CSE 322 Spring 2005
Assignment #6

Due: Friday, May 20, 2005

Reading assignment: Reading Sections 2.2 and 2.3 of Sipser's text.

Problems:

1. Apply the Cocke-Kasami-Younger algorithm (in the proof of Theorem 7.14) to the following Chomsky Normal Form grammar to show that string $babbaa$ is accepted (show the tableau):

$$\begin{aligned} S &\rightarrow AB \mid BA \mid AT \mid BU \mid SS \\ T &\rightarrow SB \\ U &\rightarrow SA \\ A &\rightarrow a \\ B &\rightarrow b \end{aligned}$$

2. Sipser's text, page 120, Exercise 2.5 (b), (c), (d), (e), (f). Your informal descriptions should document your diagrams.

3. Carry out the general top-down construction to convert a CFG to a PDA (the one done both in class and in the text) for the following grammar which generates balanced parentheses:

$$S \rightarrow (S) \mid SS \mid \epsilon$$

   Now, do the same for the bottom-up construction given in class.
   Finally, for each of the PDA's show the sequence of configurations that would cause the PDA to accept the input $(()())()$.

4. (Bonus) Sipser's text, page 122, Problem 2.26.