Max GCD

Input file:	`standard input`
Output file:	`standard output`
Time limit:	3 seconds
Memory limit:	1024 megabytes

You are given an array a of length n.

We define the value of an interval $[l, r]$ as

$$\max_{\substack{l \le i < j < k \le r \\ j-i \le k-j}} \gcd(a_i, a_j, a_k).$$

If $r - l \le 1$, the value is 0.

There will be q queries. In each query, you need to find the value of a particular interval.

Input

The first line contains two integers n and q ($3 \le n \le 1.5 \times 10^5$, $1 \le q \le 10^5$).

The second line contains n integers $a_1, a_2, \ldots, a_n$ ($1 \le a_i \le 10^6$).

Each of the next q lines contains two integers l and r ($1 \le l \le r \le n$).

Output

For each query, output one line, an integer, the value of the interval.

Example

standard input	standard output
8 8 8 24 4 6 6 7 3 3 1 5 2 6 3 7 5 8 4 8 1 3 2 5 3 8	4 2 3 1 3 4 2 3