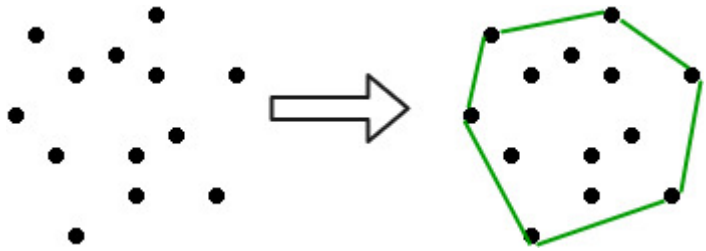
C. Encirclement

Author: Shahril

One of the most and ancient tactics in war is encirclement. It works by surrounding the position to isolate enemy forces. The most common reasons is to actually prevent outside reinforcements and supplies.

With having the enemy forces encircled, attacker can focus on attacking multiple enemy points in the inner circle. When this happens, defender (those inside the circle) either must fight to the death in order for them to break the encirclement, or surrender.



You, as *Admiral General Aladeen* most trusted programmer, has been instructed to create a program, which can calculate which enemy units to attack with the intention of creating encirclement for inner enemy units. One strict condition that he asked is to never let enemy units to be outside of the encirclement, or else disaster will happen. Beware, you don't want to disappoint Aladeen, right?

Input

First line of input is an integer ***N (3≤N≤100)***, where ***N*** is the number of enemy units.

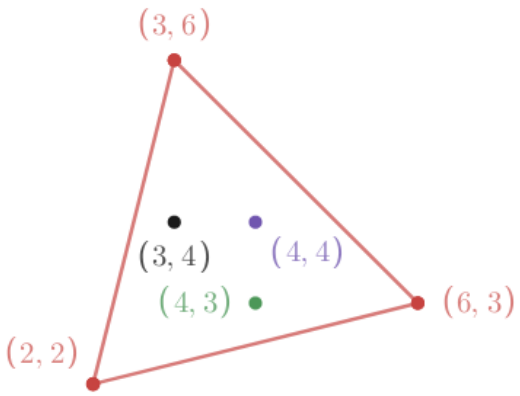
For the next ***N*** lines, there are two integers ***X*** and ***Y (0≤X,Y≤1,000)***, where these denote point coordinates of enemy units.

Output

Output all point coordinates of enemy units to attack based on *Admiral General Aladeen* instruction above. You need to sort the point coordinates result based on the formula ***(a.x+a.y) < (b.x+b.y)*** where ***a*** is the first point and ***b*** is the second point.

Sample Input	Sample Output
6 2 2 4 4 3 4 4 3 3 6 6 3	2 2 6 3 3 6

Explanation:



All point coordinates in sample output have created a close polygon, where inner enemy units have been totally circled