



2CS701- Compiler Construction

Practical 5

Aim: To implement a calculator in YACC: Syntax Directed Translation.

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

Author: Darshil Maru 20BCE514

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Guide: Prof. Deepti Saraswat

Calc.l File:

```
%{ /*Declarations */
#include <stdlib.h>
void yyerror(char *);
#include "y.tab.h"
%}
%%
[0-9]+    { yylval = atoi(yytext);
           return INTEGER;
        }
[-+*/\n]  return *yytext;
PLUS      return '+';
MINUS     return '-';
MULTIPLY  return '*';
TIMES     return '*';
DIVIDE    return '/';
[ \t] ;
.         yyerror("invalid character");
%%
int yywrap(void) {
return 1;
}
```

Calc.y File:

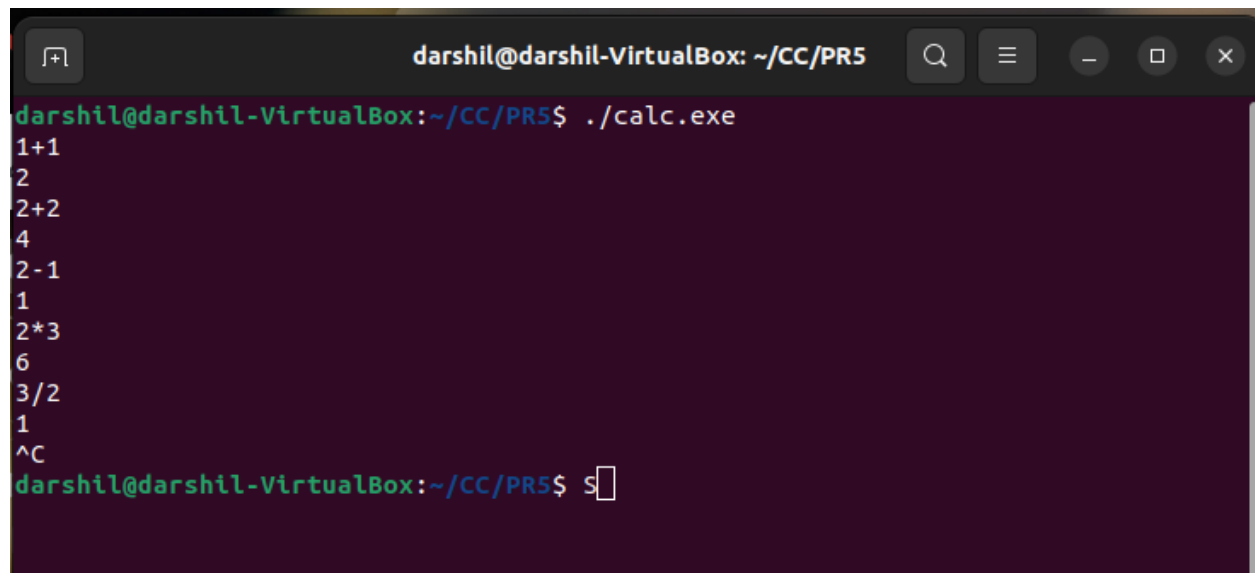
```
%{ /*Declarations */
#include <stdio.h>
int yylex(void);
void yyerror(char *);
%}
%token INTEGER
%%
program:
    program expr '\n' { printf("%d\n", $2); }
    |
    ;
expr:
```

```

    INTEGER { $$ = $1; }
    | expr '+' expr { $$ = $1 + $3; }
    | expr '-' expr { $$ = $1 - $3; }
    | expr '*' expr { $$ = $1 * $3; }
    | expr '/' expr { $$ = $1 / $3; }
    ;
%%
void yyerror(char *s) {
    fprintf(stderr, "%s\n", s);
}
int main(void) {
    yyparse();
    return 0;
}

```

Output:



The screenshot shows a terminal window titled 'darshil@darshil-VirtualBox: ~/CC/PR5'. The user has executed the command './calc.exe'. The program's output is as follows:

```

1+1
2
2+2
4
2-1
1
2*3
6
3/2
1
^C
darshil@darshil-VirtualBox:~/CC/PR5$ S

```

The output demonstrates basic arithmetic operations: addition (1+1=2, 2+2=4), subtraction (2-1=1), multiplication (2*3=6), and division (3/2=1). The program terminates with a Ctrl+C (^C) signal, and the prompt returns to the user, who has entered the letter 'S'.