**Compiler Design Lab**

**Assignment-6**

**Implementation of Syntax Checker using Yacc Tool**

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**Code:**

**analyser.l**

**%{**

#include <stdlib.h>

#include <stdio.h>

#include "y.tab.h"

void yyerror**(**char**\*);**

int linenum**=**0**;**

extern int yylval**;**

**%}**

**%%**

\n **{**linenum**++;}**

**[** \t**]+** **;**

int**|**float**|**char**|**double **{return** DATATYPE**;}**

**while** **{return** WHILE**;}**

**if** **{return** IF**;}**

**else** **{return** ELSE**;}**

**for** **{return** FOR**;}**

**[**0**-**9**]+** **{**yylval **=** atoi**(**yytext**);** **return** INTEGER**;}**

**[**"].+["**]** **{return** STRING**;}**

**[**a**-**zA**-**Z\_**]+[**0**-**9**]\*?** **{return** IDENTIFIER**;}**

**[,=;]** **{return** yytext**[**0**];}**

"<"**|**"<="**|**">"**|**">="**|**"=="**|**"!=" **{return** RELATIONAL**;}**

"+"**|**"-"**|**"\*"**|**"/" **{return** ARITHMETIC**;}**

"++"**|**"--" **{return** UNARYOP**;}**

"(" **{return** **\***yytext**;}**

")" **{return** **\***yytext**;}**

"{" **{return** **\***yytext**;}**

"}" **{return** **\***yytext**;}**

**%%**

int yywrap **(**void**)**

**{**

printf**(**"\nThe given program is syntactically correct.\t\n"**);**

**return** 1**;**

**}**

void yyerror**(**char **\***s**)**

**{**

printf**(**"\nSyntax error at line number %d\n"**,**linenum**);**

exit**(**1**);**

**}**

int main**()**

**{**

FILE **\***fp**;**

fp **=** fopen**(**"input.c"**,**"r"**);**

**if** **(**fp **==** **NULL)**

**{**

printf**(**"File not found\n"**);**

exit**(**0**);**

**}**

printf**(**"Given input:\n"**);**

char c **=**fgetc**(**fp**);**

**while(**c**!=**EOF**)**

**{**

printf**(**"%c"**,**c**);**

c**=**fgetc**(**fp**);**

**}**

fclose**(**fp**);**

fp **=** fopen**(**"input.c"**,**"r"**);**

yyin **=** fp**;**

yyparse**();**

fclose**(**fp**);**

**return** 0**;**

**}**

**analyser.y**

**%{**

#include <stdio.h>

#include <stdlib.h>

#include <ctype.h>

void yyerror**(**char**\*);**

int yylex**(**void**);**

#include "y.tab.h"

**%}**

**%**token INTEGER STRING IDENTIFIER RELATIONAL WHILE FOR ARITHMETIC UNARYOP DATATYPE IF ELSE

**%%**

PROGRAM**:** LINE

LINE**:** LINE STATEMENT **|** STATEMENT

STATEMENT**:** DATATYPE STATEMENTLIST ';'

**|** STATEMENTLIST ';'

**|** condition\_st

STATEMENTLIST**:** STATEMENTLIST ',' INIT **|** INIT

INIT**:** IDENTIFIER **|** EXPR

EXPR**:** IDENTIFIER '=' ASSIGNMENTEXPR **|** IDENTIFIER UNARYOP **|** IDENTIFIER '=' ARITHMETIC ASSIGNMENTEXPR

ASSIGNMENTEXPR**:** IDENTIFIER ARITHMETIC ASSIGNMENTEXPR

**|** INTEGER ARITHMETIC ASSIGNMENTEXPR

**|** IDENTIFIER UNARYOP

**|** IDENTIFIER

**|** INTEGER

**|** STRING

condition\_st**:** WHILE '(' condition\_expr ')'

**|** WHILE '(' condition\_expr ')' '{' LINE '}'

**|** IF '(' condition\_expr ')' LINE ELSE

**|** IF '(' condition\_expr ')' '{' LINE '}' ELSE '{' LINE '}'

**|** IF '(' condition\_expr ')' ELSE '{' LINE '}'

**|** IF '(' condition\_expr ')' '{' LINE '}' ELSE

**|** FOR '('DATATYPE IDENTIFIER '=' INTEGER ';' condition\_expr ';' EXPR ')' '{' LINE '}'

**|** FOR '(' DATATYPE IDENTIFIER '=' INTEGER ';' condition\_expr ';' EXPR ')'

condition\_expr**:** IDENTIFIER RELATIONAL condition\_expr

**|** INTEGER RELATIONAL condition\_expr

**|** IDENTIFIER

**|** INTEGER

**%%**

**Output:**



