

Computer Science 81, Spring 2007

Assignment 3

Due Wed. Feb. 7

Automata and Grammars

When page numbers are given, the problems are in the Kozen book.

1. [20 points] Page 326, exercise 50a.
2. [20 points] Depict the abstract states and transitions of the non-regular language $\{x 0 x \mid x \in \{1\}^*\}$. (This is a carry-over from assignment 2. If you submitted it then, you don't have to re-do it. Just make a note on your submission for this assignment.)
3. [20 points] Page 322, exercise 28.
4. [20 points] Page 304, exercise 2b. Exemplify the construction in your answer by deriving from it an NFA for the language in part a.
5. [20 points] Page 325, exercise 37g.
6. [20 points] Derive a DFA for the language generated by the following grammar over terminal alphabet $\{a, b\}$, where S is the start symbol:

$S \rightarrow A$

$S \rightarrow a$

$A \rightarrow aA$

$A \rightarrow bB$

$B \rightarrow aC$

$B \rightarrow bA$

$B \rightarrow bB$

$C \rightarrow aA$

$C \rightarrow \epsilon$