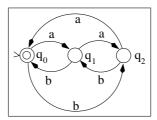
T-79.4301 Spring 2006

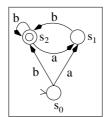
Parallel and Distributed Systems

Tutorial 3 - Wed Feb 15, 2006 11:15 and Fri Feb 17, 2006 14:15

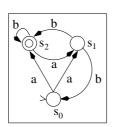
1. Consider the three following finite state automata, where $\Sigma_i = \{a, b\}$. Automaton \mathcal{A}_1 :



Automaton A_2 :



Automaton A_3 :



- (a) Construct the finite state automaton $\mathcal{A}_a = \mathcal{A}_1 \cup \mathcal{A}_2$.
- (b) Construct the finite state automaton $A_b = A_1 \cap A_2$.
- (c) Is the language accepted by \mathcal{A}_b non-empty? If not, give a word accepted by \mathcal{A}_b .
- (d) Complement the deterministic automaton \mathcal{A}_1 , and give the resulting automaton \mathcal{A}_d .
- (e) Give a deterministic finite state automaton \mathcal{A}_e , which accepts the same language as \mathcal{A}_3 .
- (f) Describe the language accepted by A_1 as a function of the number of occurrences of a and b.