Group 5

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3rd Place in class

Sorted Correctly

Data Representation

We store the data in an array of custom `DataPoint` objects.
The `DataPoint` class a *Comparable* private inner class with 4 fields.

- int x // x coordinate
- int y // y coordinate
- int timeStamp // unique time stamp
- double distance // distance to the closer reference point

This allows us to compute the distance only once when each object is created.

Sorting Algorithm Analysis

Computational Efficiency

- Θ(n) to build the array of DataPoint objects
- Sort with Arrays.sort(Object)
- O(n log(n)) efficiency in the worst case, better on partially sorted data

Memory Efficiency

- Θ(n) for the array of objects
- O(n/2) used by Arrays.sort(Object)

Final Comments

One other thing we did:

- We square threshold to avoid the need to use Math.sqrt() in the distance formula

One thing we would do differently:

- Do deep cloning for the data set