```
 1  using System;
 2  using System.IO;
 3  using System.Collections.Generic;
 4  using System.ComponentModel;
 5  using System.Data;
 6  using System.Drawing;
 7  using System.Linq;
 8  using System.Text;
 9  using System.Threading.Tasks;
10  using System.Windows.Forms;
11
12  namespace Calculator
13  {
14      public partial class Form1 : Form
15      {
16          public Form1()
17          {
18              InitializeComponent();
19          }
20
21          private void Form1_Load(object sender, EventArgs e)
22          {
23
24          }
25
26          StreamWriter outputFile = new StreamWriter("Log.txt", true);
27
28          string input = "";  //first operand
29          string input2 = "";  //second operand
30
31          bool step2 = false;  //becomes true if first operand has been inputted
32
33          private void DisplayInput(string num) //displays input
34          {
35              if (step2)
36              {
37                  input2 += num;
38                  outputLabel.Text = input2;
39              }
40              else
41              {
42                  input += num;
43                  outputLabel.Text = input;
44              }
45          }
46
47          private void Button_Click(object sender, EventArgs e) //click events
              for entire form
48          {
```

```
49              string[] ops = { "/", "*", "-", "+", "+-", "=" };
50              Button button = (Button)sender;
51              if (ops.Contains(button.Text))
52              {
53                  OperatorClick(button.Text);
54              }
55              else if (button.Text == "Save Log")
56              {
57                  outputFile.WriteLine(DateTime.Now.ToString());
58                  outputFile.Close();
59              }
60              else
61              {
62                  DisplayInput(button.Text);
63              }
64          }
65
66          //variables to use in calculate method
67          public bool addition = false;
68          public bool subtraction = false;
69          public bool multiplication = false;
70          public bool division = false;
71
72          private void OperatorClick(string op)  //uses chosen operator for
              correct operation with exception handling
73          {
74              switch (op)
75              {
76                  case "+":
77                      if (addition == true)
78                      {
79                          MessageBox.Show("Please enter a number then press '+'
                        again.");
80                      }
81                      else
82                      {
83                          Log("+");
84                          addition = true;
85                          step2 = true;
86                          outputLabel.Text += "+\r\n";
87                      }
88                      break;
89
90                  case "/":
91                      if (division)
92                      {
93                          MessageBox.Show("Please enter a number then press '/'
                        again.");
94                          break;
```

```
95                      }
96                      else
97                      {
98                          Log("/");
99                          division = true;
100                         step2 = true;
101                         outputLabel.Text += "/\r\n";
102                         break;
103                     }
104
105                 case "*":
106                     if (multiplication)
107                     {
108                         MessageBox.Show("Please enter a number then press '*'
                        again.");
109                         break;
110                     }
111                     else
112                     {
113                         Log("*");
114                         multiplication = true;
115                         step2 = true;
116                         outputLabel.Text += "*\r\n";
117                         break;
118                     }
119
120
121                 case "-":
122                     if (subtraction)
123                     {
124                         MessageBox.Show("Please enter a number then press '-'
                        again.");
125                         break;
126                     }
127                     else
128                     {
129                         Log("-");
130                         subtraction = true;
131                         step2 = true;
132                         outputLabel.Text += "-\r\n";
133                         break;
134                     }
135
136
137                 case "=":
138                     Log(null);
139                     input = Calculate(input, input2).ToString();
140                     input2 = "";
141                     outputFile.WriteLine("=");
```

```
142                     Log(null);
143                     outputFile.WriteLine("\r\n");
144                     break;
145 
146                 case "+-":
147                     if (step2)
148                     {
149                         double newNum = double.Parse(input2);
150                         input2 = (-newNum).ToString();
151                         outputLabel.Text = input2;
152                         break;
153                     }
154                     else
155                     {
156                         double newNum = double.Parse(input); ;
157                         input = (-newNum).ToString();
158                         outputLabel.Text = input;
159                         break;
160                     }
161 
162             }
163         }
164 
165         double total = 0;
166 
167         private double Calculate(string input, string input2)  //executes when
              '=' is pressed
168         {
169             if (addition)
170             {
171                 total = Calc.Add(input, input2);
172                 addition = false;
173             }
174             else if (subtraction)
175             {
176                 total = Calc.Subtract(input, input2);
177                 subtraction = false;
178             }
179             else if (multiplication)
180             {
181                 total = Calc.Multiply(input, input2);
182                 multiplication = false;
183             }
184             else if (division)
185             {
186                 total = Calc.Divide(input, input2);
187                 division = false;
188             }
189 
```

```
190             outputLabel.Text = total.ToString();
191             return total;
192         }
193
194         private void Log(string sign)  //uses streamWriter object to log
              calculations
195         {
196             if (input2 == "")
197             {
198                 outputFile.WriteLine(input + sign);
199             }
200             else
201             {
202                 outputFile.WriteLine(input2);
203             }
204         }
205     }
206 }
207
```