

# CS515: Computer System Lab 2

Date: 23rd Apr 2020

Submission Filename: [assign10.c](#) or [assign10.cpp](#) [assign10README.txt](#)

Assignment 10

Due Date: 29th Apr 2020

## 1 Problem Overview

Consider two triangles in a 2D plane. The triangles may overlap. Each point of the triangle is specified by two integer coordinate  $(x, y)$ . You can assume origin to be at the bottom left corner.  $X$  axis increases towards right and  $Y$  axis increases towards top. No triangle will have two vertices having the same  $X$  coordinate. Also, assume that more than two edges never intersect in a point.

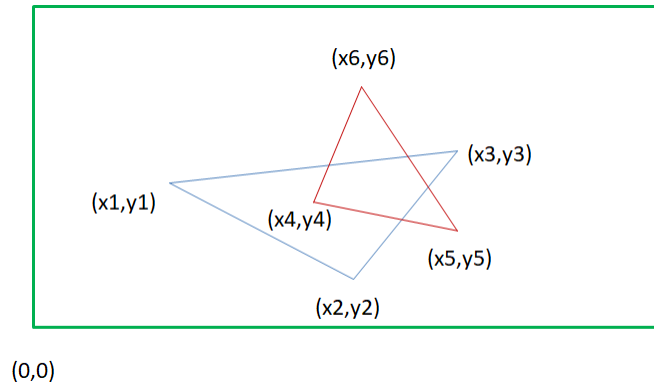


Figure 1: Triangle 1 with blue edges and Triangle 2 with red edges

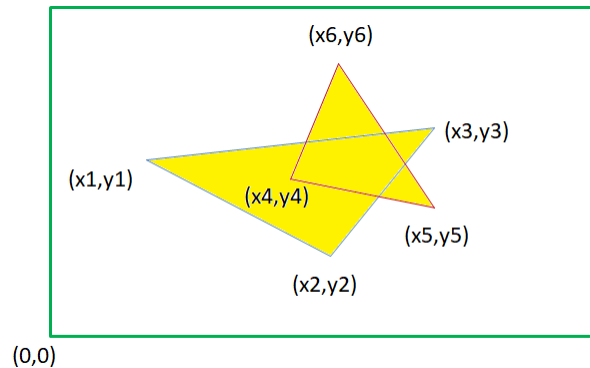


Figure 2: Area covered by the two triangles is shown by yellow shade

Your task is to find the area covered by both the triangles. Of course the overlapping area if there is any should be considered only once. So, if a triangle is fully contained inside another triangle then the resultant area will be the area of the outer triangle. Your grades will depend as many different cases as possible.

### Input Format

- The input to be taken from an input file (filename: [ip.txt](#))
- The first line of input file contain 6 integers for the first triangle:  $x_1 y_1 x_2 y_2 x_3 y_3$
- The second line of input file contain 6 integers for the second triangle:  $x_4 y_4 x_5 y_5 x_6 y_6$

**Output Format** The output should be the total area covered by the triangles and it should be printed on the terminal.

## 2 Submission Guidelines

Please note the followings-

- Your code must validate the inputs appropriately.
- All the necessary assumptions can be mentioned in [assign10README.txt](#) file. You must mention the different type of cases you have handled.
- Copying programs from others or from other sources and allowing others to copy your program will be equally penalized.