

The next A lines hold answer descriptions. Each has 8 integers x_1, y_1, w_1 and h_1 defining an enclosing rectangle for the answer text and x_2, y_2, w_2 and h_2 defining the rectangle that is the 'tick' box; followed by the text of the answer. (x_1, y_1) and (x_2, y_2) are the top-left corner of the respective rectangles and w_1, w_2, h_1 and h_2 are the widths and heights of the two rectangles. All rectangles will have positive area and will fit within the dimensions of the page. No rectangles can overlap each other but they may touch. All question and answer strings are non-empty.

After the text descriptions are F lines, each describing one fold in the form. The lines each hold 4 integers: x_1, y_1, x_2, y_2 being the x - and y -coordinates of the points at which a fold meets an edge of the paper. All input items are single space separated on their lines.

Fold lines are always between adjacent edges – they will not pass through a corner – and the corner between is the pointer. Each box will be ticked by at most one fold. The number of folds, F , will be less than or equal to the total number of answer boxes.

The coordinate system for the form is in millimetres; $(0, 0)$ is the top left corner; (w, h) is the bottom right corner. Intersection points with an edge will have one coordinate that is exactly 0 (top or left), w (right) or h (bottom). The length of text in a question or answer is never more than 100 characters. You may assume all folds to be valid i.e.: they point into a tick box - and point cleanly inside the box (by at least 0.1mm).

Output

The output for each form should consist of one line per question. For each question the line should be the question text followed by a colon, a space and then a list of semicolon and space separated answers to that question. The answers should be listed in the order given in input. For some questions there may be no answer. For some questions there may be more than one answer.

Sample Input and Output

Sample Input	
210 150 3 3	W H Q F
4 9 19 121 10 Rate your contest experience	
9 29 33 10 43 29 10 10 Terrible	
57 29 32 10 90 29 10 10 Neutral	
104 29 16 10 121 29 10 10 OK	
135 29 31 10 167 29 10 10 Perfect	
4 9 49 150 10 How hard did you find the problems?	
9 59 42 10 52 59 10 10 Very hard	
66 59 22 10 89 59 10 10 Hard	
103 59 23 10 127 59 10 10 Easy	
141 59 27 10 169 59 10 10 Trivial	
5 9 109 182 10 Which programming languages did you use?	
9 119 22 10 32 119 10 10 Java	
46 119 9 10 56 119 10 10 C	
70 119 20 10 91 119 10 10 C++	
105 119 31 10 137 119 10 10 Python	
151 119 14 10 166 119 10 10 C#	
0 50 35 0	
210 105 180 150	
0 113 27 150	
Output for Sample Input	
Rate your contest experience: Terrible	
How hard did you find the problems?:	
Which programming languages did you use?: Java; C#	