

Alturas de NoMeAcuerdo

In NoMeAcuerdo city a population census has been conducted last week. As a result, two lists (temporary data for a certain process) were generated: one list with the heights in cm. for the women of the city, and another list with heights in cm. for the men. The data in each list are not necessarily sorted, and contain a height for each woman or man.

Input

Lists should be read from the input in the order indicated above (first the women heights, then the men heights). Each list ends with a 0 indicating end of the list. It is known that each list will have no more than 500 elements.

Output

Your program should output four lines. The first line should be a list containing the two original lists merged and sorted, with only one occurrence of each value. The next 3 lines will show: number of women, number of men and number of different heights.

Example

Input:

```
155 180 165 165 172 166 170 172 180 0
173 150 180 199 168 168 170 165 167 155 0
```

Output:

```
150 155 165 166 167 168 170 172 173 180 199
9
10
11
```