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CSE-C

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Assignment 6

Develop a Syntax checker to recognize the tokens necessary for the following statements by writing suitable grammars

Assignment statement

Conditional statement

Looping statement

**CHECK.L**

%{

#include<stdio.h>

#include<stdlib.h>

#include "y.tab.h"

void yyerror(char \*);

int yylex(void);

int yylval;

%}

assign ("=")

relop ("=="|"!="|">="|"<="|"<"|">")

arithop ("+"|"-"|"/"|"%"|"\*")

inde ("++"|"--")

logical ("||"|"&&")

id [a-zA-Z\_][a-zA-Z0-9\_]\*

%%

[0-9]+ {return NUM;}

{assign} {return ASSIGN;}

{relop} {return RELOP;}

{logical} {return LOGIC;}

{arithop} {return ARITH;}

{inde} {return INDE;}

"if" {return IF;}

"else if" {return ELSEIF;}

"else" {return ELSE;}

"for" {return FOR;}

"while" {return WHILE;}

{id} {return ID;}

[ \t] {;}

[\n] {;}

. {return \*yytext;}

%%

int yywrap(void)

{

return 1;

}

**CHECK.Y**

%{

#include<stdio.h>

#include<stdlib.h>

#include<string.h>

int yylex(void);

int yyerror(char \*);

int flag=0;

%}

%token NUM ASSIGN ID

%token IF ELSEIF ELSE

%token FOR WHILE

%token RELOP LOGIC ARITH INDE

%%

stmts : bl stmts

| bl

;

bl : Loop '{' bl

| condstmt '{' bl

| expression ';'

| '}'

;

Loop : FOR '(' expression ';' condition ';' expression ')'

| FOR '(' ';' condition ';' ')'

| WHILE '(' condition ')'

;

condstmt : IF '(' condition ')'

| ELSEIF '(' condition ')'

| ELSE

;

condition : condn LOGIC condition

| condn

;

condn : ID RELOP ID

| ID RELOP NUM

| ID

;

expression : init

| ID ASSIGN ID ARITH ID

| ID ASSIGN ID ARITH NUM

| ID ASSIGN NUM ARITH NUM

| ID INDE

| INDE ID

;

init : ID ASSIGN init

| ID ASSIGN ID

| ID ASSIGN NUM

;

%%

int yyerror(char \*s)

{

flag = 1;

return 1;

}

int main(void)

{

printf("\n\nSYNTAX CHECKER USING YACC\n");

printf("\nCODE\n\n");

FILE \*fp = fopen("file.txt", "r+");

char c = fgetc(fp);

while (c != EOF)

{

printf ("%c", c);

c = fgetc(fp);

}

fclose(fp);

printf("\n\n");

FILE \*fps = fopen("file.txt", "r+");

yyparse();

fclose(fps);

if(flag==1)

{

printf("\nSyntactically Incorrect.\n");

}

else

{

printf("\nSyntactically Correct.\n");

}

return 0;

}

**FILE.TXT**

a = 3;b=10;

for(a = 0; a < b; a++){

if(a >= b){

a = a + 1;

}

else{

a = a - 1;

}

while(b < 10){

b++;

}

}

**OUTPUT:**

Text

Description automatically generated

Text

Description automatically generated

**LEARNING OBJECTIVE:**

Syntax Checker was implemented using yacc.