MANIPAL UNIVERSITY
JAIPUR

School of Information Technology

Department of Information Technology

IT3230 Compiler Design Lab (January – May 2024)

List of Experiments

Week 1	1. Write a program to count number of characters, words, whitespaces and number of new lines in a given file. 2. Write a program to count the number of vowels and consonants in a given string.
Week 2	3. Write a program to check whether the entered string is a keyword or not. If so, then count number of keywords. 4. Write a program to separate terminals and non-terminals of the given grammar with its counting number.
Week 3	5. Write a program to check whether the entered string belongs to a grammar as per Chomsky Hierarchy (Type-3/Type-2/Type-1/Type-0) or not. If so, then specify type of grammar.
Week 4	6. Design a program for creating machine that accepts three consecutive one. 7. Design a program for creating machine that accepts the string always ending with 101. 8. Design a program for Mode 3 Machine.
Week 5	9. Design a program to find 1's and 2's complement of a given binary number. 10. Write a program to check whether a given grammar is left recursive, if so, eliminate it.
Week 6	11. Write a program to remove left factors from a given CFG. 12. Write a program to match names starting with "Mr" or "Ms"
Week 7	13. Design a program for creating a machine which accepts string having equal no. of 1's and 0's. 14. Design a PDA to accept WCWR where w is any string and WR is reverse of that string and C is a Special symbol. 15. Design a Program to create PDA machine that accept the well-formed parenthesis.

Week 8	16. Write a program to design a Turing Machine for language L= $\{a^n b^n c^n \mid n>0\}$ 17. Write a program to add two numbers using Turing Machine.
Week 9	18. Write a LEX Program to count the number of vowels, consonants and digits in a given string. 19. Write a LEX Program to get the ECHO of a string. 20. Write a LEX Program to count and recognize the keywords and identifiers. 21. Write a LEX Program to find words beginning and ending with 'a'.
Week 10	22. Write a LEX Program to print the total number of letters, digits, spaces, tabs and lines in a given input file. 23. Write a LEX program to identify the capital letters, small letters, digits and special symbols. 24. Write a LEX Program to prepend line number to each line. [Taking file from user] 25. Write a LEX Program to count the number of words.
Week 11	26. Write a program to identify the given grammar is LL 1 or not. 27. Write a LEX Program to eliminate single and multiline comments. 28. Write a LEX Program to check the valid email. 29. Write a LEX program to check the valid mobile number. 30. Write a LEX Program to check the valid URL.
Week 12	31. Write a program to design a Turing Machine for language L= $\{a^n b^n c^n \mid n>0\}$ 32. Write a program to add two numbers using Turing Machine.
Week 13	33. Write a YACC program to recognize strings with grammar ($a^n b^n$, n >= 0). 34. Write YACC program to recognize a valid variable, which starts with a letter followed by any no. of letters or digits. 35. Write a YACC program to recognize the grammar ($a^n b$, n >= 5).

Practice Programs:

1. Write a LEX program for checking ambiguity.
2. Write a LEX program to generate a parse tree.
3. Write a YACC program to test validity of a simple expression involving operators +,-,* and /.
4. Write a YACC program to recognize nested IF control statements and display the number of levels of nesting.
5. Write a YACC program to recognize valid arithmetic expression that uses operators +, -,* and /.
6. Write a YACC program to recognize a valid variable, which starts with a letter, followed by any number of letters or digits.