1. (25 pts) Consider the following grammar:
   
   \[
   \begin{align*}
   S & \rightarrow aScB \mid A \mid b \\
   A & \rightarrow cA \mid c \\
   B & \rightarrow d \mid A
   \end{align*}
   \]
   Which of the following sentences are in the language generated by this grammar? For those that are, use a parse tree to show a derivation.
   
   a. abcd
   b. accbcbcd
   c. accbccc
   d. accd
   e. accc

2. (20 pts) Show that the following grammar is ambiguous by drawing two different parse trees for the same string of your choosing.
   
   \[
   \begin{align*}
   foo & \rightarrow AAA \mid bar \mid qux \mid DDD \\
   qux & \rightarrow CCC \mid foo \mid \epsilon \\
   bar & \rightarrow BBB \mid foo
   \end{align*}
   \]

3. (30 pts) For each of the following grammars, why is the grammar not LL(1)? Modify each one to fix the problem.
   
   a.
   
   \[
   \begin{align*}
   foo & \rightarrow AAA \mid bar; \quad \text{<- start symbol} \\
   bar & \rightarrow bar \mid BBB \\
   bar & \rightarrow BBB
   \end{align*}
   \]

   b.
   
   \[
   \begin{align*}
   foo & \rightarrow AAA \mid bar; \quad \text{<- start symbol} \\
   bar & \rightarrow BBB \mid foo \\
   bar & \rightarrow BBB \mid qux \\
   qux & \rightarrow CCC
   \end{align*}
   \]

4. (25 pts) Write a paragraph summarizing significant characteristics of the following scripting languages. Use Perl as a point of comparison. If you use other sources besides the book, cite them.
   
   a. bash
   b. awk
   c. tcl
   d. Python
   e. Ruby