Dividing Machine

Problem code: DIVMAC

SUCCESSFUL SUBMISSIONS

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 size of array **A** and the number of queries correspondingly.

The second line of each test case contains **N** space-separated integers A_1, A_2, ..., A_N denoting the initial array for dividing machine.

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

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
```

```
2 5 6 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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Date Added:	5-07-2015
Time Limit:	1 - 3 sec
Source Limit:	50000 Bytes
Languages:	ADA, ASM, BASH, BF, C, C99 strict, CAML, CLOJ, CLPS, CPP 4.3.2, CPP 4.9.2, CPP14, CS2, D, ERL, FORT, FS, GO, HASK, ICK, ICON, JAVA, JS, LISP clisp, LISP sbcl, LUA, NEM, NICE, NODEJS, PAS fpc, PAS gpc, PERL, PERL6, PHP, PIKE, PRLG, PYPY, PYTH, PYTH 3.4, RUBY, SCALA, SCM chicken, SCM guile, SCM qobi, ST, TCL, TEXT, WSPC

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