

Microsoft® Excel: Advanced

A Workshop for San Diego State University Faculty and Staff



Where to Find Help When You Need It

Help from your Division/College's Computer Consultant

Some divisions and colleges have computer consultants assigned to them. You can contact these consultants when you need help. To determine if you have a consultant assigned to your division or college, look to: <http://rohan.sdsu.edu/~facstaff>

Help from the BATS Web Page

BATS (Baseline Access, Training and Support) is a California State University initiative to provide all students, faculty, and staff with "baseline" access to information resources via networks, training in the uses of baseline hardware and software systems, and ongoing professional and technical support for utilization of computer resources at San Diego State University. You can access the BATS Web Page by pointing your browser to: <http://rohan.sdsu.edu/~bats/>

Help in the San Diego State University, Faculty Room

The Faculty Room is staffed Monday through Friday with computing consultants who will try to answer your questions.

Location: Adams Humanities, 1109
Phone Number: x45727
Semester Hours: 7:30am – 6:00pm Monday -Thursday
7:30am – 4:30pm Friday
Semester Intersession: 7:30am – 4:30pm Monday – Friday

Help from the Faculty Computing Help Line

Phone Number: x41348 **E-mail:** helpline@mail.sdsu.edu
Semester Hours: 7:30am – 6:00pm Monday – Thursday
7:30am – 4:30pm Friday
Semester Intersession: 7:30am – 4:30pm Monday – Friday

Help from the Staff Computing Help Line

Phone Number: x40824 **E-mail:** staffhelp@sdsu.edu
Semester Hours: 7:30am – 6:00pm Monday – Thursday
7:30am – 4:30pm Friday
Semester Intersession: 7:30am – 4:30pm Monday – Friday

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MACROS

Microsoft Excel contains a powerful macro language called Visual Basic for Applications (VBA). Macros allow you to automate your work by turning a series of actions into a single command.

Macros can be created by writing VBA code or by use of the macro recorder. This document will only discuss the macro recorder.

Recording a macro involves starting the macro recorder, performing the steps involved in the macro, then turning off the macro recorder.

Planning The Macro The simplest, and most effective, way to plan a macro is to write down every single step in the process on a piece of paper.

Take note of every time you click a toolbar button, select a command from the menus or type information into a cell.

Naming The Macro Excel will assign a non-descriptive default name to a macro if you do not enter your own name. Use a descriptive name so you can easily identify the purpose of the macro.

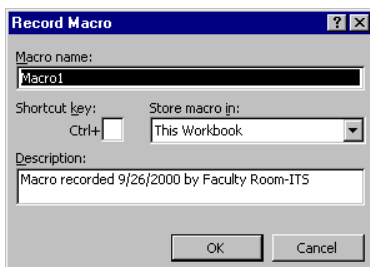
Names are subject to the following rules:

- Names must begin with a letter
- Names can contain letters, numbers, and the underscore (_) character.
- Spaces are not allowed
- Names can be up to 255 characters in length

Assigning a Shortcut Key The fastest way to execute a macro is to assign a shortcut key to run the macro.

To set or change a shortcut key:

1. Choose **Tools, Macro, Record New Macro**. The Macro dialog box appears.
2. Select the name of the desired macro, and then click on the **Options** button. The Macro Options dialog box appears.
3. Type a letter in the **Shortcut Key** text box. If you type an uppercase letter, you will need to press the Shift key to run the macro.



4. Click on **OK** to complete the command.

Recording the Macro Once you are sure you know the exact steps to perform, you are ready to record the macro.

1. Open the workbook and activate the worksheet where you want the macro to be recorded, and position the active cell where the macro should begin.
2. Choose **Tools, Macro, Record New Macro**. The Record Macro dialog box appears.
3. Type the name you want to use for the macro. You can enter a shortcut key for your macro now, or you can assign the shortcut key later.
4. Select a storage location for the macro.
5. Choose **OK** to begin recording.
6. Perform the actions you have planned for your macro.
7. When finished, click the **Stop Recorder** button on the Stop Recorder toolbar, or choose **Tools, Macro, Stop Recorder**.



NOTE: The macro recorder records only the actions that you complete. If you cancel a typing entry, backspace a couple of times or open a dialog box and cancel, the actions will be ignored.

Running a Macro To run a macro:

1. Choose **Tools, Macro** to open the Macro dialog box.
2. Select the name of the Macro you want to run and choose the **Run** button to execute your macro.

Deleting a Macro Once you decide that you no longer need a macro, it can be deleted.

To delete a macro:

1. Choose **Tools** from the Menu Bar and then select, **Macro, Macros**.
2. Select the name of the macro to be deleted.
3. Click on the **Delete** button. A confirmation message will appear.

4. Click on **Yes** to delete the macro.

Adding Macro to Toolbar

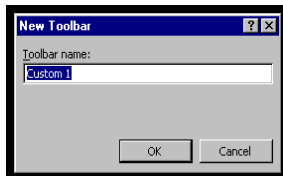
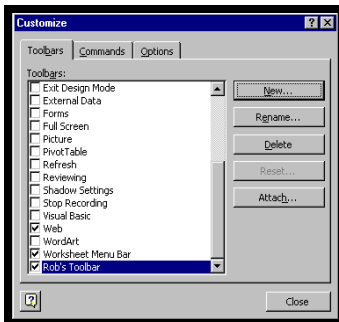
If you use a macro often enough to make it a valuable tool, but not often enough to remember the shortcut keystrokes used to launch the macro, you can add the macro to a toolbar.

You can add new buttons to an existing toolbar or you can create a new toolbar just for your applications.

Creating a New Toolbar

To create a new toolbar:

1. Activate the workbook that contains the macros you have recorded.
2. Click on **Tools** on the Menu Bar, then select **Customize** and click on the **Toolbars** tab.
3. Choose the **New** button to create a new toolbar.
4. Enter the name for the new toolbar and choose the **OK** button.



Adding Buttons to a Toolbar

To add macro buttons:

1. If the Customize dialog box is not already open, click on **Tools** on the Menu Bar and then select **Customize**.
2. Click on the **Commands** tab to display the list of built-in commands that can be added to the toolbar.
3. In the Categories list box, select **Macros**.
4. To add a custom button, drag the button image from the **Custom Button** list item to the position on the toolbar where you want to place the button.
5. To add a custom menu item, drag the button image from the **Custom Button** list item to the position on the toolbar where you want the menu item to appear.

Assigning a Macro to a Toolbar Button

1. If the Customize dialog box is not already open, click on **Tools** on the Menu Bar and then select **Customize**.
2. Right-click the button or custom menu item that you want to assign a macro to.
3. Choose the **Assign Macro** command.
4. Select the macro you want to assign and choose **OK**.

Editing Toolbar Button or Menu Item Text

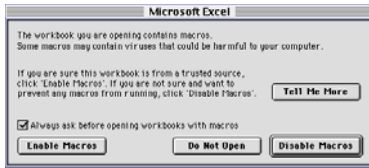
1. If the Customize dialog box is not already open, click on **Tools** on the Menu Bar and then select **Customize**.
2. Right-click the button or custom menu item whose text you want to edit.
3. Select the text to the right of the Name command, and then edit it by typing or using the Backspace and delete keys.
4. Press **Enter** to complete the change.

Where Macros are Stored By default, Excel stores your macro in the workbook in which the macro was created.

But you actually have three options to choose from:

- *The current workbook.* This makes the macro available whenever the workbook is open, but it is not available when the workbook is not open.
- *A new workbook.* This option creates a new workbook and stores the macro there. It is a handy option when you are starting on a new worksheet application.
- *Personal macro workbook.* Excel creates a hidden workbook that is automatically opened every time you start Excel. All macros in this workbook are available at all times.

Macro Viruses When you open a workbook that contains macros, Excel displays a dialog box warning you of the possibility of viruses.



You have three choices of action when the virus warning box displays:

- *Disable Macros.* The workbook is opened but you cannot run any attached macros.
- *Enable Macros.* The workbook is opened and the macros work normally. If a virus is present, you risk damage to your file and your computer.
- *Do Not Open.* The workbook is not opened. Use this option when you are opening a file from an unknown source or a file that is not supposed to contain any macros.

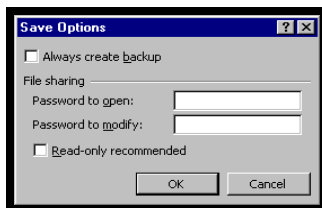
PROTECTION

There are several levels of protection that you can place on a workbook. You can:

- Assign a password that is required before a file can be opened.
- Assign a password that is required to modify a file.
- Set up the file so that it is recommended as a “read-only” file.
- Hide worksheets in a workbook and require a password be used to re-display the worksheets.
- Protect specific cells within a workbook so that changes cannot be made to the cells.

Setting a Password to Open a File

To assign a password to a workbook:



1. Click on **File** on the Menu Bar and choose **Save As**.
2. Click on the Tools drop down menu. A drop down menu will appear. Choose **General Options**. The **Save Options** box appears.
3. Enter the desired password in the **Password to open** box.

Note: If you elect to require a password to modify a file, the user must know the password to make any changes to the workbook. The user will have the option to open it and view it, but cannot save any changes to the file unless the file is given a different name.

Note: If you elect to recommend that users open the workbook as read only, keep in mind that this is a recommendation only. The users are not prevented from editing and then saving changes to the workbook under a different name.

The password can be up to 15 characters long and can include spaces. Passwords are case sensitive.

4. Click on **OK** and the Confirm Password dialog box will appear.
5. Retype the password (to verify your typing) and click on **OK**.
6. Click on **Save**.
7. Write the password down and keep it in a secure place. If you lose the password, you cannot open the file.

To open a password-protected workbook:

1. Choose **File** from the Menu Bar and select **Open**.
2. Double-click on the file to be opened.
3. Enter the password in the Password dialog box.
4. Choose **OK** to open the file.

To Hide Worksheets

You can hide worksheets and then protect them from being displayed without a password.

To hide a worksheet:

1. Select the worksheet to be hidden.
2. Choose **Format** from the Menu Bar, select **Sheet** and then select **Hide**.

To protect the workbook:

1. Choose **Tools** from the Menu Bar, select **Protection** and then select protect **Workbook**.

To Protect Cells in a Worksheet

2. Click the **Structure** check box to activate protection for the basic structure of the workbook.

When you protect a worksheet, Excel assumes that every cell in the worksheet is to be protected. You need to tell Excel which cells can be modified.

1. Select the cells that are permitted to be modified.
2. Choose **Format** from the Menu Bar and select **Cells**.
3. When the **Format Cells** dialog box appears, click the **Protection** tab.

4. Click on the **Locked** check box to remove the check from it, which unlocks the selected cells.
5. Click on **OK**.
6. Choose **Tools** from the Menu Bar, select **Protection** and then select **Protect Sheet**.
7. In the **Password** text box, type the password and click **OK**.
8. In the **Reenter Password to Open** text box, retype the password and click **OK**.

ADVANCED FILTER

When using Excel as a database, you can query information by the use of filters. Filters allow you to extract data based on criteria you specify.

To filter in place you must first establish the criteria area and then input your criteria.

1. Select the labels for all of the fields.
2. Copy these labels.
3. Select an area of the worksheet and paste these labels.
4. Enter the criteria you want to use to filter your database.

Note: Criteria entered on the same row will be treated as an “and” condition. Criteria entered on different rows will be treated as an “or” condition.

Filter in Place To perform a filtering action that will place the search results in the location of the existing database:

1. Select any cell in your database.
2. Choose **Data** from the Menu Bar, select **Filter** and then select **Advanced Filter**.
3. Click the Collapse Dialog button to the right of the Criteria Range box. The dialog box will collapse.
4. Select the cells that contain the criteria (all field labels must be included).
5. Click the Collapse Dialog button to restore the dialog box to the screen.

6. Ensure that **Filter the list, in place** option is selected.
7. Click on **OK**.

To place your search results in a new location:

Filter to Another Location

1. Select any cell in your database.
2. Choose **Data** from the Menu Bar, select **Filter** and then select **Advanced Filter**.
3. Click the **Collapse Dialog** button to the right of the Criteria Range box. The dialog box will collapse.
4. Select the cells that contain the criteria (all field labels must be included).
5. Click the **Collapse Dialog** button to restore the dialog box to the screen.
6. Click the **Collapse Dialog** button to the right of the Copy to box. The dialog box will collapse.
7. Click once in the upper-left corner of the worksheet area where you want to see the results of your search.
8. Click the **Collapse Dialog** button to restore the dialog box to the screen.
9. Ensure that **Copy to another location** option is selected.
10. Click on **OK**.

IF FUNCTION

The IF Function is one of the most useful functions available in Excel. When you design an IF Function, you ask Excel to perform a test, and then you tell Excel what to do if the result of the test is positive or negative.

The syntax you use is as follows:

`=IF(logical_test, value_if_true,value_if_false)`

While this may look intimidating, it really is quite simple. Set up a worksheet as follows:

	A	B	C	D	E	F	G	H
12								
13								
15	F/S Code	Years of Service	FACULTY/STAFF SOCIAL CLUB					
16			Name	Status	Fee	Discoun!	Total	
17								
18								
19								
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Assume you enter the following formula in cell D16;
 =IF(A16=1, Faculty, Staff). The syntax is broken down as follows:

- **=IF** – All formulas in Excel start with the equal (=) sign and the IF indicates you want Excel to perform the IF Function. The remaining information is inserted within **parenthesis**.
- **logical_test** – You use the logical test to ask Excel to test something. Excel would look at cell A16 and determine if the value of that cell equals 1.
- **value_if_true** – If A16 has a value of 1 then Excel would insert the text “Faculty” in cell D16.
- **value_if_false** – If A16 has any value other than 1, Excel would insert the text “Staff” in cell D16.

The value_if_true and value_if_false parts of the function can contain text or formulas.

Nested IF Functions You can insert an IF Function within another IF Function to provide a more complex logic in formulas.

For instance, if you wanted to evaluate the years of service for faculty and staff members so that you could provide a fee discount based on years of service, you could nest an IF Function within an IF Function.

For example, you might want to give a 10% discount for faculty/staff with 20 years of service or more, a 5% discount for faculty/staff with 10 years up to 20 years of service, and no discount for faculty/staff with less than 10 years of service. If cell B16 contains the years of service for faculty/staff, you could enter the following formula in cell F16:

```
=IF(B16>=20,E16*10%,IF(B16>=10,E16*5%,IF(B16>0,0)))
```

RAND FUNCTION

This function creates a list of randomly generated numbers between 0 and 1 to a precision of 15 digits. You can use this function to sort a list of items into random order.

Every time the worksheet is recalculated (by entering text or numbers into a cell and pressing <ENTER>, the formulas will recalculate and new random numbers will appear in the spreadsheet cells.

To create a list of random numbers select all the cells and type **=RAND()**. Then press **Ctrl + ENTER** to place this function into all the selected cells.

If you do not want the numbers to be recalculated, select the cells with the random numbers in them and copy the cells. Go to **Edit** on the Menu Bar and select **Paste Special**. From the Paste Special window choose **Values**. This will turn the formulas into numbers.

If you need numbers greater than those generated (between 0 and 1), simply create a formula to multiply the randomly generated numbers by 10, 100, 1000, etc. This will give you numbers greater than 1.