

Al-Ma'moun University College
Department of Engineering of Medical
instrumentation Techniques
Second Class

Chapter Three

Visual Basic 6.0

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Visual Basic 6.0

1. Introduction

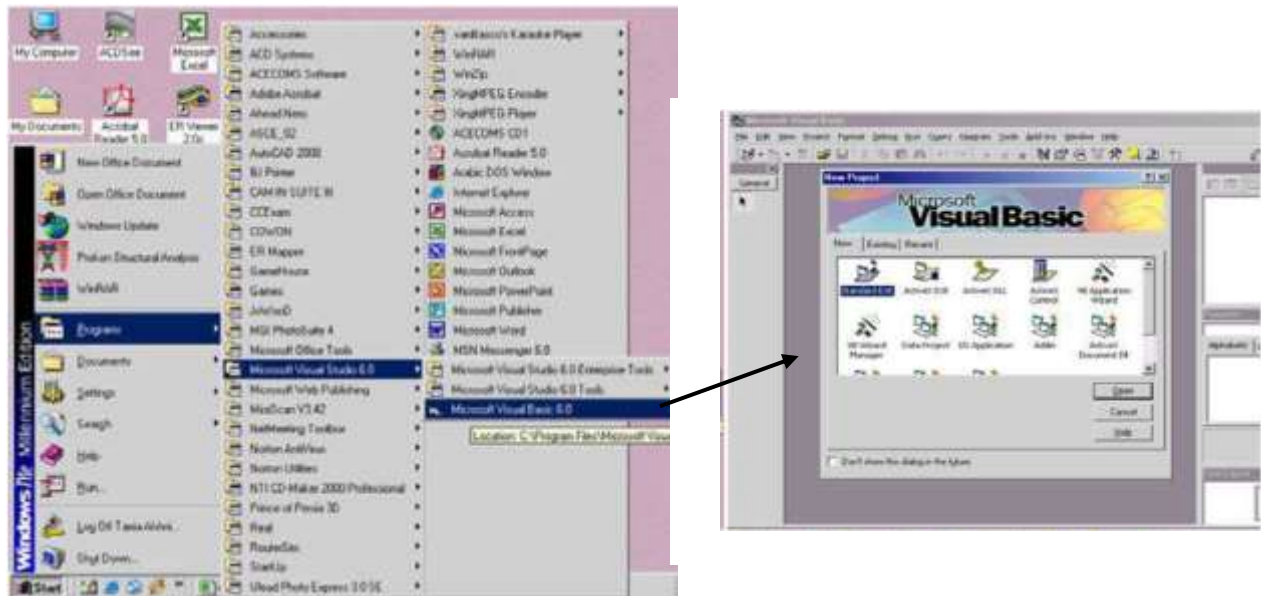
Visual Basic is a **high level programming** evolved from the earlier DOS version called **BASIC**. **BASIC** stands for **Beginners' All-purpose symbolic Instruction code**. The program codes in visual Basic resemble the English language. Different software companies produce different versions of BASIC, such as Microsoft QBASIC, QUICKBASIC, GWBASIC.

Visual Basic implements graphical user interface that allows the use of graphics for different applications. It provides visual interactive windows with user, like Dialogue box for (color, font ...), Input box, and Output box. Also it is able to create menu to simplify user application.

To run this program on user computer:

Start>programs>Microsoft Visual Studio 6.0>Microsoft Visual Basic 6.0

It will appear on the computer screen as in the following picture.



To exit from Visual Basic and return to Windows is like exit from most Windows applications. There are three ways to close the Visual Basic as stated below:

- 1- Click on **close** button icon that appears in the **upper-right** corner of the screen.
- 2- Press **Alt+F4**.
- 3- Select **File >Exit**.

2. The Importance of Visual Basic Program

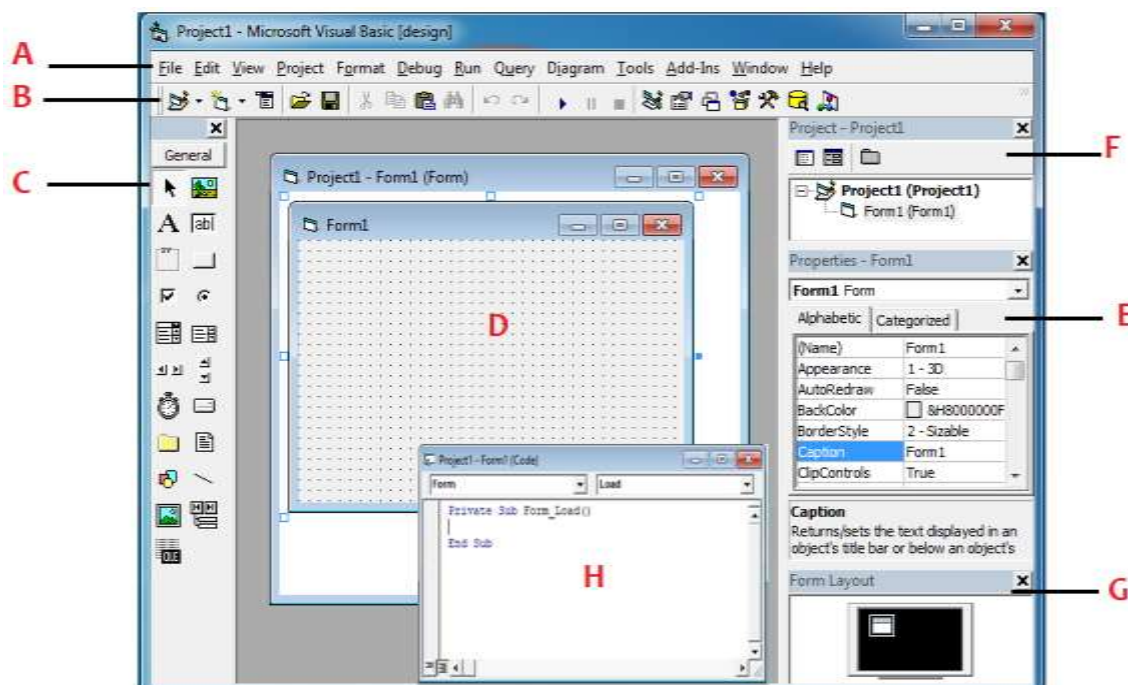
Languages like Basic and Pascal depend on variables and procedures to build the applications. This is why it is called procedural languages. The new approach is called object programming for visual programs like Visual Basic and Visual C++ and others. In this programming approach everything (form, command buttons, controls) is an object.

The reasons for of implementing Visual Basic program are listed as follows:

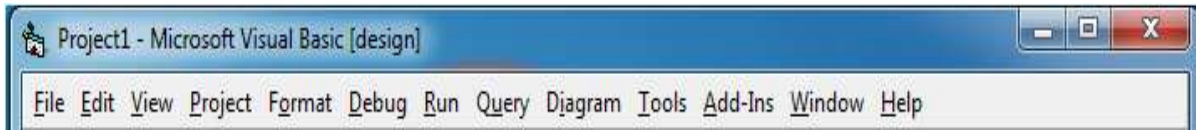
- 1- It uses **Integrated Development Environment (IDE)** which is easier for the user to minimize code writing.
- 2- All visual programs follow the same concepts, therefore the user will become more familiar with visual approach for other visual languages.
- 3- It provides Input box and Output box as an interactive windows with user.
- 4- It is able to connect to Internet, and to call Explorer.

3. Elements of the Integrated Development Environment (IDE)

The IDE environment consists of many elements. Some elements are displayed when Visual Basic is started (By default) as in the following figure. Other elements are displayed if the user requires them. We will list some of these elements.




A- Menu Bar: It contains a standard command like: **File, Edit, View, Window, Help menus**, and **specific command** such as: Project, Format, or Debug menus.

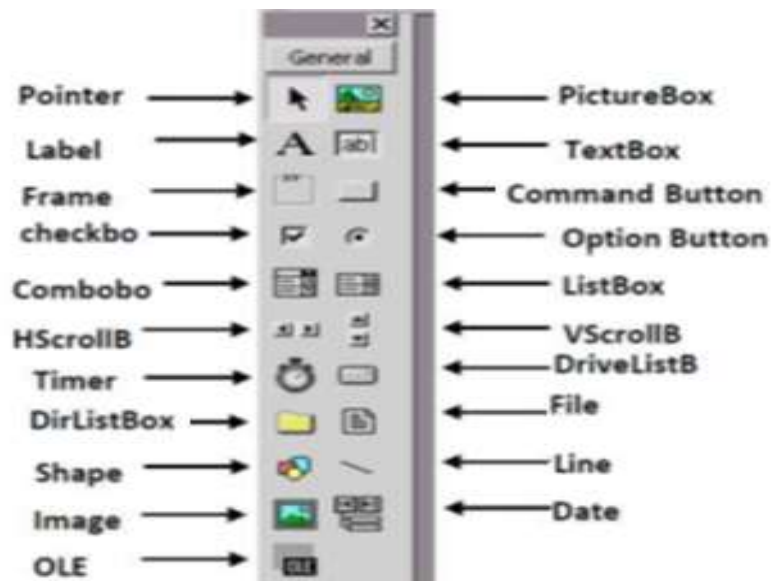


B- Toolbar: it contains the most commonly used commands (button), if clicked an action represented by that button is carried out.

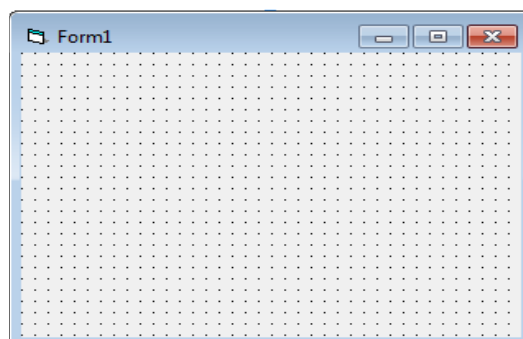


C- Toolbox: it contains a collection of tools that are needed for project design.

To **show the toolbox**,
Press **toolbox icon**  > the toolbox appear as in the following diagram.



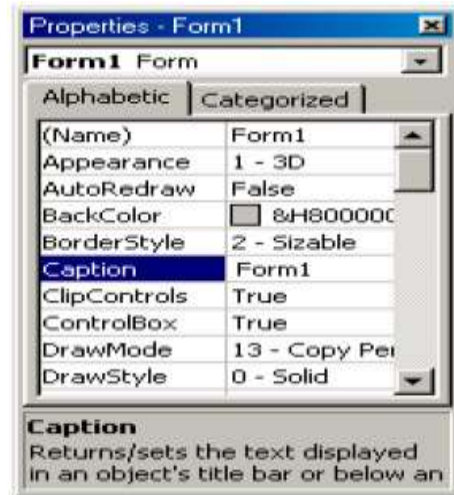
D- Form Designer: it is a window for each form to customize the designed interface of the application. Using the form designer, the user can add **controls, graphics**, and **text** to create the desired form appearance.



E-Properties Window: it is a List of properties settings for a selected form or a control. These properties are characteristics (such as **size**, **visible**, or **color**) of the selected object it provides an easy way to set properties.

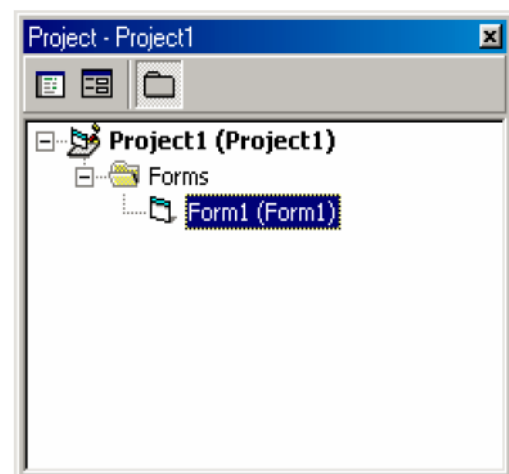
To show the **properties window** press

View> properties window icon  .

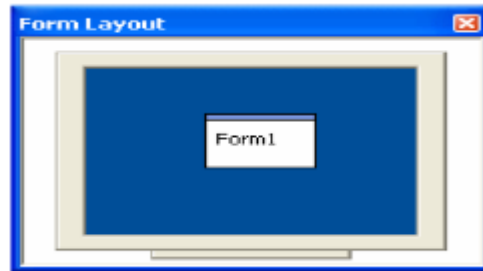


Properties name	Objective
Name	Used to represent name of object in code.
Caption	Name appears on object
BackColor	Background color for object.
ForeColor	Color of text written on object.
Font	Font style type and size
Visible	Used to control showing of tools.
Enable	Used to change the activity of tool.
Height	Length of tool.
Width	Width of tool.
Top	Coordinates of top of tool on screen.
Left	Coordinates of left of tool on screen.
Text	Allows inputting and editing text in tool.
Style	1-graphical 0-standard
multiline	To enter more than one line

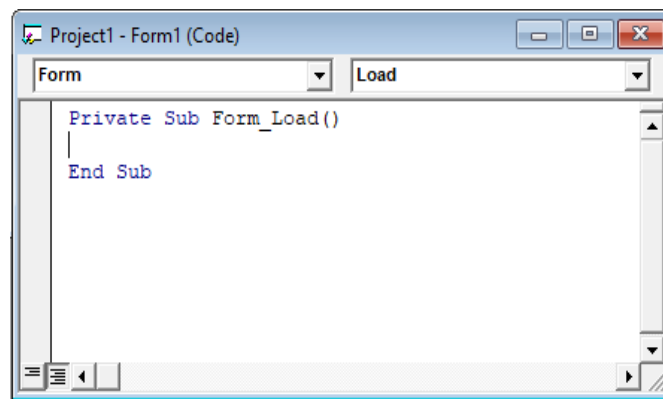
F-Project Explorer Window: The project explorer window's tool bar contains three buttons, namely **view code**, **view object** and **toggle folders**. When pressed, the view code button displays a window for writing Visual Basic code. View object, when pressed, displays the form. Double-clicking form1 (form1) also displays the form. The toggle folders button toggles (i.e., alternately hides or shows) the forms folder.



G-Form Layout Window: The Form Layout window is a **small screen**. Which is used to reposition the form of the application so that it **appears in proper place** when project is run.



H- Code Editor Window: Code Editor Window is used to write a VB code for an application. For each form there is a separate code editor window. It is displayed when user clicks on form or object in form.



To Create an Application Visual Basic:

The title of program includes the name of project, and when the user first starts the program it takes a defaulted value (project1).

The following steps are required to create an application in Visual Basic 6.0:

- 1- Select type of project new. A form automatically appears in the form design .The basis for any application's interface is the form that user should create. User can add other forms to the project (to add another form select project menu>add form).
2. To add objects (controls) to the form use the ToolBox.
3. Set the properties for the objects through properties window.
4. Write code. The code for an application can be written on the Code Editor window. In this window user can view and edit quickly any of the code.
5. Run the Application .To run the application, click the start(▶) button on the toolbar, or press F5.
6. Stop. To stop running the application and return to visual basic program click on stop (■) button in tool bar.
7. Check if there is an error, return to step.3, otherwise continue.
8. Save project.
9. Exit.

Exercises

Q1) define Visual Basic and what are the reasons for using the Visual Basic application?

Q2) Define the following parameters:

1. Menu Bar
2. Toolbar.
3. ToolBox.
4. Form designer.
5. Form layout.
6. Project window.
7. Properties window.
8. Code editor window.

Q3) what is the main ways to close visual Basic?

Q4) what is project explorer windows toolbar contains?

Project (VBP)

Project is a program designed to user application that may be simple or complex. Visual basic program can create many types of projects. The most important or usual project is the standard project (for window applications) .

Working with Standard Projects:

The following working steps (create, save, add, open and delete) could be done:

a) To create project:

When program starts, project box appears-select Standard EXE >Project window appears.

OR: File> New project> Box (select Standard EXE)> Project window appears.



b) To add project: Any number can be added.

Project icon> Select Standard EXE> Project window appears.

c) To open an existing project:

It is previously designed and saved on disc in a folder.

File> Open project> Box (select existing and look for the project) >Project window

d) To delete a project:

Select project in Project window > Mouse list > Remove project.

e) To save project:

The visual basic can save the project on disc in two ways, as an executable type or a non- executable type:

1-for project in non-execution stage

- a- Project file: it consists of all files which are related to specific project, also some other information with it. This could be saved with extension (.VBP)
- b- The form Files: this contains form description and any Object or program related to it .This is saved with extension (.frm).
 - **To save project for first time:**
File>Save project (group) as>Box (project name)> forms saved then projects group saved.
 - **To resave project:** to save previously saved project in same place:
File>save project (group).

2-project for execution

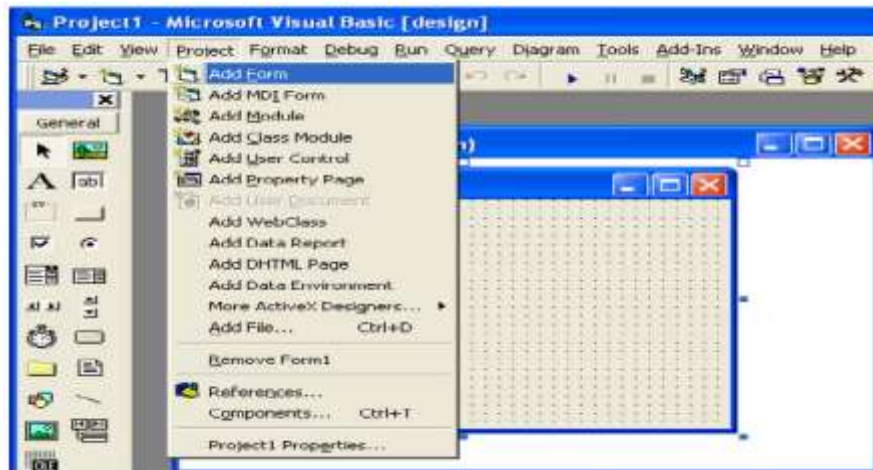
This is the final stage so that it could be opened and run by Windows and no need for Visual Basic program. **File> Makeproject.exe.**



Item		Action steps	Remarks
Create project	New	File>New project	The user can open any number of projects.
	Exist	File>Open project	Project was already designed and saved.
	Recent	File>Open project	Project was recently designed and saved.
Save project		File>Save project group as	Visual Basic can deal with it (open and modify).
		File>Make projectl.exe	For execution by window.
Delete project		File> Remove project	Select project before remove.

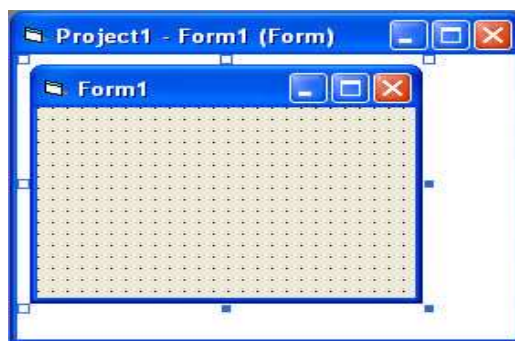
Forms

1. Introduction to form

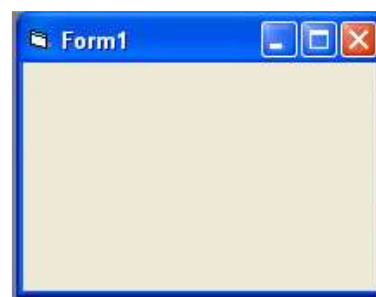
The form is a window that can be designed and modified to fit user applications. It is the most important visible object, without it no control can be displayed. In the standard project the form Designer creates and modifies visual forms. When user starts visual Basic program a form is automatically displayed in designer window. The designer can add any number of forms to the project of his application by pressing: add form from project menu.



There are **two modes**: **design mode** and **running mode**. User can interchange between them, by pressing on start icon  or stop icon  on tool bar.



Design mode



Running mode

The forms also have **properties** and **events**.

2. Form properties

Properties list has a predefined value (**numeric or string**) and could be changed, some properties could be rewritten like caption, and some could be selected from option list by pressing on down arrow on the side.

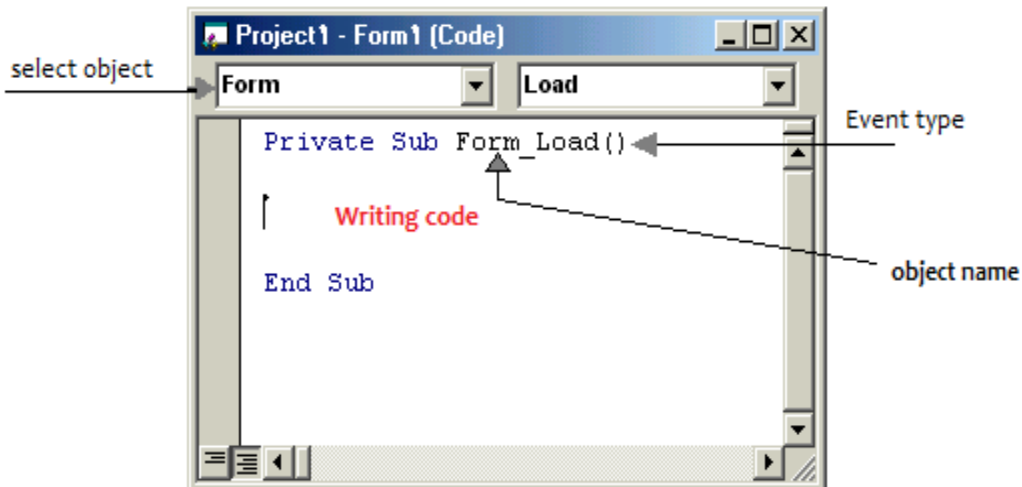
The most **important properties** of the **form** are listed in the following table:

Property name	Objective	code	Stage of Changing
Name	Used to represent name of form in code.		Design
Caption	String appear in title of form	Form _{no.} .caption= "any name"	Design and run
BackColor	Background color for form.	Form _{no.} .BackColor=Qbcolor(no.)	Design and run
ForeColor	Color of text written on form.	Form _{no.} .forecolor=Qbcolor(no.)	Design and run
Font	Font style, type and size.	Size: Form _{no.} .fontsize= no. Style: <i>font</i> { <i>italic</i> <i>bold</i> <i>underline</i> Type: Form1.FontName = "arial"	Design and run
borderstyle	0-None borderless and captionless. 1-Fixed Single a nonresizable form 2-Sizable (default), creates a resizable window. 3-Fixed Dialog: nonresizable form without Minimize and Maximize buttons. 4-Fixed Tool window for a floating toolbox like form. 5-Sizable Tool window.		Design
Enabled	The tools enable or disable.	Form _{no.} .Enabled =true or false	Design and run
Hide	To hide the form	Form _{no.} .hide	Run
show	To show the form	Form _{no.} .Show	Run

3. Code form

The code is written in code Form and it will be edited quickly by code editor. The codes are of two categories:

- 1- Declaration is written before any procedure in the code
- 2- Statements. The user selects the required event then code statements are written inside these event procedures.



4. Events:

Events are like **electrical switches**. The electrical switches are of many types, so are the events. The forms and controls support events (**generation**, **interaction with mouse** and **keyboard**). The most important events for the form are described in the following table.

Event	Action taken when
Click	Single click on object.
DbClick	Double click on object.
load	Loading the object

Examples:

- 1- Design a form such that: in event load, when project runs, the form back color property changed (chose any color).

Sol:

Code:

```
Private Sub Form_Load()
    Form1.BackColor = QBColor(12)
End Sub
```

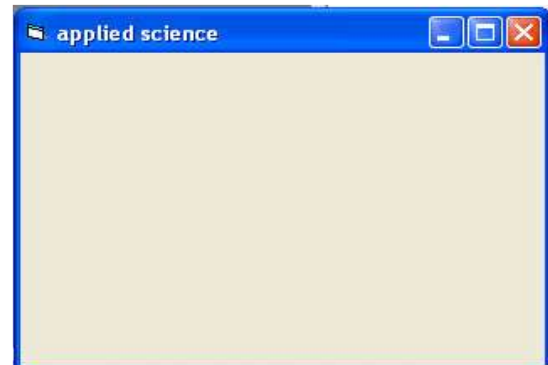


2- Design a form such that: in event click on form, when project runs, the title of the form changed to applied science.

Sol:

Code:

```
Private Sub Form_Click()
    Form1.Caption = "applied science"
End Sub
```



Exercises:

Q1) Define the following parameters:

1. project 2.form 3.Events

Q2) Design a standard project has three forms with backcolors red, blue and green.

Q3) design a standard project that has one form change the name from form1 to "students".

Q4) Design a standard project with four forms when running project all forms appear on screen, and Hide all forms when click on the form1.

Note: use this code in form1 (form1.show, form2.show, form3.show, form4.show), and (form1.hide, form2.hide, form3.hide, form4.hide)

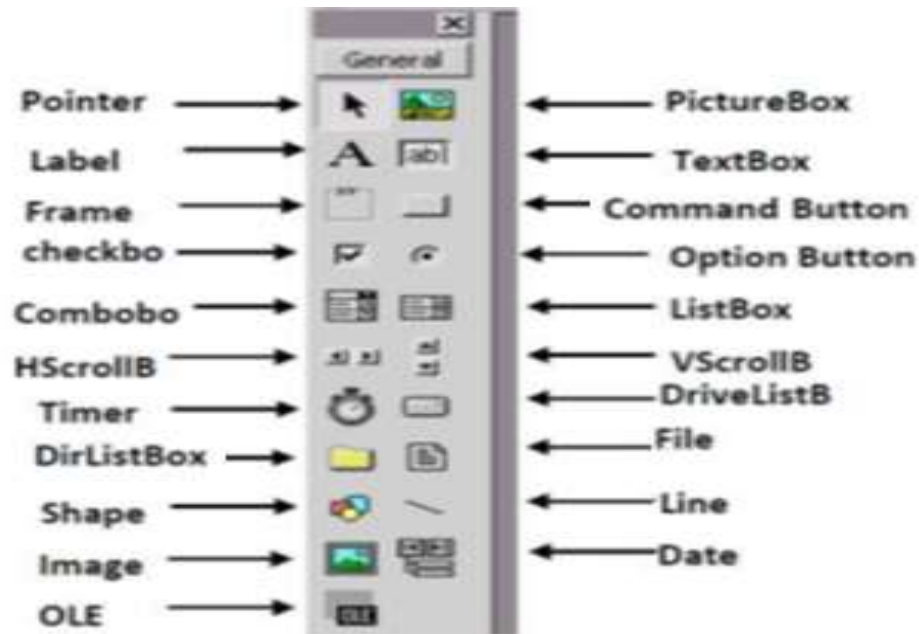
Code

```
Private Sub Form_Load()
    Form1.Show
    Form2.Show
    Form3.Show
End Sub
```

```
Private Sub Form_Click()
    Form1.Hide
    Form2.Hide
    Form3.Hide
End Sub
```

Toolbox

It is a window box that contains tools which could be used in the project. **Tools** are **objects** that could be selected from Toolbox to be placed on form.



The toolbox includes many tools and in general they are:

	Control	Description
1	Pointer(not control)	used to select tools already on form
2	PictureBox	A control that display any picture you choose in your computer.
3	Label	A control that display text in the form, you cannot enter text during running of project.
4	TextBox	A control that used for either enters or delete or change any text.
5	Frame	A control for grouping other controls.
6	CommandButton	A control that represents a button, used to execute any event and action.
7	Check box	For a yes/ no (true /false) selection
8	OptionButton	A control that used to show many option in your form and choose only one of them at a time.
9	ListBox	A control that provides a list of items.
10	ComboBox	A control that provides a short list of items
11	HscrollBar	A horizontal scrollbar
12	VscrollBar	A vertical scrollbar
13	Shape	A control for drawing circles, rectangles, squares or ellipse
14	Line	A control for drawing line.

15	Image	A control for displaying images. The images control does not provide as many capabilities as a picturebox.
16	Timer	A control that performs a task at programmer specified intervals.
17	Drive List Box	A special ListBox filled automatically with names, of the files in a specified directory. It is a list invariant.
18	Dir List Box	A special ListBox filled with drives (Hard disc, Flopy, CD) in the system. It is an invariant.
19	File List Box	A special ListBox filled automatically with the names of all DirListBox. It is a list invariant
20	Data	used for data base.
21	OLE	used for joining with another programs.

Tool Box and Form

The user can place the tool on form and then work with the tool. To place the tool on form:

Click on tool > Draw tool to Form > the tool appears on Form.

Or:

Double click on it.

Notes:

- Each tool has a property window .To see this window: Click on tool on form>Property window appears.
- Property can be changed manually or by code and the effect of code appears in the run time (when user runs project).
- To put code for tool action:
Double click on tool > code sheet of the Form appears (with code of corresponding tool is written) > User write the desired code inside tool event, or outside in Form event.

Working with Tools

The user can work with tool in the **design stage**.

- To add tool:** double click on tool. Tool appears on form or drags it to design part of page and draw it in the desired size.
- To delete:** click on element in page> press delete key of the key board or right click on object for mouse list> choose delete.
- To display code form:** double click on tool to display code form for that element.

1. Textbox:

The most important properties of this tool is the text content which is described in the following:

Property name	Objective Code
Text	Textno.text = "any name"
BackColor	Textno.BackColor=vbcolor
ForeColor	Textno.forecolor=vbcolor

2. Command:

The most important properties of this tool is described in the following:

Property name	Objective Code
Caption	Commandno.caption="anyname"
BackColor	Commandno.BackColor=vbcolor
ForeColor	Commandno.forecolor=vbcolor
Visible	Commandno.visible=true or false
Enabled	Commandno.enabled=true or false

3. Label:

The most important properties of this tool is described in the following:



Property name	Objective	Code	Stage of Changing
Caption	String appear in title of form	label _{no} .caption= "any name"	Design and run
BackColor	Background color for label.	label _{no} .BackColor=Qbcolor(no.)	Design and run
ForeColor	Color of text written on label.	label _{no} .forecolor=Qbcolor(no.)	Design and run
Font	Font style, type and size.	Size: label _{no} .fontsize= no. Style: <i>font</i> { <i>italic</i> <i>bold</i> <i>underline</i> Type: label.FontName = "arial"	Design and run
visible	The label appear or disappear	Label _{no} .visible= true or false	Design and run
Enabled	The label enable or disable	Label _{no} . Enabled =true or false	Design and run

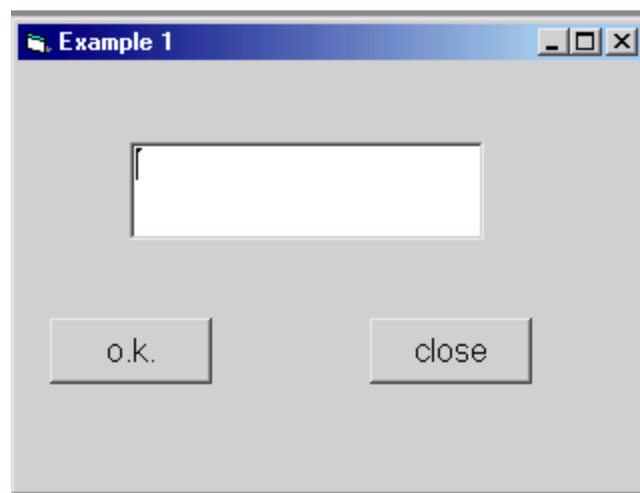
✚ Steps in Developing Application:

There are **three primary steps** involved in building a Visual Basic application:

- 1-**Draw** the user interface
- 2-**Assign** properties to controls.
- 3-**Attach** code to control to see how this is done, use the steps in the following procedures to create a simple application for the following.

Example 1:

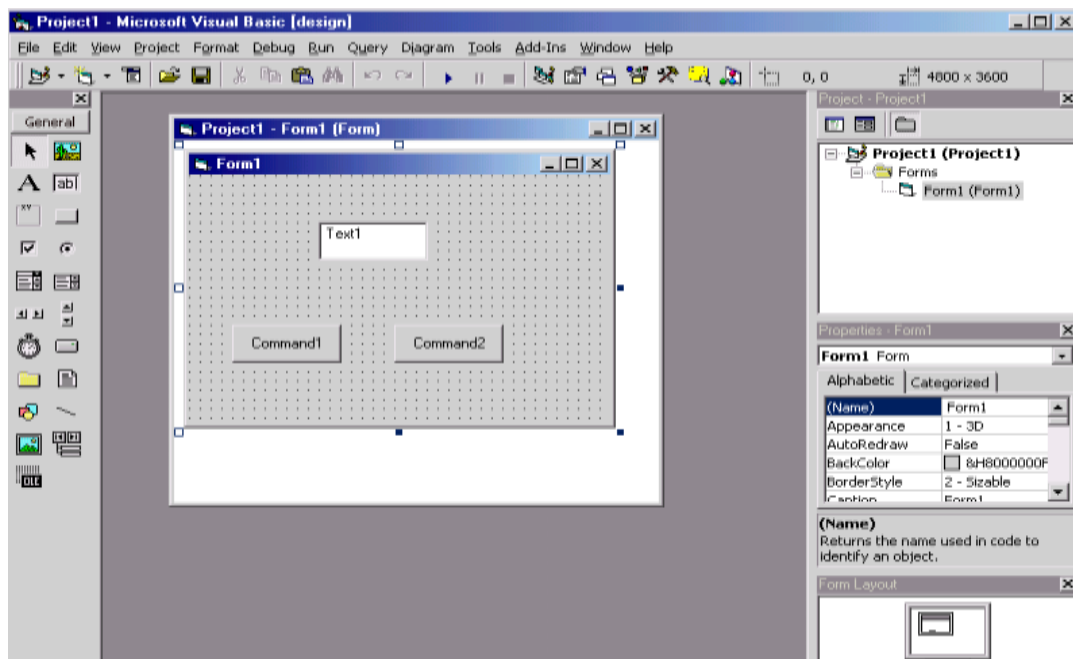
Design a form with one text box and two Commands button. Write a code so when run project and click on command1 (**O.k.**) appear the word (**Welcome**) in text box, and when click on Command2 (**Close**) terminate the program and return back to the form interface.



Solution:**1-Create the Interface:**

The first step in building a Visual Basic application is to create the forms that will be the basis for your application's interface. Then you draw the objects that make up the interface on the forms you create.

- a. **Adding a text box to the form.** Double-click the toolbox's textbox to create a text box with sizing handles in the center of the form.
- b. **Adding a Command Button1 to the form.** Click on button and draw button1 to form then the button appears on form.
- c. **Repeat step 2 to add a Command Button2 to the form.**

**2-Setting Properties**

The next step is to **set properties** for the **objects**. The properties window provides an easy way to set properties for all objects on a form. For the Example 1, you'll need to change **four property** setting. Use the default setting for all other properties.

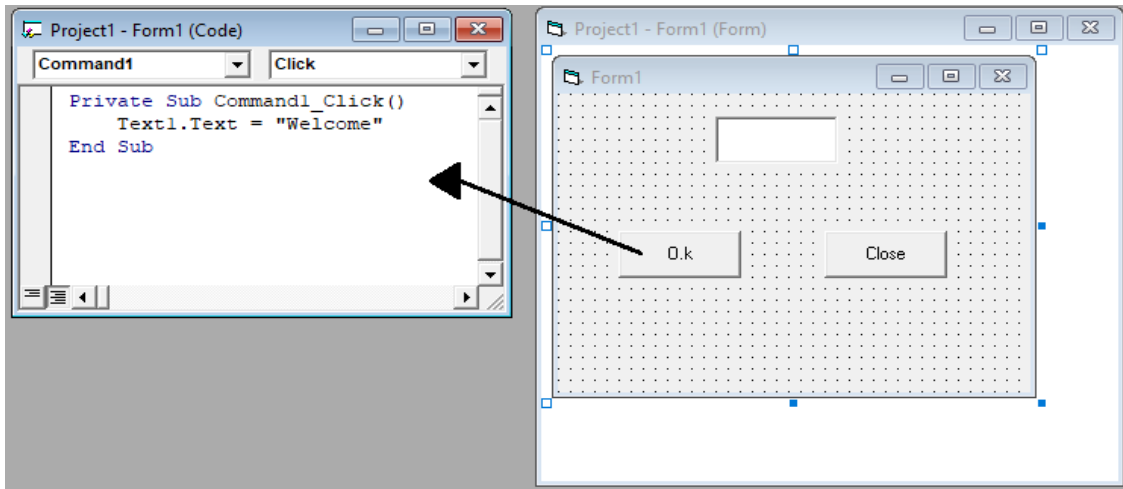
1.	Form1	Name : Form1	Caption : Example1
2.	Command1	Name : Command1	Caption :O.k
3.	Command2	Name : Command2	Caption : Close
4.	Textbox	Name : Text1	Text:

3-Write Code:

The code editor window is where you write Visual Basic code for your application. Code consists of language statements, constants, and declarations. **To open** the code window, **double-click the form** .

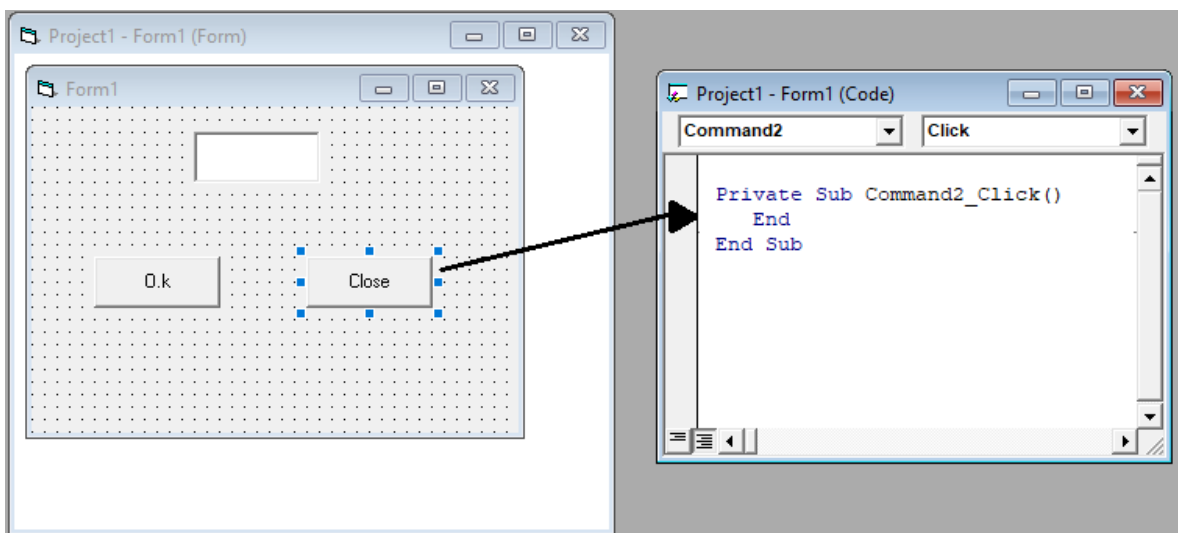
code:

```
Private Sub Command1_click ()
    Text1.text="Welcome"
End Sub
```




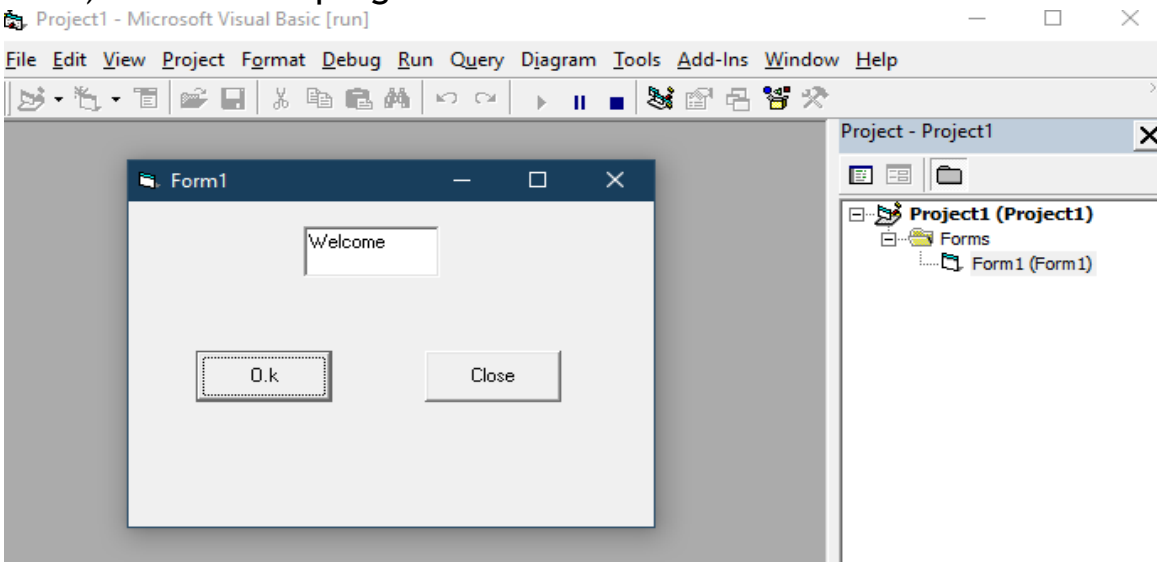
code:

```
Private Sub Command2_click ()
    End
End Sub
```



4-Running the Application:

To run the application, choose **start** from the **Menu Bar > Run** , or click the **start** button  on the toolbar , or **F5** Click the command button (O.k.) and see the “Welcome” displayed in the text box. Click the command button (close) the end the program and return to the form window.



5-Saving a Project

Choosing **save project** from the **file menu**. Visual Basic will prompt you separately to **save the form** and then the **project**.

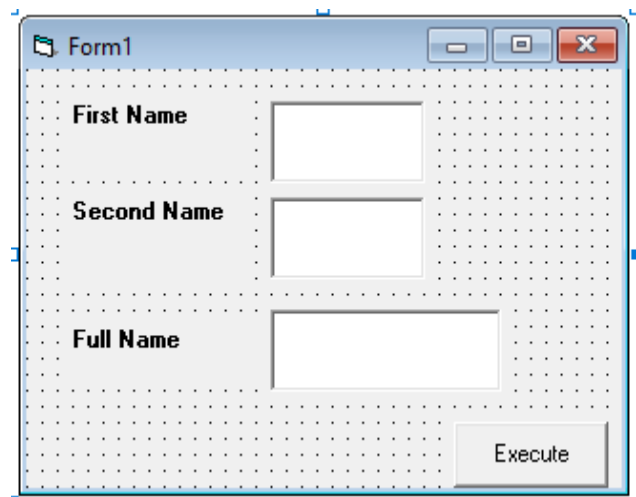
Example 2:

Design a form shown in figure below, with three text boxes and one Command Button. Write code in the Command1 (**Execute**). So when run project enter the Student Name in TextBox (Txt1) and the Father Name in TextBox (Txt2). When click on Command1 (Execute) your Full Name appear in the TextBox(Txt3).

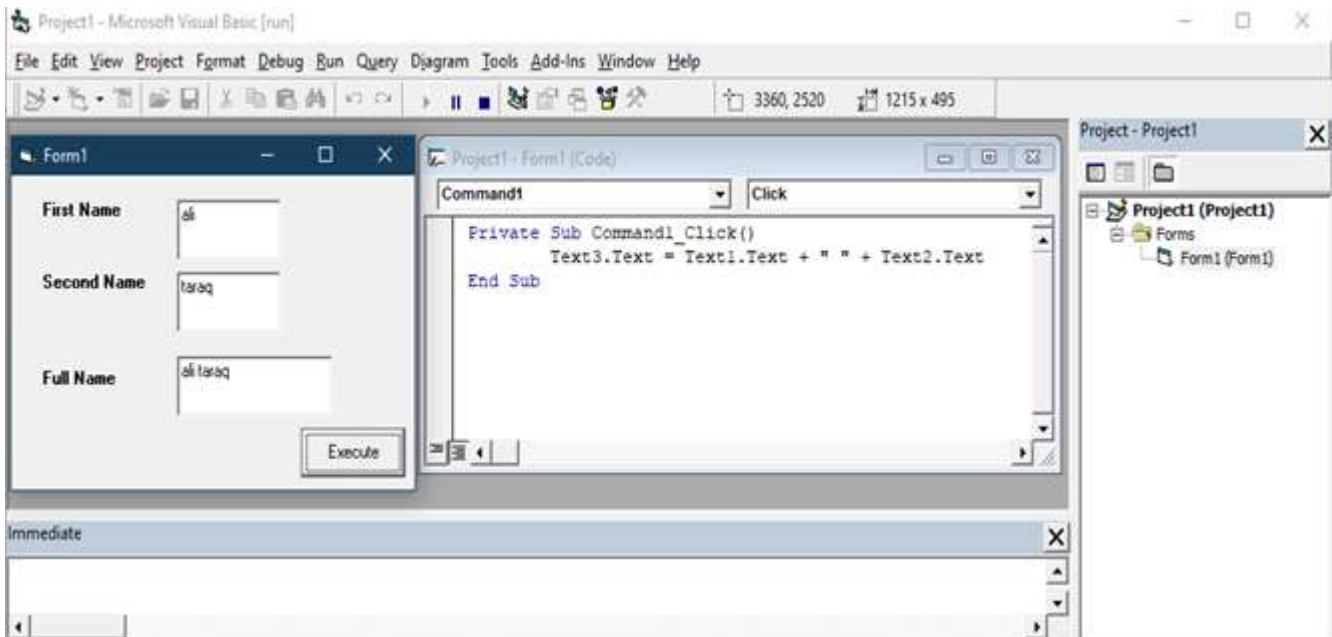
Solution

Code:

```
Private Sub Command1_click ()
    Text3.Text = Text1.Text + " " + Text2.Text
End Sub
```

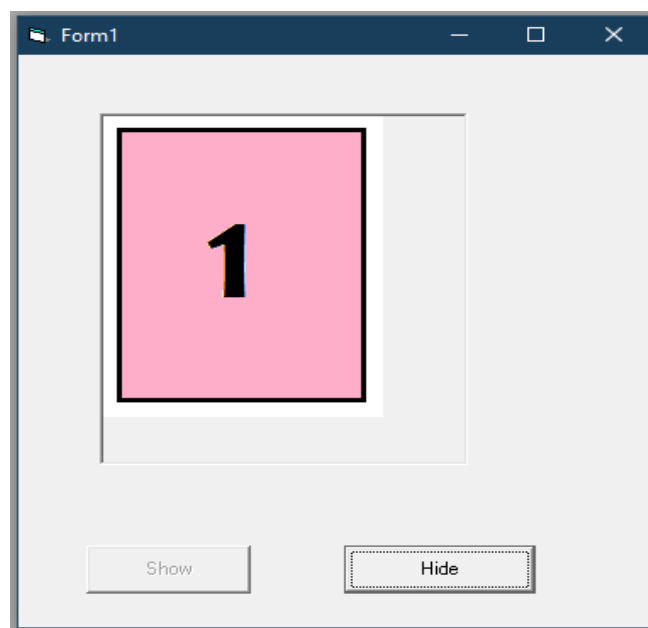


Running stage:

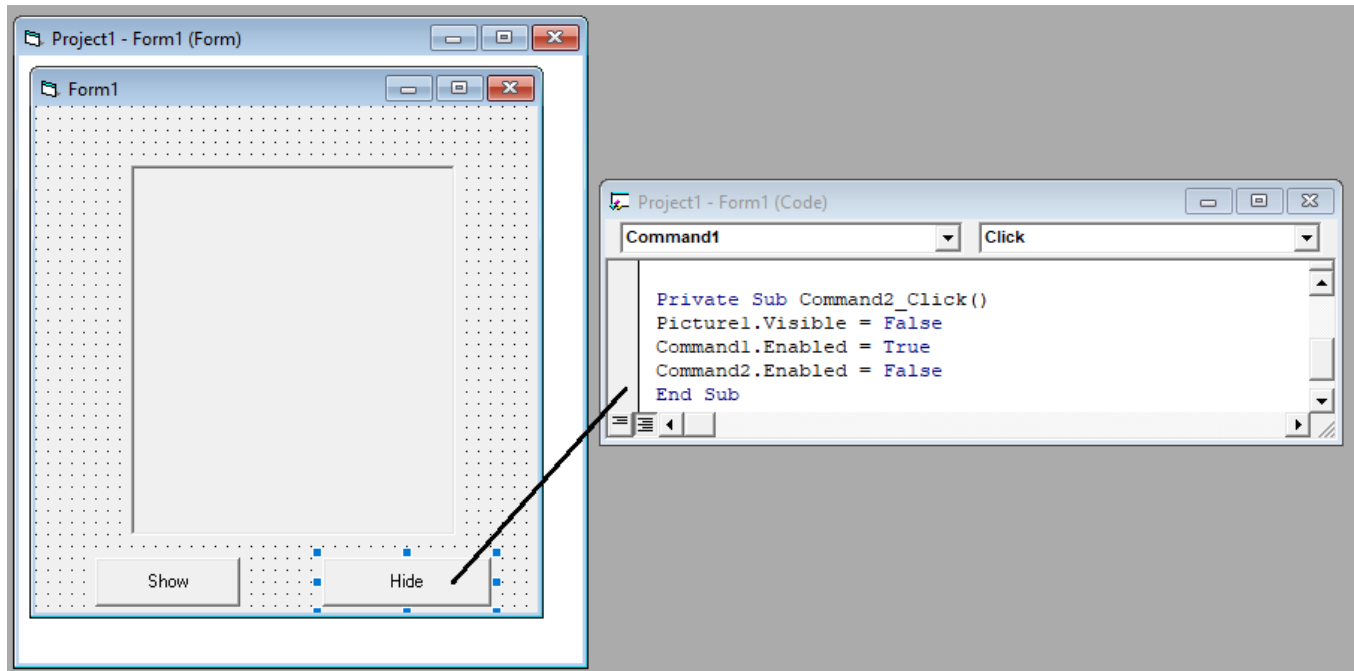
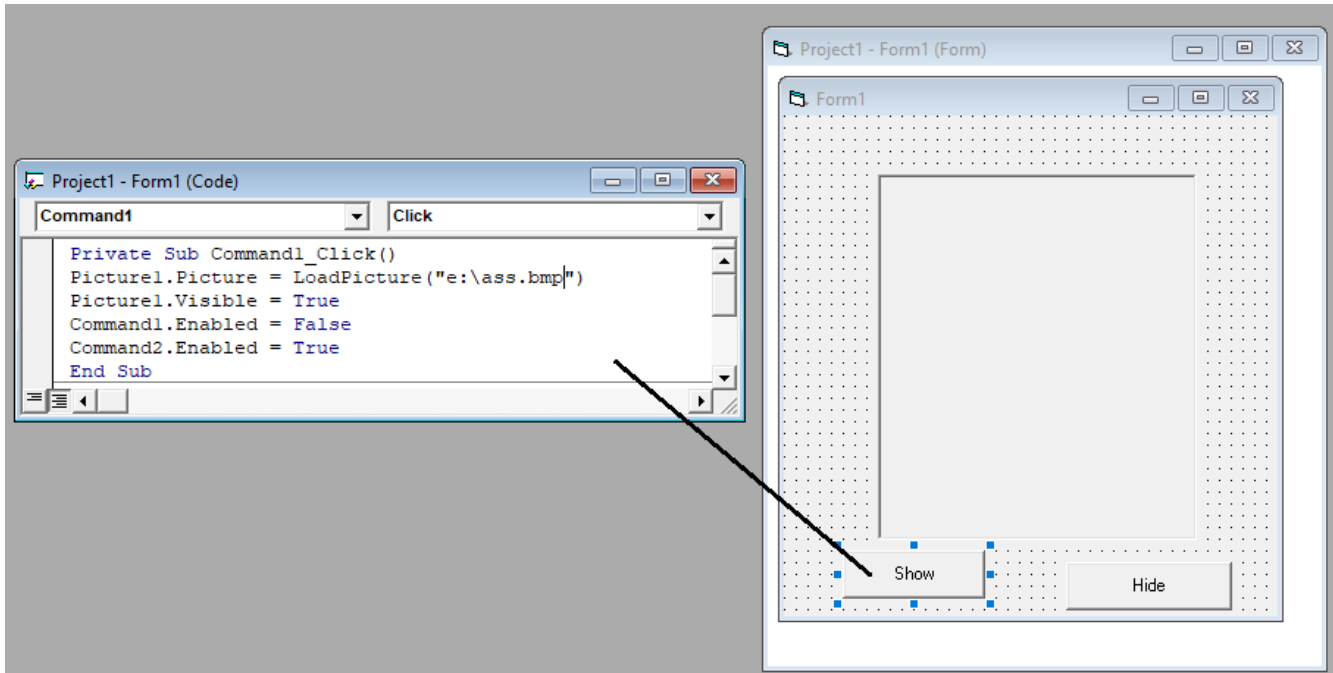


Example 3:

Design a form with one picture and two Commands Button. Write code in the Command1 (Show) and in the Command2(Hide).So when click on Command1 (Show) the picture will show and active the Hide command and when click on Command2(Hide) the picture will hide and active the show command .



Solution



Exercises:

- Q1) Who to working with Tools in the design stage?
- Q2) What is the Steps in Developing Application (VB)?
- Q3) What the main property of textbox?
- Q4) What the main property of Command?
- Q5) What the main property of Label?
- Q6) How to run the application?
- Q7) How to save Project?
- Q8) How write code to close program?