

المحاضرة السادسة

١) مراجعة ٢) المصفوفات

Function of String Variable

- **x = CStr(Text1.Text)**
- **CStr** The function CStr converts integer, long integer, single-precision, double-precision, and variant numbers to strings. If x is any number, the value of CStr(x) is the string determined by x. unlike the Str function, CStr does not place a space in front of positive numbers.[variant]
- **Str** The Str function converts numbers to strings. The value of the function Str(n) is the string consisting of the number n in the form normally displayed by a print statement.
- **Y=Len(x)** Number of characters of Variable
- **Y=LCase (x)** Change to small letters
- **Y=UCase (x)** Change to capital letters

Example

- Dim x, z, m As String
- Dim y
- x = CStr(Text1.Text)
- y = Len(x)
- z = LCase(x)
- m = UCase(x)
- Text2.Text = y
- Text3.Text = z
- Text4.Text = m
- Text5.Text = m + z

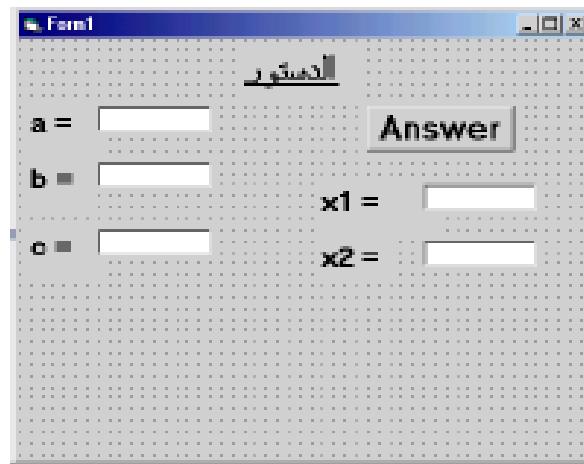
Examples

Arithmetic formula	Visual Basic language
$\sqrt[3]{\frac{e^5 + \sin 30}{\log(2) - \tan(35)}}$	((exp(5)+sin(30*3.14159/180))/(log(2)/log(10)-tan(35*3.14159/180))^(1/3)
$\frac{\pi}{4} \left(\frac{U_{av}}{100} \right)^2$	3.14159/4*(Uav /100)^2
$\frac{\pi}{4} \left(\frac{U_{av}}{100} \right)^2 \frac{1}{\left[1 - \left(\frac{U_{av}}{100} \right)^{5.63} \right]^{0.533}}$	3.14159/4*(Uav/100)^2/(1-(Uav/100)^5.63)^0.533
$\frac{-b + \sqrt{b^2 - 4 * a * c}}{2 * a}$	(-b+sqr(b^2-4*a*c))/(2*a)

Create a Visual Basic project to solve for the roots of the quadratic equation $aX^2 + bX + c = 0$,

using quadratic formula as: $X_{1,2} = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$. Design the program so that the values of a, b, and c are entered into separate (labeled) text boxes and display X_1 and X_2 in separate (labeled) text boxes?

Object	Property	Setting
Form1	Name	Form1
	Caption	Form1
Command Button1	Name	Cmd1
	Caption	Answer
TextBox1	Name	Txt1
	Text	Empty
TextBox2	Name	Txt2
	Text	Empty
TextBox3	Name	Txt3
	Text	Empty
TextBox4	Name	Txt4
	Text	Empty
TextBox5	Name	Txt5
	Text	Empty
Label1	Name	Label1
	Caption	الدستور
Label2	Name	Label2
	Caption	a =
Label3	Name	Label3
	Caption	b =
Label4	Name	Label4
	Caption	c =
Label5	Name	Label5
	Caption	X1=
Label6	Name	Label6
	Caption	X2=



- Dim a, b, c, x1, x2
- a = Val(Text1.Text)
- b = Val(Text2.Text)
- c = Val(Text3.Text)
- x1 = (-b + (Sqr((b ^ 2) - (4 * a * c)))) / (2 * a)
- x2 = (-b - Sqr(b ^ 2 - 4 * a * c)) / (2 * a)
- Text4.Text = x1
- Text5.Text = x2

Example//Write a program to enter the value of variable (Mark). Find the grade using If – Block statement and display the value of grade in a text box. When the value of variable (Mark) exceed 100, write a Message Box (Wrong entry, please Re-enter the Mark). Design form window and select all the control objects are used.

- Dim Mark As Single, Grade As String
- 10 Mark = InputBox("input x")
- If Mark > 100 Then
- MsgBox "Wrong entry", vbCritical, " Error"
- GoTo 10
- ElseIf Mark >= 90 And Mark <= 100 Then
- Grade = "Excellent"
- ElseIf Mark >= 80 Then
- Grade = "Very Good"
- ElseIf Mark >= 70 Then
- Grade = "Good"
- ElseIf Mark >= 60 Then
- Grade = "Medium"
- ElseIf Mark >= 50 Then
- Grade = "Pass"
- Else
- Grade = "Fail"
- End If
- Text1.Text = Grade

Example find sinx from the series

$$\text{Sin}(x) = x - \frac{x^3}{3!} + \frac{x^5}{5!} - \frac{x^7}{7!} + \dots$$

- Dim X, Sx, I, J, T, K, N, Fact, mm
- X = Val(Text1.Text): X = X * 3.14 / 180
- N = 1; K = 1; Sx = 0
- 10 Fact = 1
- For I = 1 To 2 * N - 1
- Fact = Fact * I
- Next I
- T = X ^ (2 * N - 1) / Fact
- If Abs(T) >= 0.000001 Then
- Sx = Sx + T * K
- mm = mm + 1
- K = -K; N = N + 1
- GoTo 10
- Else
- Text2.Text = Str(N)
- Text3.Text = (Sx)
- Text4.Text = mm
- End If

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$$\cos(x) = 1 - \frac{x^2}{2!} + \frac{x^4}{4!} - \frac{x^6}{6!} + \dots$$

$$Y = 1 - \frac{X^3}{3^2} + \frac{5X^7}{7^2} - \frac{9X^{11}}{9^2} + \dots \quad X > 0$$

$$Y = \frac{X^2}{2^2} - \frac{3X^6}{6^2} + \frac{5X^{10}}{10^2} - \dots \quad X < 0$$

Arrays in Visual Basic 6

1) Fixed-Size Array

a) One Dimension Array:

- General form
- **Dim ArrayName (N) As Var Type**
- **Example**
- **Dim Num (5) As Integer**

Num (5)	Num (0)	Num (1)	Num (2)	Num (3)	Num (4)	Num (5)
	1	3	-10	5	3	2

How to read and write the matrix

- Dim a(5) As Integer
- Dim I As Integer
- For I = 1 To 5
- a(I) = InputBox("input any value", "matrix")
- Next
- For I = 1 To 5
- Print a(I);
- Next

Using Space

- Dim a(5) As Integer
- Dim I As Integer
- For I = 1 To 5
- a(I) = InputBox("input any value", "matrix")
- Next
- For I = 1 To 5
- Print a(I); Space(5), I
- Next

Example using matrix to find the maximum number for n values

- Dim a(5) As Integer, I, max
- N = text1.Text
- For I = 1 To N
- a(I) = InputBox("input matrix value")
- Next
- max = a(1)
- For I = 1 To N
- If a(I) > max Then
- max = a(I)
- End If
- Next
- Print max

Two Dimensional Arrays:

- For example
- Dim Avg (3, 3) as Single

Avg (Row, Col.)	Avg (0,0)	Avg (0,1)	Avg (0,2)	Avg (0,3)
	Avg (1,0)	Avg (1,1)	Avg (1,2)	Avg (1,3)
	Avg (2,0)	Avg (2,1)	Avg (2,2)	Avg (2,3)
	Avg (3,0)	Avg (3,1)	Avg (3,2)	Avg (3,3)

Example

Read two dimensional matrix

- Dim A(3, 4) As Single
- For I = 1 To 3
- For J = 1 To 4
- A(I, J) = InputBox("")
- Next
- Next
- For I = 1 To 3
- For J = 1 To 4
- Print A(I, J);
- Next
- Print
- Next

List box

Suppose A is a one dimension array with 10 elements is entered into **listbox**. Write a program segment to create the one dimension array (B) contains the even value in array (A). Display the new array (B) into list box2.

- List2.Clear
- Dim A(4) As Single, B(4) As Single
- For I = 1 To 4
- A(I) = Val(List1.List(I - 1))
- Next
- For I = 1 To 4
- If A(I) Mod 2 = 0 Then
- k = k + 1
- B(k) = A(I)
- End If
- Next
- For I = 1 To k
- List2.AddItem Str(B(I))
- Next

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