User defined functions in EXCEL

If you use a particularly complex calculation in many formulas or calculations that require several formulas because existing worksheet functions do not meet your needs, you can create custom functions. These functions, known as user-defined functions, are created by using Visual Basic for Applications. For more information about creating user-defined functions, see Visual Basic Help.

Visual Basic Help

To install Visual Basic Help, choose the Custom setup option, and then select the Online Help for Visual Basic check box (Microsoft Excel category, Online Help and sample files subcategory) when you install Microsoft Excel.

To get Help about Visual Basic in Microsoft Excel, point to Macro on the Tools menu, and then click Visual Basic Editor. Click Office Assistant . Or you can click the Assistant to display the balloon; type the method, property, function, statement, or object you want information about; click Search, and then click the topic you want.

Example:

Let us say that we need a function that can calculate a value as per the following:

$$x = \min\left[\frac{-b+\sqrt{b^2-4ac}}{2a},\quad \frac{-b-\sqrt{b^2-4ac}}{2a}\right] \qquad for \quad b^2 \geq 4ac$$

$$x = 0 \qquad for \quad b^2 \leq 4ac$$

Let us enter a user defined function, say, with a name Funct10. It will have the input values of a, b and c. The value of x will be returned in the name of the function itself, i.e., value of x can be obtained by using the expression Funct10(a,b,c) where ever x is to be used. Follow the procedure:

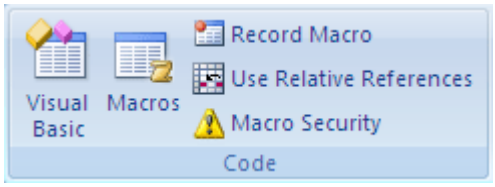
FOR EXCEL versions from before 2007:

- Open Excel → Tools → Macro → Visual Basic Editor
    - A separate window with the title Microsoft Visual Basic - Book1 will pop up
- Insert → Module
    - A separate sub-window with the title Book1 - Module1 (Code) will appear within this window
- Enter the function code as if it is a visual basic program (See the example)
- In the main work sheet of EXCEL, use the function wherever you would use x

FOR EXCEL versions 2007 and later:

Create a macro by using Microsoft Visual Basic

1. If the **Developer** tab is not available, do the following to display it:
    1. Click the **Microsoft Office Button** , and then click **Excel Options**.
    2. In the **Popular** category, under **Top options for working with Excel**, select the **Show Developer tab in the Ribbon** check box, and then click **OK**.
2. To set the security level temporarily to enable all macros, do the following:
    1. On the **Developer** tab, in the **Code** group, click **Macro Security**.



    2. Under **Macro Settings**, click **Enable all macros (be careful since you may allow potentially troublesome code to run from an untrustworthy source)**, and then click **OK**.

NOTE To help prevent potentially dangerous code from running, it is recommended that you return to any of the settings that disable all macros after you finish working with macros.

3. On the **Developer** tab, in the **Code** group, click **Visual Basic**.
4. If needed, on the **Insert** menu, click **Module**.

NOTE Modules are automatically created for all sheets in the workbook.

5. In the code window of the module, type or copy the macro code that you want to use.
6. To run the macro from the module window, press F5.
7. On the **File** menu, click **Close and Return to Microsoft Excel** when you finish writing the macro.