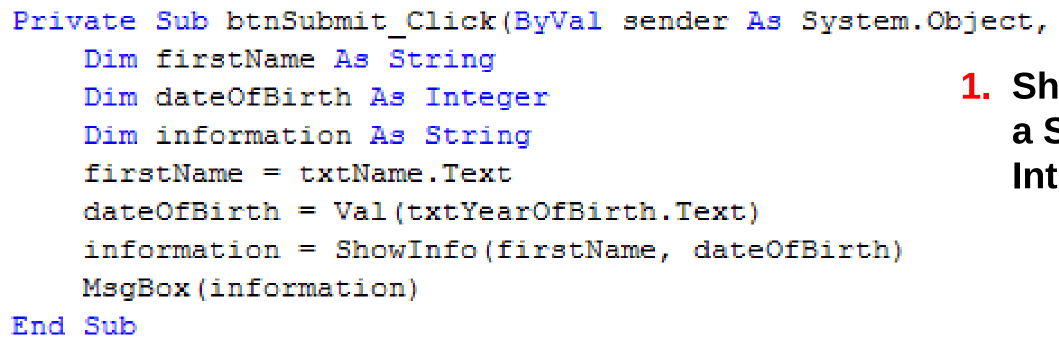
Functions calling Functions

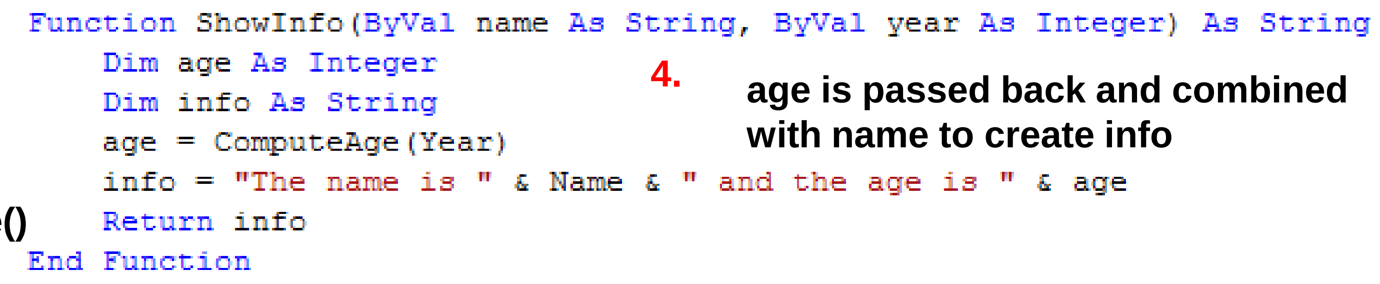


```
Private Sub btnSubmit_Click(ByVal sender As System.Object,
    Dim firstName As String
    Dim dateOfBirth As Integer
    Dim information As String
    firstName = txtName.Text
    dateOfBirth = Val(txtYearOfBirth.Text)
    information = ShowInfo(firstName, dateOfBirth)
    MsgBox(information)
End Sub
```

1. **ShowInfo() is called providing a String variable name and a Integer variable year of birth.**

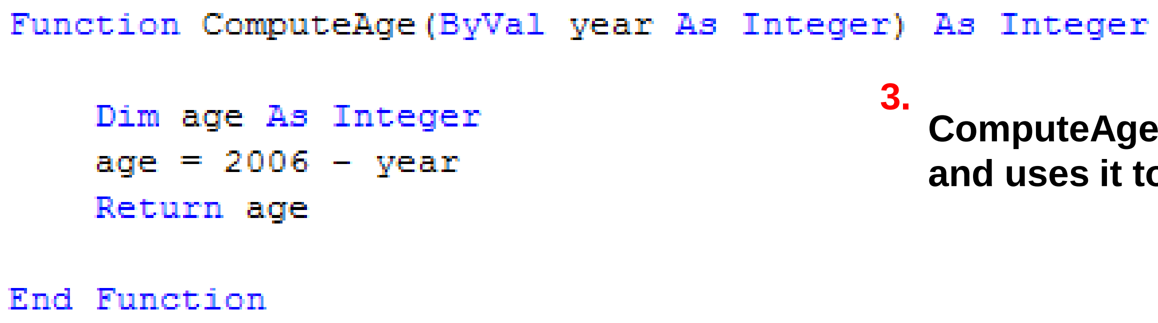
5. **info is passed back and assigned to information which is then displayed in a message box.**

2. **ShowInfo() recieves the arguments from the function call.
It then passes the year argument to ComputeAge()**



```
Function ShowInfo(ByVal name As String, ByVal year As Integer) As String
    Dim age As Integer
    Dim info As String
    age = ComputeAge(Year)
    info = "The name is " & Name & " and the age is " & age
    Return info
End Function
```

4. **age is passed back and combined with name to create info**



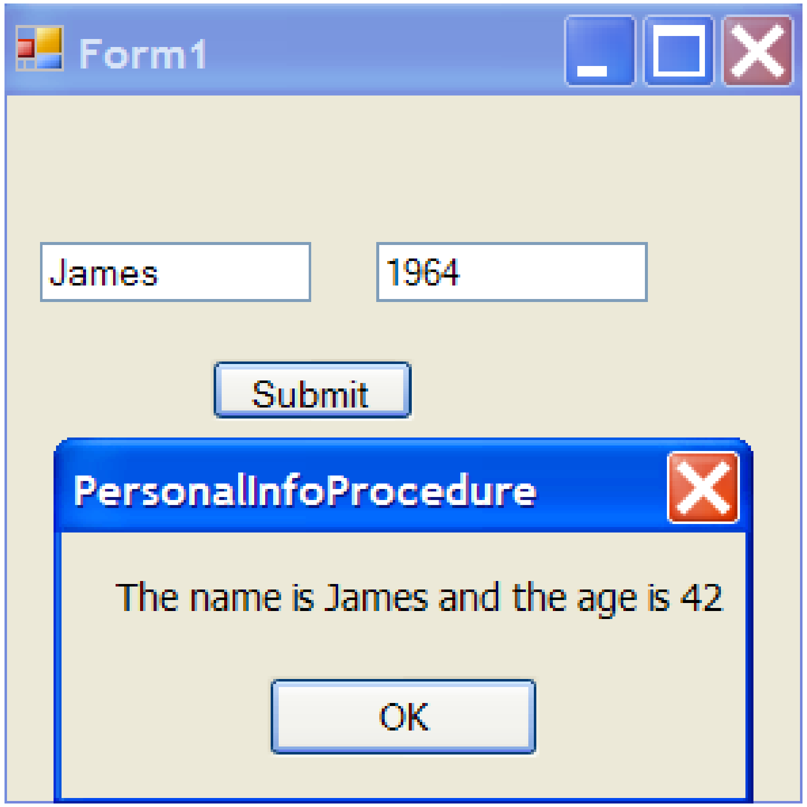
```
Function ComputeAge(ByVal year As Integer) As Integer

    Dim age As Integer
    age = 2006 - year
    Return age

End Function
```

3. **ComputeAge() receives the year argument and uses it to calculate age.**

Helper Functions



The name is James and the age is 42

Functions that are called to perform a task for another function or procedure are sometimes called ‘helper functions’

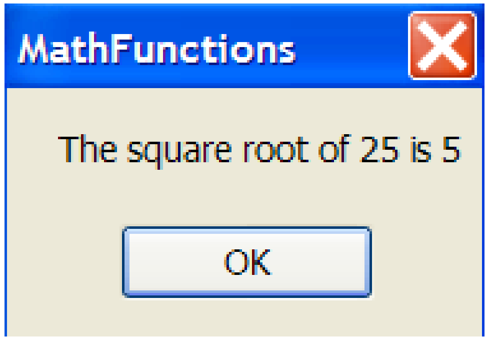
Math Functions

Visual Basic includes many “pre-built” procedures and functions that a programmer can use. Some that we have used in the past include MsgBox(), InputBox(), Val(), Chr() etc.

Procedures and Functions can be easilt recognized by the presence of Open and closed brackests after the procedure/function names.

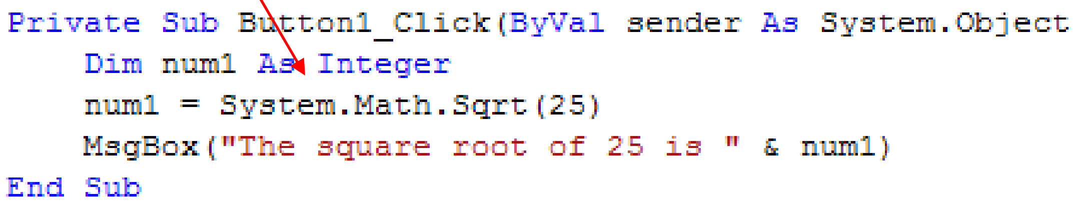
In this section we will look at some of the Math functions included in Visual Basic.

To find a square root of a number.



The square root of 25 is 5

Sqrt() function is part of the Math class in a System package so it is preceded by this syntax



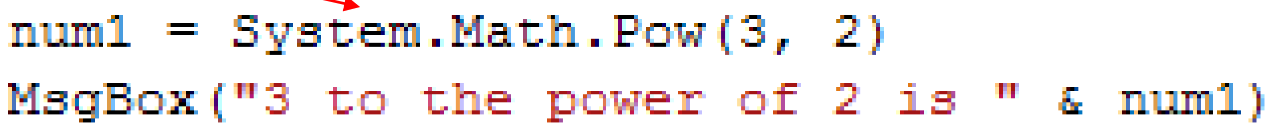
```
Private Sub Button1_Click(ByVal sender As System.Object
    Dim num1 As Integer
    num1 = System.Math.Sqrt(25)
    MsgBox("The square root of 25 is " & num1)
End Sub
```

The Exponent Function

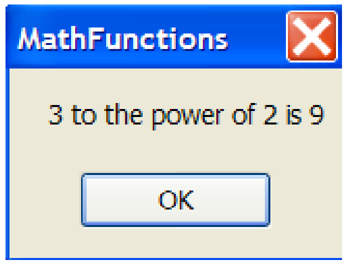
The Sqrt() function requires only one argument (the number you want the square root of). With the exponent function you require 2 arguments. The first is the base of the exponent and the second is the power to which the base is raised to.

For instance 3 raised to the power 2 or 3^2 would be coded as follows.

Again notice the presence of System.Math syntax.



```
num1 = System.Math.Pow(3, 2)
MsgBox("3 to the power of 2 is " & num1)
```

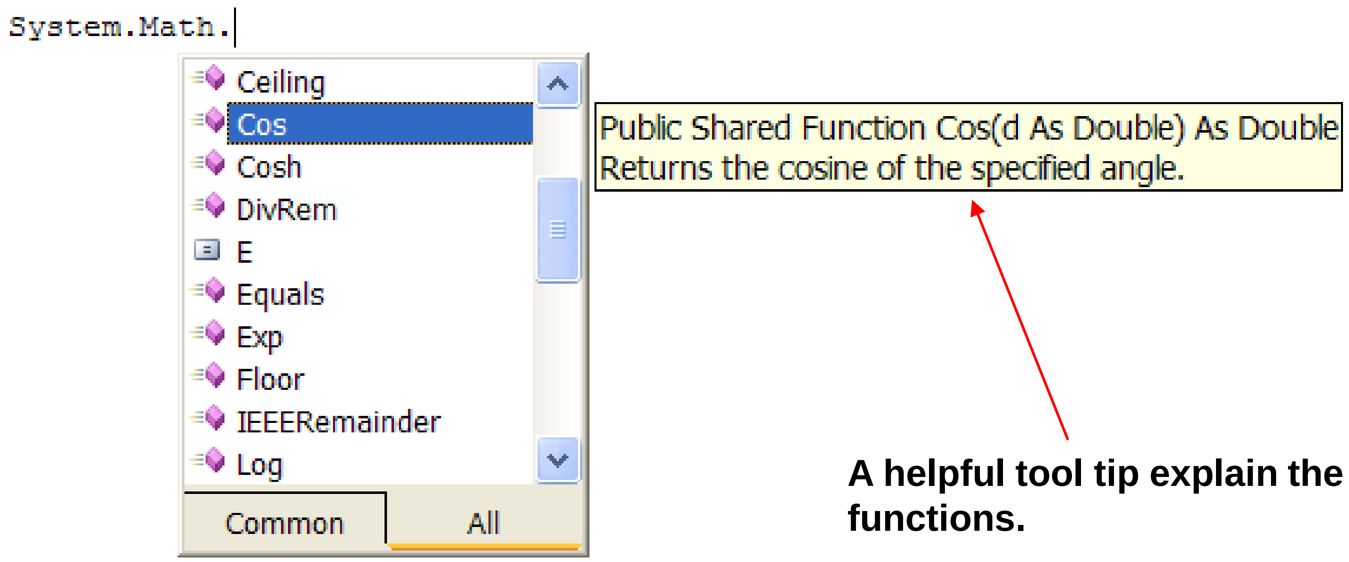


MathFunctions

3 to the power of 2 is 9

Many Math Functions

By typing in "System.Math." you get an idea of the number of Math functions available.



```
System.Math.
```

Public Shared Function Cos(d As Double) As Double
Returns the cosine of the specified angle.

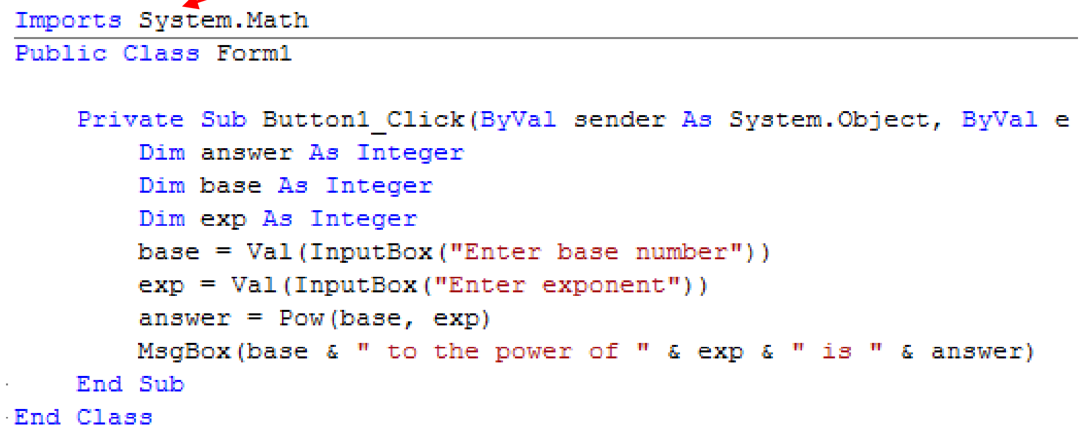
A helpful tool tip explain the use of each of the functions.

Using the “imports” Statement

The use of many functions in VB requires extra syntax before the function call.
In the previous 2 slides we had to write System.Math before each function.

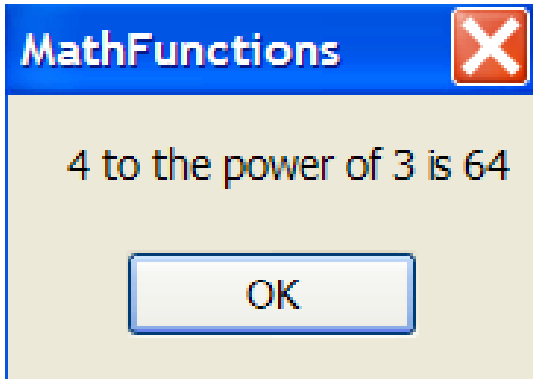
This can get repetitive and requires extra code.
This can be avoided by including an imports statement at the very top of the program.

The imports statement is the very **first line of the program!**



```
Imports System.Math
Public Class Form1

    Private Sub Button1_Click(ByVal sender As System.Object, ByVal e
        Dim answer As Integer
        Dim base As Integer
        Dim exp As Integer
        base = Val(InputBox("Enter base number"))
        exp = Val(InputBox("Enter exponent"))
        answer = Pow(base, exp)
        MsgBox(base & " to the power of " & exp & " is " & answer)
    End Sub
End Class
```



```
4 to the power of 3 is 64
```