COMPETITIVE CODING
with
RAMAN CLASSES

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Problem: Least Prime Divisor

Topic	: **Arrays**
Difficulty	: **EASY**
Programming Language	: **C++**
Time to Spend	: **15 min**

Problem Statement

Problem:
You are given a positive integer n. You have to find its least prime divisor.

Input :
1
10

Output :
2

Input Description :
The first line contains a single integer denoting the number of test case.
For each test case, one line contain a single integer **n**.

Problem Statement

Output Description :

Print a single integer denoting the least prime divisor for each test case.

Let Us Revise

In order to solve this problem, go through the following concepts.

1. Sieve of Eratosthenes
2. Using Loop statements

Problem Description

We are given an integer n and we are required to the least prime number which can divide the integer n

For example: Assume an integer n=6

All the prime number divisors of 6 are –
2 and 3

Among them the smallest is 2

Output: 2

Let Us Think

In order to solve this problem, let us think and analyse how to get started with this problem.

Try out different examples in the paper. After analysing it a little you can see, for all the multiple of 2, the smallest prime number divisor is 2 and same for other prime numbers.

So the problem boils down to storing the least prime number divisor of every number (1-1000000) in an array using Sieve of Eratosthenes

Let Us Think

Now you know the logic. Lets proceed with the code.

Let Us Think

Now you know the logic. Lets proceed with the code.

Things we need to do for this problem:

1. Create an array to store all the smallest prime number divisor of number from 1 to 1000000.

2. Print out for each query.

Let Us Code

1. Create an array to store all the smallest prime number divisor of number from 1 to 1000000.

```
//Array to store the least prime number divisor
//of number from 1 to 1000000
//Initialize with 0
int leastprime[1000001] = { 0 };

//for 1, least prime is 1
leastprime[1] = 1;

for (int i = 2; i <= 1000000; i++)
{
    // if leastprime[i] is 0,it
    // means it i is prime number
    if (leastprime[i] == 0)
    {
        // Prime number is its own prime number
        leastprime[i] = i;

        // mark this as a divisor for all its
        // multiples if not already marked
        for (int j = 2 * i; j <= 1000000; j += i)
            if (leastprime[j] == 0)
                leastprime[j] = i;
    }
}
```

Let Us Code

2. Print out for each query.

```
//for each query
while (q--) {
    //interger n
    int n;
    cin >> n;
    //print the answer
    cout << leastprime[n] << endl;
}
```

Tweak n Try

Modify the code to find Largest prime number divisor.

Thank You !

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