**Compiler Theory CS447b: Quiz 1.** **UWO, February 21, 2003.**

**Student ID number**:

**Guidelines.** The quiz is closed book and all notes are forbidden. The duration of the quiz is 20 minutes. All answers should be written in the *answer boxes*. No justifications for the answers are needed. You are expected to do this quiz on your own without assistance from anyone else in the class. If possible, please avoid pencils and use pens with dark ink. Thank you.

**Exercise 1.** Consider the following grammar $G$ (with terminals $a, b$ and nonterminals $S, A$)

$$\begin{array}{lcl} S & \longmapsto & AS \mid b \\ A & \longmapsto & SA \mid a \end{array}$$

Let $L$ be the language generated by $G$. Consider the words $w_1 = baab$, $w_2 = abab$, $w_3 = bbaa$. For $i = 1, 2, 3$, if $w_i$ belongs to $L$ then give a parse tree for $w_i$ with $G$.

**Answer 1**

**Exercise 2.** Give a grammar that generates the same language as the one recognized by the automaton of Figure 1.

**Answer 2**

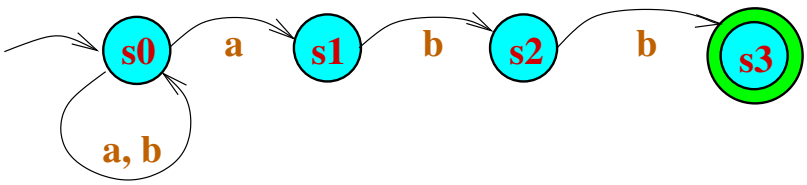


Figure 1: An automaton.

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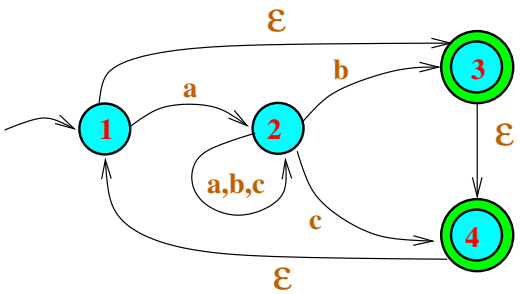


Figure 2: A non-deterministic finite automaton with instantaneous transitions.

**Exercise 3.** Give a deterministic automaton that recognizes the same language as the non-deterministic finite automaton shown on Figure 2

**Answer 3**