CSci 3501 Assignment 4

Due Wednesday, Oct. 4 in class

Problem 1. (10 points) CLRS: Exercises 8.2-1, 8.2-3 p. 170, 8.3-3 p. 173.

Problem 2. (3 points) CLRS: Exercise 8-2 a,b,c p. 179.

Problem 3. (7 points) Sipser: Exercises 0.3, 0.4 p. 26

Problem 4. (4 points) Sipser: Exercise 0.8 p. 26

Problem 5. (7 points) You are given the set A = {a, b, c, d } and the following relation on this set: R = { (a, a), (a, b), (b, a), (b,c), (c, a), (d, d) }. Draw the graph of the relation. Is the relation reflexive? Is it symmetric? Is it transitive? Compute the reflexive, symmetric, and transitive closures of R.

Problem 6. (3 points) Assume that digits are ordered as $0 < 1 < 2 \ldots 8 < 9$. Consider the following sequences as strings over the alphabet of digits and order them lexicographically: $203, 79, 123, 14, 22, 203, 7, 999$.

Give the answer for both classical lexicographic order (see, for instance, definition on p. 269 of CLRS) and for the practical "lexicographic" order, as defined in Sipser.

Problem 7. (2 points) Sipser: Exercise 0.10 p. 27.