CSci 3501 Assignment 9

Due Wednesday, November 30 in class

Problem 1 (5 points). Construct a context-free grammar and a PDA for the following language: $(ab)^k(ba)^{k+1}$, $k \geq 0$. For instance, strings ba and $abbaba$ are in the language.

Problem 2 (4 points). Sipser, exercise 2.12 p. 156.

Problem 3 (6 points). Sipser, exercise 2.5 (parts b,c of 2.4 only!) p. 155.

Problem 4 (9 points). Sipser, exercise 2.16 p. 156. In other words, given two context-free grammars G_1, G_2 that derive languages L_1, L_2, repsectively, show how to construct context-free grammars for the languages $L_1 \cup L_2$, $L_1 \circ L_2$, and L_1^*. Alternatively you can start with two PDAs and construct PDAs for the required languages.

Problem 5 (9 points). Sipser, exercises 2.30a, 2.31, 2.32 p. 157.

Problem 6 (6 points). Sipser, exercises 3.1a,c and 3.2b,c p. 187.

Problem 7 (2 points). Sipser, exercise 3.7 p. 188.

Problem 8 (4 points). Sipser, exercise 3.8b p. 188.