



## *The Visual Basic Programming Language*

### *Introduction*

A set of instructions that tells a computer how to accomplish a task is called a **computer program** or, more simply, a **program**. Programs are written by programmers using a variety of special languages called programming languages. Some popular programming languages are Visual Basic, C#, Matlab, and Java. We will write our programs using the Visual Basic programming language, which is built into Microsoft's integrated development environment: Visual Studio.

Visual Basic is a high level language produced by Microsoft in 1991 as the first programming language that directly supported graphical user interfaces. Visual Basic allows the programmer to use objects (tools) to accomplish a program's goal. Programs written for the Windows environment typically use objects such as labels, check boxes, list boxes, and buttons. From that time until now, there were many other versions released, each version having features that increased the power of the language.

### *The Visual Studio integrated development environment (IDE)*

An **integrated development environment (IDE)** is an environment that contains all of the tools and features you need to create, run, and test your programs. You also will use the IDE to create graphical user interfaces for your programs. A **graphical user interface** (or **GUI**) is what the person using your program (referred to as the user) sees and interacts with while your program is running. The user interface and its program instructions are referred to as an **application**. The Visual Studio IDE contains many different windows, each with its own special purpose. The five



windows you will use most often when designing your user interfaces are shown in Figure 1-1.

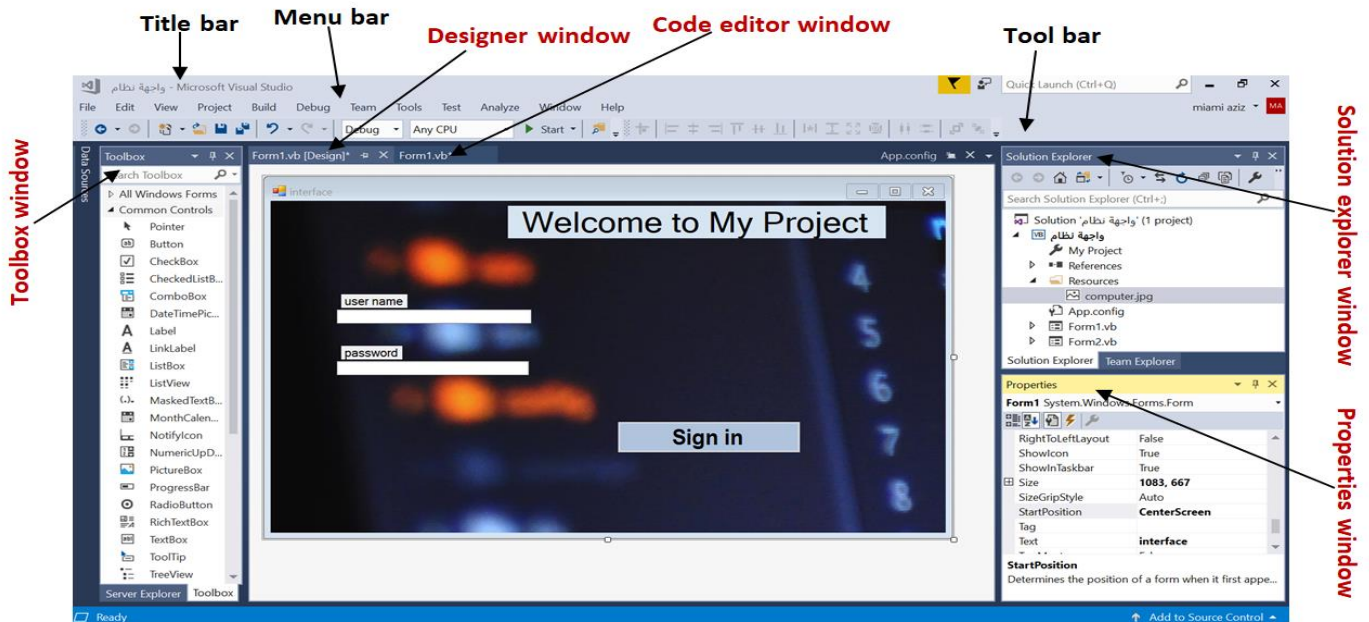


Figure 1-1 Visual Studio IDE

The **designer window** is where you create (or design) your application's GUI. A Windows Form object, or **form**, appears in the designer window shown in Figure 1-1. A **form** is the foundation for the user interface in an application created for the Windows environment. The form is automatically instantiated for you when you create a Windows Forms application in Visual Basic.

You use the **Toolbox window** to add other objects, called **controls (tools)**, to the form. You add a tool by clicking its corresponding tool picture in the toolbox and then dragging it with your mouse pointer to the form. For example, the two textbox objects shown in Figure 1-1 were instantiated (created) by dragging the TextBox tool from the toolbox to the form. Similarly, the button was instantiated using the Button tool.



Each tool has a set of attributes that determine its appearance and behavior. The attributes, called **properties**, are listed in the **Properties window** when the tool is selected in the designer window. In Figure 1-1, the form is selected, and the names of its properties (such as StartPosition and Text), along with their values (CenterScreen and interface), appear in the Properties window. You can use the Properties window to change the value of an tool's property. For example, you can use it to change the form's Text property, which appears in the form's title bar, from *interface* to *user interface*.

Windows applications in Visual Basic are composed of solutions, projects, and files. A solution is a container that stores the projects and files for an entire application. A project is also a container, but it stores only the files associated with that particular project. The **Solution Explorer** window displays a list of the projects contained in the current solution and the items contained in each project. The Solution Explorer window shown in Figure 1-1 indicates that the "واجهة النظام" Solution contains the "واجهة النظام" Project, which contains several items:

- ✓ The computer.jpg item is the name of the image that appear in the form background.
- ✓ The Form1.vb file stores the program instructions (**code**) that tell the button how to respond when the user click it.

You enter the code in the **Code Editor window**, which is shown in Figure 1-1. The Code Editor window opens in the IDE, when you right-click the form in the solution explorer and then click View Code on the context menu. Also, Code Editor window appears as soon as you click on any tool inside the form or click on the form itself.



At this point, we are not expected to understand the contents of the Code Editor window in Figure 1-2; you will understand this code in the Upcoming lectures.

```
1 Public Class Form1
2     Private Sub Button1_Click(sender As Object, e As EventArgs) Handles Button1.Click
3         If TextBox1.Text = "miami" And TextBox2.Text = "12345" Then
4             Form2.Show()
5             TextBox1.Text = ""
6             TextBox2.Text = ""
7             Hide()
8         Else
9             MsgBox("There is an error in the username or password")
10            TextBox1.Text = ""
11            TextBox2.Text = ""
12        End If
13    End Sub
14 End Class
```

Figure 1-2 Code Editor Window

### ***Create a Windows Forms Application***

Our application will be a Windows Forms application, which is an application that has a Windows user interface and runs on a laptop (or desktop) computer.

#### **To create a Windows Forms application:**

1. Click **File** on the menu bar and then click **New Project** to open the New Project dialog box. If necessary, click the **Visual Basic** node in the Installed Templates list, and then click **Windows Forms App (.NET Framework)** in the middle column of the dialog box.
2. Change the name entered in the Name box to **any name you want**.
3. Click the **Browse** button to open the Project Location dialog box. Locate and then click the **wanted** folder which you want to used it in saving. Click the **Select Folder** button to close the Project Location dialog box.



- If necessary, select the **Create directory for solution** check box in the New Project dialog box. Change the name entered in the Solution name box to **any name (if you want)**. Figure 1-3 shows the completed New Project dialog box in Visual Studio Community 2017.

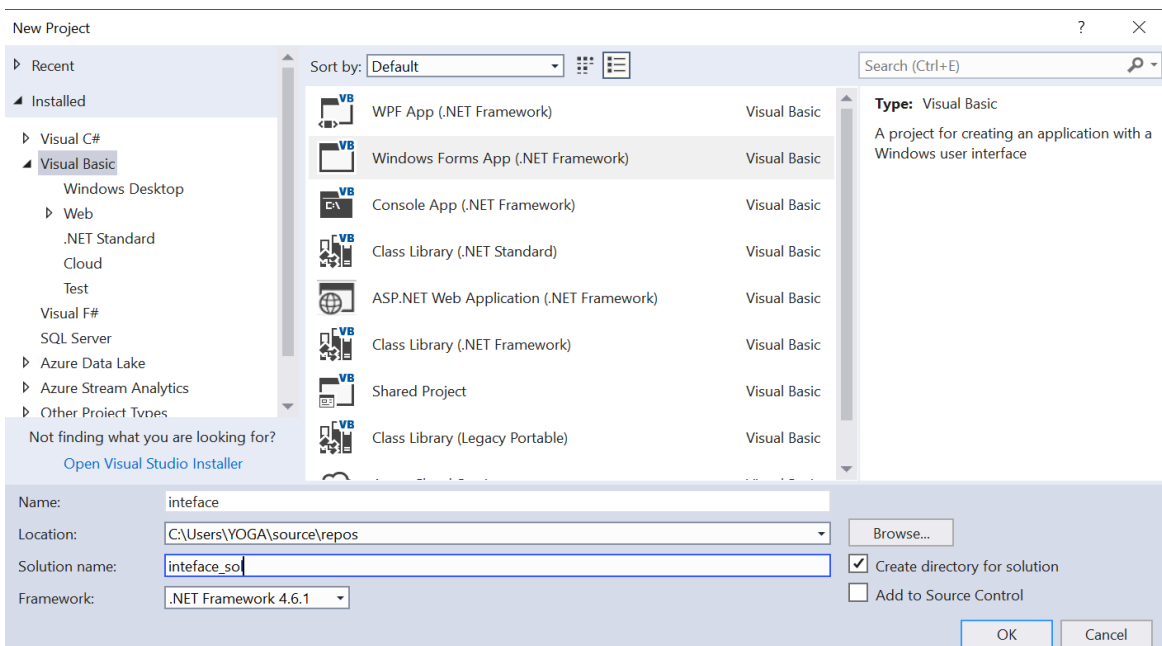


Figure 1-3 Completed new project dialog box

- Click the **OK** button to close the New Project dialog box. The computer creates a solution and adds a Visual Basic project to the solution. The names of the solution and project, along with other information pertaining to the project, appear in the Solution Explorer window. Visual Basic also automatically creates a form object, which appears in the designer window. See Figure 1-4.



Al-Mustaqbal University College  
Department of Medical Instrumentation Techniques Engineering  
Class: Second Class  
Subject: Computer Applications  
Lecturer: Assistant Lecturer Miami Abdul Aziz  
Lecture: First Lecture

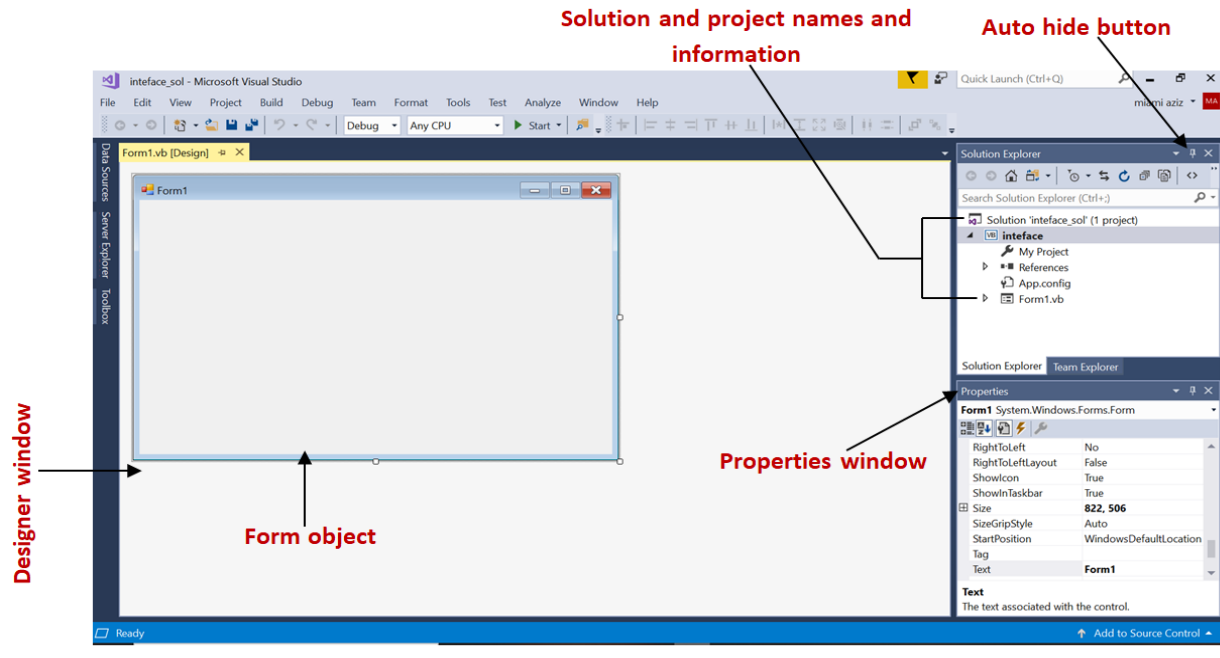


Figure 1-4 Solution and Visual Basic project