# GOKARAJU RANGARAJU INSTITUTE OF ENGINEERING AND TECHNOLOGY COMPILER DESIGN LAB

## Course Code: GR20A4055 L/T/P/C: 0/0/4/2 IV Year I Semester

**Course Objectives:**

1. Introduce the major concept areas of language translation and compiler design.
2. Understand practical programming skills necessary for constructing a compiler.
3. Learn parsing techniques and to parse given string.
4. Learn LEX and YACC tool to develop a scanner &parser.
5. Provide deeper insights into the concept of code generation.

## Course Outcomes:

1. Demonstrate different phases of compiler through programming language.
2. Define the role of lexical analyser and use of regular expressions.
3. Develop program for implementing parsing techniques.
4. Understand the working of LEX and YACC compiler and develop simple applications.
5. Design programs that execute faster by using code optimization techniques

# TASK 1

Design a lexical analyser for given language (ignore redundant spaces, tabs, comments new lines etc.)

# TASK 2

Write a program to recognize strings under 'a’, 'a\*b+', 'abb'.

# TASK 3

Implement symbol table formation.

# TASK 4

Write a program to implement predictive parser table.

# TASK 5

Write a program to compute First () and Follow () for the given grammar.

# TASK 6

Construct operator precedence parser.

# TASK 7

Write a program to parse a string using Shift Reduce Parser.

# TASK 8

Solve the given string using LALR parser.

# TASK 9

Write a program to implement lexical analyzer functionalities using LEX tool.

# TASK 10

Design a simple arithmetic calculator using LEX.

# TASK 11

Write a Lex program to count no of characters, words, lines and special characters in a file.

# TASK 12

Implement code optimization technique.

## Text Books:

* 1. Principles of compiler design -A.V. Aho,J.D.Ullman, Pearson Education.
  2. Modern Compiler Implementation in C- Andrew N. Appel, Cambridge University Press.

## References:

1. Lex&Yacc – John R. Levine, Tony Mason, Doug Brown,O’reilly
2. Compiler Construction- Louden, Thomson.