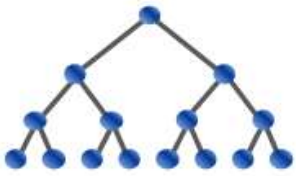
USA Computing Olympiad



USACO 2016 DECEMBER CONTEST, BRONZE
PROBLEM 1. SQUARE PASTURE

Return to Problem List

Contest has ended.

Submitted; Results below show the outcome for each judge test case

1	2	3	4	5	6	7	8	9	10
*	*	*	*	*	*	*	*	*	*
28.4mb 139ms	26.8mb 147ms	28.0mb 146ms	25.3mb 140ms	27.2mb 136ms	28.5mb 136ms	27.4mb 145ms	26.6mb 147ms	27.9mb 136ms	26.6mb 141ms

English (en)

Farmer John has decided to update his farm to simplify its geometry. Previously, his cows grazed in two rectangular fenced-in pastures. Farmer John would like to replace these with a single square fenced-in pasture of minimum size that still covers all the regions of his farm that were previously enclosed by the former two fences.

Please help Farmer John figure out the minimum area he needs to make his new square pasture so that if he places it appropriately, it can still cover all the area formerly covered by the two older rectangular pastures. The square pasture should have its sides parallel to the x and y axes.

INPUT FORMAT (file square.in):

The first line in the input file specifies one of the original rectangular pastures with four space-separated integers x_1 y_1 x_2 y_2, each in the range $0 \ldots 10$. The lower-left corner of the pasture is at the point (x_1, y_1), and the upper-right corner is at the point (x_2, y_2), where $x_2 > x_1$ and $y_2 > y_1$.

The second line of input has the same 4-integer format as the first line, and specifies the second original rectangular pasture. This pasture will not overlap or touch the first pasture.

OUTPUT FORMAT (file square.out):

The output should consist of one line containing the minimum area required of a square pasture that would cover all the regions originally enclosed by the two rectangular pastures.

SAMPLE INPUT:

```
6 6 8 8
1 8 4 9
```

SAMPLE OUTPUT:

```
49
```

In the example above, the first original rectangle has corners $(6, 6)$ and $(8, 8)$. The second has corners at $(1, 8)$ and $(4, 9)$. By drawing a square fence of side length 7 with corners $(1, 6)$ and $(8, 13)$, the original areas can still be enclosed; moreover, this is the best possible, since it is impossible to enclose the original areas with a square of side length only 6. Note that there are several different possible valid placements for the square of side length 7, as it could have been shifted vertically a bit.

Problem credits: Brian Dean

Language: C

Source File: Choose File No file chosen

Submit Solution

Note: Many issues (e.g., uninitialized variables, out-of-bounds memory access) can cause a program to product different output when run multiple times; if your program behaves in a manner inconsistent with the official contest results, you should probably look for one of these issues. Timing can also differ slightly from run to run, so it is possible for a program timing out in the official results to occasionally run just under the time limit in analysis mode, and vice versa. Note also that we have recently changed grading servers, and since our new servers run at different speeds from the servers used during older contests, timing results for older contest problems may be slightly off until we manage to re-calibrate everything properly.