L: Wedgie

Picture a rectangular block of cheese sitting on a solid tabletop and a deranged chef (yes, just fresh off the range!) with a long straight knife ready to hack into it. He takes a couple whacks at the cheese. Your task is to determine if the cheese is separated into at least two pieces. You are given the size of the cheese and three coordinates of the two cuts. All measurements are integral and of the same units. Specifically, the points include the starting point (at a corner or along an edge) and where the knife stops along two sides. Because of the table, no cut starts from the bottom. It is possible that the knife goes all the way through, cleaving the cheese on a single whack. It is also possible that the two whacks intersect, separating out a wedge of cheese. The tip of the knife is always outside the block of cheese.

In case the cheese is fully cleaved in a single stroke, the exiting points (always two, as specified in the problem) will be the two opposite ends of a line (always at edges or corners) on a face being exited. You may assume this means the final two exit points of the knife from the block.

Input

Input may consist of multiple cases. Each line of a case contains 21 non-negative integers. The first 3 are the dimensions of the cheese: length, width, and height. Consider the cheese to be sitting in the corner of the first quadrant in 3-D space starting at location 0, 0, 0. Following this are the descriptions of the two whacks, each consisting of 9 values. The first 3 of each whack are the coordinates of where the knife first enters the cheese along the length, width, and height. Similarly the next two sets of 3 are coordinates for the two ending points somewhere on the surface of the block. An input line showing the cheese block being of size 0, 0, 0 is the sentinel for the end of input. Do not process it.

Output

For each case, display the case number followed by the word "touche!" if the cheese was split or "must be hard cheese!" if still intact, formatted as in the sample.

Sample Input

```
10 10 10    5 0 10   5 0 5   5 10 5     6 0 10   6 0 5   6 10 5
10 10 10    5 0 10   5 0 5   5 10 5     10 0 6   4 0 6   4 10 6
0 0 0    1 2 3   4 5 6  7 8 9    1 2 3   4 5 6   7 8 9
```

Sample Output

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Case 1: must be hard cheese!
Case 2: touche!
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