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Subject: PL IV Roll No.: 2183505 Exp. No.: 5

Name of the Experiment: _____

Implement Parser for Sample Lang

Performed on: _____

Submitted on: _____

Marks	Teacher's Signature with date
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Title:- Implement Parser for sample language using YACC

Problem Statement:-

Implement YACC for subset of C
(for loop / switch stmt / while loop / if loop)

Objectives:-

- 1) To understand the basic syntax of YACC
- 2) To understand how a compiler parsing phase works for subset of C

Theory:-

- Parser generator facilitates the construction of the front end of a compiler
- YACC is LALR parser generator
- It is used to implement hundreds of compilers
- YACC is command of the UNIX system
- YACC stands for "Yet Another Compiler Compiler"

A YACC Source program has three parts:-

Declaration

%%

Translation Rules

%%

Supporting Subroutines

* Implementation Details / Design logic:-

• Algorithm:-

• LEX:-

- 1) Declaration of header files especially y.tab.h which contains declarations for the tokens FOR, OPBR, CLBR, SEMIC, RELOP, EQU, ID, NUM, RELOP, INC, DEC

- 2) Define the regular expression for the tokens FOR, OPBR, CLBR, SEMIC, RELOP, EQU, ID, NUM, RELOP, INC, DEC.
- 3) End of declaration section with %%
- 4) Match regular expression
- 5) If match found then store it in `yyval` where `p` is pointer declared in YACC
- 6) Return the token
- 7) End rule-action by %%
- 8) End

• YACC

- 1) Declaration of header files
- 2) Declare tokens FOR, OPBR, CLBR, SEMIC, RELOP, EQU, ID
 @a NUM, RELOP, INC, DEC
- 3) End of declaration section by %%
- 4) Declaration of grammar
- 5) End the section by %%
- 6) Declare `main()` function {
 @a Call `yyparse()` function with `yypin`
- 7) End

* FAQ's

1) When does yywrap function return 1 and what is data type of yyin?

Ans

yywrap():-

- When yylex() finished with first file, it calls yywrap() which opens the next file and yylex() continues
- When yywrap() has exhausted all the lines of code, it returns 1 & yylex() returns with value 0

yyin():-

- yyin & yyout are the FILE *s to input & output file respectively
- Both are accessible and can be assigned to a value other than stdin & stdout
- yylex() reads the i/p indicated by the global variable file pointer
- yyin defaults to standard input
- yylex is of type int, so a non zero value is normally returned

Q.2. What is the significance of YACC?

Ans. YACC stands for Yet Another Compiler Compiler

- YACC provides a tool to produce a parser for a given grammar
- YACC is a program designed to compile a LALR(1) grammar
- It is used to produce the source code of the syntactic analyzer

Q.3) For which phase of compilation is YACC used?

Ans. YACC provides a tool to produce a parser for a given grammar

- YACC is a program designed to compile a LALR(1) program
- It is used for Syntactic Analysis and input is the rule or grammar & the output is a C program.

★ Conclusion:-

Purpose of this assignment is fulfilled by understanding the implementation of parser for sample language using YACC.