# MacroGCD Refinement

It's your first day at your new job working in the MacroGCD Re-
finement office! You were excited at first, but it turns out the work
is not at all what you were expecting. You've been given numerous
files, each filled with an absurdly large list of numbers that you're
required to sift through. The department head, Mark F., says that
you are to find subsets of the numbers that share a very particular
defining feature: their *greatest common divisors*. You have no idea
why you're supposed to do this, and when asked, Mark just rattles
off something about the work being "mysterious and important..."
After a few hours of computing GCD's by hand, you're already start-
ing to lose it. To keep what's left of your sanity, you decide to use
some of your Advanced Algo knowledge to speed up your work.

Write a program that, given a file, represented by a list of integers $A$, will answer queries of the form
$GCD(l, r)$ by calculating the greatest common divisor of the *range* of numbers included in $A[l \ldots r]$.

In addition, the files in MacroGCD Refinement are constantly getting updated over seemingly random
ranges of numbers. Your program must also support queries of the form $ADD(l, r, \delta)$. This query should
update $A[l \ldots r]$ by adding $\delta$ to each value in the range.

## Input

The first line will contain the size of the file $N$ and the number of queries $Q$. The following line will contain
$N$ space-separate integers—the numbers contained in the file. The following $Q$ lines will each contain a
query in one of the two following formats:

- "$GCD$" followed by integers $l$ and $r$ indicating what range to calculate the greatest common divisor
  over.

- "$ADD$" followed by integers $l$, $r$, and $\delta$, where $\delta$ is the amount to add to each number in the specified
  range.

## Output

For each $GCD$ query, output the greatest common divisor of the numbers included in the range. That is, a
$GCD(l, r)$ query should output

$$\gcd(A[l], A[l+1], \ldots, A[r]).$$