

CS 451 F01 Automata and Formal Languages, Spring 2007
Quiz 2 Solutions

Quiz 2 was given in class on Wednesday, February 14, 2007.

1. [2 pts] What is “equivalence” of (finite) automata?

Two DFAs with the same input alphabet are said to be *equivalent* if they accept the same language.

2. [2 pts] What is “minimization” of (finite) automata?

We *minimize* a DFA by

- removing all unreachable states, and
- creating a new automaton whose states are equivalence classes of states in the original. Here, an equivalence class is a collection of states, all of which are pairwise equivalent, and none of which are equivalent to any state outside the class.

The transitions of this new DFA are found in the obvious way from the transitions of the original DFA.

This minimization process results in a DFA that is equivalent to the original, while having a minimum possible number of states.

3. [1 pt] Is there an algorithm that, given two DFAs, determines whether they accept the same language? *Circle one.*

☒ Yes

☐ No