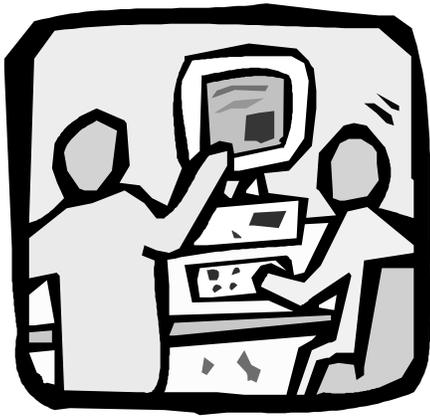


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# Tutorial: Learning to Program Amos with Visual Basic



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## Purpose

You can use **Amos 4.0** as a component in the computer programs you write. It is a relatively easy process because Amos lets you work in a general-purpose programming language instead of having to learn some special language. To use **Amos 4.0** with your program, you need to

program in a language or environment that can control automation servers, *e.g.*, Microsoft **Visual Basic**, Microsoft **C++**, the **SPSS** scripting facility, **SAS**, DEC **Visual FORTRAN** or Borland **Delphi**<sup>1</sup>.

The program that you write can carry out a single Amos analysis, or multiple Amos analyses. It can also include statements that:

- specify a model
- give the location of data files
- select options, such as: which discrepancy function to use, whether to obtain bootstrap confidence intervals, and so on.

This section demonstrates in detail how you can call **Amos 4.0** from the Microsoft **Visual Basic Professional Edition**<sup>2</sup>, Version 5.0. It assumes that Microsoft **Visual**

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<sup>1</sup> At the time of this writing, there have not been any attempts to use **Amos 4.0** with SAS, Visual Fortran, or Borland Delphi.

**Basic Professional Edition** is installed on your system. The **Visual Basic** files for this tutorial are **startVB.vbp** (VB project) and **startVB.bas** (VB code). You will find both located in the **Tutorial** subdirectory underneath the **Amos 4.0** program directory.

### ***1. Create a new Visual Basic project***

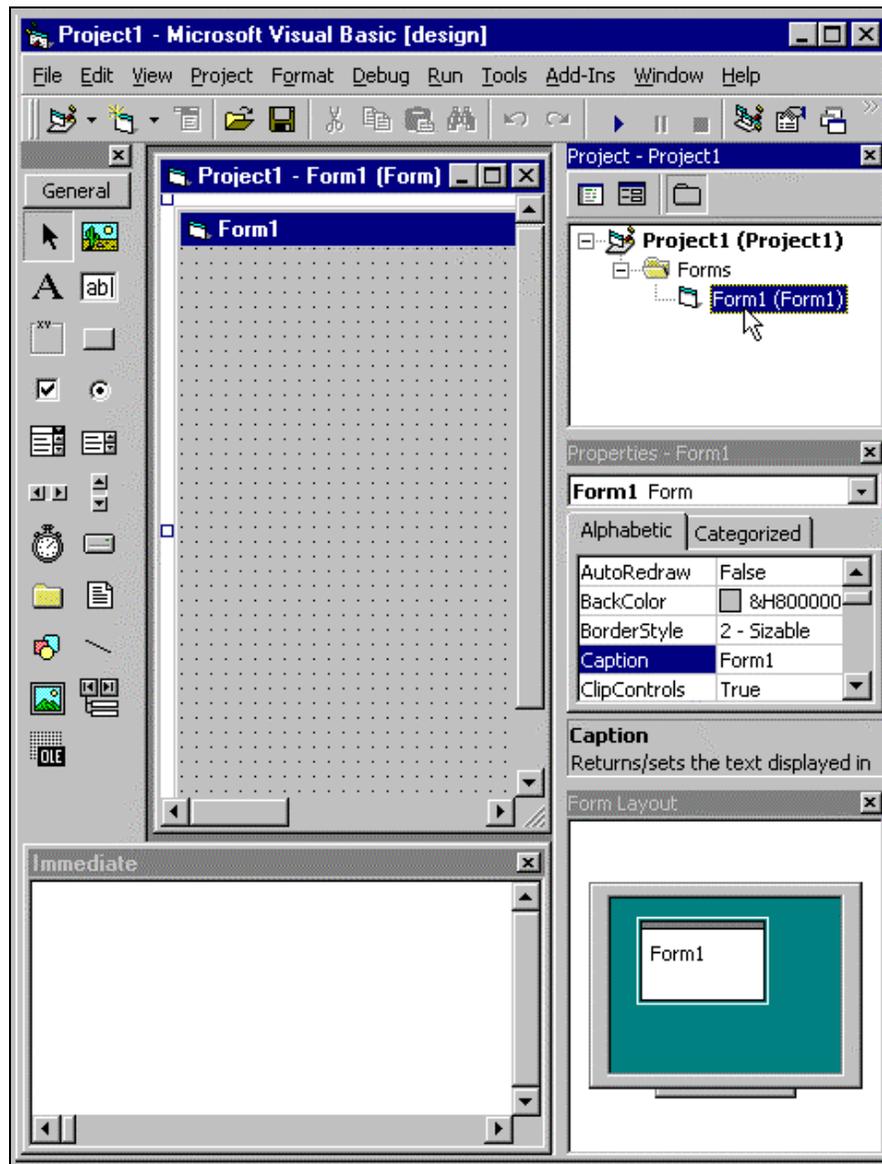
First, launch **Visual Basic**. In the **New Project** window, click on the **New** tab and double-click on **Standard EXE**.

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<sup>2</sup> Microsoft offers several other **Visual Basic** packages with varying capabilities. Most of these can be used with **Amos 4.0**, but different steps may be required to reference the Amos Engine.

## 2. Remove Form1

If this is the first time you have used **Visual Basic** since its installation, the **Visual Basic** window will probably look something like this:



Many of the elements in the **Visual Basic** window are useful only when you are writing a program that has a graphical interface. These elements are not needed for this tutorial, so we will get rid of them.

In the **Project1** window, use the *right* mouse button to click on **Form1 (Form1)** as indicated by the mouse pointer in the preceding figure. When the following pop-up menu appears, select **Remove Form1**:



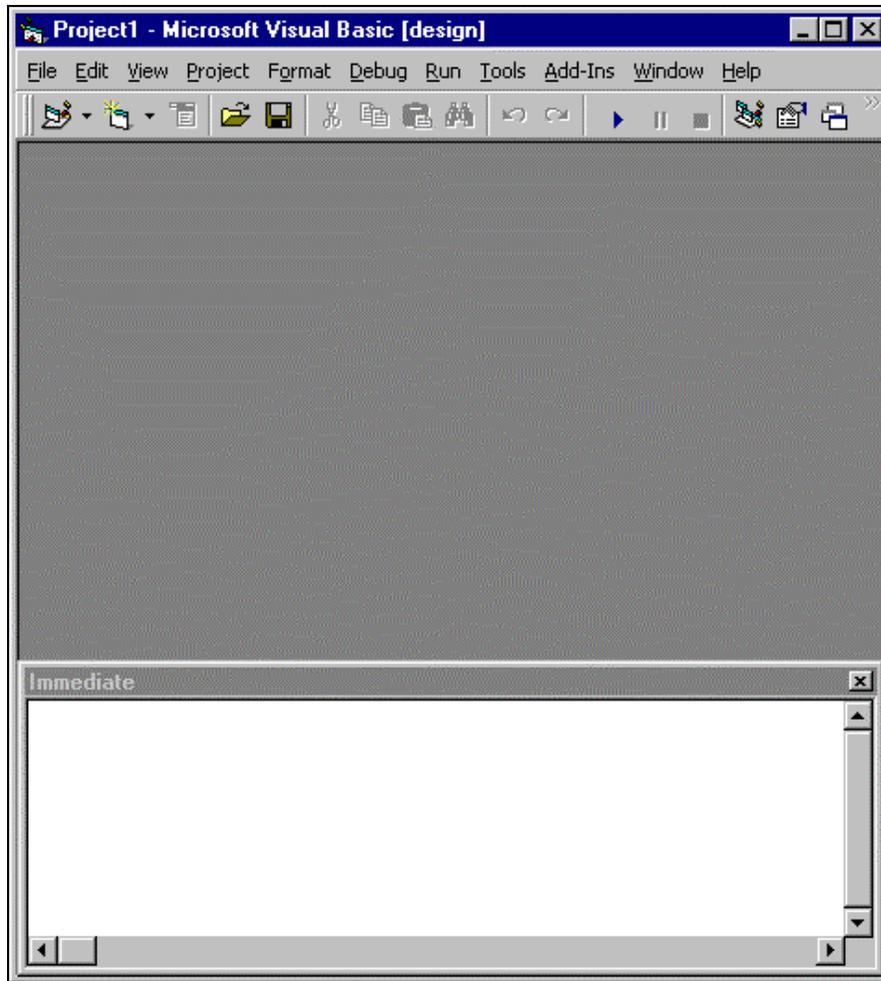
### 3. Hide unnecessary windows

- ✕ Hide the VB toolbar by clicking the **X** button indicated by the mouse pointer in the following figure:



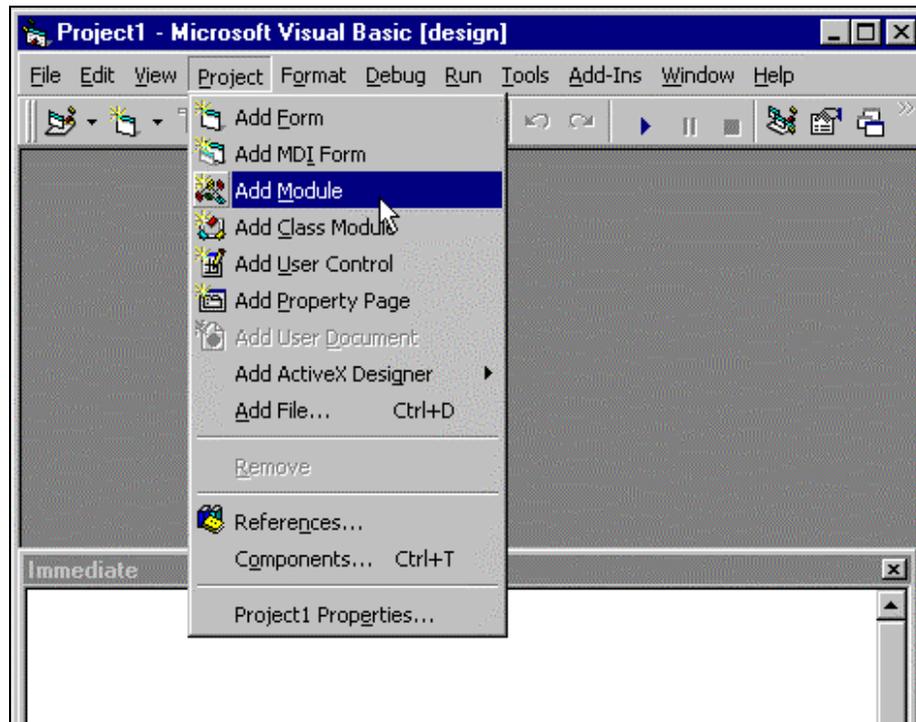
Also, hide the three sub-windows titled **Project - Project1**, **Properties - Project1**, and **Form Layout - Project1**. (Do not hide the sub-window titled **Immediate**.)

The resulting **Visual Basic** window should look like this:

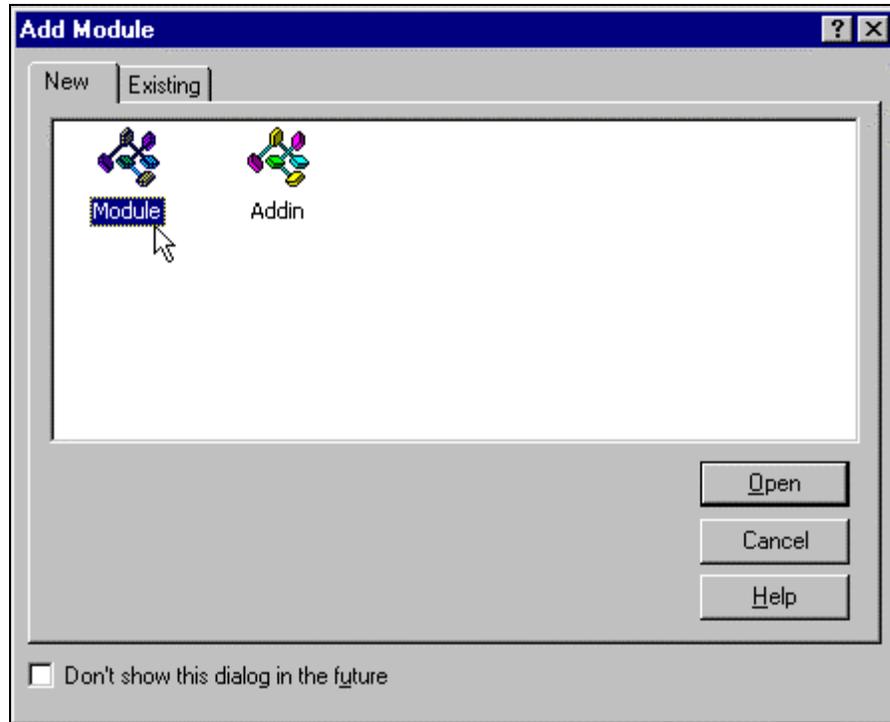


#### 4. Create a code window for your program

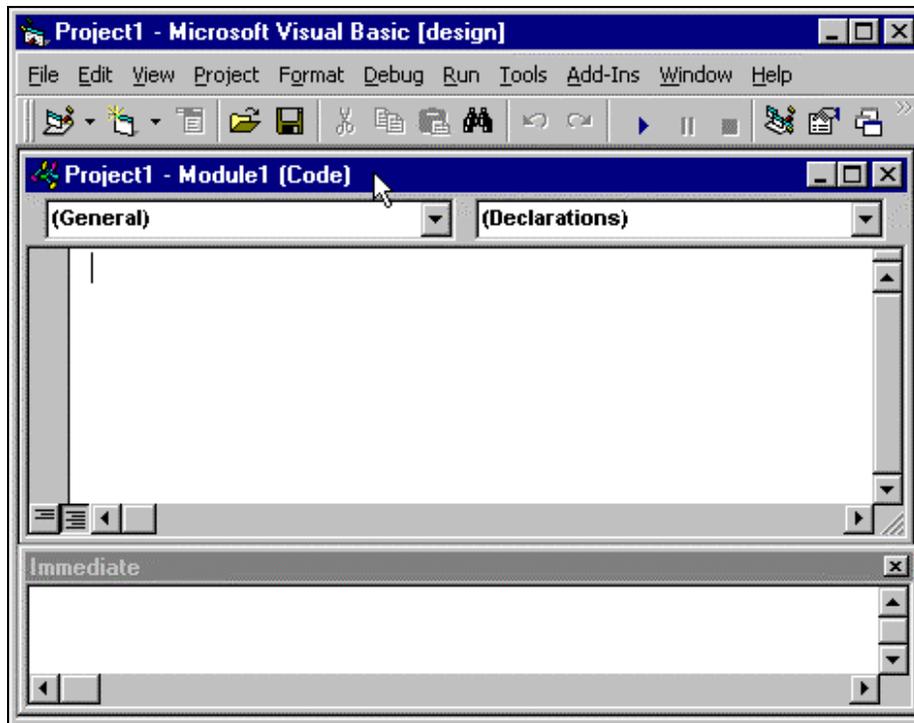
On the menu, select **P**roject and then **A**dd **M**odule:



In the **Add Module** window, select the **New** tab and double-click on **Module**:

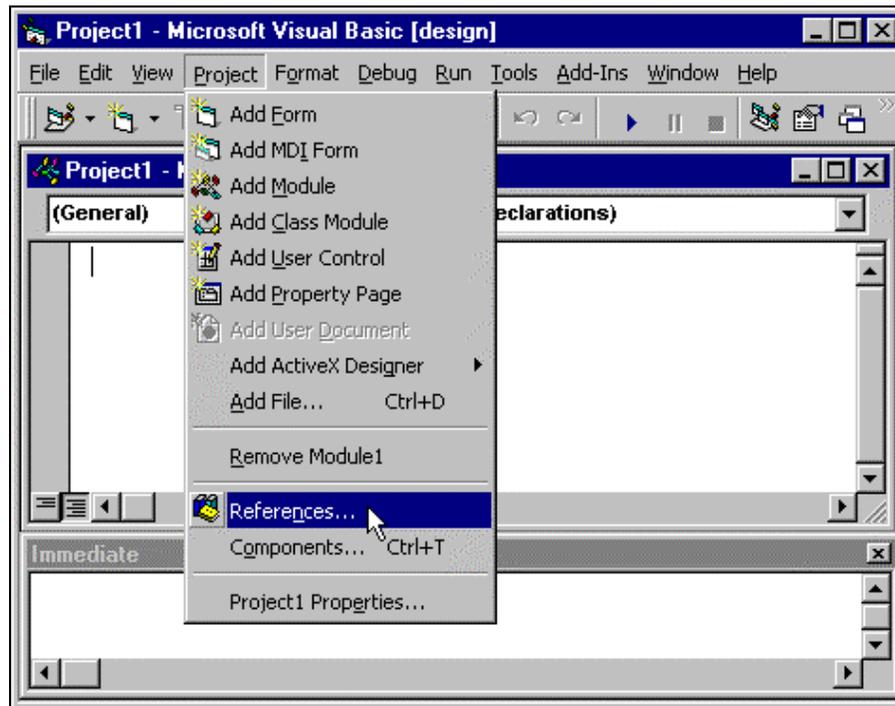


The **Visual Basic** window will then look something like this:

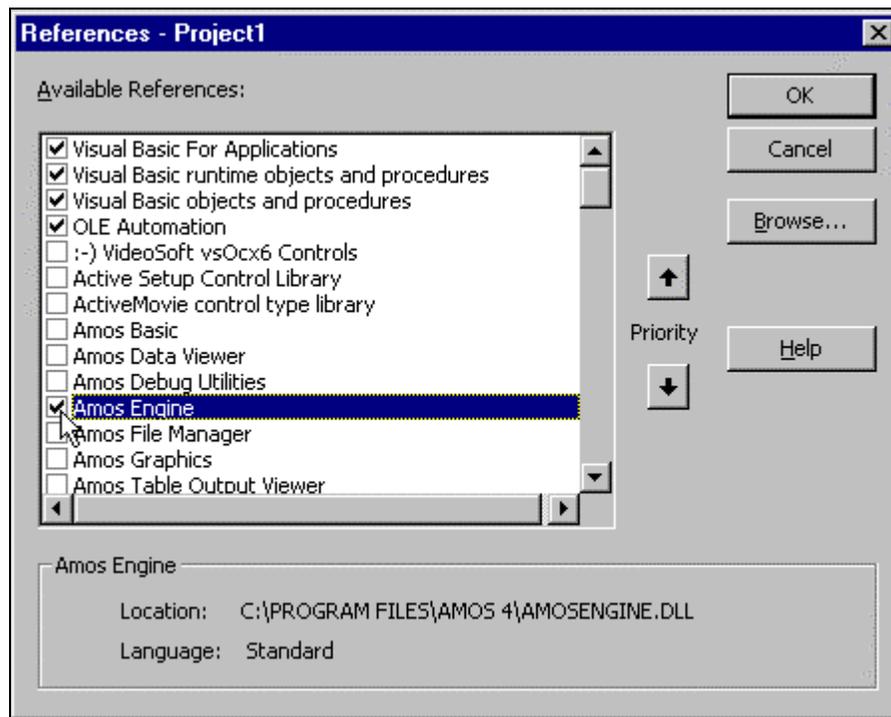


## 5. Tell Visual Basic how to find the Amos Engine

In order to let **Visual Basic** know that you want to use the Amos Engine, select **Project** from the main menu, and then **References**:



When the **References - Project1** dialog appears, make sure that the **Amos Engine** box is has a check mark in it. If necessary, click on the **Amos Engine** box to add a check mark. Then press the **OK** button to close the dialog:



## 6. Enter your program

Type the following program in the large panel in the **Visual Basic** window.

```
Option Explicit

Sub main()
    Dim Sem As New AmosEngine

    Sem.TextOutput

    Sem.BeginGroup Sem.Dir & "Tutorial\Hamilton.dbf"
    Sem.Structure "SAT = (w1) Education + (w2) Income + (1) Other"
    Sem.FitModel

    Debug.Print "Regression weight 1 is "; Sem.ParameterValue
    ("w1")
    Debug.Print "Regression weight 2 is "; Sem.ParameterValue ("w2")
    Debug.Print "Chi square = "; Sem.Cmin
    Debug.Print "Degrees of freedom = "; Sem.df

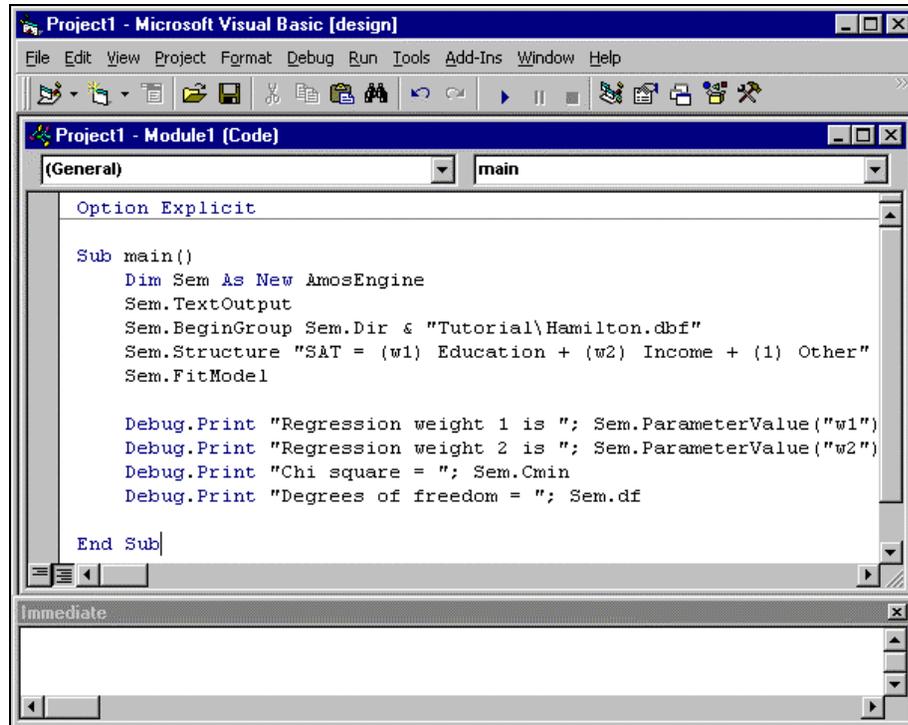
End Sub
```

Instead of typing these commands, you can also insert the **StartVB.bas** file from **Amos 4.0's Tutorial** subdirectory. With the code window active, run **Edit** → **Insert File...** and select **StartVB.bas** located by default in the **C:\Program Files\Amos 4\Tutorial** directory. **Sem.Dir** is an Amos Engine property that returns the path to where the Amos program is found. The VB string expression:

```
Sem.Dir & "Tutorial\Hamilton.dbf"
```

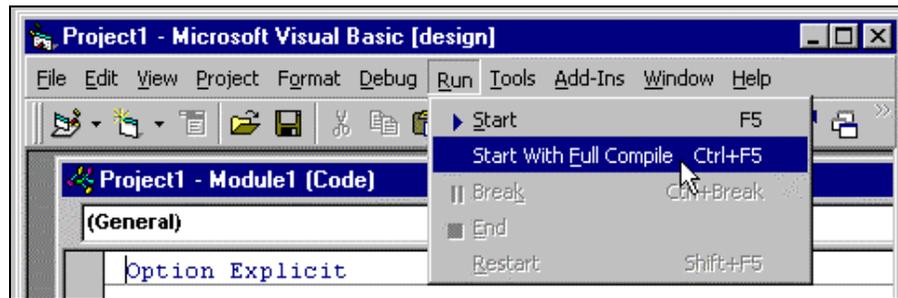
pinpoints exactly where the data file resides.

The **Visual Basic** window should look like this:

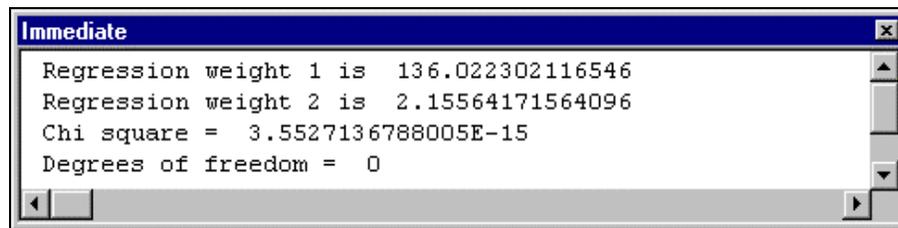


## 7. Run the program

To run the program, select **R**un from the main menu, and then **S**tart with **F**ull **C**ompile:



When the program has finished running, the output from the `Debug.Print` statements appears in the **I**mmEDIATE panel:



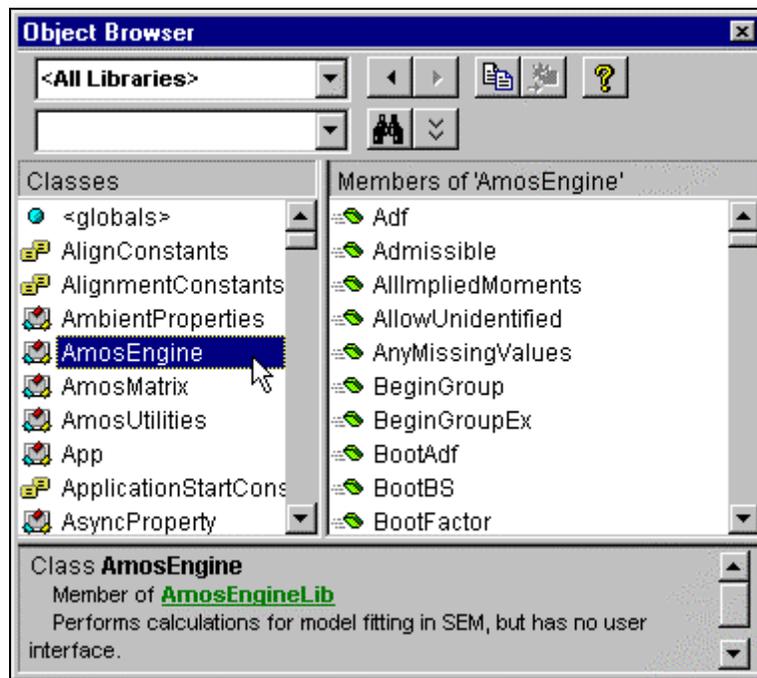
## 8. Try out the help system

Before closing the **V**isual **B**asic window, try the help system. Click somewhere within one of the words that describes an Amos method in your program:

- TextOutput
- BeginGroup
- Structure
- FitModel
- ParameterValue
- Cmin
- Df

Then press the **F1** key. A dialog box will appear giving documentation for that method. To get a list of all available methods, press the **F2** key to display **V**isual **B**asic's **O**bject **B**rowser. In the **C**lasses listbox, click on **A**mos**E**ngine.

All the available methods will appear in the listbox labeled **Members of 'AmosEngine'**:



Click once on a method to see a short summary of its function in the bottom panel. Press **F1** to see the full documentation of the method.

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## Beyond the basics

Still seeking more information about how to use **Amos 4.0** as a component in the computer programs you write? Extensive, advanced reference material for the Amos API is also included in the *Amos 4.0 Programming Reference Guide*. This guide is available as a downloadable Portable Document Format (PDF) file from the Amos 4.0 CD-ROM or as a Help file from either the **Amos Graphics** or **Amos Basic** Help menu.