

SSN COLLEGE OF ENGINEERING, KALAVAKKAM
DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

UCS1602 - Compiler Design Programming

Assignment-5

Implementation of Desk Calculator using Yacc Tool

Name : Rahul Ram M

Reg no. : 185001121

calc.l:

```
%{
```

```
#include<stdio.h>
```

```
#include<stdlib.h>
```

```
#include"y.tab.h"
```

```
void yyerror(char*);
```

```
extern int yylval;
```

```
%}
```

```
num [0-9]+
```

```
Op "+"|"-"|"*"|"/"|"%"|"^"|"&&"|"||"|"!"|">>"|"<<"
```

```
paran "("|")"
```

```
%%
```

```
{num} {yylval=atoi(yytext);return id;}
```

```
{Op} return *yytext;
```

```
{paran} return *yytext;
```

```
[\t];
```

```
[\n] return 0;
```

```
. {yyerror("Invalid Character in input!!!");exit(1);} %%
```

```
%%
```

```
int yywrap(void)
```

```
{
```

```
return 1;
```

```
}
```

calc.y:

```
%{
```

```
#include<stdio.h>
```

```
#include<stdlib.h>
```

```
#include<math.h>
```

```
#include"y.tab.h"
```

```
int yylex(void);
```

```
void yyerror(char *str);
```

```
%}
```

%token id

%left '+' '-'

%left '*' '/'

%left '^'

%left '(' ')'

%left '!' '&&' '||'

%left '>>' '<<'

%%

```
Expr: E {  
    printf("Result is %d\n\n", $$);  
    return 0;  
};
```

E: E '+' E { \$\$ = \$1 + \$3; }

| E '-' E { \$\$ = \$1 - \$3; }

| E '*' E { \$\$ = \$1 * \$3; }

| E '/' E { \$\$ = \$1 / \$3; }

| E '^' E { \$\$ = pow(\$1, \$3); }

| '(' E ')' { \$\$ = \$2; }

| E '&' E { \$\$ = \$1 & \$3; }

| E '|' E { \$\$ = \$1 | \$3; }

| '!' E { \$\$ = ! \$2; }

| E '<<' E { \$\$ = \$1 < \$3; }

| E '>>' E { \$\$ = \$1 > \$3; }

| id { \$\$ = \$1; }

;

%%

```
void yyerror(char *str)
{
    fprintf(stderr, "%s\n", str);
}
```

```
}
```

```
void main()
```

```
{
```

```
for(int i=0;i<5;i++){
```

```
printf("Enter Expression:");
```

```
yyparse();
```

```
}
```

```
exit(0);
```

```
}
```

Sample I/O:

Enter Expression:5+6

Result is 11

Enter Expression:(6*7)*6

Result is 252

Enter Expression:5-3

Result is 2

Enter Expression:9-

syntax error

Enter Expression:(7*5

syntax error

Learning Outcomes:

This assignment helped me

1. To understand the implementation of calculator using yacc tool
2. To understand how yacc tool helps in parsing the input expression.