2020/06/03 Algorithm Homework

Note: When the exercise asks you to "design an algorithm for…," it always means that "designs an EFFICIENT algorithm for … and ANALYZES your algorithm and write pseudo code". You should keep this in mind when writing solutions.

1. **[CLRS 3rd] Exercise 26.1-7**

2. **[CLRS 3rd] Exercise 26.2-3**

3. **[CLRS 3rd] Exercise 26.2-11**

4. **[CLRS 3rd] Exercise 26.2-12**

5. **[CLRS 3rd] Exercise 26.2-13**

6. **[CLRS 3rd] Exercise 26.3-4**

7. Give There are two extended ways used to find the augmenting path that we have mentioned in class (refers to slides p.14, Unit 10), please design an efficient algorithm with the argument of second method to find the augmenting path. Argue that your algorithm is correct and also analyze the time-complexity.

8. Show that any comparison-based algorithm needs $\Omega(n \log n)$ time to solve the following problem: Given n points in the 2D plane, construct a tree of minimum total length whose vertices are the given points and the edge length of an edge is the Euclidean distance between the two end points of the edge.