Practical 5

Compiler Construction

2CS701

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20BCE515

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Aim :

To implement a calculator in YACC: Syntax Directed Translation

Extend practical assignment 1 to generate a Symbol Table for identifiers, and label in the code. (Symbol Table columns : Name, Value)

Use YACC to Write a Grammar for multiple expression statements, and apply syntax directed translation for calculator.

P5.l :

```
%{
#include<stdio.h>
#include"y.tab.h"
extern int yylval;
%}

%%
"";
[0-9]+ {
    yylval=atoi(yytext);
    return NUMBER;
}
[\t] ;

[\n] return 0;

. return yytext[0];

%%

int yywrap()
{
    return 1;
}
```

P5.y :

```
%{
#include <stdio.h>
int flag=0;
%}
%token NUMBER
%left '+' '-'
```

```
%left '*' '/' '%'
%left '(' ')'
%%
ArithmeticExpression: E{
    printf("\nResult=%d\n",$$);
    return 0;
};
E:E'+'E {$$=$1+$3;}
 |E'-'E {$$=$1-$3;}
 |E'*'E {$$=$1*$3;}
 |E'/'E {$$=$1/$3;}
 |E'%'E {$$=$1%$3;}
 |'('E')' {$$=$2;}
 | NUMBER {$$=$1;}
 ;
%%

void main()
{
    printf("\nEnter any Arithmetic Expression: ");
    yyparse();
    if(flag==0)
    {
        printf("\nEntered Arithmetic Expression is Valid");
    }
}

void yyerror()
{
    printf("\nEntered Arithmetic Expression is Invalid");
    flag=1;
}
```

Output :

```
D:\BE\Sem-7\CC\Lab\Practical\Practical 5>a.exe;

Enter any Arithmetic Expression: 2+8*6

Result=50

Entered Arithmetic Expression is Valid
D:\BE\Sem-7\CC\Lab\Practical\Practical 5>a.exe

Enter any Arithmetic Expression: 2++

Entered Arithmetic Expression is Invalid
D:\BE\Sem-7\CC\Lab\Practical\Practical 5>a.exe

Enter any Arithmetic Expression: 2+(3*4+)

Entered Arithmetic Expression is Invalid
D:\BE\Sem-7\CC\Lab\Practical\Practical 5>
```