KIIT University, Bhubaneswar

Compiler Design Laboratory

LEX:

1. Write a LEX program to identify *i*) number of vowel and consonants, *ii*) number of identifiers numbers, operators and keywords from a C program.
2. Write a LEX program to check the validity of a given mathematical expression.
3. Write a LEX program that replaces *i*) each instance of the keyword *float* by *double*, *ii*) more than one repeated spaces should be replaced by single space, *iii*) more than one new lines should be replaced by single new line.

YACC:

4. Program to test the validity of a simple mathematical expression of the following grammar.

$$T \rightarrow T+T \mid T-T \mid T*T \mid T/T \mid (T) \mid a$$

5. Program to evaluate the simple mathematical expression of the grammar given in Q.4. The value of *a* will be given as numeric.
6. Program to recognize strings of a language $L=\{a^n b^n, n \geq 0\}$.
7. Program to recognize strings of a language $L=\{a^m b^n, m \geq 0, n \geq 0\}$.
8. Program to recognize strings Generated by the Grammar $G=\{S \rightarrow SS+ \mid SS* \mid a\}$.
9. Program to recognize strings Generated by the Grammar $G=\{S \rightarrow Aa \mid bAc \mid dc \mid bda, A \rightarrow ab \mid a\}$.

Others:

10. Write a program for implementing *Recursive Predictive Parsing* using the following grammars:

a) $E \rightarrow E+T \mid T$, $T \rightarrow T*F \mid F$, $F \rightarrow (E) \mid a$

b) $S \rightarrow L=R \mid R$, $L \rightarrow *R \mid a$, $R \rightarrow L$

c) $S \rightarrow AaAb \mid BbBa$, $A \rightarrow \varepsilon$, $B \rightarrow \varepsilon$

d) $S \rightarrow AaS \mid b$, $A \rightarrow cB \mid dB \mid eB$, $B \rightarrow ab \mid b$

11. Write a program to implementing *Operator Precedence Parsing* algorithm using the following grammars. *Precedence table* is given.

$$E \rightarrow E+T \mid T$$
$$T \rightarrow T*F \mid F$$
$$F \rightarrow (E) \mid a$$

12. Write a program to implementing *LR* Parsing algorithm using the following grammars. *LR* parsing table is given.

a) $E \rightarrow E+T \mid T$, $T \rightarrow T*F \mid F$, $F \rightarrow (E) \mid a$

b) $S \rightarrow AA$, $A \rightarrow aA \mid b$