

Chapter 3: Syntax Analysis

1. What is parse tree? How it is used to prove that grammar is ambiguous? Explain with suitable examples.
2. How to eliminate left recursion from a translation scheme? Explain with example.
3. Focus on non recursive predictive parsing by giving suitable model. Write predictive parsing program. And explain how to generate parsing table with suitable example.
4. Define parser. Explain briefly Top-down & Bottom-up parsing.
5. Show that following grammar is LL(1)
$$S \rightarrow AaAb \mid BbBa, A \rightarrow ^, B \rightarrow ^$$
6. Explain with example recursive descent parsing.
7. Explain stack implementation of shift-reduce parsing. Consider the grammar
$$S \rightarrow (L) \mid a, L \rightarrow L, S \mid S$$

parse the input string $(a(a,a))$ using shift reduce parsing.
8. What is operator precedence parsing ? Explain operator precedence parsing with the help of example.
9. Consider the context free grammar
$$S \rightarrow (L)a$$
$$L \rightarrow L, S \mid s$$
 - a. What is language generated by above grammar?
 - b. Is the grammar is ambiguous? Justify
10. Explain error recovery in predictive parsing.
11. Explain top-down translation of L-attributed definitions.
12. Explain in detail Bottom-up evaluation of S-attributed definitions.
13. Explain the following concepts in rewriting grammars:
 - a. Eliminating ambiguity
 - b. Eliminating left recursion
 - c. Left factoring

14. Explain SLR parsing algorithm with example.
15. Explain the predictive parsing for LL(1) grammar with the help of suitable example.
16. Consider the context-free grammar
 $S \rightarrow SS+ | SS^* | a$
- Show how the string $aa+a*a+$ can be generated by the this grammar.
 - Construct the parse tree for the above string.
 - What language is generated by this grammar? Justify your answer.
 - Is the grammar ambiguous? Justify.
17. What is left recursion? How the left recursion is eliminated from grammar?
Eliminate left recursion from the following grammar.
 $S \rightarrow (L) | a, L \rightarrow L, S | s$
18. What is LR parsing algorithm ? Explain.
19. Write short note on Conflicts in shift-reduce parser.
20. Write short note on First and Follow rules.
21. Write short note on Error recovery strategy in parser.
22. How the context-free grammars are constructed from a regular expression ?
Explain with the example regular expression $(a+b)^*abba$.
23. Explain in detail error recovery in YACC.
24. Explain handles in Handle Pruning with example?
25. What is Left Factoring? Explain with example.
26. Explain the transition diagrams for predictive parsers.
27. Show that the following grammar
 $S \rightarrow Aa | bAc | dc | bda, A \rightarrow d$ is LALR(1) but not SLR(1)
28. Explain algorithm to construct a predictive parsing table with example.
29. Compute FIRST & FOLLOW for the grammar
 $S \rightarrow iEtSS' | a, S' \rightarrow eS | ^, E \rightarrow b$
30. Explain role of parser.