ProblemSet1_S

100.00 / 100.00
points earned
8 / 8 autograded cells
passed

Graded Cells

Cell 3 (cell-27ea82442fc84766)

Passed | 28.57 /
28.57 points
View feedback

Cell 3 (cell-3520e78d700c653c)

Passed | 0 / 0 points
View feedback

Cell 6 (cell-580fc4f473d646d0)

Passed | 28.57 /
28.57 points
View feedback

Cell 6 (cell-00b07f0c726e3a2d)

Passed | 0 / 0 points
View feedback

Cell 6 (cell-b9eb749c03f9e41c)

Passed | 0 / 0 points
View feedback

Cell 6 (cell-9ed6c57e3ae0a952)

Instructions

> This assignment is to be completed and uploaded as a python3 notebook.

This problem set covers the following topics:

- Basics of algorithms: correctness and running time complexity.
- Time Complexity: O, big-Omega and big-Theta Notations.
- Proving Correctness of Algorithms through Inductive Invariants.
- Merge Sort: Proving Correctness.

Important Note

Although this is a programming assignment, we have asked you to work on the "design" and provided opportunities for you to analyze your solution and describe your design. **However, those parts will not be graded.** You are welcome to compare your answers against our solutions once you have completed the assignments. Our solutions are provided at the very end.

Problem 1: Find Crossover Indices.

You are given data that consists of points $(x_0, y_0), \ldots, (x_n, y_n)$, wherein $x_0 < x_1 < \ldots < x_n$, and $y_0 < y_1 \ldots < y_n$ as well.

Furthermore, it is given that $y_0 < x_0$ and $y_n > x_n$.

Find a "cross-over" index i between 0 and $n - 1$ such