

J: Line of Symmetry

You are totally bored with nothing to do. You notice a line of bread crumbs on the floor in front of you and begin to dwell on them. There is no obvious pattern or symmetry to their spacing. With time this becomes very grating, and you contemplate adding more crumbs to satisfy your quest for balance. For this exercise you are to resolve this situation with a computer program. Given a line of crumbs, determine the fewest additional crumbs needed to generate a pattern with mirror reflection symmetry (spacing between the front two and back two are the same, similarly for the next pairs further in, etc.) No specific origin is required.

Input

Input may consist of multiple cases. Each case begins on a new line with a positive value less than or equal to 100 indicating the number of crumbs. Following this number and possibly continuing on additional lines the distances (all integers and in increasing order) of each of the crumbs from some arbitrary point. You may assume that all distances will be unique since one would not expect one crumb to land on another and remain balanced there! There may be arbitrary white space between values. After the last case is a line containing a single 0.

Output

For each case, display the case number followed by the answer. Specifically, state the minimum number of additional crumbs (non-negative integer) formatted as in the sample with single spaces as delimiters.

Sample Input

```
2  3  4
4 -4 -3  3  4
4  0  1  4  8
1  17
0
```

Sample Output

```
Case 1: 0
Case 2: 0
Case 3: 1
Case 4: 0
```
