CS250 Lab 9 – Pushdown Automata

Objectives: In this lab you will learn how to

- determine languages described by PDAs

- construct PDAs to recognize specific languages

A Nondeterministic Pushdown Automata is similar to a FA but with additional memory in the form of a stack. Symbols can be pushed onto and popped off of the stack. A transition must now encode two inputs (what must be read from input and the top of the stack before you can take this transition) and one output (what must be pushed onto the stack if you decide to take this transition). A transition for a PDA is defined in JFLAP as `W,X`;`Y`; where W represents the input symbols to be processed, X represents the stack symbols that must be on the stack and are popped off the stack, and Y represents the stack symbols that are pushed onto the stack. Note the comma separates the two inputs (what must be matched if this transition is to be taken) and the semicolon separates the inputs from the output. We also use the special symbol "Z" to denote the empty stack symbol.

Download the lab9 files and start JFLAP.

Assignment 1:
Open file ex9.1 in the Pushdown Automata editor.
Try Step with Closure with the input `abb`. Does it accept?
Try Step with Closure again with the input `aabb`. Does it accept?

Clearly and succinctly describe the language accepted by this PDA.

Assignment 2:
Build and thoroughly test PDAs for the exercises 6c, k on pp 189-190 of your text.

Submit your files in goucherLearn for grading.