

Homework #7  
CS322 / KAIST 2011 Fall  
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**Exercise 1. (8pt)** Consider the following language.

$$L = \{ a^n b^m c^l \mid n, m, l \geq 0, n+l = m \}$$

- (1) Design the *PDA* to accept the given language
- (2) Represent your *PDA* as a transition diagram.
- (3) Show how your *PDA* accepts the string *aaabbbbc*.

**Exercise 2. (12pt)** Consider the following CFG.

$$S \rightarrow S + T \mid T$$

$$T \rightarrow T * F \mid F$$

$$F \rightarrow (S) \mid a$$

- (1) Show the leftmost derivation for string  $a^*(a+a)+a$ .
- (2) Design a shift and reduce *PDA*
- (3) Show the rightmost derivation for string  $a^*(a+a)+a$ .