Assignment 1 write-up

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# Problem interpretation

**Assumptions**

Following are the assumptions which have been considered or made while attempting this assignment:

1. The coordinates are given as an input in sorted order with respect to the x coordinate.
2. First line of the input is n. the next 2\*n lines are x and y coordinate of a point alternately.
3. Area is treated as a vector, i.e., area above the x-axis is taken to be positive whereas the area below the x axis is considered negative.
4. There is a lower and upper bound on the value of x and y coordinates to avoid overflow of numbers.

**Basic idea**

To solve the assignment problem, we took the following approach:

1. Take n as input, if n is 1, there is only one point on the graph so area covered is zero.
2. When n>1, every pair of points form either a trapezium or a triangle or 2 triangles considering the two points and their foot of perpendiculars on x-axis. On close observation, we found out that the formula (x2-x1)\*(y1+y2)/2 works in all the cases where the two consecutive points are (x1,y1) and (x2,y2) despite their signs.
3. We keep on adding the area of new consecutive points to the previously calculated area.
4. The area finally obtained is the net area under graph.

# Code Explanation