

```

1  /*****
2  EGRE 531: Multithreaded Programming
3  Lab 1
4  Programmed by: Luis Barquero
5  Purpose: Program will calculate the value of an RPN expression.
6  *****/
7
8  #include <iostream>
9  #include <stack>
10 #include "Lab1.h"
11 #include <string.h>
12 #include <stdlib.h>
13 #include <stdbool.h>
14 #include <algorithm>
15 using namespace std;
16 bool str2double(string&, double&);
17
18 int main()
19 {
20     Calculator rpn;
21     string ptr; //variable that represents the user's input.
22     double convert; //variable that will be used in the conversion of the string to the
23     double.
24     char c; // variable used to set the while loop.
25     cout << "RPN calculator using prefix notation, or enter q or Q to exit" << endl;
26     while(c == 0) //while loop condition.
27     {
28         cin >> ptr; // extracts the user's input.
29         if(str2double(ptr,convert)) //string to double function.
30         {
31             rpn.enter(convert); //if the input is a double, it enters the double into
32             the stack and prints them.
33         }
34         if(ptr == "+") //if the user's string involves a + operator
35         {
36             rpn.add(); //adds the two numbers and places them onto the stack.
37             rpn.prt(); // calls the print function.
38             cout << "Enter C to clear the queue, or continue adding numbers to the RPN
39             queue, or enter q or Q to exit." << endl;
40         }
41         else if (ptr == "-")//if the user's string involves a - operator
42         {
43             rpn.sub();//subtracts the two numbers and places them onto the stack.
44             rpn.prt();//calls the print function.
45             cout << "Enter C to clear the queue, or continue adding numbers to the RPN
46             queue, or enter q or Q to exit." << endl;
47         }
48         else if(ptr == "*") //if the user's string involves a * operator
49         {
50             rpn.mult();//multiplies the two numbers and places them onto the stack.
51             rpn.prt();//calls the print function.
52             cout << "Enter C to clear the queue, or continue adding numbers to the RPN
53             queue, or enter q or Q to exit." << endl;
54         }
55         else if(ptr == "/"//if the user's string involves a +/ operator
56         {
57             rpn.div();//divides the two numbers and places them onto the stack.
58             rpn.prt();//calls the print function.
59             cout << "Enter C to clear the queue, or continue adding numbers to the RPN
60             queue, or enter q or Q to exit." << endl;
61         }
62         else if ((ptr == "c") || (ptr == "C")) //if the user's string involves an upper
63         or lowercase c/
64         {
65             rpn.clear(); // calls the clear function (which clears the stack.)
66             rpn.prt();//calls the print function.
67             cout << "RPN calculator using prefix notation, or enter q or Q to exit" <<

```

```

        endl;
63     }
64     else if ((ptr == "q") || (ptr == "Q"))
65     {
66         exit(1);
67     }
68 }
69 }
70
71 bool str2double(string& term, double& operand)
72 {
73     char* ptr;
74     // conversion begins at term string address 0 and on success
75     // pointer ptr is advanced to end of numeric portion of content
76     operand = strtod(term.c_str(), &ptr);
77     // return boolean value of comparison
78     // addr stored in ptr to addr of term string
79     return (ptr == (term.c_str()+term.length()));
80 }
81

```