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1500. Prime Gap

Total: 4292 **Accepted:** 2372 **Rating:** 2.9/5.0(22 votes)

Description

Time Limit: 1sec **Memory Limit:32MB**

The sequence of $n \geq 1$ consecutive composite numbers (positive integers that are not prime and not equal to 1) lying between two successive prime numbers p and $p + n$ is called a prime gap of length n . For example, 24, 25, 26, 27, 28 between 23 and 29 is a prime gap of length 6.

Your mission is to write a program to calculate, for a given positive integer k , the length of the prime gap that contains k . For convenience, the length is considered 0 in case no prime gap contains k .

Input

The input is a sequence of lines each of which contains a single positive integer. Each positive integer is greater than 1 and less than or equal to the 100000th prime number, which is 1299709. The end of the input is indicated by a line containing a single zero.

Output

The output should be composed of lines each of which contains a single non-negative integer. It is the length of the prime gap that contains the corresponding positive integer in the input if it is a composite number, or 0 otherwise. No other characters should occur in the output.

Sample Input

[Copy](#)

```
10
11
27
2
492170
0
```

Sample Output

[Copy](#)

```
4
0
6
0
114
```

Problem Source: Tokyo 2007[Status](#) [Submit](#) [Source Code](#)

Sicily Online Judge System(Rev 20120716-961)

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