

This assignment asks you to prepare written answers to questions on top-down parsing. Each question has a short answer. You may discuss this assignment with other students and work the problems together. However, your writeup should be your own individual work. Remember written assignments are to be turned in in class on the date due.

Consider the following grammar for a subset of English sentences. The nonterminals are S , NP , VP , AP . The terminals are *the*, *noun*, *adjective*, *verb*. The starts symbol is S .

$$\begin{array}{lcl} S & \rightarrow & NP \ VP \\ & | & NP \ VP \ NP \end{array}$$
$$NP \rightarrow \text{the } AP \text{ noun}$$
$$\begin{array}{lcl} AP & \rightarrow & AP \text{ adjective} \\ & | & \epsilon \end{array}$$
$$VP \rightarrow \text{verb}$$

1. Left-factor this grammar.
2. Eliminate left-recursion from your answer to part (1).
3. Give the *First* and *Follow* sets for each grammar symbol for your answer to part (2).
4. Give an LL(1) parsing table for your answer to part (2).
5. Show the sequence of moves of your LL(1) parser on the input:

The silly professor invented the awkward obscure sentence.

(Note that you need to tokenize the input first.)

6. Show the parse tree that your parser traces for this sentence.