

ASSIGNMENT-11

TITLE: Lex-Yacc calculator

PROBLEM STATEMENT: Write a program to implement calculator using Lex & yacc

OBJECTIVES:

- i) To study Lex and YACC
- ii) To learn their syntax
- iii) To study about their combined working

THEORY:

LEX

- Lex is scanner, program that generates lexical analyzers
- It is mostly used with YACC parser generator
- It reads the input stream and outputs source code implements the lexical analyzer in the C programming language.
- Lex will read patterns (regular expressions); then produces C code for a lexical analyzer that scans for identifiers
- Regular expressions are translated by lex to a computer program that mimics an ECA/ESM

INPUT STRUCTURE OF Lex

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Definitions section...

%%

... Rules section...

%%

... C code section (subroutines)...

Eg. %%

ECHO;

\n ECHO;

%%

int yywrap (void) {

return 1;

}

int main (void) {

yylex();

return 0;

}

Echo is an action and predefined macro in lex that writes code matched by the pattern

PROCESS OF LEX COMPILER

Lex source prog → Lex compiler → Lex.yy.c

Lex.yy.c → C Compiler → a.out

Input stream input.c → a.out → Sequence of tokens

YACC

- YACC stands for "Yet Another Compiler Compiler"
- It reads the grammar and generate C code for parser
- Grammar written in Backus Normal Form (BNF)
- BNF grammar used to express context-free languages
- This is bottom up or shift reducing parser
- It uses stack for storing (LIFO)

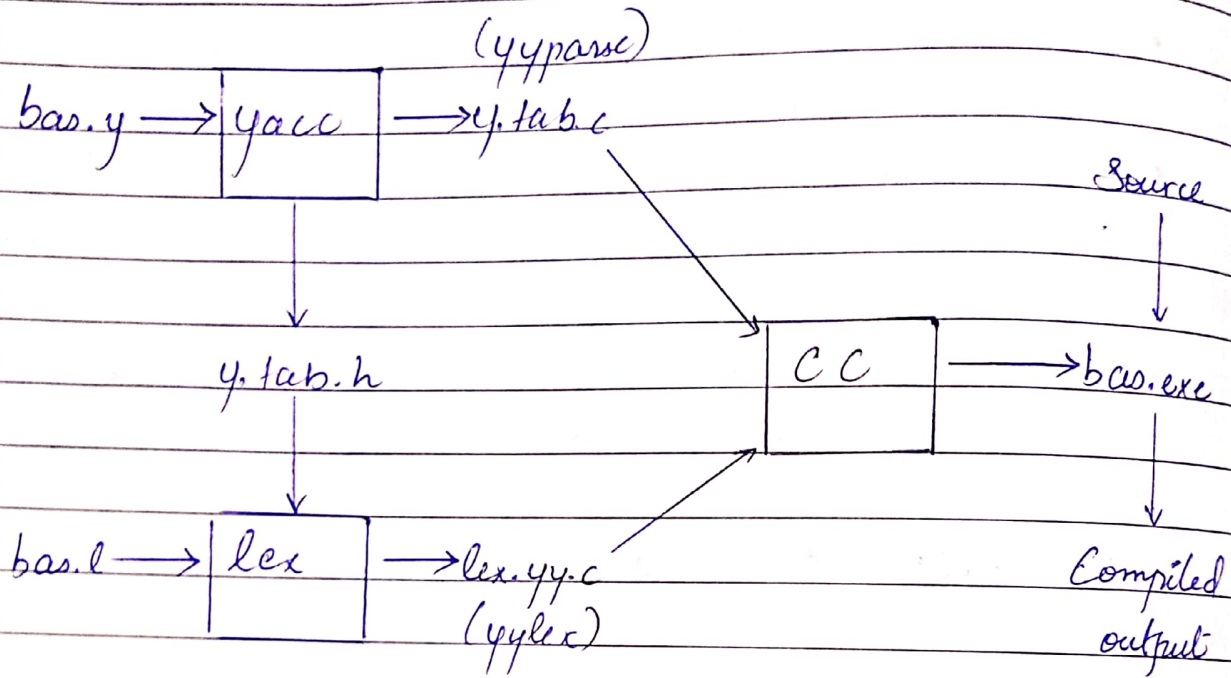
SECTIONS OF YACC INPUT

... Definitions ...
% %
... Rules ...
% %
... Subroutines ...

BASIC OPERATIONAL SEQUENCE OF YACC

<u>Gram.y</u>	File containing desired grammar in YACC format
<u>YACC</u>	YACC program
<u>y.tab.c</u>	C source program created by YACC
<u>CC or gcc</u>	C compiler
<u>a.out</u>	Executing program that will parse generator given in gram.y

LINKING OF LEX AND YACC



CONCLUSION:

Thus we have studied about Lex & Yacc their structure, linkage and have also successfully implemented the calculator using Lex & Yacc.