Practice Problems – Parsing

This short set of practice problems will help you review your understanding of LR(1) parsing.

1. Consider the following grammar and corresponding action and goto tables:

   \[
   \begin{array}{l|l}
   \text{action} & \text{goto} \\
   \hline
   a & 1 \\
   b & 2 \\
   S & s5 \\
   A & s3 \\
   B & s7 \\
   $ & r1 \\
   \end{array}
   \]

   Give a table, following the format on slide 39 of the lexing and parsing lectures, showing the stack, input, and action at each step of parsing the string \textit{aaabb}.

2. Draw the LR(1) parsing DFA (following slide 55) for the following grammar:

   \[
   \begin{array}{l}
   1. \ S \rightarrow aSa \\
   2. \ S \rightarrow B \\
   3. \ B \rightarrow Bbb \\
   4. \ B \rightarrow c \\
   \end{array}
   \]

3. Draw the LALR(1) parsing DFA for the grammar above. Does switching from LR(1) to LALR(1) parsing introduce any parsing conflicts?