Problem 5: Nested Boxes

It is a common prank to give someone a gift in a large box, in which is nested a smaller box, with another smaller box inside that one, and so forth, until the smallest box — nested within all those other boxes — contains the gift. Given a set of boxes of various sizes, your problem is to find the size (cardinality) of the largest subset of boxes that can be used to create such a nested arrangement. If no boxes can be nested, then the size of the subset is just 1.

Naturally, each box in the set from which you can choose has three dimensions. Any box can be rotated, if desired, if that would enable it to fit inside another box. For our purposes, a box A can fit inside a box B if each dimension of box A is strictly less than the corresponding dimension of box B.

Example

For example, suppose box A has dimensions $12 \times 20 \times 60$ and box B has dimensions $42 \times 18 \times 10$. If we rotate box B appropriately — so the dimensions are $10 \times 18 \times 42$, then we will be able to nest it inside box A. However, if box B had dimensions $13 \times 11 \times 58$, then no rotations would allow it to fit inside box A.

Input

There may be multiple cases. The input for each case begins with a line containing a single integer, N, that specifies the number of boxes in the set from which you are allowed to choose. This line will be followed by N more lines, each containing three positive non-zero integers giving the dimensions of a box. N will be no larger than 500, and no box will have a dimension larger than 999.

Input for the last case is followed by a single integer –1.

Output

For each case, display the case number (starting with 1) and the maximum number of boxes selected from the set that can be nested as described. Make your output appear similar to that shown in the samples below. Leave a single blank line between the output for consecutive cases.

Sample Input	Output for the Sample Input
5	Case 1: 2 boxes
145 472 812	
827 133 549	Case 2: 4 boxes
381 371 900	
271 389 128	
718 217 491	
4	
432 123 139	
942 844 783	
481 487 577	
677 581 701	
–1	