

Monacci

Chandler loves functions. He has invented a new function f named *Monacci* .

$f(1)$ and $f(2)$ are given to you. If $i > 2$, $f(i) = af(i - 2) + bf(i - 1)$.

Chandler also has got a sequence x_1, x_2, \dots, x_n .

Chandler also loves query. So he gives you q queries. In each query, he gives you numbers l and r ($l \leq r$) and for each i that $l \leq i \leq r$, you should increase x_i by $f(i - l + 1)$.

At last, you should print the final sequence. Of course, members of sequence could be very large, so you should print them modulo $10^9 + 7$.

Input

The first line of input contains two integers n and q .

The second line contains two integers $f(1)$ and $f(2)$.

The third line of input contains two integers a and b .

The forth line of input contains n space separated integers x_1, x_2, \dots, x_n .

The next q lines, each line contains two integers l and r .

$$1 \leq n, q \leq 10^5$$

$$1 \leq f(1), f(2), a, b \leq 10^9$$

$$0 \leq x_i \leq 10^9 \text{ (for each } 1 \leq i \leq n \text{)}.$$

Output

Print the final sequence in a single line.

Sample

Input:

6 6

1 1

1 1

0 0 0 0 0

1 6

1 1

4 5

2 2

4 4

5 6

Output:

2 2 2 5 7 9