

Homework 7

Due: 2014.12.20 midnight

Problem 1 Explain how to convert a many state pushdown automaton to a one state pushdown automaton. Give enough details so someone who did not know how to do it could convert a many state pda to a one state pda.

Problem 2 Write an algorithm in English to determine if there is a derivation $A \xrightarrow{*} xAy$ where A is a variable in a context-free grammar.

Problem 3 Given the context-free grammar used in class

$$S \rightarrow AB|BC$$

$$A \rightarrow BA|a$$

$$B \rightarrow CC|b$$

$$C \rightarrow AB|a$$

Use dynamic programming to determine if the string $bbaaba$ is in the context-free language defined by the grammar.

Can the string be generated in more than one way?