CS 3510: Advanced Algorithms/Data Structures

Spring 2019 Assignment 3

Problems due as noted.

Assignment

Problems identified by x.y(z) denote the problem “y”, in chapter “x” of the textbook, with part “z”. If “z” is not noted, then the entire problem is required.

Assignment 3a, Due Feb 2
- 3.2 (b) DFS with pre/post numbers and edge type identification.
- 3.12 Prove means give a convincing argument. Counter example means a single concrete example that proves the statement is false.
- 3.28(a,b) Show all satisfying truth assignments, and show why your formula is unsatisfiable.

Assignment 3b, Due Feb 5
- 3.4 (i)(a,b,c,d) (i) is the first graph in the problem.
- 3.22 The algorithm is a simple extension of one in the chapter.
- 3.28 (part c) This means draw the graphs that result from the example and your example.
- 3.28 (d) The hint should give it away.

Assignment 3c, Due Feb 7
- 3.11 Give an algorithm, argue correctness, analyze runtime
- 3.28(e,f) For f, prove that the runtime is linear.

Assignment 3z, Due Never (optional)
- 3.15 (a) Describe a graph problem that represents this problem, and the graph algorithm that will answer the question in linear time.
- 3.15 (b) Describe a graph problem that represents this problem, and the graph algorithm that will answer the question in linear time.
- 3.18 Give the preprocessing algorithm, and the query algorithm. Analyze their complexity.
- 3.24 The algorithm is a simple extension of one in the chapter.

Submission
- At the beginning of class on the due dates, submit paper copies of your solutions, tables and graphs.