

Contest Duration: 2025-05-17(Sat) 22:00 (<http://www.timeanddate.com/worldclock/fixedtime.html?iso=20250517T2100&p1=248>) - 2025-05-17(Sat) 23:40 (<http://www.timeanddate.com/worldclock/fixedtime.html?iso=20250517T2240&p1=248>) (local time) (100 minutes)

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G - Travelling Salesman Problem

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Time Limit: 2 sec / Memory Limit: 1024 MiB

Score : 625 points

Problem Statement

You and N merchants stand on a number line. The merchants are numbered $1, 2, \dots, N$.

Initially, you are at coordinate 0 , and merchant i is at coordinate X_i . Each merchant holds one item; the item held by merchant i is called item i .

Your goal is to receive items $1, 2, \dots, N$ in this order.

You may repeat any number of times, in any order, the following three operations:

- Move yourself by 1 . The cost of this operation is C .
- Choose one merchant and move that merchant by 1 . The cost of this operation is D .
- Choose one merchant, say merchant i . If you and merchant i are at the same coordinate, and you have not yet received item i , then receive item i from merchant i . Otherwise, do nothing. The cost of this operation is 0 .

Find the minimum total cost required to achieve the goal.

Also, output one possible combination of coordinates at which you receive each item when the total cost is minimized.

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Constraints

- $1 \leq N \leq 2 \times 10^5$
- $1 \leq C, D \leq 10^5$
- $-10^5 \leq X_i \leq 10^5$
- All input values are integers.

Input

The input is given from Standard Input in the following format:

```
N C D
X1 X2 ... XN
```

Output

Output two lines.

The first line should contain the minimal total cost required to achieve the goal.

The second line should contain N integers A_1, A_2, \dots, A_N separated by spaces. Here, there must exist a sequence of operations that satisfies both of the following conditions:

- The goal is achieved, with the minimum possible total cost.
- For every integer i such that $1 \leq i \leq N$, you receive item i at coordinate A_i .

Sample Input 1

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```
3 2 3
1 -1 2
```

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Sample Output 1

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```
10
0 0 2
```

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For example, the following sequence of operations achieves the goal with total cost 10:

- Move merchant 1 from coordinate 1 to 0. The cost of this operation is 3.
- Move merchant 2 from coordinate -1 to 0. The cost of this operation is 3.
- Receive item 1 from merchant 1. The cost of this operation is 0.
- Receive item 2 from merchant 2. The cost of this operation is 0.
- Move yourself from coordinate 0 to 1. The cost of this operation is 2.

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- Move yourself from coordinate 1 to 2. The cost of this operation is 2.
- Receive item 3 from merchant 3. The cost of this operation is 0.

It is impossible to achieve the goal with total cost less than 10.

Sample Input 2

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```
2 100000 60000
100000 -100000
```

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Sample Output 2

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```
12000000000
0 0
```

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Sample Input 3

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```
6 4 4
2 -1 5 -2 -2 2
```

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Sample Output 3

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```
56
0 -1 -1 -2 -2 2
```

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