You Bet I will Get Ya!

ZPRAC-16-17-Lab6

[20 Points]

Bhuvesh and Rohan are cyber-security interns at the FBI for the semester. They decide to hack into their fellow tutors' systems and see what they are upto, as they both know that their friends are not as innocent as they look while teaching :)

Their first subject is Prabuddha. It took a long time for them to hack into Prabuddha's system. He had set up his defenses well. To their surprise, they found that Prabuddha had his entire browser history filled with online cricket betting sites! He had developed his own rating system for the teams, and used it to place his bets. But lately, he had been losing quite a lot of money. Bhuvesh and Rohan traced it to a bug in his rating programs. They decide to help him out by fixing his bug for him.

There are 2*N teams (numbered from 0 to 2*N - 1) with Prabuddha's rating given by $P[i]$. Bhuvesh and Rohan assign a new rating $R[i]$ such that $R[i]=P[i]+GCD(P[i],P[2*N-1-i])$. Can you write a program for this?

The input consists of two lines. The first line contains the integer N. The second line contains 2*N space-separated integers, representing the rating of the teams.

The output should consist of $2*N$ lines each containing a single integer, with the i_{th} line's integer being the new rating for team i. $(0 \leq i \leq (2*N-1))$. Again for clarity, the new rating of team i is original rating + gcd(rating of team i, rating of team $2*N-1-i$)

IMPORTANT : You are supposed to write a function for gcd, which takes two integers and returns the gcd. Failure to conform to this will result in an approriate deduction of marks.

Constraints :
$1 \leq N \leq 100$

Example
Input:
3
12 6 8 9 10 16

Output:

16
8
9
10
12
20

Explanation:
GCD(12, 16) = 4
GCD(6, 10) = 2
GCD(8, 9) = 1