**Week 12 Assignment**

**Problem**

Generate quadruples for given arithmetic expression using LEX and YACC

**intermediate\_code\_generator.y**

%{

#include"y.tab.h"

#include<stdio.h>

char addtotable(char,char,char);

int index1=0;

char temp = 'A'-1;

struct expr{

char operand1;

char operand2;

char operator;

char result;

};

%}

%union{

char symbol;

}

%left '+' '-'

%left '/' '\*'

%token <symbol> LETTER NUMBER

%type <symbol> exp

%%

statement: LETTER '=' exp ';' {addtotable((char)$1,(char)$3,'=');};

exp: exp '+' exp {$$ = addtotable((char)$1,(char)$3,'+');}

|exp '-' exp {$$ = addtotable((char)$1,(char)$3,'-');}

|exp '/' exp {$$ = addtotable((char)$1,(char)$3,'/');}

|exp '\*' exp {$$ = addtotable((char)$1,(char)$3,'\*');}

|'(' exp ')' {$$= (char)$2;}

|NUMBER {$$ = (char)$1;}

|LETTER {(char)$1;};

%%

struct expr arr[20];

void yyerror(char \*s){

printf("Errror %s",s);

}

char addtotable(char a, char b, char o){

temp++;

arr[index1].operand1 =a;

arr[index1].operand2 = b;

arr[index1].operator = o;

arr[index1].result=temp;

index1++;

return temp;

}

void threeAdd(){

int i=0;

char temp='A';

while(i<index1){

printf("%c:=\t",arr[i].result);

printf("%c\t",arr[i].operand1);

printf("%c\t",arr[i].operator);

printf("%c\t",arr[i].operand2);

i++;

temp++;

printf("\n");

}

}

void fouradd(){

int i=0;

char temp='A';

while(i<index1){

printf("%c\t",arr[i].operator);

printf("%c\t",arr[i].operand1);

printf("%c\t",arr[i].operand2);

printf("%c",arr[i].result);

i++;

temp++;

printf("\n");

}

}

int find(char l){

int i;

for(i=0;i<index1;i++)

if(arr[i].result==l) break;

return i;

}

void triple(){

int i=0;

char temp='A';

while(i<index1){

printf("%c\t",arr[i].operator);

if(!isupper(arr[i].operand1))

printf("%c\t",arr[i].operand1);

else{

printf("pointer");

printf("%d\t",find(arr[i].operand1));

}

if(!isupper(arr[i].operand2))

printf("%c\t",arr[i].operand2);

else{

printf("pointer");

printf("%d\t",find(arr[i].operand2));

}

i++;

temp++;

printf("\n");

}

}

int yywrap(){

return 1;

}

int main(){

printf("Enter the expression: ");

yyparse();

threeAdd();

printf("\n");

fouradd();

printf("\n");

triple();

return 0;

}

**intermediate\_code\_generator.l**

%{

#include"y.tab.h"

extern char yyval;

%}

%%

[0-9]+ {yylval.symbol=(char)(yytext[0]);return NUMBER;}

[a-z] {yylval.symbol= (char)(yytext[0]);return LETTER;}

. {return yytext[0];}

\n {return 0;}

%%

}**Input & Output:**

