2+2i, i^2+3i, ..., not exceeding n:

         A[j] := false.

Output: all i such that A[i] is true.

Solution

Full Source Code

```python
a = int(input())
b = []
for i in range(a):
    tmp = int(input())
    b.append(tmp)

n = 163845
p = [True] * (n + 1)
limit = int(n ** 0.5)

for i in range(2, limit):
    if p[i]:
        for j in range(i * i, n + 1, i):
            p[j] = False

ans = []
for i in range(2, len(p)):
    if p[i]:
        ans.append(i)

for i in range(len(b)):
    print(ans[b[i] - 1])
```

Results

Results

ID	Date	Author	Problem	Language	Judgement result	Test #	Execution time	Memory used
7877170	19:09:00 9 May 2018	poommomo	1086. Cryptography	Python 3.6	Accepted		0.234	1 992 KB

Thank You :)