

Homework Questions for chapter 4, Due Wednesday, February 10th at 8am.

There are four problems below,

1. Perform the pairwise disjointness test for the following grammar rules.

a. $S \rightarrow aSb \mid bAA$

b. $A \rightarrow B\{aB\} \mid a$

c. $B \rightarrow aB \mid a$

2. Show a trace of the recursive descent parser given in [Section 4.4.1](#) (in the book) for the string $a + b * c$.

3. Given the following grammar and the right sentential form, draw a parse tree and show the phrases and simple phrases, as well as the handle.

$$S \rightarrow aAb \mid bBA$$

$$A \rightarrow ab \mid aAB$$

$$B \rightarrow aB \mid b$$

a. $aaAbb$

b. $bBab$

c. $aaAbBb$

4. Design a state diagram to recognize the floating-point literals of your favorite programming language. Similar to the state diagram from the book that I used numerous times in the lecture videos.