

ASSIGNMENT 5: Implementation of Desk Calculator using Yacc Tool

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Code:

Calculator.l

```
%{
#include<stdio.h>
#include<stdlib.h>
#include<string.h>
#include "y.tab.h"
extern int yylval;
}%
%%
[0-9]+ {
    yylval = atoi(yytext);
    return INTEGER;
}
(" " | "\t") { }
("+|-|*|/|^|"|"") { return *yytext; }
. {
    char err[25];
    sprintf(err, "Invalid character: %s\n", yytext);
    yyerror(err);
}
```

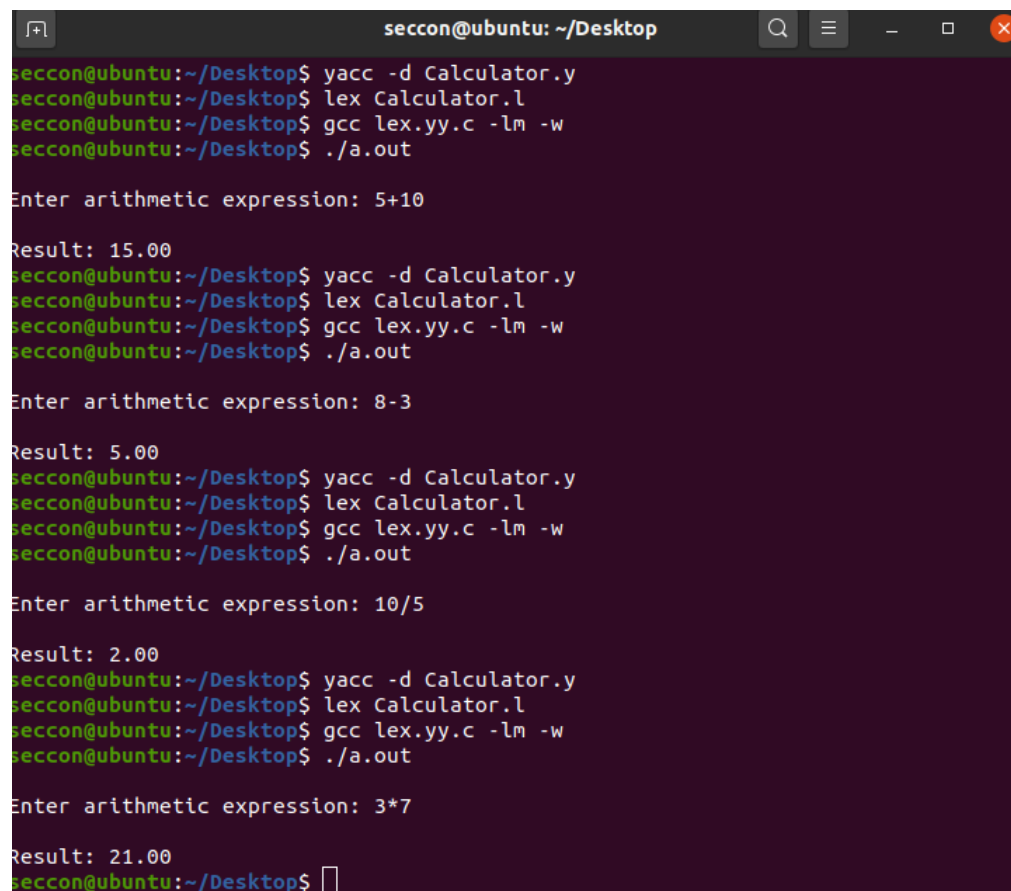
Calculator.y

```
%{
#include<stdio.h>
#include<stdlib.h>
#include<math.h>
int yylex(void);
#include "y.tab.h"
}%
%token INTEGER
%%
program: line program
        | line
line: expr '\n' { printf("%d\n", $1); }
expr: expr '+' mulex { $$ = $1 + $3; }
     | expr '-' mulex { $$ = $1 - $3; }
     | mulex { $$ = $1; }
mulex: mulex '*' powex { $$ = $1 * $3; }
      | mulex '/' powex { $$ = $1 / $3; }
```

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```
    | powex { $$ = $1; }
powex: powex '^' term { $$ = pow($1, $3); }
    | term { $$ = $1; }
term: '(' expr ')' { $$ = $2; }
    | INTEGER { $$ = $1; }
%%
int yyerror(char* s)
{
    fprintf(stderr, "%s\n", s);
    return 0;
}
int yywrap()
{
    return 1;
}
int main()
{
    yyparse();
    return 0;
}
```

OUTPUT:



```
seccon@ubuntu: ~/Desktop
seccon@ubuntu:~/Desktop$ yacc -d Calculator.y
seccon@ubuntu:~/Desktop$ lex Calculator.l
seccon@ubuntu:~/Desktop$ gcc lex.yy.c -lm -w
seccon@ubuntu:~/Desktop$ ./a.out

Enter arithmetic expression: 5+10

Result: 15.00
seccon@ubuntu:~/Desktop$ yacc -d Calculator.y
seccon@ubuntu:~/Desktop$ lex Calculator.l
seccon@ubuntu:~/Desktop$ gcc lex.yy.c -lm -w
seccon@ubuntu:~/Desktop$ ./a.out

Enter arithmetic expression: 8-3

Result: 5.00
seccon@ubuntu:~/Desktop$ yacc -d Calculator.y
seccon@ubuntu:~/Desktop$ lex Calculator.l
seccon@ubuntu:~/Desktop$ gcc lex.yy.c -lm -w
seccon@ubuntu:~/Desktop$ ./a.out

Enter arithmetic expression: 10/5

Result: 2.00
seccon@ubuntu:~/Desktop$ yacc -d Calculator.y
seccon@ubuntu:~/Desktop$ lex Calculator.l
seccon@ubuntu:~/Desktop$ gcc lex.yy.c -lm -w
seccon@ubuntu:~/Desktop$ ./a.out

Enter arithmetic expression: 3*7

Result: 21.00
seccon@ubuntu:~/Desktop$
```

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