

# Compiler Construction

BPDC

(Lab - 02)

## 1 Understanding the *LEX*ical Analyser Generator

You are given five lex programs herewith (\*.l files). You are supposed to create 5 different folders, one per program and compile each of those as follows.

1. **Run** the command `lex program.l` //This compiles the file `program.l` and creates an equivalent C program `lex.yy.c`. Further, compile the so created C program as follows.
2. **Run** the command `cc -o outfile lex.yy.c -lfl` //This creates the *executable* file `outfile`.

The objective is to learn lex programming by understanding how the given programs respond to various input and analysing their behaviour. You are expected to refer to the **given tutorial** in tandem.

1. `program1.l` just distinguishes tokens *numbers, arithmetic operators, newline character etc.* and prints some corresponding message, depending on the action (*segment of code written in C*) written *against* each of those corresponding regular expressions. *We feed-in the input from command line. As soon as we are done with our input, press **Ctrl+d** to exit data entry mode.*
2. `program2.l` counts the number of words, lines and characters in the given input. Run `program2.l` in the same way as program1. Modify `program2.l` so that it counts only those words which are of length at least 6.
3. Run `program3.l` in the same way as above. Modify the program so as to make it recognize whether the given input is a power of two, in binary, or not.
4. For `program4.l`, copy your favorite C program “input.c” to your folder which would be the input to your lex program.
5. For `program5.l`, use the same input file “input.c”. Check your output in the file “out.c”.

Note that the last two programs don't take input from terminal but an input file.

## 2 Explain yourself

Write a lex program that would take a BITS student's roll number as input and details the student based on that. *You are expected to write regular expressions that would synthesize information like, year of joining, specialization, PS/Thesis, Registration index, Campus (..U) etc. from the given roll number. If the given input does not abide by the Roll number format, print some error message.*