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Lab Assignment - 7

Title: Validation of ~~compound~~ compound statement

Problem statement: write a program using LEX & YACC to validate compound statements in High level language

Objective:

- To study YACC tool for syntax analysis
- To master YACC utility.

Theory:

Syntax Analysis of a Parser

Syntax analysing is second phase of the compiler design that comes after lexical analysis. It analyses the syntactical structure of the given input. It checks if the given input is in the correct syntax of the programming language in which the input which has been written. It is known as the Parse Tree or Syntax Tree

Definitions of yylval, yyparse() & yyerror()

yylval: tab h1. generated by yacc with the -d option. This variable is defined as a C union having a member function called text to point to character strings and a member val to hold a integer value. This definition was performed in the yacc specification

yyparse(): You call this function to cause parsing to occur. This function reads tokens, executes actions and ultimately returns when it encounters end-of-input.

yerror: It is a lex and yacc function that simply display a text using string argument to stderr using fprintf, and returns the integer value received from fprintf.

Input: Source specification (*.y) file for loop statement like if statements while and do-while statement

Output: Statement is grammatically correct or not

Conclusion: Parser for validation of compound statement is successfully done.

FAQ's

1. What is the role of y.tab.h file?

Before writing a LEX program, there must be some way by which the YACC program can tell the LEX declared in the YACC program. This is facilitated by the file y.tab.h which contains the file

Eg: #define DIGIT 253

Note that 253 is a YACC generated constant to represent DIGIT. The constant may vary at different defining a macro identifier corresponding to it.

2. Explain YACC tool.

YACC stands for Yet Another Compiler. It provides a tool to produce a parser for a given grammar and it is designed to compile a LALR (1) grammar.

YACC is used to produce a source code of the syntactic analyzer of the language produced by LALR (1) grammar. The input of YACC is the rule or grammar and the output is a C program.