Practice Problems – Parsing
Sample Solution

1. Stack | Input | Action
--- | --- | ---
0 | aaab$ | s5
0, a, 5 | aab$ | s5
0, a, 5, a, 5 | ab$ | s5
0, a, 5, a, 5, a, 5 | bb$ | r3
0, a, 5, a, 5, A, 6 | bb$ | r2
0, a, 5, A, 6 | bb$ | r2
0, A, 2 | bb$ | s3
0, A, 2, b, 3 | b$ | s7
0, A, 2, b, 3, b, 7 | $ | r4
0, A, 2, B, 4 | $ | r1
0, S, 1 | $ | accept

2. Since this grammar does not have a start symbol that only appears in one production, we need to add a new start symbol to the grammar:
   0. $S' \rightarrow S$
   1. $S \rightarrow aSa$
   2. $S \rightarrow B$
   3. $B \rightarrow Bbb$
   4. $B \rightarrow c$

The resulting DFA is shown in Figure 1.

3. The resulting DFA is shown in Figure 2. There are no introduced parsing conflicts.
Figure 1: DFA for problem 2.

Figure 2: DFA for problem 3.