Dividing Machine

Problem Code: **DIVMAC**

All submissions for this problem are available.

All Submissions

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Read problems statements in Mandarin Chinese, Russian and Vietnamese as well.

Chef has created a *special dividing machine* that supports the below given operations on an array of positive integers.

There are two operations that Chef implemented on the machine.

Type 0 Operation

```
Update(L,R):
        for i = L to R:
                a[i] = a[i] / LeastPrimeDivisor(a[i])
```

Type 1 Operation

```
Get(L,R):
        result = 1
        for i = L to R:
                result = max(result, LeastPrimeDivisor(a[i]))
        return result;
```

The function **LeastPrimeDivisor(x)** finds the smallest prime divisor of a number. If the number does not have any prime divisors, then it returns 1.

Chef has provided you an array of size **N**, on which you have to apply **M** operations using the special machine. Each operation will be one of the above given two types. Your task is to implement the *special dividing machine* operations designed by Chef. Chef finds this task quite easy using his machine, do you too?

Input

The first line of the input contains an integer **T** denoting the number of test cases. The description of **T** test cases follows.

The first line of each test case contains two space-separated integers N, M, denoting the s

The second line contains N space-separated integers $A_1, A_2, ..., A_N$ d

Each of following **M** lines contain three space-separated integers **type**, **L**, **R** - the type of operation (**0** - **Update** operation, **1** - **Get** operation), and the arguments of function, respectively

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Output

For each test case, output answer of each query of type 1 (**Get** query) separated by space. Each test case from the same file should start from the new line.

Constraints

- $1 \le T \le 100$
- $1 \le A_i \le 10^6$
- $1 \le L \le R \le N$
- $0 \le type \le 1$
- Sum of **M** over all test cases in a single test file does not exceed 10^6

Subtasks

Subtask #1: (10 points)

- $1 \le N, M \le 10^3$

Subtask #2: (25 points)

- $1 \le N, M \le 10^5$
- A_i is a prime number.

Subtask #3: (65 points)

- $1 \le N, M \le 10^5$

Example

Input:

```
2
6 7
2 5 8 10 3 44
1 2 6
0 2 3
1 2 6
0 4 6
1 1 6
0 1 6
1 4 6
2 2
1 3
0 2 2
1 1 2
```

Output:

```
5 3 5 11
1
```

Explanation

Example case 1. The states of array A after each **Update**-operation:

```
A: = [2 1 4 10 3 44]
A: = [2 1 4 5 1 22]
A: = [1 1 2 1 1 11]
```

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Editorial:	http://discuss.codechef.com/problems/DIVMAC
Tags:	kaizer, medium, segment-tree, sept16
Date Added:	5-07-2015
Time Limit:	1 - 3 secs
Source Limit:	50000 Bytes
Languages:	C, CPP14, JAVA, PYTH, PYTH 3.5, PYPY, CS2, PAS fpc, PAS gpc, RUBY, PHP, GO, NODEJS, HASK, SCALA, D, PERL, FORT, WSPC, ADA, CAML, ICK, BF, ASM, CLPS, PRLG, ICON, SCM qobi, PIKE, ST, NICE, LUA, BASH, NEM, LISP sbcl, LISP clisp, SCM guile, JS, ERL, TCL, PERL6, TEXT, SCM chicken, CLOJ, FS

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