

Problem M. Magenta and Cyan Integers

Input file: *standard input*
Output file: *standard output*
Time limit: 2 seconds
Memory limit: 1024 mebibytes

For a sequence of positive integers $x = (x_1, x_2, \dots, x_k)$ where $k \geq 2$, let $f(x)$ be the answer to the following problem:

Among the k positive integers x_1, x_2, \dots, x_k , paint at least one and at most $k - 1$ of them magenta, and paint the rest cyan. Let d_m be the greatest common divisor (GCD) of the integers painted magenta, and d_c be the GCD of the integers painted cyan. Find the maximum possible value of $d_m + d_c$.

You are given a sequence of n positive integers $a = (a_1, a_2, \dots, a_n)$. You will also be given q queries. For each query, you will be given two integers ℓ_i and r_i such that $1 \leq \ell_i < r_i \leq n$. For each query, let $x = (a_{\ell_i}, a_{\ell_i+1}, \dots, a_{r_i})$, and find $f(x)$.

Input

The first line of the input contains a single integer n ($2 \leq n \leq 2 \cdot 10^5$).

The second line contains n integers a_1, a_2, \dots, a_n ($1 \leq a_i \leq 10^{18}$).

The third line contains a single integer q ($1 \leq q \leq 2 \cdot 10^5$).

Each of the following q lines describes a single query and contains two integers: ℓ_i and r_i ($1 \leq \ell_i < r_i \leq n$).

Output

For each query, print a single integer: the value of $f(x)$.

Example

<i>standard input</i>	<i>standard output</i>
6	7
3 6 2 5 4 4	9
3	7
1 3	
4 6	
1 6	