

Magic Trees

The part of a tree that grows outwards forming new branches is called the “growth bud.” At the starting point there is only one growth bud, but as the tree grows, it forms new ones.

You and your biology research team have discovered a new type of magical tree that’s able to grow infinitely from its starting point. Two years after the starting point, there are four growth buds. Four years after the starting point, there are 16 growth buds. The formation of new growth buds continues at this rate indefinitely.

Given the number of magical trees in a certain part of the forest and the amount of time that each tree has had to grow, display each tree and the total number of growth buds.

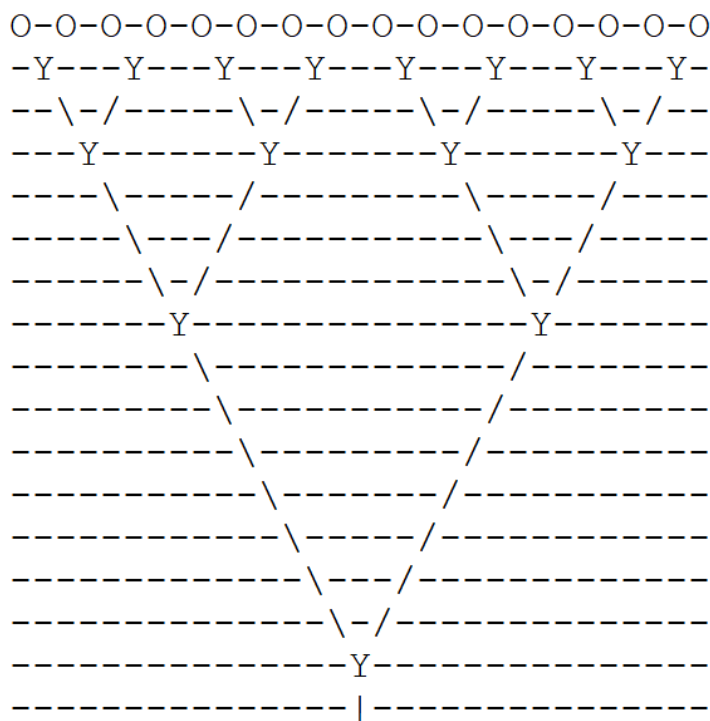


Figure 1: A diagram of a magical tree.

INPUT

The first line will contain a single integer n : the number of trees in the specified section of the forest.

The next line will contain n integers, indicating the age of each tree in years from the starting point. Each age will be separated by a single space.

$$0 \leq n < 20$$

$$0 \leq \text{age} < 7$$

OUTPUT

The first line of the output should print the total number of growth buds in the section of the forest.

The remaining output should display a diagram of each tree in the forest, following the specification seen below. Dashes are used below for clarity—each dash should be replaced with a space.

Sample Input	Sample Output
1 0	1 O
2 1 3	10 O-O -Y- - - O-O-O-O-O-O-O-O -Y---Y---Y---Y- --\-/-----\-/-- ---Y-----Y--- ----\-----/ -----\---/ -----\-/----- -----Y----- ----- -----
2 2 4	20 O-O-O-O -Y---Y- --\-/-- ---Y--- --- --- O-O-O-O-O-O-O-O-O-O-O-O-O-O-O-O-O-O-O-O

	-Y---Y---Y---Y---Y---Y---Y---Y- --\-/-----\-/-----\-/-----\-/-- --Y-----Y-----Y-----Y--- ---\-----/-----\-----/--- ----\---/-----\---/----- -----\-/-----\-/----- -----Y-----Y----- -----\-----/----- -----\-----/----- -----\-----/----- -----\-----/----- -----\-----/----- -----\---/----- -----\-/----- -----Y----- ----- -----
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