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):

   \[ S \rightarrow AB | BA | AT | BU | SS \]
   \[ T \rightarrow SB \]
   \[ U \rightarrow SA \]
   \[ A \rightarrow a \]
   \[ B \rightarrow b \]

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:

   \[ S \rightarrow (S) | SS | \epsilon \]

   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 (())().