

Computer Science 2300: Homework 4

Due: March 22, 2010

Note: Please use rigorous, formal arguments. If you are asked to provide an algorithm then you may either write pseudocode similar to the pseudocode in the DPV text, or provide a clear description in English (similar to the description of the permutation algorithm given in the Homework 1 handout). You **must** also provide an argument for why the algorithm is correct, and an analysis of the running time. We encourage you to collaborate with other students, while respecting the collaboration policy. Please write the names of all the other students you collaborated with on the homework. **Hardcopies are required by submission time. E-mailed versions will not be accepted.**

1. (5 points) DPV Problem 4.1 (page 120).
2. (5 points) DPV Problem 4.2 (page 120).
3. (10 points) DPV Problem 4.13 (pages 121-122).
4. (10 points) DPV Problem 4.20 (pages 124-125). Note: you can assume that the graph representation is undirected (don't worry about one-way streets). Your algorithm should not have asymptotic complexity that is worse than the sum of the asymptotic complexity of Dijkstra's algorithm and the length of the list E' .
5. (10 points) DPV Problem 4.21 (page 125).