LAB 7

Name :- Amit Kumar
Roll No. :- 220103021
Section :- B

1. Write a YACC program to implement calculator and recognize a valid arithmatic expression .

Calculator.l :-

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

/* Rule Section */
%%
[0-9]+ {
                    yylval=atoi(yytext);
                    return NUMBER;

          }
[\t] ;

[\n] return 0;

. return yytext[0];

%%

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

claculator.y :-

```
%{
/* Definition section */
#include <stdio.h>
int flag = 0;
%}

%token NUMBER

%left '+' '-'
```

```
%left '*' '/' '%'
%left '(' ')'

/* Rule Section */
%%

ArithmeticExpression: E {
   printf("\nResult = %d\n", $1);
   return 0;
};

E: E '+' E { $$ = $1 + $3; }
 | E '-' E { $$ = $1 - $3; }
 | E '*' E { $$ = $1 * $3; }
 | E '/' E {
    if ($3 == 0)
       yyerror();
    else
       $$ = $1 / $3;
 }
 | E '%' E { $$ = $1 % $3; }
 | '(' E ')' { $$ = $2; }
 | NUMBER { $$ = $1; }
;
%%
// Driver code
int main() {
   printf("\nEnter Any Arithmetic Expression which can have operations Addition, "
          "Subtraction, Multiplication, Division, Modulus and Round brackets:\n");
   yyparse();
   if (flag == 0)
      printf("\nEntered arithmetic expression is Valid\n\n");
   return 0;
}
void yyerror(const char *s) {
   printf("\nEntered arithmetic expression is Invalid\n\n");
   flag = 1;
}
```

```
iiitmanipur@iiitmanipur-HP-ProDesk-600-G4-SFF:~/Compiler Design$ lex lab7_1.l
iiitmanipur@iiitmanipur-HP-ProDesk-600-G4-SFF:~/Compiler Design$ yacc -d lab7_1.y
iiitmanipur@iiitmanipur-HP-ProDesk-600-G4-SFF:~/Compiler Design$ gcc lex.yy.c y.t
ab.c -w
iiitmanipur@iiitmanipur-HP-ProDesk-600-G4-SFF:~/Compiler Design$ ./a.out

Enter Any Arithmetic Expression which can have operations Addition, Subtraction,
Multiplication, Division, Modulus and Round brackets:
(10+20)-(10*2)

Result = 10

Entered arithmetic expression is Valid

iiitmanipur@iiitmanipur-HP-ProDesk-600-G4-SFF:~/Compiler Design$
```