Parsing

Exercise 1:
Consider grammar specified bellow:
1. Remove the left recursion in the following grammar.
2. Why are left recursions bad, and for what type of parser?

\[
\begin{align*}
\text{sentence} & \; ::= \; \text{wordList}. \\
\text{wordList} & \; ::= \; \text{wordList}\text{word} \; | \; \text{word}
\end{align*}
\]

Exercise 2:
Extend the grammar from Exercise 1 so it can support questions (sentences ending in a question mark), exclamations (sentences ending in a exclamation mark), complex sentences (parts are divided by a comma), and the notion that the first word of a sentence must begin with a capital letter. Also, any other word in the sentence can begin with a capital letter. Assume that \text{capitalWord} is a word with a capital first letter.

Good will task (not graded): write regular expressions for \text{capitalWord} and \text{word}.

Exercise 3:
Write a grammar for parsing a 6 or 7 digit phone number with country code (i.e. +1 for USA, +47 for Switzerland, +381 for Serbia, +1246 for Barbados. There are no 5 digit country codes) and two digit area code. Assume you have \text{digit} defined \((0 \mid 1 \mid 2 \mid 3 \mid 4 \mid 5 \mid 6 \mid 7 \mid 8 \mid 9)\). The area code should be preceded by \((0)\). This is used when calling from the same country.
Examples:
+1246 (0) 68 1245783
+381 (0) 64 2521515
+41 (0) 31 5119636
+1 (0) 12 1234567