C. Modified GCD

time limit per test: 2 seconds
memory limit per test: 256 megabytes
input: standard input
output: standard output

Well, here is another math class task. In mathematics, GCD is the greatest common divisor, and it's an easy task to calculate the GCD between two positive integers.

A common divisor for two positive numbers is a number which both numbers are divisible by.

But your teacher wants to give you a harder task, in this task you have to find the greatest common divisor d between two integers a and b that is in a given range from low to $high$ (inclusive), i.e. $low \le d \le high$. It is possible that there is no common divisor in the given range.

You will be given the two integers a and b, then n queries. Each query is a range from low to $high$ and you have to answer each query.

Input

The first line contains two integers a and b, the two integers as described above ($1 \le a, b \le 10^9$). The second line contains one integer n, the number of queries ($1 \le n \le 10^4$). Then n lines follow, each line contains one query consisting of two integers, low and $high$ ($1 \le low \le high \le 10^9$).

Output

Print n lines. The i-th of them should contain the result of the i-th query in the input. If there is no common divisor in the given range for any query, you should print `-1` as a result for this query.

Examples

input
9 27 3 1 5 10 11 9 11

output
3 -1 9