Learning VB.Net

Tutorial 16 – Modules

Hello everyone… welcome to vb.net tutorials. These are going to be very basic tutorials about using the language to create simple applications, hope you enjoy it. If you have any notes about it, please send them to **notes@mka-soft.com** I will be happy to answer them. Finally if you find these tutorials are useful, it would be nice from you to send a small donation via PayPal to **donation@mka-soft.com**.

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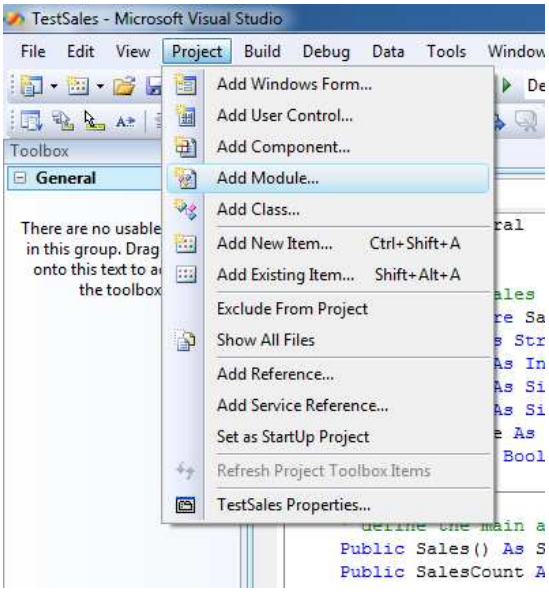
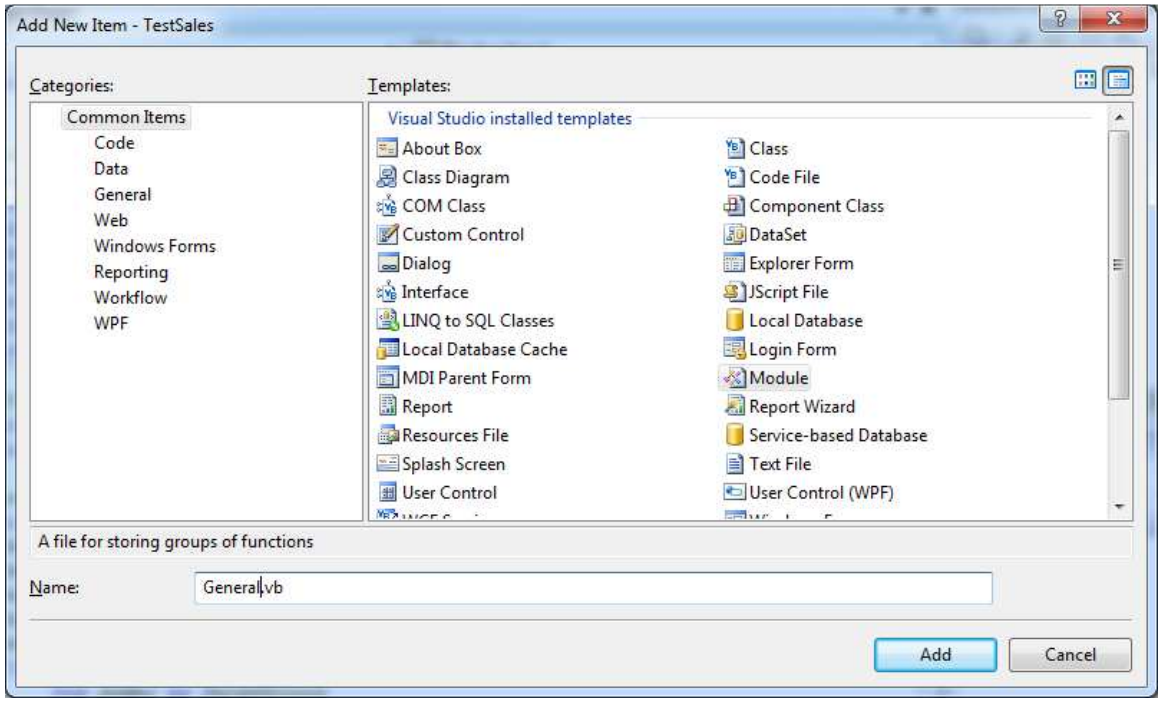
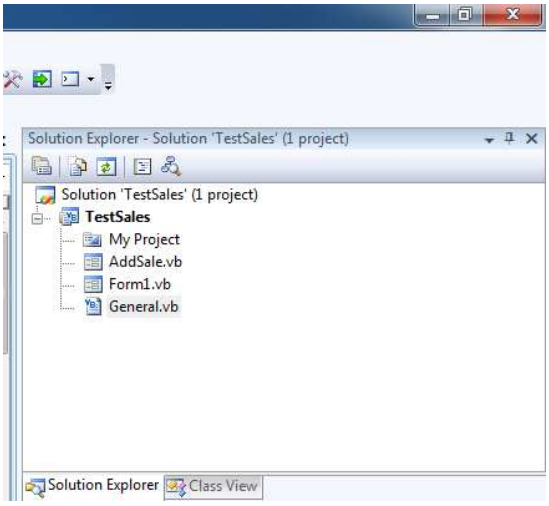
Modules

In vb.net you can write place your code in different files. Some of these files are called modules. A module is a file that contains vb code only (i.e. functions, structures, subroutines…). It does not include GUI like buttons, lists, menus …etc. Now to add a module to your project select project then add module



After that you provide module name:





You can see the module file is added into your project. The code you see is:

```
Module General

End Module
```

Now you can write the functions and subroutines in this module. For example:

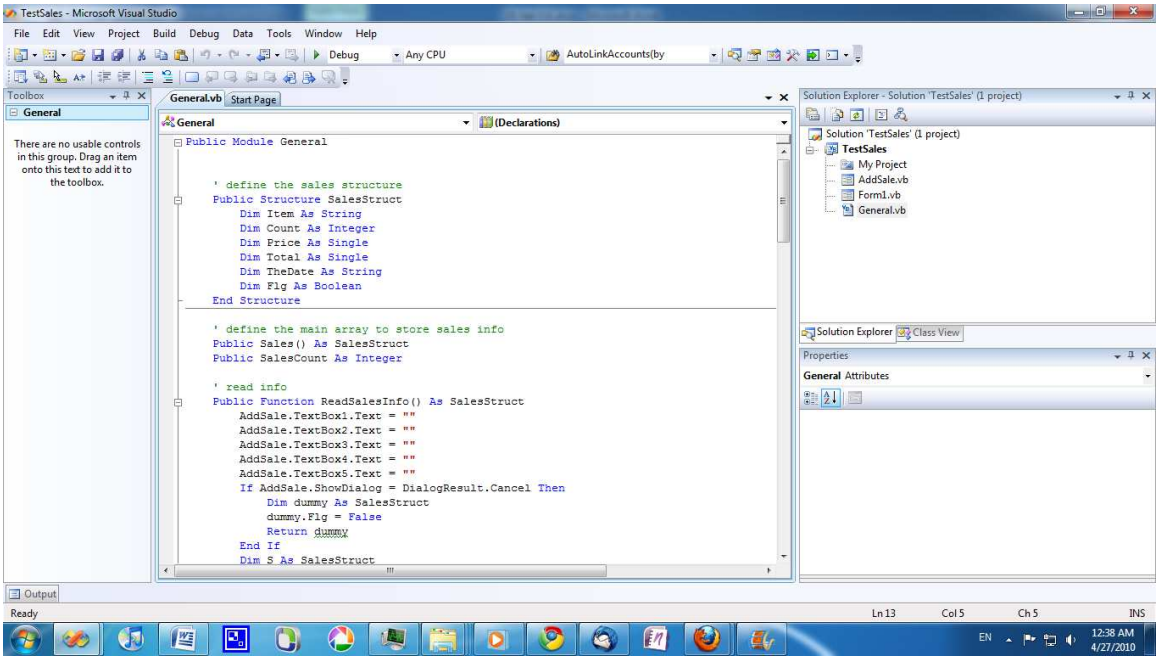
```
Module General

    ' define the sales structure
    Public Structure SalesStruct
        Dim Item As String
        Dim Count As Integer
        Dim Price As Single
        Dim Total As Single
        Dim TheDate As String
        Dim Flg As Boolean
    End Structure
End Module
```

So you might be wondering what difference does modules make in a program? Well modules helps you place related functions, subroutines, and other coding that you make in one place, so that it becomes easier for you to find, and easier for you to work with, and make it possible for other parts of your program to use the code.

To illustrate this consider that you have a two or three forms that require some sort operation. Instead of writing the code in one form which makes it part of that form, you place the code in a module, and sort function/subroutine becomes available to all the forms. Later on you can even take the code of the sort operation and add that to another project and you will find it works without modification (assuming the code is done correctly).

Now the following example (the sales vb project included on the web site). This project contains one module:



The idea of this project is to add a number of items you were able to sale, and later on you could find the total of sales, save or load the files.

If you check the module you will find the code:

```
' define the sales structure
Public Structure SalesStruct
    Dim Item As String
    Dim Count As Integer
    Dim Price As Single
    Dim Total As Single
    Dim TheDate As String
    Dim Flg As Boolean
End Structure
```

Which defines the main structure, then

```
' define the main array to store sales info
Public Sales() As SalesStruct
Public SalesCount As Integer
```

Which defines the array and its number of elements

```
' read info
Public Function ReadSalesInfo() As SalesStruct
    AddSale.TextBox1.Text = ""
    AddSale.TextBox2.Text = ""
    AddSale.TextBox3.Text = ""
    AddSale.TextBox4.Text = ""
```

```
        AddSale.TextBox5.Text = ""
        If AddSale.ShowDialog = DialogResult.Cancel Then
            Dim dummy As SalesStruct
            dummy.Flg = False
            Return dummy
        End If
        Dim S As SalesStruct
        S.Item = AddSale.TextBox1.Text
        S.Count = AddSale.TextBox2.Text
        S.Price = AddSale.TextBox3.Text
        S.Total = AddSale.TextBox4.Text
        S.TheDate = AddSale.TextBox5.Text
        S.Flg = True
        Return S
    End Function
```

This function uses a dialog called AddSale to read the information of an item. The first part just clears the text boxes on the form/dialog, and the if statement part shows the window and tells you if the user canceled the data entry, and the last part fills the structure from the form and returns the result.

```
    ' display the information of the strucutre in the data grid view
    Public Sub DisplayArray(ByVal Arr() As SalesStruct, ByVal DGV As DataGridView)
        DGV.Rows.Clear()
        Dim I As Integer
        For I = 0 To Arr.Length - 1
            DGV.Rows.Add(Arr(I).Item, Arr(I).Count, Arr(I).Price, Arr(I).Total, Arr(I).TheDate)
        Next
    End Sub
```

This part displays the information of the array in a data grid view

```
    ' remove an item from array based on item name
    Public Sub RemoveItemBasedOnName(ByVal Name As String, ByRef Arr() As SalesStruct, ByRef IC As
Integer)
        Dim I As Integer
        Dim J As Integer
        For I = 0 To Arr.Length - 1
            If Name = Arr(I).Item Then
                For J = I + 1 To Arr.Length - 1
                    Arr(J - 1) = Arr(J)
                Next
                ReDim Preserve Arr(0 To Arr.Length - 2)
                IC = IC - 1
                Exit Sub
            End If
        Next
    End Sub
```

This one removes an item based on its name

```
    ' save the sales info
    Public Sub SaveFile(ByVal FileName As String, ByVal Arr() As SalesStruct)
        FileSystem.FileOpen(1, FileName, OpenMode.Output, OpenAccess.Write)
        Dim I As Integer
        FileSystem.PrintLine(1, Arr.Length)
        For I = 0 To Arr.Length - 1
            FileSystem.PrintLine(1, Arr(I).Item)
            FileSystem.PrintLine(1, Arr(I).Price)
            FileSystem.PrintLine(1, Arr(I).TheDate)
            FileSystem.PrintLine(1, Arr(I).Total)
        Next
        FileSystem.FileClose(1)
    End Sub

    ' load the file info
    Public Sub LoadFile(ByVal FileName As String, ByRef Arr() As SalesStruct, ByRef IC As Integer)
```

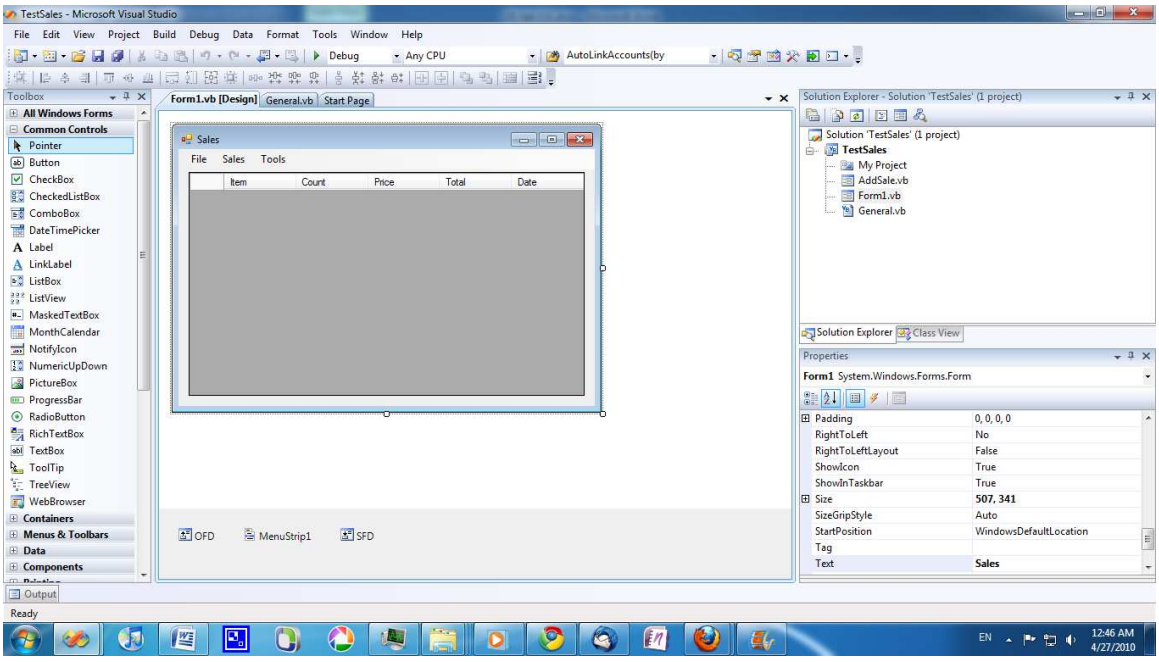
```
        FileSystem.FileOpen(1, FileName, OpenMode.Input, OpenAccess.Read)
        Dim I As Integer
        IC = FileSystem.LineInput(1)
        ReDim Arr(0 To IC - 1)
        For I = 0 To Arr.Length - 1
            Arr(I).Item = FileSystem.LineInput(1)
            Arr(I).Price = FileSystem.LineInput(1)
            Arr(I).TheDate = FileSystem.LineInput(1)
            Arr(I).Total = FileSystem.LineInput(1)
        Next
        FileSystem.FileClose(1)

    End Sub
```

These two saves and load the information

```
    ' get total sum
    Public Function GetTotalSales(ByVal Arr() As SalesStruct) As Single
        Dim S As Single = 0
        Dim I As Integer
        For I = 0 To Arr.Length - 1
            S += Arr(I).Total
        Next
        Return S
    End Function
```

This last one finds the total. As you can see there is almost no difference in the code that is inside the module. It is exactly the same as the code you use in forms. Now if you open the main form of the application



This one contains a menu strip and a data grid view, with open files dialog and save file dialog. If you check the code of the form

```
    Private Sub AddToolStripMenuItem_Click(ByVal sender As System.Object, ByVal e As System.EventArgs)
Handles AddToolStripMenuItem.Click
        Dim SR As SalesStruct
        SR = General.ReadSalesInfo
```

```
        If SR.Flg Then
            SalesCount = SalesCount + 1
            ReDim Preserve Sales(0 To SalesCount - 1)
            Sales(SalesCount - 1) = SR
            DisplayArray(Sales, DGV)
        End If
    End Sub


    Private Sub RemoveSaleToolStripMenuItem_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles RemoveSaleToolStripMenuItem.Click
        If DGV.SelectedRows.Count = 0 Then
            Exit Sub
        End If
        RemoveItemBasedOnName(DGV.SelectedRows.Item(0).Cells(0).Value, Sales, SalesCount)
        DisplayArray(Sales, DGV)

    End Sub


    Private Sub ExitToolStripMenuItem_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles ExitToolStripMenuItem.Click
        End
    End Sub


    Private Sub SaToolStripMenuItem_Click(ByVal sender As System.Object, ByVal e As System.EventArgs)
Handles SaToolStripMenuItem.Click
        SFD.Filter = "*.txt|*.txt"
        If SFD.ShowDialog = Windows.Forms.DialogResult.Cancel Then
            Exit Sub
        End If
        SaveFile(SFD.FileName, Sales)
    End Sub


    Private Sub LoadToolStripMenuItem_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles LoadToolStripMenuItem.Click
        If OFD.ShowDialog = Windows.Forms.DialogResult.Cancel Then
            Exit Sub
        End If
        LoadFile(OFD.FileName, Sales, SalesCount)
        DisplayArray(Sales, DGV)
    End Sub


    Private Sub FindTotalToolStripMenuItem_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles FindTotalToolStripMenuItem.Click
        MsgBox("the total sales:" & GetTotalSales(Sales).ToString)
    End Sub
```

You can see the code is much smaller here, because it is just a call to the code in the module. In fact later on if you want to modify the user interface, the code of the module is not affected. Also since the code is much smaller, it is easier for other programmers to understand you code and update it.

So to sum things up, modules:

1- Are vb files
2- Used to store functions/subroutines, and other vb coding
3- Makes your program easier to maintin
4- Makes your program easier to understand
5- You can use/not use them, it is up to you
6- You can use any number of modules in a vb project
7- Make it easy to port your code to another application

8- Helps you isolate the interface design from program logic.

So this is all for today. If you need the source file, you can get it from the web site. If you have notes about this tutorial, email me at: **notes@mka-soft.com**.

Thanks.

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