# CSE 322 Spring'07: HW 2
# Due back Friday April $13^{th}$

**Reading Assignment:** Sipser Sections 1.2 and 1.3.

**Practice Problems:** Exercises 1.16 and 1.19.

**Problems for Submission:**

1. Let $M = (Q, \Sigma, \delta, q_0, F)$ be a DFA that accepts language $L$. Formally describe and NFA to accept the language $L^\star$. Give an example showing that turning $q_0$ into an accept state will not work. (For a more precise statement of what this means, see Problem 1.15).

2. Problem 1.17

3. Show that every NFA can be converted to an equivalent one with a single accept state. Show that this is not true for DFAs. In other words, construct a language $L$ which is regular, and prove that every DFA accepting $L$ must have more than one accept state. Extend this to show that for every integer $k \geq 2$, there is a language $L$ so that any DFA for $L$ must have at least $k$ accept states.

4. Problem 1.41.