[CS 11 25.1] Lab 1g – Streaks

Submit solution

My submissions

Points: 100 (partial)
Time limit: 4.0s
Memory limit: 1G

Problem type

Allowed languages
~~NONE~~, py3

Cheatsheet is available here: https://oj.dcs.upd.edu.ph/cs11cheatsheet/

Problem Statement

Steve has been aiming high in darts! (I don't mean he's aiming above the dartboard.)

In Steve's world, the dartboard is an **axis-aligned rectangle**, that is, a rectangle each of whose sides is parallel to either the x-axis or y-axis.

The dartboard can be represented as the axis-aligned rectangle in the 2D Cartesian plane whose bottomleft corner has coordinates (x_1, y_1) and topright corner has coordinates (x_2, y_2).

Steve has thrown several darts so far. We know the coordinates of where each dart landed.

Steve wants to know all his "success streaks"—that is, all the times that he successfully hit the dartboard consecutively, without a mistake in between. Can you help him?

Assume that a dart is a point, and that the boundary of the rectangle counts as being *inside* the rectangle. It is also allowed for multiple darts to hit the same point on the plane.

Task Details

Your task is to implement a function called `streaks`. This function has five parameters `x1`, `y1`, `x2`, `y2`, `dart_coords` in that order.

- `x1`, `y1`, `x2` and `y2` are all `int`s and their meanings are described in the problem statement.
- `dart_coords` is a tuple of pairs (x, y), each of which denotes the coordinates of a point where a dart landed.

The function must return a `tuple` of `tuple`s of pairs (x, y). Each inner tuple represents a (maximal) nonempty streak of thrown darts that all landed on the dartboard. The darts must appear in the order they appear in the input.

Restrictions

For this problem:

- Assignment is allowed.
- Recursion is allowed.
- Up to 6 function definitions are allowed.
- Comprehensions are **disallowed**.
- `range` is **disallowed**.
- The `abs` symbol is now allowed.
- The source code limit is 2000.

Example Calls

Example 1 Function Call

```
streaks(-20, -10, 20, 10, (
    (0, 0),
    (500, 0),
    (1, 1),
    (1, 1),
    (-1, 9),
    (1, 1000),
    (20, 11),
    (1, 1),
    (2, 3),
))
```

Example 1 Return Value

```
(
    ((0, 0),),
    ((1, 1), (1, 1), (-1, 9)),
    ((1, 1), (2, 3)),
)
```

Constraints

- The function `streaks` will be called at most 50 times.
- Each integer in the input will have an absolute value at most 10^{20}.
- $x_1 < x_2$
- $y_1 < y_2$
- The length of `dart_coords` is at most 100.

Scoring

Note: New tests may be added and all submissions may be rejudged at a later time. (All future tests will satisfy the constraints.)

- You get 100 🔴 points if you solve all test cases.

Clarifications

Report an issue

No clarifications have been made at this time.