

LP ASSIGNMENT #2

10-02-15

1. A) Given production

$S \rightarrow SaS$

$S \rightarrow b$

And input string = "bababab".

Identify whether grammar is ambiguous with help of parse tree and derivations.

B) check whether following grammar is suitable for top down parsing? If not, rewrite the grammar so that it becomes suitable for top down parsing.

$A \rightarrow \underline{a}bB \mid \underline{a}B \mid cdg \mid cdeB \mid cdfB$

2. Explain how parser will recover from errors? Explain each recovery strategy with at least two examples(your own) each.

3. Consider the following grammar

$S \rightarrow aB \mid bA$

$A \rightarrow a \mid aS \mid bAA$

$B \rightarrow b \mid bS \mid aBB$

a. Obtain the leftmost and rightmost derivation for the input: "aaabbabbba"

b. Construct parse tree for both the derivations.

c. Find the FIRST and FOLLOW set for the above given grammar

4. Consider the following grammar

$lexp \rightarrow atom \mid list$

$atom \rightarrow number \mid identifier$

$list \rightarrow (lexp-seq)$

$lexp-seq \rightarrow lexp-seq lexp \mid lexp$

a. write the leftmost and rightmost derivation for the string (a 23 (m x y))

b. Draw a parse tree for each of the derivation.

c. Is the grammar ambiguous?

5. Explain the concept of Recursive Descent (RD) parsing and give the algorithm for the same. Construct a RD parser for the given grammar.

$S \rightarrow a \mid \hat{I} \mid (T) \mid T$

$T \rightarrow T,S \mid a \mid \hat{I} \mid (T)$

6. Explain in detail the problem caused by a Left Recursive grammar in Top Down Parsing. Also eliminate left recursion from the following grammars.

a. $S \rightarrow Aa \mid b$

$A \rightarrow Ac \mid Aad \mid bd \mid (A) \mid e$

b. $E \rightarrow (E) \mid e \mid E,e \mid X$

$X \rightarrow x \mid y$