Homework Instructions

1. These problems require thought. Start early. Solve any three of the four problems.

2. Many problems require you to do three things: understand the high-level english description of the problem and rephrase it as a clean and precise algorithmic problem, design an algorithm to solve the problem, and prove that the algorithm is correct and runs efficiently. Full points will be given only for complete solutions which have all the required components.

3. Unless you are told otherwise, you can assume (and are not required to prove) any proposition which is stated in the book: for e.g, you can assume BFS and DFS run in time $O(m + n)$ – these are propositions 3.11 and 3.13 respectively.

4. Present your algorithms in the ‘pseudocode style’ as used in the book. Do not use C/C++/Java style code.

5. Proofs can be in ‘English’ (without too much mathematical notation), but they must be precise: you can follow the clear and easy style used in the book.

6. If you can not solve the problem completely, put down all your ideas in a clear and simple manner. You could receive partial credit.

Solve any three of the following exercises from Chapter 5. The total points for this HW is 75; you do not have to solve all the four below – you can leave any one problem of your choice from the following four.

- Exercise 1 (25 points)
- Exercise 2 (25 points)
- Exercise 3 (25 points)
- Exercise 6 (25 points)