

Quick Revision



Chapter 1 : Problem Solving

Software or Program

“Program” is a set of instruction that order the computer to perform tasks.

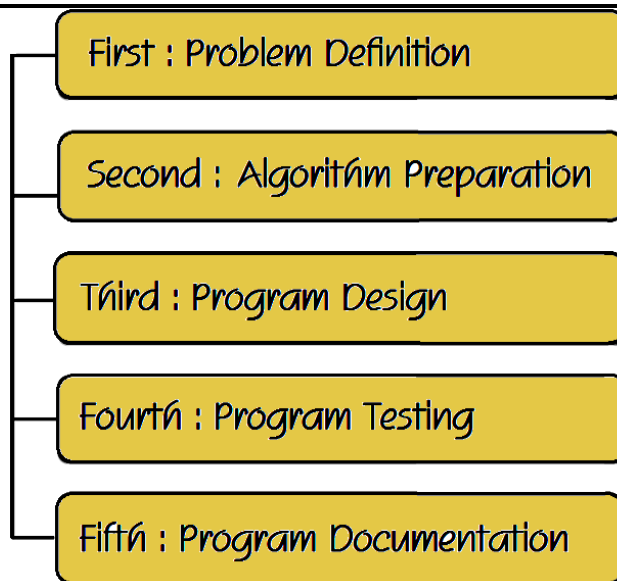
Problem

Problem is a situation that requires a solution or an objective you want to achieve through following consecutive steps sequentially ...

Problem Solving

Problem Solving is the steps , activities , and processes to be done to reach an output or objective ...

Problem Solving Stages



(1.) Problem Definition :

Problem definition **implies** the identification of required outputs , available inputs and , arithmetic and logical operations to be executed.

(2.) Algorithm Preparation :






Algorithm is one of the methods used to solve a problem through logically arranged procedures.

(3.) Program Design :

Having drawn a “ **Flowchart** ” to solve the problem , using a computer ; we have to translate this flowchart into one of the programming languages.

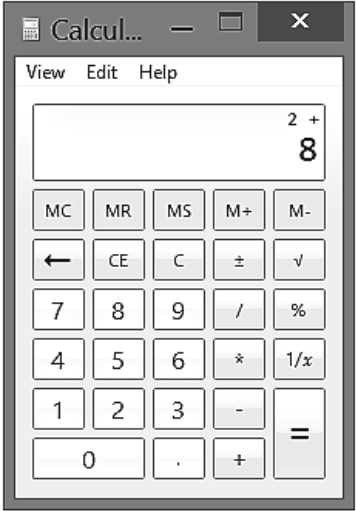
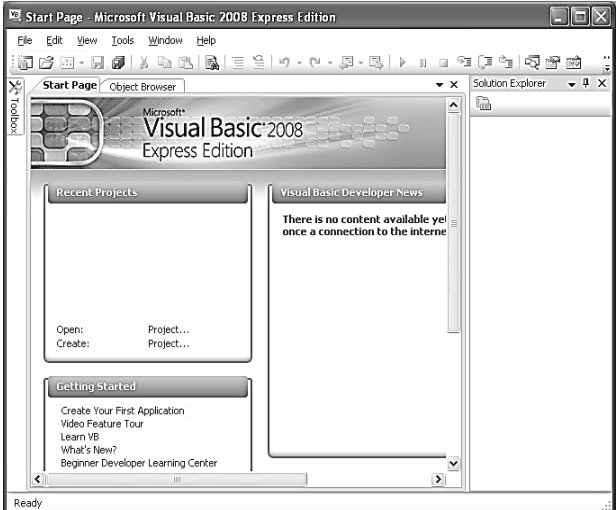
(4.) Program Testing :

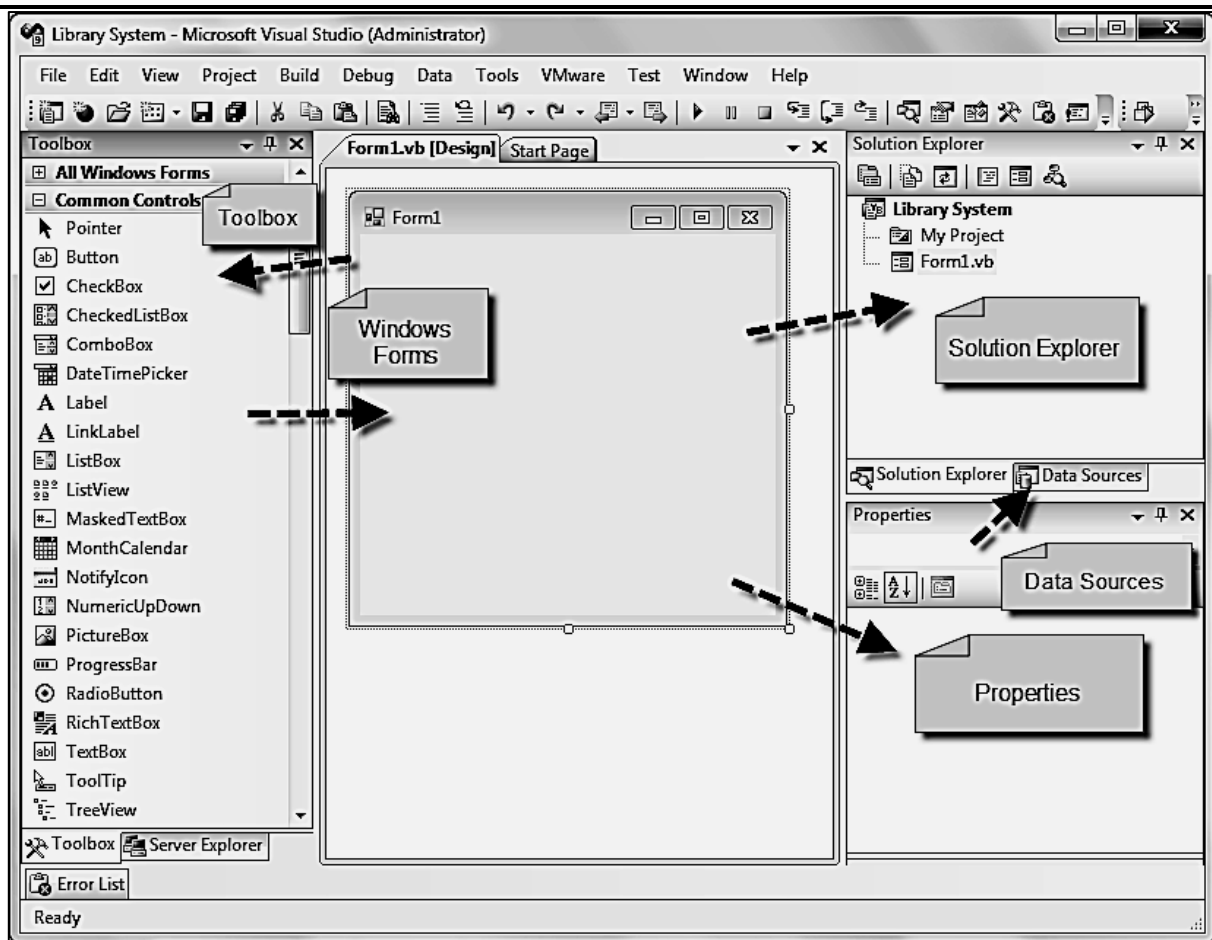
Making sure that the program is free of errors.

	<p>(5.) <u>Program Documentation :</u></p> <p>This step includes writing all steps taken for solving the problem that include : given Input , output , plan for solving the problem , drawn flowchart , programming language used for coding , instructions , date of last modification of the program and , people who contribute to the program development process .</p> <p>This is done to have the program documented to go back for feedback and correction.</p> <p>This documentation is beneficial when more than one person participate in writing or modifying the program.</p>			
Algorithm	Algorithm is defined as a group of logically arranged procedures to be executed to attain a goal or precise output , out of specific inputs.			
Flowchart	Flowchart is a diagram that uses standard graphical symbols ; to illustrate the sequence of steps required for solving a problem or specific question.			
The most commonly used symbols in Flowchart		    	<p>Terminals (Start – End)</p> <p>Input – Output</p> <p>Process (Mathematical Operation or Equation)</p> <p>Decision or Condition</p> <p>Flow Lines</p>	
Some Advantages of Flowcharts	<ol style="list-style-type: none"> 1) Facilitating the reading and understanding of the problem and illustrating to the programmer what must be done . 2) Useful to explain the program to others . 3) Helping in documenting the program in better manner, especially if the program is complicated ... 			
Variable	A Variable refers to a memory storage that holds a value.			

Chapter 2 : Introduction to Visual Basic.NET

<p><i>Visual Basic .NET (VB.NET)</i></p>	<p>It is one of the high level programming languages and designed to be easy to learn as its commands and instructions use English language vocabulary and it can be used in many applications such as :</p> <ol style="list-style-type: none"> 1) Window Applications 2) Web Applications <p>There are many of them , such as Java , C# and J#.</p> <p>Visual Basic .NET is used to create :</p> <ol style="list-style-type: none"> 1. Window Applications 2. Web applications 3. Mobile Applications ... <p>— <u>So , the Visual Basic.net is considered :</u></p> <ul style="list-style-type: none"> ⇒ Object oriented as its programs work through objects in computer Memory. ⇒ Event Driven as commands and instructions are carried out as soon as certain event occurs.
<p><i>Compiler</i></p>	<p>Compilers are programs that translate commands and instructions written by the programmer from the high level language into machine language .</p>
<p><i>Programming and Computer Memory</i></p>	<p>— Commands and instructions which are written in Visual Basic.net enable you to create objects in computer memory and every object has :</p> <ol style="list-style-type: none"> 1) Properties : such as (Size - Color - Font) of the text written on the program interface. 2) Events : such as click on a command button. 3) Procedures : each one contains commands and instructions which are carried out when calling this procedure.

<p>Visual Basic .NET (VB.NET)</p> <p>And</p> <p>Windows Applications</p>	<p>Notice that all Windows Applications have a graphical interface (a window) that share some common characteristics :</p> <p>Such as “ <u>Window style</u> , <u>Maximize button</u> , <u>Minimize button</u> and , <u>saving or opening files</u> ... Etc..</p> <p>Examples : Paint , Notepad , Calulator , Internet browser ... Etc</p> 
<p>.NET Framework</p>	<p>— The Framework.Net provides the following :</p> <ul style="list-style-type: none"> (1.) Libraries through which we create the objects. (2.) Runtime environment (called Runtime) in computer memory where Applications produced by the language of Visual Basic.net language work in. (3.) Compiler which compile commands and instructions written in Programming language into machine code which the Computer deals with.
<p>IDE</p> <p>Integrated Development Environment</p>	<ul style="list-style-type: none"> The programmer of Visual Basic.net needs Integrated Development Environment (IDE) which provides tools and merits to the programmer that help him create applications → (windows – mobile – web.....). Visual Studio represents IDE ... 



The Form

The **Form** is the interface which the user deals with through different controls such as : **Buttons** , **Textboxes** , **Labels** etc.

A **Form** is the container upon which controls :
(**Button – Textbox – Label** .. etc) are placed ...

The Toolbox

It contains tools of **controls** which can be put on the Form and can be shown in **categories** ...

The Solution Explorer

The **Solution explorer** window contains a list of items of the current **solution** ; and may contain one or multiple **projects**.
(**folders** and **files** of the **projects**)

The Properties window

Each tool of the above Common Controls has a group of **properties** which can be adjusted through "**Properties Window**" ...

Dear Student / Notice

The shown **Properties** in **Properties Window** are different according to the active part on the **IDE** screen.

Chapter 3 : Controls

Button

A **Button** is one of the (**Controls**) that can be drawn on the (Form) .

A user will use a **Button** by clicking on it to perform a specific task.

Label

It is a tool used in showing a Text on the Form Window which can't be changed during program Runtime.

TextBox

It is a tool used to insert (**input**) **data** from the user during program run time.

RadioButton

A **RadioButton** is used to select one option from a group of mutually exclusive options.

The program user selects one alternative only ...

CheckBox

A **CheckBox** is used for placing some alternatives to enable the user to select ...

GroupBox

A **GroupBox** control is used to group other controls of same function together on the Form window.

ListBox

A **ListBox** control is used for displaying a list of items.

ComboBox

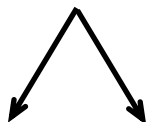
A **ComboBox** control displays a drop-down list from which one item can be selected.

ComboBox is the control tool that allows the user to choose one element of several elements in the smallest possible space on the form window ...

There are some (8) Properties that are common to most of the controls ... and they are : (All of them in the last 2 pages)

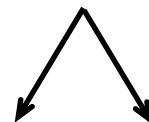
1. Text	The Text on the Control.
2. Name	Name of the Control used in the code.
3. BackColor	The Background color of the Control.
4. ForeColor	The Foreground color for the text on the Control. (The Text Color)
5. Visible	Gets or sets a value indicating whether the control is displayed or not. True or False
6. Font	The text's (Font , Style and Size) on the Control.
7. Location	The location of the Control on the Form's window. (10 , 20) X = 10 , Y = 10
8. Size	The height and width of the Control on the Form's window. (150 , 50) Width = 150 , Height = 50

You can choose one and only one item



RadioButton **ComboBox**

You can choose more than one item



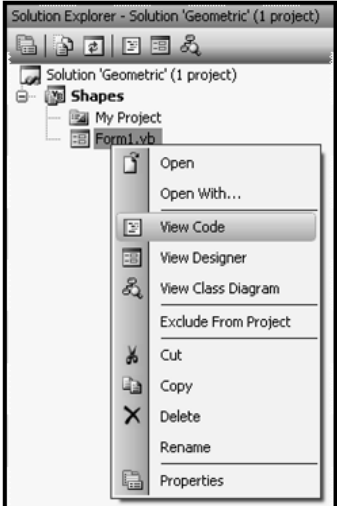
CheckBox **ListBox**

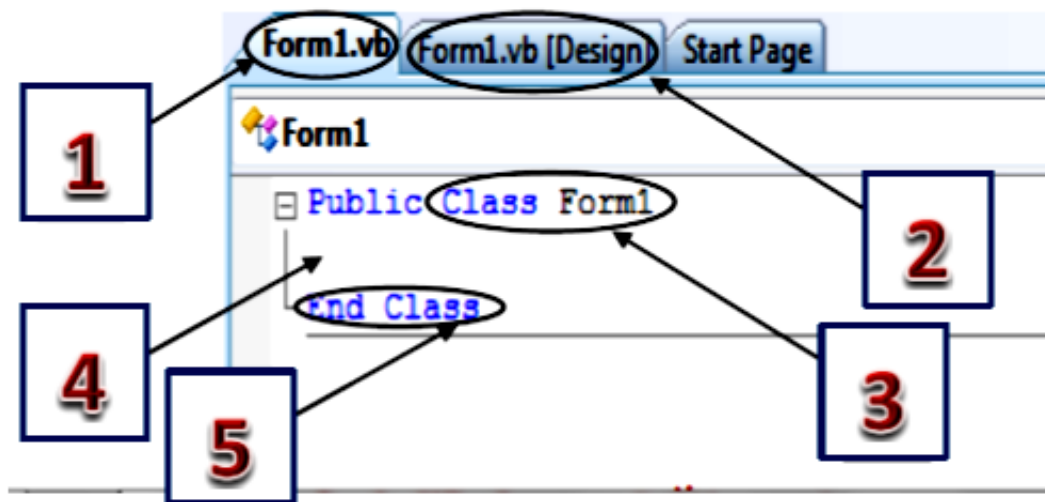
The effect of (**WindowState**) property **will not** be **active** unless we **start debugging** the **program**.

Chapter 4 : Code Window

Code window

Through the **Code window** ; we can write instructions and codes using (**Visual Basic .Net**) language “Language under study”.

Method 1	Method 2
<ol style="list-style-type: none"> 1. Make sure that the window Form is active. 2. From the keyboard press (F7) 	<ol style="list-style-type: none"> 1. In the (Solution Explorer) window , right click the file (Form1.vb) 2. Select (View Code) from the context menu ... 

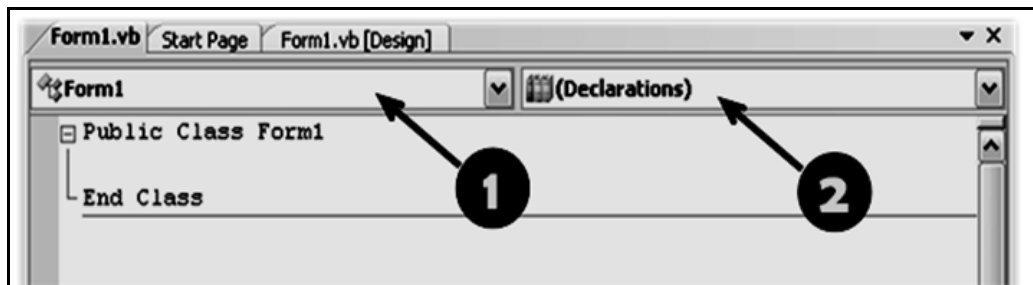


Number	Indicate
1	The name of the file that saves the code
2	The name of the file that saves the design of the form interface
3	The start of the class
4	The place to write the codes of the class
5	The end of class

Event Handler

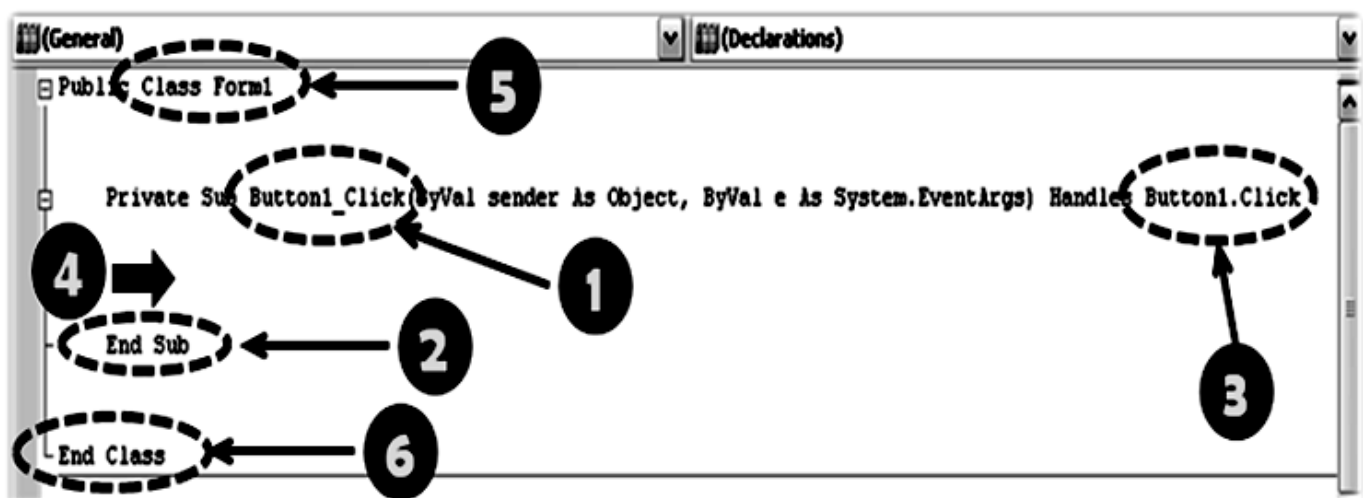
Event handler is a **procedure** which contains a code that is carried out when a corresponding **event** occurs ...

The **Procedure Name** is consisting of → the **control name** is and the **event name** is (**Click** or **Double Click**).



- The numbers shown indicate :

- 1) A drop-down menu of (**Class Names**), which refers to the names of **controls** placed on the **Form**.
- 2) A drop-down menu of (**Method Names**) or (**Events**); associated with the Class selected from the (**Class Names**) menu.



- The numbers shown in figure indicate :

- 1) The procedure name composed of (**object name** , **event name**).
- 2) End of procedure.
- 3) What causes the call of the procedure (**event occurrence**).
- 4) Between the two lines shown ; the code that will be executed on calling the procedure is written after the occurrence of the (**Event**).
- 5) The declaration of the Class (**Form1**).
- 6) The end of the Class.

Setting the (Properties) Programmatically	<p>CONTROLNAME . PROPERTY = VALUE</p>
F5 Key	Press (F5) button from the keyboard to start the Debugging
F7 Key	To open the (Code Window) of a Form press (F7)

Evaluation

- 1) Write a **VB** code to set the word " **Click** " on the " **Button1** " when clicked.

Button 1 . Text = " Click "

- 2) Write a **VB** code to change the **background** of the " **Label1** " control to the **Red** color.

Label 1 . BackColor = Color . Red

- 3) Write a **VB** code to change the **foreground** of the " **Label1** " control to the **Blue** color.

Label 1 . ForeColor = Color . Blue

- 4) Write a **VB** code that enables you to control the size of the Control (**Label1**) using mouse pointer.

Label 1 . AutoSize = False

- 5) Write a **VB** code to set the word “ جمهورية مصر العربية ” on the " **Label2** ".

Label 2 . Text = " جمهورية مصر العربية "

- 6) Write a **VB** code to make " **TextBox1** " doesn't take more than 5 characters.

TextBox 1 . MaxLength = 5

- 7) Write a **VB** code to enable the user to write in **multiple lines** in " **TextBox1** ".

TextBox 1 . MultiLine = True

- 8) Write a **VB** code to represent that the user has **selected** " **CheckBox1** ".

CheckBox 1 . checked = True

- 9) Write a **VB** code to represent that the user has not **selected** " **RadioButton1** ".

RadioButton 1 . Checked = False

- 10) Write a **VB** code to **arrange** the items in " **ListBox1** ".

ListBox 1 . Sorted = True

- 11)** Write a **VB** code to change the **font** appeared on " **Button1** " to "**Times New Roman**" and the **font size** to **26**.





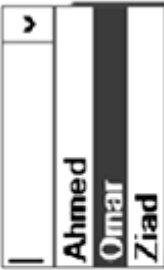



Button 1 . Font = New Font (" Times New Roman " , 26)

- 12)** Write a **VB** code to change the **size** of " **Button1** " to **150** for **width** and **100** for **height**.

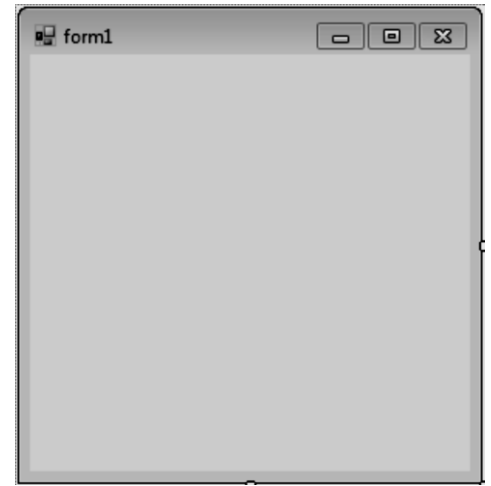
Button 1 . Size = New Size (150 , 100)

- 13)** Write a **VB** code to change the **location** of " **Button1** " to the new point **X = 70** and **Y = 50** .

Button 1 . Location = New Point (70 , 50)

Button	Label	TextBox	ListBox	ComboBox	CheckBox	RadioButton	GroupBox
							
Text	Text	Text	Text	Text	Text	Text	Text
Name	Name	Name	Name	Name	Name	Name	Name
BackColor	BackColor	BackColor	BackColor	BackColor	BackColor	BackColor	BackColor
ForeColor	ForeColor	ForeColor	ForeColor	ForeColor	ForeColor	ForeColor	ForeColor
Font	Font	Font	Font	Font	Font	Font	Font
Location	Location	Location	Location	Location	Location	Location	Location
Size	Size	Size	Size	Size	Size	Size	Size
	AutoSize	PasswordChar	Items	Items	Checked	Checked	BackgroundImage
	BorderStyle	MultiLine	Sorted	AutoCompleteSource			
		MaxLength	SelectionMode	AutoCompleteMode			

Form Properties



N	Property Name	Function
1	Name	Name of Form used in Code Window
2	Text	The appeared Text on the title bar of the Window
3	BackColor	The background color of the Form
4	RightToLeft	The direction of Controls on the form Window From Right to Left
5	RightToLeftLayout	The layout of Controls on the Form from right to left
6	MinimizeBox	It controls the appearance or disappearance of MinimizeBox of Form Window
7	MaximizeBox	It controls the appearance or disappearance of MaximizeBox of Form Window
8	ControlBox	It controls the appearance or disappearance of ControlBox of Form Window
9	FormBorderStyle	The Border style of Form Window
10	WindowState	It defines the Window State of the Form (Maximizing, Minimizing or normal)