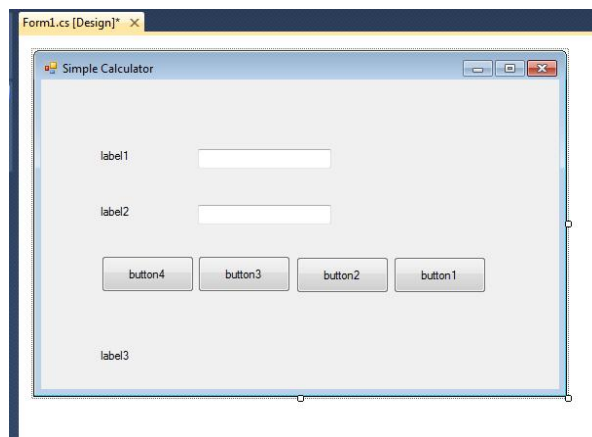


C# Language Essentials

Making a simple calculator

1. Create a new windows form project and save it as calculator
2. Add the following controls to your form:
 - Three labels
 - Two textboxes
 - Four buttons

Arrange then as shown below.



3. Set the properties as shown in the table below.

Control	Property	Change to
Form1	Text	Simple Calculator
Textbox 1	Name	txtFirstNumber
	Text	
Textbox 2	Name	txtSecondNumber
	Text	
Label 1	Name	lbFirstNumber
	Text	First Number
Label 2	Name	lbSecondNumber
	Text	Second Number
Label 3	Name	lbAnswer
	Text	The answer is
Button 1	Name	btnAdd
	Text	Add
Button 2	Name	btnSubtract
	Text	Subtract
Button 3	Name	btnDivide
	Text	Divide
Button 4	Name	btnMultiply
	Text	Multiply

4. Double click on the Add button and type in the following code:

```
{
float FirstNumber
float SecondNumber
float Result

    try
    {
        FirstNumber = float.parse(txtFirstNumber.text);
        SecondNumber = float.parse(txtSeconodNumber.text);
        Result = FirstNumber + SecondNumber;
        lbAnswer.Text = "The Answer is: " + Result.ToString();
    }
    catch (Exception exc)
    {
        MessageBox.Show(exc.Message);
    }
}
```

5. Adapt the code from the Add button to write the code for the other three buttons.
6. Run your program and debug.

The code explained.

```
float FirstNumber
float SecondNumber
float Result
```

These are variables used to store the numbers needed for the program.

```
try
```

The word try at the top of a block of code is there to catch errors. The program checks the code between "try" and "catch" looking for problems like no code entered and displays an appropriate message if this is found to be the case.

```
    FirstNumber = float.parse(txtFirstNumber.text);
    SecondNumber = float.parse(txtSeconodNumber.text);
    Result = FirstNumber + SecondNumber;
    lbAnswer.Text = "The Answer is: " + Result.ToString();
```

In this block of code the strings entered into the textboxes are converted to floating point numbers and the calculation carried out.

Improving your code

In the code above the variables you have declared apply to the button where they have been declared. These are known as local variables. If you put the variables at the top of the program, in other words not in a method for a particular component then they will apply to all the methods. Variables that are declared at the top of a program can be of two types. If you want them to apply to the whole program which may consist of many forms these are called global variables. Global variables start with the word **public**.

e.g. `public string SeeMeAnywhere`

If the variables are to apply to the single form where they are declared then the declaration starts with the word **private**.

e.g. `private string JustThisForm`

Extensions

Intermediate: Using the program you have already written change the variables so that they apply to the whole form rather than declaring them in the method for each button.

Advanced: create a new project with a calculator that operates usually, you will need to hold operations and values in variables.