WEEK 10 CD LAB AP19110010369-CHANDANA CSE C

Generate quadruples for expression that will be generated by the following CFG.

E → E+T |T
E'→ T*F | F
F → (E) | d

LEX CODE:

```
%{
#include<stdio.h>
#include "quad.tab.h"
#include<string.h>
%}
%%
[a-z]([a-z]|[0-9])* { strcpy(yylval.exp,yytext);

return VAR;
}
\t ;
\n return 0;
. return yytext[0];
%%
```

YACC CODE:

```
%{
#include<stdio.h>
#include<string.h>
struct quad
{
char op[5];
char arg1[10];
char arg2[10];
char result[10];
}QUAD[30];
int i=0,j;
%}
%union
{
```

```
char exp[10];
}
%token <exp> VAR
%type <exp> S E T F
%%
S: E { printf("\n THere are %d quadrupls n",i);
printf("\n List of Quadruples are: \n");
for(j=0;j<i;j++)

printf("%s\t%s\t%s\t%s\n",QUAD[j].op,QUAD[j].arg
1,QUAD[j].arg2,QUAD[j].result);

}
;
E: E'+'T { printf("\n E ->E+T, $1=%s,
$3=%s,$$=%s\n",$1,$3,$$);
strcpy(QUAD[i].op,"+");
strcpy(QUAD[i].arg1,$1);
strcpy(QUAD[i].arg2,$3);
strcpy(QUAD[i].result,$$);i++;
i++;
}
| T { printf("\n E -> T, $1=%s, $$=%s\n",$1,$$);}
;
T: T'*'F { printf("\n T -> T*F, $1=%s, $3=%s,
$$=%s\n",$1,$3,$$);
strcpy(QUAD[i].op,"*");
strcpy(QUAD[i].arg1,$1);
strcpy(QUAD[i].arg2,$3);
strcpy(QUAD[i].result,$$);
i++;
}
| F { printf("\n T -> F, $1=%s, $$=%s\n",$1,$$);}
;

F: VAR {printf("\n F ->VAR and $1=%s, $$=%s \n",$1,$$);}
;
%%
main()
{
yyparse();
}
int yywrap(){
return 1;
```

```
}
void yyerror(char *s)
{
printf("%s",s);
}
```

OUTPUT:

```
Microsoft Windows [Version 10.0.19043.1348]
(c) Microsoft Corporation. All rights reserved.

C:\Users\chandugeetu>cd Desktop

C:\Users\chandugeetu\Desktop>flex quad.l

C:\Users\chandugeetu\Desktop>yacc -d quad.y

C:\Users\chandugeetu\Desktop>gcc lex.yy.c quad.tab.c -w

C:\Users\chandugeetu\Desktop>a
a+b*c

 F ->VAR and $1=a, $$=a

 T -> F, $1=a, $$=a

 E -> T, $1=a, $$=a

 F ->VAR and $1=b, $$=b

 T -> F, $1=b, $$=b

 F ->VAR and $1=c, $$=c

 T -> T*F, $1=b, $3=c,$$=b

 E ->E+T, $1=a,$3=b,$$=a

 THere are 3 quadrupls n
 List of Quadruples are:
*       b       c       b
+       a       b       a
```

```
F ->VAR and $1=a, $$=a

T -> F, $1=a, $$=a

E -> T, $1=a, $$=a
syntax error
```

```
C:\Users\chandugeetu\Desktop>a
a+c+d*f+e

F ->VAR and $1=a, $$=a

T -> F, $1=a, $$=a

E -> T, $1=a, $$=a

F ->VAR and $1=c, $$=c

T -> F, $1=c, $$=c

E ->E+T, $1=a,$3=c,$$=a

F ->VAR and $1=d, $$=d

T -> F, $1=d, $$=d

F ->VAR and $1=f, $$=f

T -> T*F, $1=d, $3=f,$$=d

E ->E+T, $1=a,$3=d,$$=a

F ->VAR and $1=e, $$=e

T -> F, $1=e, $$=e

E ->E+T, $1=a,$3=e,$$=a

THere are 7 quadrupls n
List of Quadruples are:
+       a       c       a

*       d       f       d
+       a       d       a

+       a       e       a


C:\Users\chandugeetu\Desktop>
```