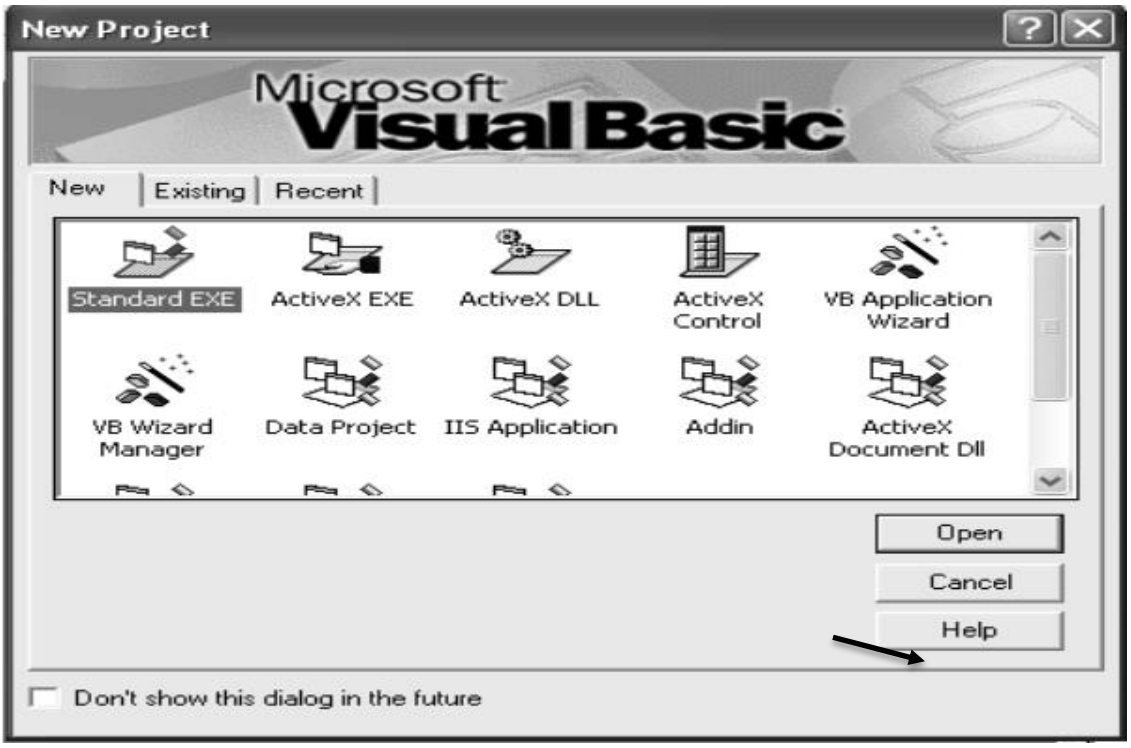
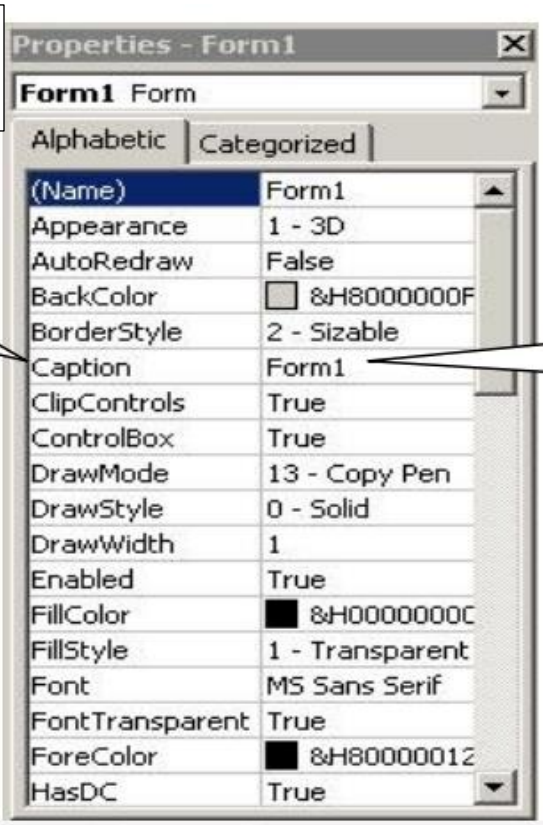
TO OPEN NEW STANDARD EXE IN VB



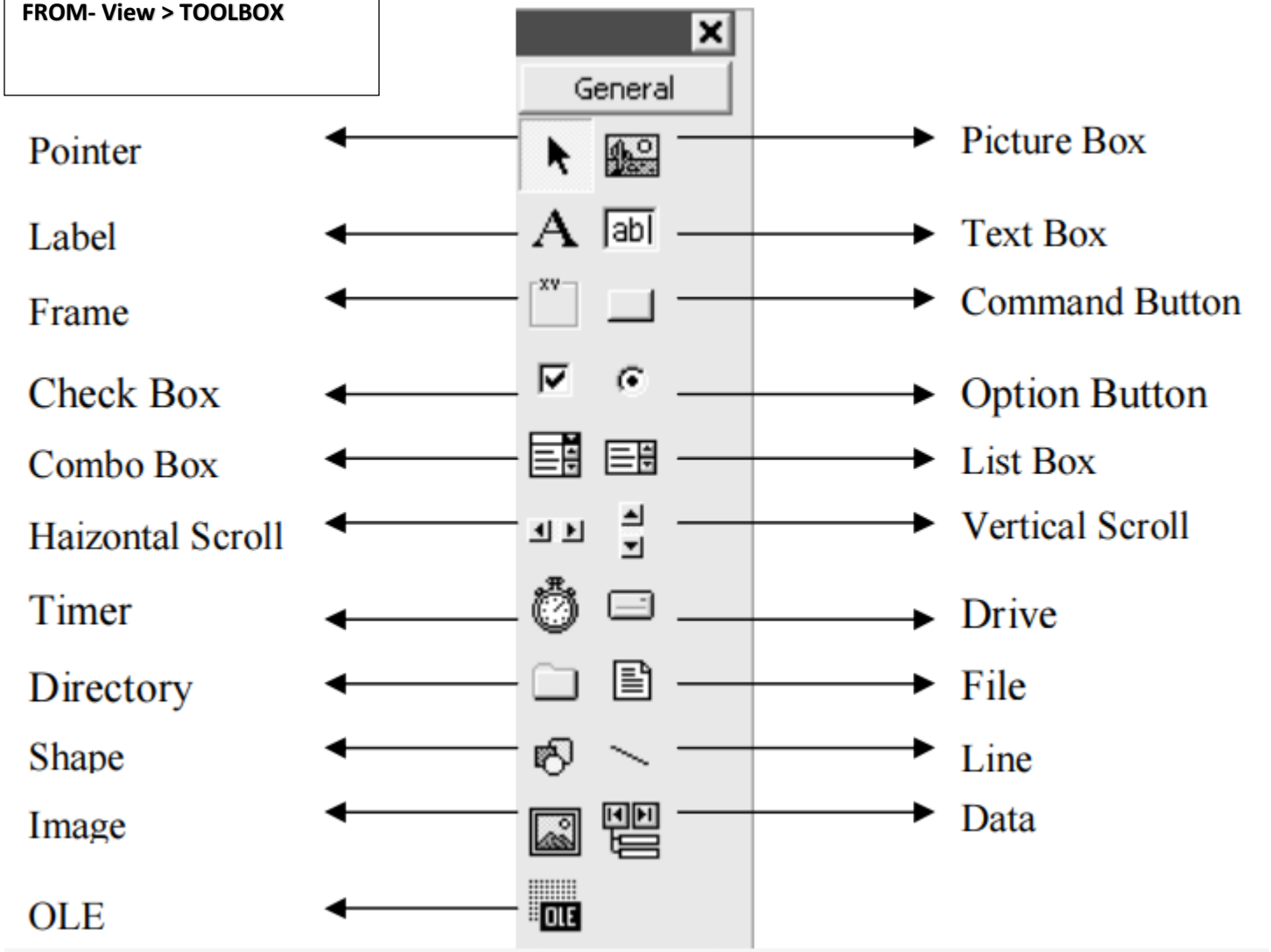
FROM- View > Properties Window OR F4

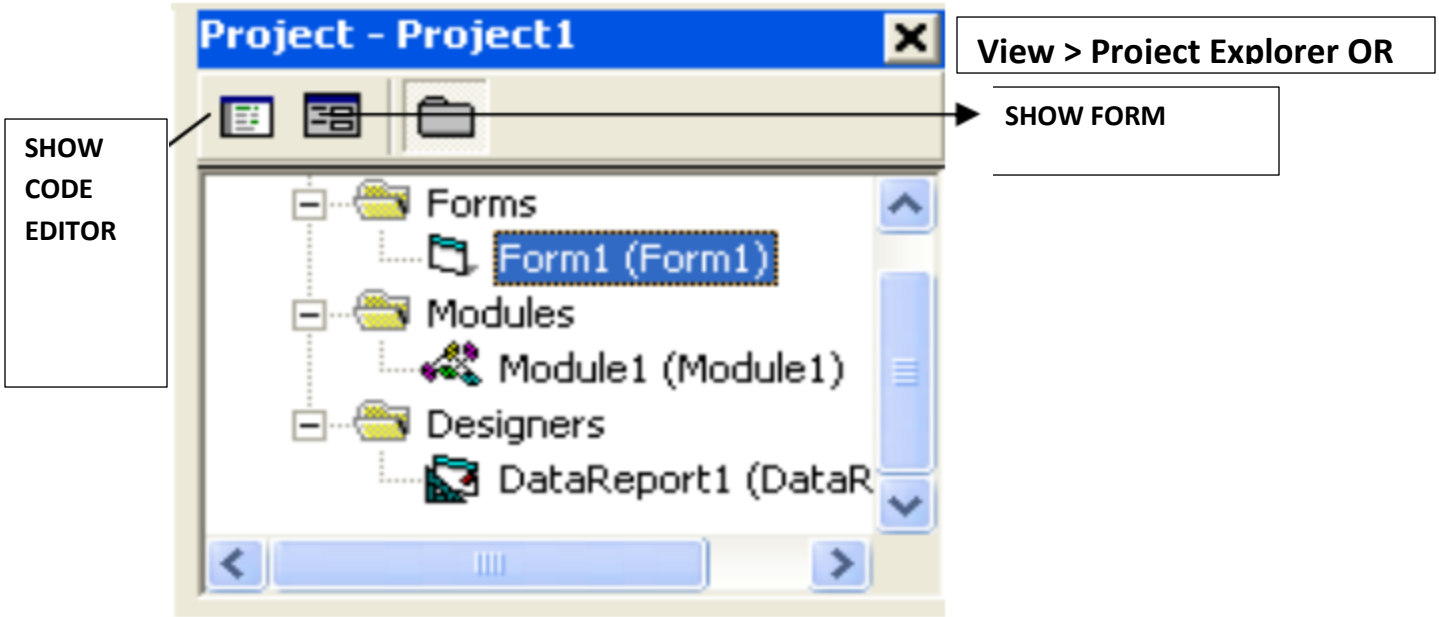


Properties Caption

FROM HERE YOU CAN CHANGE THE NAME OF FORM

FROM- View > TOOLBOX





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 tool properties window**: click on element> properties window appear.
- **To display code form:** double click on tool code form for that element.

Example Label tool:

It is used to display fixed text on form

Property name	**Objective**	**Code**	**Stage of Changing**
Caption	String appear on label	label$_{no.}$.caption= "any name"	Design and run
Autosize	To resize tool to fit text	label$_{no.}$.autosize= true or false	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: *underline* *bold* *italic* *font* 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

Note: The available color numbers that used with QBcolor is the integers 0 to 15 only

Visual basic statements

In visual basic program (code) there are four basic parts, i.e. it is contains the following statements:

1- Declaration of variables and constants
2- Inputting variables
3- Operators for variables
4- Outputting variables

1- **Declaration of a variable and constants**

The declaration means defining the data type (variable or constant).

- **Variables**

A variable is a space in memory filled with data (value, character, time or date)

2- **Notes:**

- Variable name must start with character (not number or function) and maximum length 256 character, and does not contain point or symbol.
- Variable name must not repeat for other values.

The variable has to be declared. Variable type is defined by its content .The content may be data as numeric or character or string or Boolean or date, or any type of data (called variant), these types declared as:

Dim variable name **as** type

3- **Note:** The **Dim** declaration written in general part of the form or in any place in form or sub procedure which used for one form. The types of variables that are allowed in visual basic are stated in the table below

Types of variables

Type	Value range	Declaration
1-Integer	-32768<x<32768	Dim x as integer
2-Long	-2.1 e+009<x<2.1 e+009	Dim x as long
3-Single	1.4e-045 <|x|<3.4e+038	Dim x as single
4-Double	4.9e-324<x<1.79e+308	Dim x as doub
5-String	65535 characters	Dim x as string
6-Boolean	True or false	Dim x as Boolean

Constants

It is a space in memory filled with fixed value that will not be changed.

Constant may be declared as:

Const constant name **=** value

Example design Appliction in vb to compute the area of a circle

```
Const p = 3.14159
Dim a, r As Single
Private Sub Command1_Click()
r = Val (Text1.Text)
a = r ^ 2 * p
picture1.print ;spc(2); a
Text1.Text = " "
Text1.SetFocus
End Sub
```

2- Inputting variables

There are methods to input variable x as stated in the following:

Method of input	For all type of variable
In text tool	X=text$_{no}$.text
In input box	X=val(inputbox("prompt","title))

Note: To enter many variables we usually use the second method with loop.

3- Operators for variables

The operators that are used for variable are described in the following table

Arithmetic operators	+	addition
	-	subtraction
	*	multiplication
	/	division
	mod	Modulus –rest of division
	^	exponent
Relational operators	=	equal
	<	Less than
	<=	Less or equal
	>	Greater than
	>=	Greater or equal
	<>	Not equal

Note: The order of operations when executing arithmetic operation is: Exponentiation - multiplication division and mod - finally addition and subtraction.
The mathematical representation must be written as visual basic representation in the code as following examples:

Mathematical representation	Programming representation
3(x+4y)	3*(x+4*y)
X^2+4/2	X^2+4/2
$\sqrt[4]{16}$ +3^3 +10	(16)^2+3^3+10
$\frac{5y}{x-4}$ +x-1	(5*y)/(x-4)+x-1
$\frac{e^{-2i}}{\cos(2x)+\sin(2x)}$	Exp(-2*i)/cos(2*x)+sin(2*x)
$\sqrt{a+b}$ +3	Sqr(a+b)+3

Assignment statement
There are many statements ways to fill a variable as follows:
Variable = expression
Expression may include variables, operations and functions as follows:
1- Numerical variable. For example: i=3
2- Mathematical relation. For example: x=a/b
3- Characters variable (string). For example: t="abc"
4- Boolean variable (logical). For example: p=true

Functions for variables
The numeric and string variables are the most common used variables in programming, therefore V.B provides the user with many functions to be used with a variable to perform certain operations or type convention. The most common functions for numerical variable x

Function	Description
Abs(x)	Absolute of x
Sqr(x)	Square root of x
Int(x)	Integer of x
Exp(x)	Exponential of x (e_x)
Fix(x)	Take the integer part
Sin(x), cos(x), tan(x)	Trigonometric functions
Log(x)	Natural logarithms
Len(x)	Number of character of variable x
Lcase(x)	Change the text x to small letters
Ucase(x)	Change the text x to capital letters
Cint(x)	Convert x to integer
Clong(x)	Convert x to long integer
Cdbl(x)	Convert x to double precision
Cstr(x)	Convert variable x to string
Val(x)	Convert string x to numerical variable
Fix(2.5)	2 return fraction integer
Int(2.5)	2 casting integer

4- Outputting variables

There are methods to output variable x as stated in the following:

Method of output	For all type of variable
On form	Print x Note: in load event we must use the statement: (form1.show)
to text tool	$text_{no}$.text =cstr(X)
By message box	msgbox (x) Or msgbox ("remark"& x)
By picture tool	$Piture_{no}$.print spc(2) ; x

Example 2

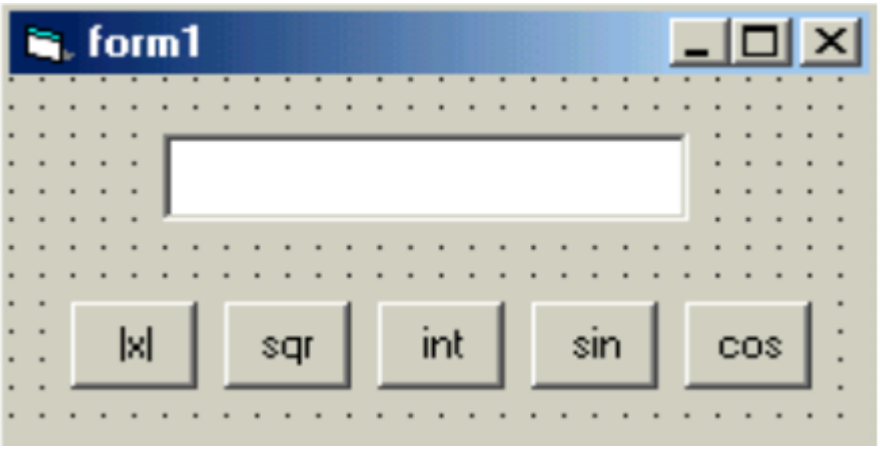
write program in vb to add and subtraction tow numbers When click on command (+) or (-) the addition or subtraction result appears in message box

use 2 command and 2 textbox

```
Private sub command1_click ()

Dim a,b, c as single
a=val(text1.text)
b=val(text2.text)
c=a + b

Msgbox(c)

End sub


Private sub command2_click ()

Dim a,b, c as single
a=val(text1.text)
b=val(text2.text)
c=a - b

Msgbox(c)

End sub
```

H w

Exercise : write a program to compute the functions: sine, cosine, integer value, square, absolute value

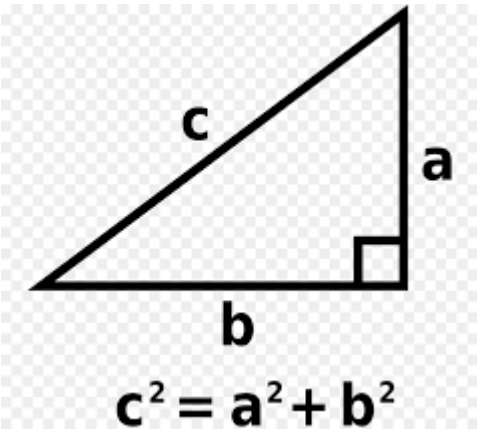


Q1/ Write a Program to compute the area of triangle with design.

Q2/Write a program to enter the name of a student and two marks of any subject by input box then computes the average and display the name and average in two texts

Q3Write a program to enter a real number then find its square after putting suitable design.

Q4 Write program in vb application to compute third side (C) of following triangle by using Pythagoras equation",



Conditional statements

There are two types of conditional statements:

1- If statement
2- Select case

1- **If** statement: The comparison operations are used with conditional statements.

The comparison operations are: (<, <=, >, >=, =, <>, and, or)

There are four structures for if statement.

a) Simple structure **If.. then**:

Used for running one programming statement only if the required condition satisfied.

The general form is: **If** condition **then** statement

Example 1: write a program to enter a mark of a student then print (pass) if he successful.

Sol:

```
Dim x as integer
Private sub command1_click()
X= val(text1.text)
If x>= 50 then text2.text= "pass"
End sub
```

If.. Then.. Else structure: Used for running many programming statements if the required condition satisfied. And running another programming statements (after else) if the required condition not satisfied.

The general form is:

If condition **then**
Statements
Else
Statements
End if

Example 1: write a program to enter two number a and b and find the largest of them

```
Private sub command1_click()

Dim a, b, max as integer
a= val(text1.text)

b= val(text2.text)

if (a>b)then max =a
```

لاحظ ان الشرط وجواب الشرط في خط واحد عندما يكون جواب الشرط جملة واحدة فقط

```
else

max=b

end if

picture1.print;spc(2); max

end sub
```

B-If block structure: Used for running many programming statements if the required condition satisfied.
The general form is:
If condition **then**
Statements

```
If x>= 50 then
text2.text= "pass"
text2.fontsize=18
End if
```

If.. Then.. Elseif.. Else structure:
Used if we have many conditions to be satisfied

Select statement

Used for applying many statements depending on one variable. The general form is:

Select case variable
Case value1
statements
Case value2
Statements
...
Case value n
Statements
Case else
Statements
End select

Q5: write a program to give the evaluation for different marks as follows by using select Case or **If.. Then.. Elseif.. Else** structure:

mark	evaluation
90-100	Excellent
80-89	Very good
70-79	Good
60-69	Medium
50-59	Pass
0-49	Fail

Q.6/ Write a program to enter a value of x and compute the value of y where

$$y=\begin{cases} x \ if \ x \geq 0 \\ -x \ if \ x < 0 \end{cases}$$

Q.7/ Write a program to find the roots of quadratic equation

$$\frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Q8/ write a program to enter three numbers and print the largest numbers

Q9/Write program to solve the following .use number of sequence =3

$$\boldsymbol{F = 1 + \frac{nx}{2!} + \frac{n(n-1)x^2}{3!} + \cdots}$$

Note 3! Mean factorial of 3 =1*2*3

Q10/write program to input value of (t)then find the values of x,y, z as double

$X=t-t^3+t^5$

$Y=\sin^2 t-\tan t$

$Z=e^{2t}-t+1$

Q11/write program to find z,y,w from the following

$$\begin{Bmatrix} z = Ax^2 + 5 \\ y = \sqrt{z - 2x} \\ w = \sqrt{Az} \end{Bmatrix} if\ A \leq 0$$