Team Assignment 5: Chapter 7. PDA & CFL

Due Thursday, February 25

Names: _____ Section: __ Score: /50 pts

1. [15 pts] Convert the following CFG to a PDA that accepts the same language by empty stack.

$$S \to 0S1 \mid A, \qquad A \to 1A0 \mid S \mid \lambda$$

2. [15 pts] Give the state diagram of a PDA M that accepts $\{\ a^{2i}b^{i+j} \mid 0 \leq j \leq i\ \}$ with acceptance by empty stack. Explain the role of the stack symbols in the computation of M. (Problem 5, P. 248)

3. (Problem 19, P.250)

   (a) [10 pts] Prove that the language $L_1 = \{\ a^ib^ic^jd^j \mid i, j \geq 0\ \}$ is context-free.

   (b) [10 pts] Prove that the language $L_2 = \{\ a^jb^ic^id^k \mid i, j, k \geq 0\ \}$ is context-free.