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SPCC ESE Question Bank 2021-22

1. Explain phases of compiler construction with example
2. Construct operator precedence parsing table for the following Grammar. $E \rightarrow E+E \mid E-E \mid E * E \mid E/E \mid E^E \mid (E) \mid id$
3. Explain the working of LR parser with example.
4. Explain the working of shift reduce parser with example.
5. Explain role of finite automata and regular expressions in constructing lexical analyser.
6. Give the output of all phases of compiler construction for the following input:
 - while $A < C$ and $B > D$ do
 - $A = A+B$
7. Differentiate between the following:
 - i) Compiler and interpreter
 - ii) Macro and function
 - iii) System program and application program
 - iv) Compilation of C program and Compilation of Java Program
8. Explain the working of operator precedence parser with example
9. Parse the following string using:
 - i) Shift reduce parser
 - ii) Operator precedence parser (first make precedence table)
10. CFG:
 - $E \rightarrow E+E$
 - $E \rightarrow E * E$
 - $E \rightarrow id$
 - Input string: $id + id * id$
11. Calculate the first and follow of the following grammar symbols(write down the rules and then solve the sum)
 - $E \rightarrow E + T$
 - $E \rightarrow T$
 - $T \rightarrow T * F$
 - $T \rightarrow F$
 - $F \rightarrow (E)$
 - $F \rightarrow id$
12. What is a system program? Explain different system programs in brief.

13. Describe different kinds of code optimization techniques with example.

14. What is forward reference problem ? explain with example.

15. Why two pass assembler is required ?

16. Describe the features of the macro.

17. List the functions of macro processor

18. Describe the functions of loader.

19. Describe the types of loaders.

20. Draw DAG for the following: Show all the steps

- i) $S1 := 4 * i$
- ii) $S2 := a[S1]$
- iii) $S3 := 4 * i$
- iv) $S4 := b[S3]$
- v) $S5 := s2 * S4$
- vi) $S6 := prod + S5$
- vii) $Prod := s6$
- viii) $S7 := i + 1$
- ix) $i := S7$
- x) 10 if $i \leq 20$ goto (1)

21. Give the output of pass1 and pass2 for the following:

- i) SIMPLE START
- ii) BALR 15,0
- iii) USING *, 15
- iv) LOOP L R1, TWO
- v) A R1, TWO
- vi) ST R1, FOUR
- vii) BNE LOOP
- viii) BR 14
- ix) R1 EQU 1
- x) TWO DC F'2'
- xi) FOUR DS 1F
- xii) END

22. Differentiate between top down parsing and bottom up parsing.

23. What is a LR parser?

24. Explain the concept of item and set of items concept with example.

25. Explain the working of LR parser with example.

26. Describe the names of different types of LR parsers.

27. Describe the issues in code generation.

28. Explain code generation algorithm with example.
28. Explain the output of pass1 and pass 2 assembler with example.
29. What is a LL parser ?
30. Explain the construction of LL parsing table with example.
31. Explain the working of LL parsing table with example.
32. Describe the functions of lexical analyser
33. What is syntax directed translation?
34. Differentiate between synthesized and inherited attributes.
35. Describe the role of intermediate code generation in compiler design.
36. Describe the types of intermediate code generation techniques with example.
37. What is the difference between syntax tree and parse tree?
38. What is annotated parse tree? Explain with example.
39. Explain different types of assembler directives supported by IBM 360 with example.
40. What is the difference between lexeme and token ?
41. Discuss the types of assembly language statements supported by IBM 360.
42. Differentiate between BALR and USING assembler directive.
43. differentiate between linker, loader and assembler.
44. What are device drivers and what is the purpose of them ?
45. State importance of debugger and editors in computer programming ?
46. Describe the databases required for pass1 assembler with example.
47. Describe the databases required for pass2 assembler with example.
48. Describe the databases required for pass1 macroprocessor with example.
49. Describe the databases required for pass2 macroprocessor with example.
50. Explain pass1 functions of macroprocessor with the help of pass1 macroprocessor flow chart.
51. Explain pass2 functions of macroprocessor with the help of pass2 macroprocessor flow chart.
52. Explain pass1 functions of assembler with the help of pass1 assembler flow chart.

53. Explain pass2 functions of assembler with the help of pass2 assembler flow chart.

54. What are the advantages of disadvantages of two pass assembler ?

55. What is left factoring ? Explain with example.

56. Explain removal of left recursion with example.

57. Remove direct and indirect left recursion from the following:

- $S \rightarrow Aa \mid b$
- $A \rightarrow Ac \mid Sd \mid \epsilon$

58. Construct LR(0) set of items for the following:

- $S \rightarrow AA$
- $A \rightarrow aA \mid b$

59. Construct LR(0) parsing table for the following:

- $S \rightarrow AA$
- $A \rightarrow aA \mid b$

60. Construct LL parsing table for the following and parse the given string.

- $S \rightarrow iEtSS'/a$
- $S' \rightarrow eS/\epsilon$
- $E \rightarrow b$

Input string: ibtibta

61. What is a handle in bottom up parsing ?

62. What is shift reduce conflict and reduce-reduce conflict in bottom up parsing ?

63. Why left recursion need to be removed?

