Problem Set 2 — Due Thursday, January 23, 1997

Instructions: *Write up your solutions as clearly and succinctly as you can. Don't forget to acknowledge anyone with whom you discussed problems. Turn in the problem set by 4:00 pm in our turn-in box at Eng. II, #2131.*

Problem 1.

Part A. Show that there is a deterministic finite automata with $n+1$ states that recognizes the language $(1^n)^*$. (The alphabet is $\Sigma = \{0, 1\}$.)

Part B. Show that there does *not* exist a smaller deterministic finite automaton for this language. (smaller = fewer states).

Problem 2. Page 85, Exercise 1.12, part (b).

Problem 3. Page 86, Exercise 1.14, part (b).

Problem 4. Page 86, Exercise 1.16, part (b).

Problem 5. Page 89, Problem 1.32.

Problem EC. *Extra credit.* Page 90, Problem 1.42.

Note. I'll probably mark a small number (3–5) of problems as "extra credit." They will not enter into numerical calcualations for your grade. They will be graded ***good*** *(clear and completely correct) or* **X** *(otherwise). I won't write up solutions to these problems. An extra credit graded "good" will be recorded in your records (and I'll notice it in assigning grades). I suggest working on an EC problem only after you've correctly solved the other (simpler) problems.*