

LAB8: Yacc for sample language.

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Code:

calc.y

```
%{
    #include<stdio.h>
    #include<math.h>
    int yyerror();
}%

%union{
    float f;
}

%token<f> NUM NEWLINE
%type<f> expr
%type<f> start

%left '+' '-'
%left '*' '/' '%'

%%

start: expr NEWLINE{
        int answer=$1;
        printf("Answer of given Expression: %d\n",answer);
        return 0;
    }
```

```

        ;
expr: expr '+' expr {$$=$1+$3;}
      | expr '-' expr {$$=$1-$3;}
      | expr '*' expr {$$=$1*$3;}
      | expr '/' expr {$$=$1/$3;}
      | NUM          {$$=$1;}
        ;

%%

int yyerror(char *message)
{
    printf("YACC error: %s\n",message);
    exit(1);
}

int main()
{
    while(1){
        printf("Enter the Expression: ");
        yyparse();
    }
}

```

calc.l

```

%{
    #include<stdio.h>
    #include"y.tab.h"
}%

integer [0-9]+
float ([0-9]+)[.][0-9]+

%%

```

```
{integer} {    yylval.f=atof(yytext);
               return NUM;
            }
```

```
{float} { yylval.f=atof(yytext);
          return NUM;
        }
```

```
.            return *yytext;
```

```
[\n]        return NEWLINE;
```

```
%%
```

```
int yywrap()
```

```
{
    return 1;
}
```

Output:

```
D:\00 Study\SEM 6\0LAB\LT\LAB 8>flex calc.l
D:\00 Study\SEM 6\0LAB\LT\LAB 8>bison -dy calc.y
D:\00 Study\SEM 6\0LAB\LT\LAB 8>gcc lex.yy.c y.tab.c -o calc.exe
y.tab.c: In function 'yyparse':
y.tab.c:601:16: warning: implicit declaration of function 'yylex' [-Wimplicit-function-declaration]
  # define YYLEX yylex ()
                  ^~~~~~
y.tab.c:1246:16: note: in expansion of macro 'YYLEX'
    yychar = YYLEX;
              ^~~~~~
calc.y: In function 'yyerror':
calc.y:35:2: warning: implicit declaration of function 'exit' [-Wimplicit-function-declaration]
    exit(1);
    ^~~~~
calc.y:35:2: warning: incompatible implicit declaration of built-in function 'exit'
calc.y:35:2: note: include '<stdlib.h>' or provide a declaration of 'exit'
calc.y:31:1:
+#include <stdlib.h>
%%
calc.y:35:2:
    exit(1);
    ^~~~~
```

```
D:\00 Study\SEM 6\0LAB\LT\LAB 8>calc.exe
Enter the Expression: 5+7
Answer of given Expression: 12
Enter the Expression: 5-7
Answer of given Expression: -2
Enter the Expression: 5*7
Answer of given Expression: 35
Enter the Expression: 5/7
Answer of given Expression: 0
Enter the Expression: 5^
YACC error: syntax error
D:\00 Study\SEM 6\0LAB\LT\LAB 8>
```