CodeVita
The TCS Global Coding Contest

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05 00 29

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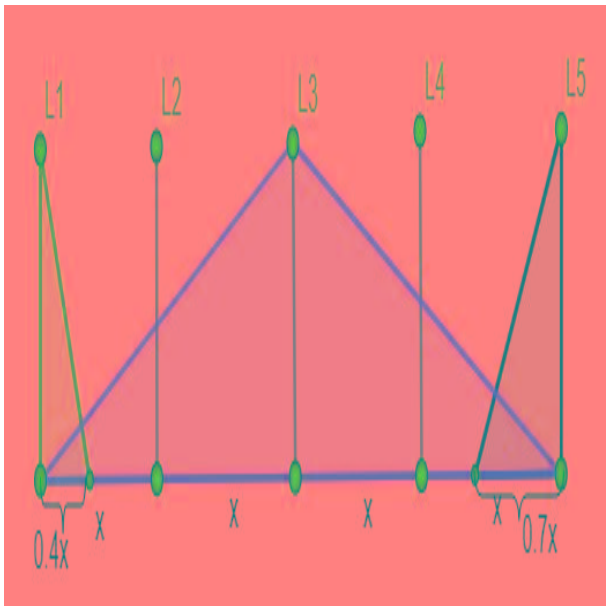
A B C D E F

ONLINE EDITOR (A)

Minimum Poles

Problem Description

There are lamp poles along a side of a road in a line at fixed positions. Calculate the minimum number of lamps and the exact lamp numbers, required to be lit, to illuminate the road. Lamps are placed at a distance of x meter from one another. Given the sum of length covered by respective lamplight in both right and left side of the lamp with the lamp in the middle.



The total length of road will be (N-1)*(distance between two poles), where N is the number of poles.

The lamp will have symmetric coverage around the pole that is it will cover equal distance on the left and right side of the pole.

The specified coverage area of a lamp is on both sides of the lamp. Hence, if the lamp is on one end of the road, only half the specified coverage will shine on the road

Light area between 2 lamps can be overlapped as shown in the diagram.

Lamps are arranged uniformly, in such a way that, there are always one lamp present at eachend of the road.

Every point of the road must be illuminated.

Constraints

1 < N < 11

D > 0 (can be fraction also)

Correct answer will either be "INSUFFICIENT LAMPS" or exactly one set of lamps which will need to be On. There are no test cases where multiple combinations for set of lamps meet the objective.

Input

First line contains number of lamps (N).

Secondline contains the distance between two lamp poles, in meters (D).

Third Line contains total lengths covered by each lamplight in meters (including both the right and the left side with the lamp in middle)

Output

First line of output should contain minimum number of lamps required to light the road completely (with no point of the road uncovered by a lamp).

Second line of output should contain the lamp numbers which should be switched On, delimited by whitespace and ordered in ascending order

Third line of output should contain the lamp numbers which should be switched Off, delimited by whitespace and ordered in ascending order

OR

If total road length is not covered by lamp lights, please print 'INSUFFICIENT LAMPS' as the first (and only) line of the output.

Test Case

Explanation

Example 1

Input

```
4
2
2.2 3.4 4.0 1.6
```

Output

```
3
1 2 3
4
```

Explanation

There are 4 lamps placed at a distance of 2m, the road length will be 6m. The 1st lamp is placed at one end of the road and the 4th lamp is placed at another end of the road, such that 1st lamp will light only its right side i.e., 1.1m to its right side and 4th lamp will light only its left side i.e., 0.8m to its left.

1st Lamp will cover 1.1m to the right side. Still, 0.9m light distance is remaining between 1st and 2nd Lamp

2nd Lamp will cover 1.7m to the left side and 1.7m to the right side. The sum of 1st lamplight distance to the right side and 2nd Lamplight distance to the left side is more than 2m, thus the distance between 1st and 2nd Lamp is covered by both 1st and 2nd lamps

2nd Lamp will cover 1.7m to the right side. Still, 0.3m is remaining between 2nd lamplight distance and 3rd lamp

3rd Lamp will cover 2m to the left side and 2m to the right side. The sum of 2nd lamplight distance to the right side and 3rd lamplight distance to the left side is more than 2m, thus the distance between 2nd and 3rd lamp is covered.

3rd Lamp will cover 2m to the right side which is same as the distance between 3rd and 4th Lamp. Thus 4th Lamp can be switched off.

Example 2

Input

```
5
2
2.2 3.4 8.0 1.6 3.0
```

Output

```
1
3
1 2 4 5
```

Explanation

There are 5 lamps placed at a distance of 2m, the road length will be 8m. The 1st lamp is placed at one end of the road and the 5th lamp is placed at another end of the road, such that 1st lamp will light only its right side i.e, 1.1m to its right side and 5th lamp will light only its left side i.e, 1.5m to its left.

1st lamp will cover 1.1m to the right side. Still, 0.9m light distance is remaining between 1st and 2nd lamp.

2nd lamp will cover 1.7m to the left side and 1.7m to the right side. The sum of 1st lamplight distance to the right side and 2nd lamplight distance to the left side is more than 2m, thus the distance between 1st and 2nd lamp is covered by both 1st and 2nd lamps.

2nd lamp will cover 1.7m to the right side. Still, 0.3m is remaining between 2nd lamplight distance and 3rd lamp.

3rd lamp will cover 4m to the left side and 4m to the right side. As the distance between 1st lamp and 3rd lamp is 4m thus 3rd lamp will light the area between 1stand 3rd lamp and therefore 1st and 2nd lamp can be switched off.

Similarly, 3rd lamp will light the area between 3rd lamp and 5th lamp and therefore 4th and 5th lamp can be switched off lamp. Hence the output.

Example 3

Input

```
5
6
18 12 11 4 0
```

Output

INSUFFICIENT LAMPS

Explanation

There are 5 lamps and 6 meters between the lamps. As the fourth lamp covers only 4 meters totally (and hence only 2 meters to its right), and the last lamp covers 0 meters, there are definitely points on the road that are not covered by any .

Upload Solution [Question : A]

☐ I, **Christian** confirm that the answer submitted is my own.

☐ Took help from online sources (attributions)

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