

Closest Pair Report

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Results

Our implementation produces the expected results on all input-output file pairs, except `slotermeier-23-tsp.txt`, where our code reports distance 2.531 as the shortest distance. This may be because of rounding errors, or differences between float and double on various machines. ¹

The following table shows the closest pairs in the input files `wc-instance-*.txt`. Here n denotes the number of points in the input, and (u, v) denotes a closest pair of points at distance δ .

n	u	v	δ
2	0	1	1
[...]			

Implementation details

We resort by y -coordinates in each recursive step.

For the comparison of points close to s in S_y we inspect 15 points, as explained (5.10) of Kleinberg and Tardos, *Algorithm Design*, Addison-Wesley 2008. Here is the corresponding part of our code:

```
min = [...]  
for (s [...]  
    for [...]  
        if (x.distance(...) < min) [...]
```

Our running time is $O(n \log n)$ for n points. ²

¹ Complete the report by filling in your correct names, filling in the parts marked [...], and changing other parts wherever necessary. For instance, if your implementation passes all tests, then write that. Remove the sidenotes in your final hand-in.

² Change or delete as necessary, add anything else you find interesting about your implementation.