Course Code	Course Name	Year
CS4158	**Program Language Technology**	**2025**

List of Exercises/Experiments:

1. Design and implement a lexical analyser for given language using C and the lexical analyser should ignore redundant spaces, tabs and new lines.
2. Implementation of Lexical Analyzer using Lex Tool.
3. Generate YACC specification for a few syntactic categories.
    a. Program to recognize a valid arithmetic expression that uses operator +, –, * and /.
    b. Program to recognize a valid variable which starts with a letter followed by any number of letters or digits.
    c. Implementation of Calculator using LEX and YACC
    d. Convert the BNF rules into YACC form and write code to generate abstract syntax tree
4. Write program to find Simulate First and Follow of any given grammar.
5. Develop the LL(1) parser for a given language.
6. Develop an operator precedence parser for a given language.
7. Implement Intermediate code generation for simple expressions.
8. Write a program to perform loop unrolling.
9. Write a program to perform constant propagation.
10. Write a report which explains all you have done in each task and submit it in PDF.

Instructions:

- You can use any tool of your choice for LEX and YACC or else the prominent ones are FLEX and Bison for LEX and YACC respectively.
- Please submit the .l, .y, and .c files for the tasks where any or all of them are applicable.
- Please include the screenshots of the successful output of your tasks in the report.
- You can see some tutorials and documents here for the reference.

Expected Outcome:

The student will be able to:

I. Implement the techniques of Lexical Analysis and Syntax Analysis.
II. Apply the knowledge of Lex & YACC tools to develop programs.
III. Generate intermediate code.
IV. Implement Optimization techniques and generate machine level code.