

Problem E – Encrypted Messages

Time limit: 5 seconds

Ralph was hired as a knight by a rich German earl some years ago. One day, he captured a spy that presumably intended to deliver a message to his earl's arch-enemy. At those ancient times, it was very popular to engrave a message into the inside of a ring in order to hide it. Knowing about this technique, Ralph quickly examined the spy's rings and found the message. But, unfortunately, it was encrypted.

Thus, Ralph tortured the spy until he disclosed how to decode the engraved message: The encrypted message is a single line of n numbers. One has to apply the following decoding procedure for s times: add to each number l times the number to its left and r times the number to its right. Note, that due to the cyclic engraving each number has exactly two neighbours. As numbers can be quite large, one only has to take care of the x lower digits.

Unfortunately, Ralph has never learnt how to add and multiply numbers. Please help him!

Input

The input consists of:

- One line with five integers $n, s, l, r,$ and x ($2 < n \leq 1000, 0 \leq s \leq 2^{30}, 0 < l, r, x < 10$).
- One line with n integers e_1, \dots, e_n ($0 < e_i < 1000$), where e_i is the i -th number of the encrypted message from left to right.

Output

Output one line with the n decrypted numbers (in the same order as in the input).

Sample Input 1

```
3 1 1 1 3
1 1 1
```

Sample Output 1

```
3 3 3
```

Sample Input 2

```
3 1 1 1 3
23 42 0
```

Sample Output 2

```
65 65 65
```

Sample Input 3

```
4 10 2 1 9
1 2 3 4
```

Sample Output 3

```
2620960 2621920 2620896 2621984
```

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