A. Shaass and Oskols

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

Shaass has decided to hunt some birds. There are n horizontal electricity wires aligned parallel to each other. Wires are numbered 1 to n from top to bottom. On each wire there are some oskols sitting next to each other. Oskol is the name of a delicious kind of birds in Shaass's territory. Supposed there are a_i oskols sitting on the i-th wire.

Sometimes Shaass shots one of the birds and the bird dies (suppose that this bird sat at the i-th wire). Consequently all the birds on the i-th wire to the left of the dead bird get scared and jump up on the wire number $i - 1$, if there exists no upper wire they fly away. Also all the birds to the right of the dead bird jump down on wire number $i + 1$, if there exists no such wire they fly away.

Shaass has shot m birds. You're given the initial number of birds on each wire, tell him how many birds are sitting on each wire after the shots.

Input

The first line of the input contains an integer n, $(1 \le n \le 100)$. The next line contains a list of space-separated integers $a_1, a_2, \ldots, a_n$, $(0 \le a_i \le 100)$.

The third line contains an integer m, $(0 \le m \le 100)$. Each of the next m lines contains two integers x_i and y_i. The integers mean that for the i-th time Shaass shoot the y_i-th (from left) bird on the x_i-th wire, $(1 \le x_i \le n, 1 \le y_i)$. It's guaranteed there will be at least y_i birds on the x_i-th wire at that moment.

Output

On the i-th line of the output print the number of birds on the i-th wire.

Examples

input
5 10 10 10 10 10 5 2 5 3 13 2 12 1 13 4 6

output
0 12 5 0 16

input
3 2 4 1 1 2 2

output
3 0 3

→ **Attention**

Package for this problem was not updated by the problem writer or Codeforces administration after we've upgraded the judging servers. To adjust the time limit constraint, solution execution time will be multiplied by 2. For example, if your solution works for 400 ms on judging servers, then value 800 ms will be displayed and used to determine the verdict.

Codeforces Round #178 (Div. 2)

Finished

→ **Virtual participation**

Virtual contest is a way to take part in past contest, as close as possible to participation on time. It is supported only ACM-ICPC mode for virtual contests. If you've seen these problems, a virtual contest is not for you - solve these problems in the archive. If you just want to solve some problem from a contest, a virtual contest is not for you - solve this problem in the archive. Never use someone else's code, read the tutorials or communicate with other person during a virtual contest.

Start virtual contest

→ **Problem tags**

implementation math

No tag edit access

→ **Contest materials**

- Announcement
- Tutorial