SLV

Assignment no. 11

33213

Title:- calculator using lex and yacc.

Problem Statement:- Write a program to implem calculator using LEX and YACC.

Objective:- To understand the process of lexica analysis and parsing, thrugh tools like lex & YACC.

Theory:-

Lexical analysis:- The action of scanning the source program into proper syntactic classes is known as lexical analysis. Scanner / lexical analyser scans the program and converts it into basic elements or taken of the language.

The goals of parsing are to check the validity of a source of string & to determine its syntactic structure

For a correct input, the parser builds a parse tree to reflect the sequence of derivation or reduction performed. The parse tree is passed to next phase of compiler.

Bottom up parsing:-

A bottom up parser constructs a parse tree for a source string through a sequence of reductions. The source string is valid if it can be reduced to 'S' i.e. the starting symbol. if not, then

the error is indicated, and reported during the process of reduction.

Top down parsing:

The top down parsing according to the grammar G tries to derive the matching sequence of derivations, starting with distinguished symbol of G.

LEX: Several tools have been built for constructing lexical analyser from special purpose notations based on regular expressions. Several algorithms exists for compiling regular expressions into pattern matching algorithm.

lex is a tool widely used to specify lexical analyser for variety of languages. the tool shows how the specsimplification of pattern using regular expression can be combined with actions that LA may be required to perform.

Translation rules structure of LA is such that it keep trying to recognize tokens, until action associated with one found causes a return.

yyval is a variable whose definition appears in lex.yacc output lex.yy.c and which is also available to parser.

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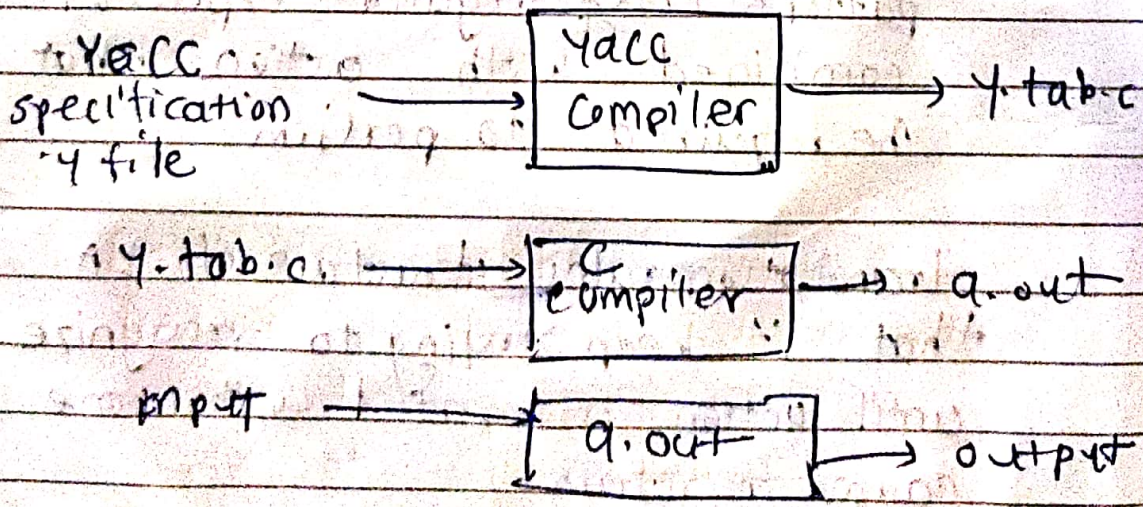
Purpose of yyval is to hold the lexical value returned. 'return' statement can only return a code for token class.

Variable 'yytext' corresponds to the pointer to the first character of lexeme & 'yyleng' is variable that stores the length of lexeme.

Parser generator (YACC):- It stands for Yet Another Compiler Compiler. Parser generator can be used to facilitate the construction of ~~first~~ front end of compiler. It makes use of shift reduce parser. Ambiguity in grammar can be resolved by specifying the operators and their associativity either left or right.

The operator which appear in first line are of lowest priority while on next lines are of higher priority.



Conclusion. Calculator was implemented using lex & yacc.