# Project 9 - Loan Calculator

Project Design

Do you want to know how much that new car will cost each month or how long it will take to pay off a credit card? This program will do the job. You enter a loan amount, a yearly interest, and a number of months, and the project computes your monthly payment. All entries will be in text boxes and a command button will initiate the payment calculation. The project you are about to build is saved as **Loan** in the project folder (**\BeginVCS\BVCS Projects**).

Place Controls on Form

Start a new project in Visual C#. Place four label controls and four text boxes on the form. Then place a button on the form. When done, your form should look something like this:
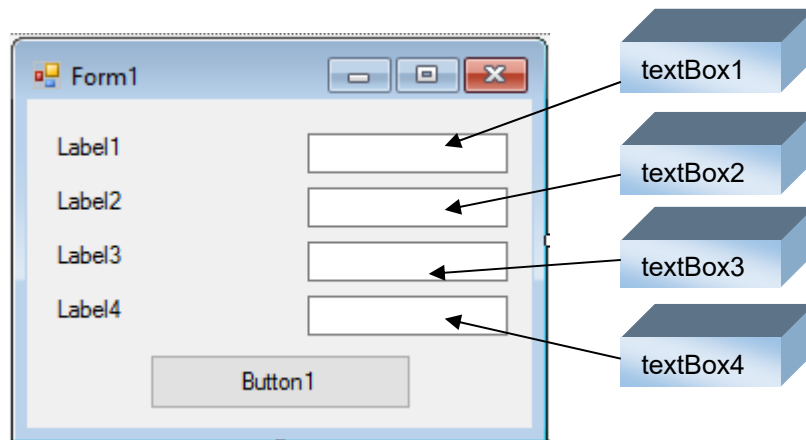
Set Control Properties

Set the control properties using the properties window:

Form1 Form:

Property Name	Property Value
Text	Loan Calculator
FormBorderStyle	FixedSingle
StartPosition	CenterScreen

label1 Label:

Property Name	Property Value
Text	Loan Amount

label2 Label:

Property Name	Property Value
Text	Yearly Interest

label3 Label:

Property Name	Property Value
Text	Number of Months

label4 Label:

Property Name	Property Value
Text	Monthly Payment

textBox1 Text Box:

Property Name	Property Value
Name	txtLoan
Text	0
TextAlign	Right

textBox2 Text Box:

Property Name	Property Value
Name	txtInterest
Text	0
TextAlign	Right

textBox3 Text Box:

Property Name	Property Value
Name	txtMonths
Text	0
TextAlign	Right
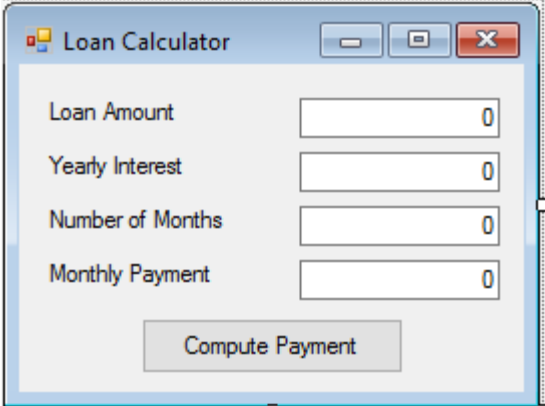
textBox4 Text Box:

Property Name	Property Value
Name	txtPayment
Text	0
TextAlign	Right
BackColor	White
ReadOnly	True
TabStop	False

button1 Button:

Property Name	Property Value
Name	btnCompute
Text	Compute Payment

When done setting properties, my form looks like this:
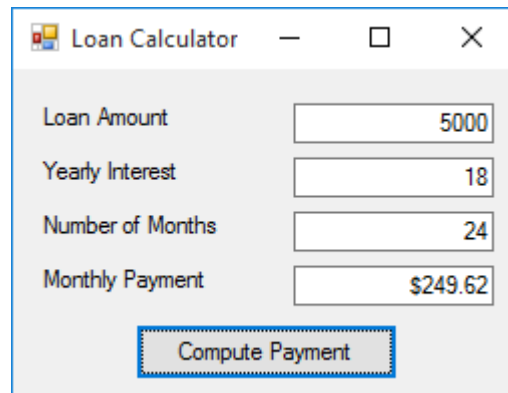
Write Event Methods

Only one event is needed here - the **Click** event for **btnCompute**. Fill in values in the Loan Amount, Yearly Interest, and Number of Months text boxes, then click **Compute Payment**. The values are read and the payment is computed and displayed.

The **btnCompute_Click** event method:

```csharp
private void btnCompute_Click(object sender, EventArgs e)
{
    double loan, interest, months, payment, multiplier;
    // Read text boxes
    loan = Convert.ToDouble(txtLoan.Text);
    interest = Convert.ToDouble(txtInterest.Text);
    months = Convert.ToDouble(txtMonths.Text);
    // Compute interest multiplier
    multiplier = Math.Pow((1 + interest / 1200), months);
    // Compute payment
    payment = loan * interest * multiplier / (1200 *
(multiplier - 1));
    txtPayment.Text = "$" +
Convert.ToString(String.Format("{0:f2}", payment));
}
```

Run the Project

Save your work. Run the project. Fill in a loan amount, an interest, and a number of months. Click **Compute Payment** to determine and display the monthly payment. Try a loan amount of $5,000 (don't type in the comma), an interest rate of 18%, and 24 months. Your payment should be $249.62:

What can you do with this? Well, you can find monthly payments like we just did. Or, try this. Say you have a credit card balance of $2,000. The interest rate is 15% and you can make $100 payments each month. Put the 2000 in the loan amount box, the 15 in the interest. Then, try different numbers of months until the computed payment is close to $100. This will tell you how many months it will take you to pay off the credit card. I got 23 months with payments of $100.59 each month.

Other Things to Try

If you are going to let others use this program, it needs some improvements. Review the key trapping procedures discussed in Class 10 and make sure users can only type numbers, a decimal point, and a backspace key when using the text boxes for inputs. You need some logic to make sure the user has typed values in all three text boxes (Loan Amount, Yearly Interest, Number of Months). Also, what if the interest rate is zero (a very nice bank!)? The program won't work (try it). You'll need a way to compute payments with zero interest.