

3871 Share and Share Alike

In the spirit of congeniality, players at a round table poker game decide to even out their winnings after a game ends. The scheme involves sharing their winning — each player divides his money into three parts according to a specified pattern $L : M : R$. L indicates the part he shares with his neighbor on the left, M indicates the part he keeps for himself, and R indicates the part he shares with his neighbor on the right. However, if the left or right portion contains loose change (i.e., partial dollars), the player keeps that, and only gives whole dollar amounts to his/her neighbors.

For example, suppose there are four players seated counterclockwise around the table with winnings of \$60, \$60, \$120, and \$90, respectively. If the sharing scheme is $2 : 3 : 1$, each shares $1/3$ (that is, $2/6$) of his money with the player on the left, $1/6$ of his money with the player on his right, and keeps the rest of his money for himself. After sharing, the money is distributed in the following amounts: \$65, \$80, \$100, and \$85. The players may decide to repeat this scheme more than once. If they share a second time, the money is distributed in these amounts: \$74, \$84, \$92, and \$80.

Your job is to find how the money is finally distributed among the players after sharing is complete:

Input

There will be one or more games specified. For each game, you will be provided with this input:

- The first line will be the number of players, N , where N is an integer, $N > 0$
- The next N lines will be the original amount held by each player, where each value is a non-negative integer. These are provided in the order the players are seated counterclockwise around the table
- The next line is the sharing scheme in the form $L M R$ (three non-negative integers). At least one of $L M R$ will be greater than 0.
- The next line is a non-negative integer indicating the number of times the sharing scheme is to be carried out.

A zero for the number of players will indicate end of input, and that game should not be processed.

Output

For each game, output a line with the word 'Game' and the number of the game, beginning with 1. The next line indicates the distribution of money for the players, with a single space between the numbers.

This is to be followed by a blank line.

Sample Input

```
4
60
60
120
90
2 3 1
2
```

```
5
100
0
0
0
0
1 5 4
3
0
```

Sample Output

Game 1

74 84 92 80

Game 2

25 34 25 8 8