

Crop Circles

TopCoder SRM 359

Filename: cropcircle

Making a crop circle is a difficult job because it is hard to see what one is doing. You have found a farm with boulders scattered around, and have realised that it would be easiest to use a circle that passes through three or more of the boulders. You have started wondering how many different circles you could produce in this way.

The Problem

Given list of integers x and list of integers y , return the number of distinct circles that can be made. The boulders are at (x_0, y_0) , (x_1, y_1) , etc.

The field is large enough that a circle can be made through any three boulders that do not lie in a straight line. When four or more boulders lie on the same circle, this circle should still only be counted once. No two boulders will be in the same location.

The Input

There will be multiple test cases in the input. Each test case will consist of 3 lines, and begin with a line containing only an even integer N ($1 \leq N \leq 50$). The next 2 lines will contain lists x and y respectively, where each is exactly N integers that are separated by exactly one space from each other. Each element of x and y will be between 0 and 500, inclusive. After the last case, there will be a line containing only a zero.

The Output

For each case in the input, output a line of the form:

```
Circles for boulder set #a: c
```

Where a is the number of the test case (starting at 1), and c is the number of distinct possible circles.

Sample Input

```
5
1 2 1 2 8
2 1 8 9 9
3
0 4 7
3 3 3
5
0 10 10 10 20
10 0 10 20 10
5
0 10 11 10 21
10 0 11 20 10
0
```

Sample Output

```
Circles for boulder set #1: 1
Circles for boulder set #2: 0
Circles for boulder set #3: 5
Circles for boulder set #4: 10
```