

## Programming component for Homework #2

This is the same problem that was discussed in the problem session on 27<sup>th</sup> Aug. (This problem will be graded for correctness and running time)

Hidden Surface Removal: You are given  $n$  non-vertical lines on a plane. A line is said to be “visible” if there is some x-coordinate at which this line is the uppermost line. Give an algorithm that outputs all the “visible” lines.

INPUT: The first line in the input file is  $n$ . This is followed by the description of the  $n$  lines. Any line on a plane can be written as  $y=mx+c$ . The description of a line is  $m$  followed by  $c$  (separated by :). Below we give an example input file (“input.txt”):

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```
4
2.5:10.0
3.7:-2.0
1.2:-10.5
-0.2:5.0
```

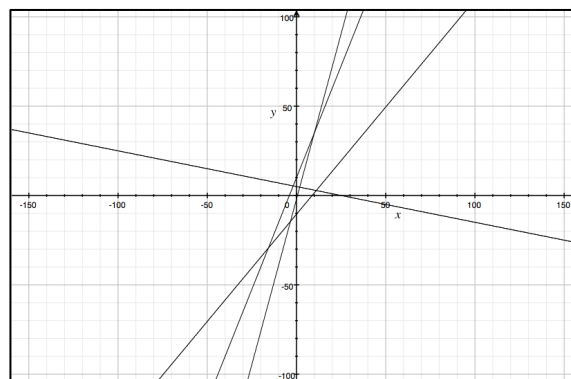
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OUTPUT: The output should be the visible lines ordered as per line numbering. Below is the output file (“output.txt”) for the above input. Note that the 1<sup>st</sup> line, 2<sup>nd</sup> line, and the 4<sup>th</sup> line are visible for the above input.

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```
1,2,4
```

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Input lines

SUBMISSION INSTRUCTIONS: All your program files should be in a directory named <Your Entry Number in Caps>. You will be asked to create a zip of this directory and submit this zip file. In this directory, there should be a makefile that will compile your code (read about makefile on the net in case you do not know what it is). This should create an executable called “visible” (in case you are using java/python, this could be a shell script). This when executed, should read the input file (input.txt) and write the answer in the output file. (output.txt).