



University Information
Technology Services

Microsoft Office Excel 2013

Advanced Excel Tools

University Information Technology Services

Training, Outreach, Learning Technologies and Video Production

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University Information Technology Services

Microsoft Office Excel 2013

Advanced Excel Tools

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Introduction

This booklet is the companion document to the Excel 2013: Advanced Excel Tools workshop. The booklet will explain how to create a simple macro, how to use nested formulas, how to create templates, hide/unhide rows and columns, and protect/unprotect your spreadsheets and workbook.

Learning Objectives

After completing the instructions in this booklet, you will be able to:

- Understand what Nested Functions are
- Link data between sheets
- Understand what Macros are
- Create a simple Macro
- Hide/unhide information in your spreadsheet
- Protect your spreadsheet and workbook
- Create templates out of workbooks

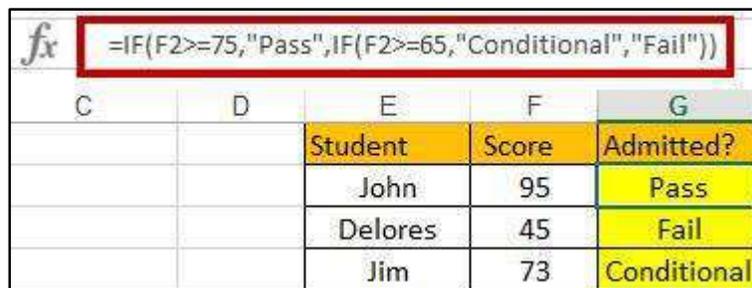
Creating Nested Functions

Nested functions are functions within a function. For example, by nesting an IF function within an existing IF function, you can test additional conditions.

For example: =IF(F2>=75,"Pass",IF(F2>=65,"Conditional","Fail"))

This formula checks the cell for a value, and if it is greater than or equal to (>=) a predetermined grade (e.g. 75), then the formula will return the phrase Pass (*Note: Pass is in quotes to indicate to Excel that this is the value we want returned, and it is not another function*). If the number in the cell is less than 75, Excel will move to the next part of the formula, and so on.

This can be helpful if you want to assign scores or grades based on certain conditions (See Figure 1).



The screenshot shows an Excel spreadsheet with a formula bar at the top containing the nested IF formula: =IF(F2>=75,"Pass",IF(F2>=65,"Conditional","Fail")). Below the formula bar is a table with columns C, D, E, F, and G. The table has three rows of data. The first row has headers: Student, Score, and Admitted?. The second row has John, 95, and Pass. The third row has Delores, 45, and Fail. The fourth row has Jim, 73, and Conditional.

	C	D	E	F	G
			Student	Score	Admitted?
			John	95	Pass
			Delores	45	Fail
			Jim	73	Conditional

Figure 1 - Nestled IF Function

Linking Data

Linking data between spreadsheets allows you to reference data contained elsewhere in your workbook without having to copy all of the information. For example, you could have a workbook that has multiple spreadsheets tracking regional sales and a separate spreadsheet to tally the totals across all regions. By linking to the regional data from the totals, you will only have to update your information in one location. The following explains how to link data between spreadsheets:

1. Open the spreadsheet that contains the source data and the target location (e.g. Eastern Region, Totals).
2. Select the cell(s) in the source spreadsheet that contain the data that you want to link to the target location (See Figure 2).



The screenshot shows an Excel spreadsheet with a table titled "Eastern Division". The table has columns for Item, QTR 1, QTR 2, QTR 3, QTR 4, and Totals. The data is as follows:

Item	QTR 1	QTR 2	QTR 3	QTR 4	Totals
Hardware	\$ 300.00	\$ 800.00	\$ 900.00	\$ 500.00	\$ 2,500.00
Software	\$ 400.00	\$ 100.00	\$ 800.00	\$ 100.00	\$ 1,400.00
Furniture	\$ 200.00	\$ 500.00	\$ 500.00	\$ 200.00	\$ 1,400.00
Accessories	\$ 200.00	\$ 300.00	\$ 500.00	\$ 300.00	\$ 1,300.00

Figure 2 - Selected Cells

3. Right-click on the **selected cells**.
4. A *context sensitive* menu will appear. Click on **Copy** (See Figure 3).



Figure 3 - Copy

5. Go to the target location and select the cell(s) where you want to paste the source data (See Figure 4).

Year End Totals					
Item	Eastern	Northern	Southern	Western	Total
Hardware					\$0
Software					\$0
Furniture					\$0
Accessories					\$0

Figure 4 - Paste Location

6. Right-click on the **selected cells**.
7. A *context sensitive* menu will appear. Click on the **Paste Link** icon (See Figure 5).



Figure 5 - Paste Link

8. The target location will now be updated whenever the source data is changed.

Macros

Macros are programs that run within Excel that can help to automate common repetitive tasks, thus saving time and boosting productivity with a simple click or command. For example, if you want to delete a row within your spreadsheet, you will need to select the row, click the home tab, select delete, and then click delete rows. Instead, you can create a macro that completes the entire sequence with a single click or keystroke.

Enabling the Developer tab

Before you can record a macro, you will need access to the *Developer* tab in the *Ribbon*. The following steps explain how to add the *Developer* tab to the *Ribbon*:

1. Right-click in an **empty section** within the *Ribbon*.
2. A *dialog box* will appear. Select **Customize the Ribbon...** (See Figure 6).

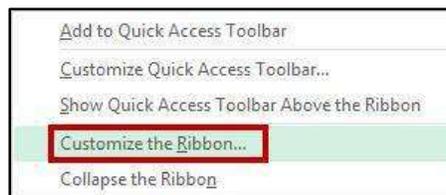


Figure 6 - Customize the Ribbon

3. The *Customize Ribbon* window will appear, with options to customize the ribbon on the right (See Figure 7).

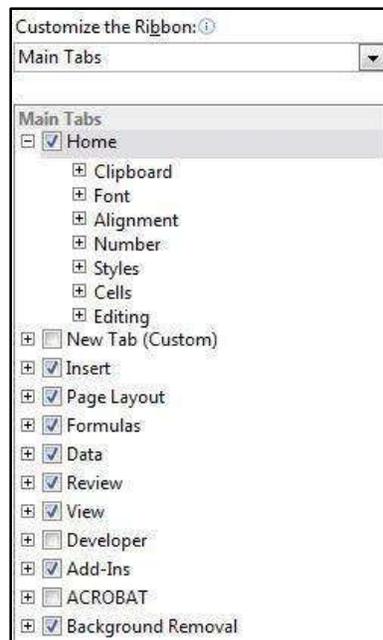


Figure 7 - Customize the Ribbon Options

- Click on the **checkbox** next to *Developer* (See Figure 8).



Figure 8 - Developer Checkbox

- Click on **OK**.
- The *Developer* Tab will now be displayed in the *Ribbon* (See Figure 9).



Figure 9 - Developer Tab

Recording a Macro

When recording your macro, Excel will register every mouse-click and keystroke as part of your macro until you stop recording. The following example describes how to create a simple macro that will delete an entire row.

Note: If the *Developer* tab is not available, see the section on Enabling the Developer tab on how to activate it.

- In the *Ribbon*, click on the **Developer** tab (See Figure 10).



Figure 10 - Developer Tab

2. In the *Code* group, click on **Use Relative References** (See Figure 11).



Figure 11 - Use Relative References

Note: With *Use Relative References* enabled, macros are recorded with actions relative to the initial selected cell.

3. In the *Code* group, click on **Record Macro** (See Figure 12).



Figure 12 - Record Macro

4. The *Record Macro* window will appear (See Figure 13).

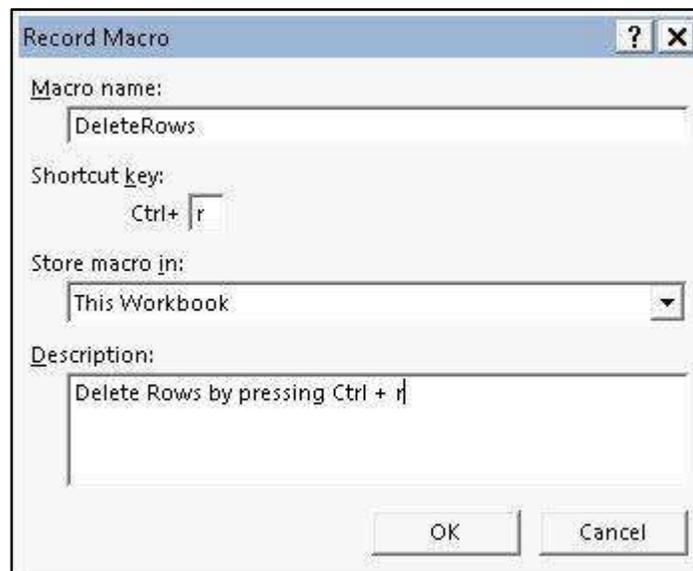


Figure 13 - Record Macro Window

5. Type in a **name** in the *Macro Name* field (See Figure 13).
6. In the *Shortcut key* field, enter a **shortcut** key (This will be the keyboard command you use to activate your Macro) (See Figure 13).

7. In the *Store macro in:* field, click the **down arrow**, and select where you want the macro to be stored (if you plan to use a macro with more than one workbook, select the Personal Macro Workbook option) (See Figure 13).
8. Enter a **description** of the macro in the *Description* field (See Figure 13).
9. Click on **OK** to begin recording.
10. You are ready to record the steps of the macro (See Figure 14).

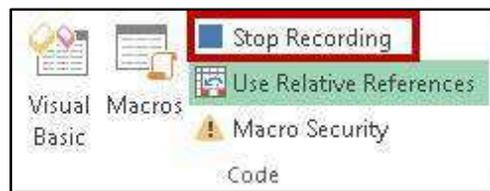


Figure 14 - Stop Recording

Note: When recording your macro, Excel will register every mouse-click and keystroke as part of your macro until you stop recording.

11. In your spreadsheet, select a **row** you wish to delete.
12. In the *Ribbon*, click on the **Home** tab (See Figure 15).



Figure 15 - Home Tab

13. Under the *Cells* grouping, click on the **arrow below delete** (See Figure 16).

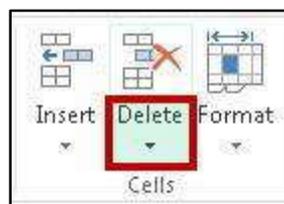


Figure 16 – Delete

14. From the dropdown, click on **Delete Sheet Rows** (See Figure 17).



Figure 17 - Delete Sheet Rows

15. The selected row will be deleted.

16. Click on the **Developer** tab (See Figure 18).



Figure 18 - Developer Tab

17. On the Developer tab, click on **Stop Recording** (See Figure 19).



Figure 19 - Stop Recording

18. To run your *DeleteRows* macro, select the row to delete and press **CTRL + r**.

Managing your Macros

Once you have created a macro, you can run it without using the keyboard shortcut, delete it, edit it, or change the keyboard options for it.

1. In the *Ribbon*, click on the **Developer** tab (See Figure 20).



Figure 20 - Developer Tab

2. In the *Code* group, click on **Macros** (See Figure 21).



Figure 21 – Macros

3. The *Macro* window will open. A list of available macros will be displayed (See Figure 22).

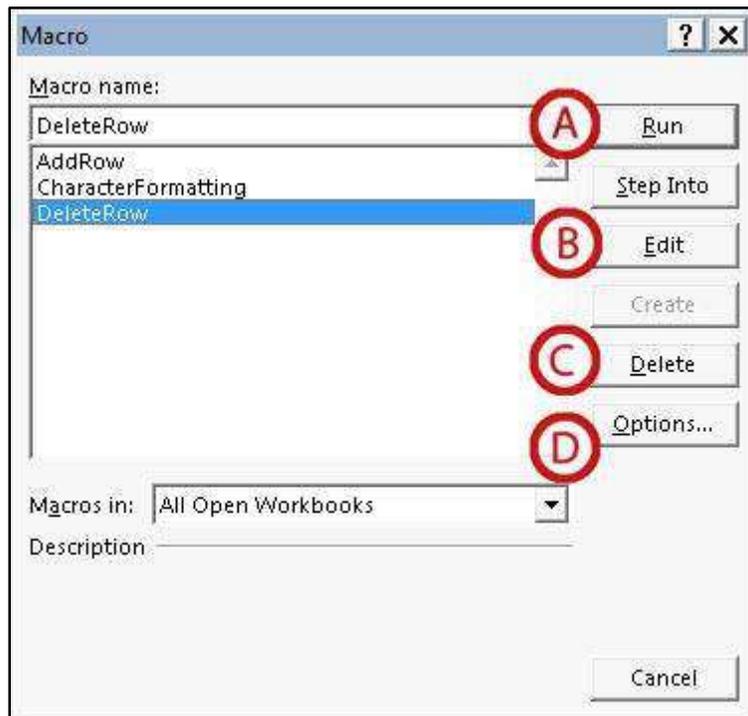


Figure 22 - Macro Window

- A. To run a macro, select it from the list, and click **Run** (See Figure 22).
- B. To edit a macro in Visual Basic, select it from the list, and click on **Edit** (See Figure 22).

Note: You will need to understand Visual Basic in order to edit the macro. If you need to make a correction and are not familiar with Visual Basic, it would be easier to delete the macro and re-record it.

- C. To delete a macro, select it from the list, and click on **Delete** (See Figure 22).
 - D. To change the shortcut key or description for the macro, select it from the list, and click on **Options...**(See Figure 22).
4. Click on **Cancel** when finished.

Moving Spreadsheets

The following explains how to move spreadsheets:

1. Left-click and hold on the **spreadsheet tab** at the bottom of your spreadsheet (See Figure 23).

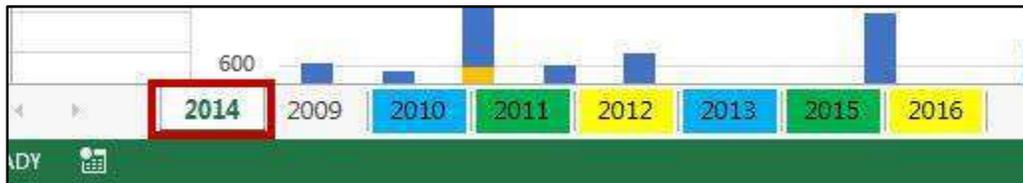


Figure 23 - Spreadsheet Tab

2. Drag the **spreadsheet tab** in-between any existing spreadsheet to move. Your cursor will change to show you are moving a spreadsheet (See Figure 24).

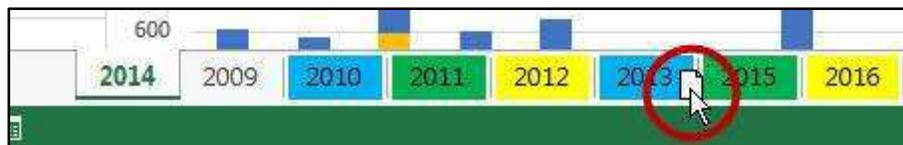


Figure 24 - Dragging Spreadsheet

3. Release the left-mouse button to finish moving your spreadsheet.

-OR-

1. Right-click on the **spreadsheet tab** you wish to move.

2. A *context sensitive menu* will appear. Click on **Move or Copy...** (See Figure 25).

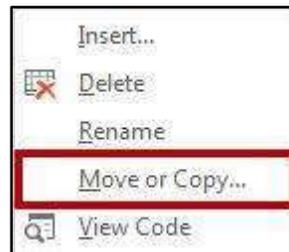


Figure 25 - Move or Copy...

3. The *Move or Copy* window will appear. Under *Before sheet*, select where you want the currently selected spreadsheet to be moved (See Figure 26).

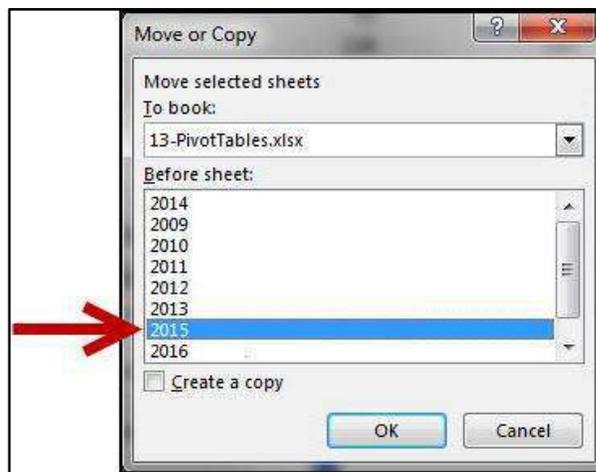


Figure 26 - Move or Copy Window

4. Click on **OK**. The spreadsheet will be moved before the selected location.

Copying Spreadsheets

The following explains how to copy spreadsheets:

1. Right-click on the **spreadsheet tab** you wish to copy.
2. A *context sensitive menu* will appear. Click on **Move or Copy...** (See Figure 27).

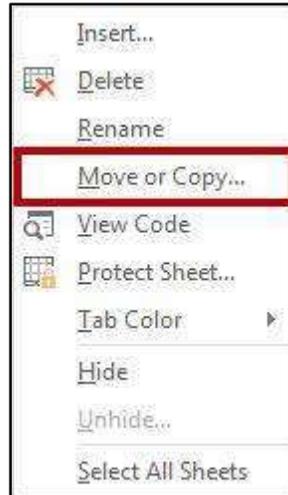


Figure 27 - Move or Copy...

3. The *Move or Copy* window will appear. Under *Before sheet*, select where you want the copy of the currently selected spreadsheet to be moved (See Figure 28).

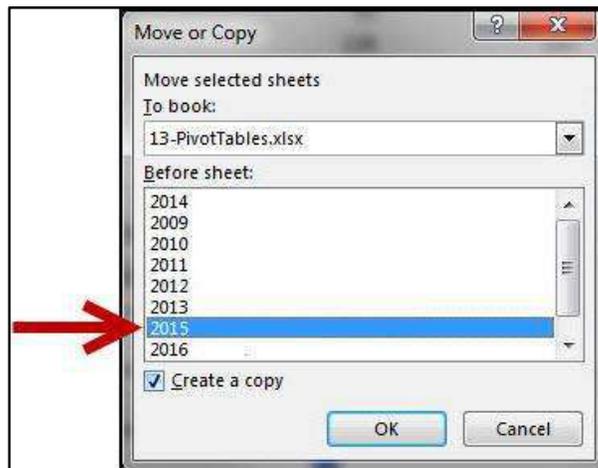


Figure 28 - Move or Copy Window

4. Next to *Create a Copy*, click on the **checkbox**.
5. Click on **OK**. A copy of the spreadsheet will be made in the selected location.

Hiding Rows and Columns

Hiding rows and/or columns in your spreadsheet can hide them from view so you can focus on other parts of your table. To hide a row or column:

1. Select the row/column in your spreadsheet.
2. Right-click on the selected **row/column**.
3. A *context sensitive* menu will appear. Click on **Hide** (See Figure 29).

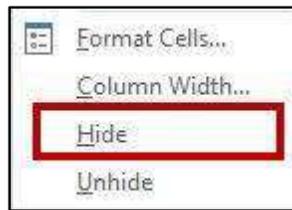


Figure 29 - Hide

4. The selected row/column will be hidden.

Hiding Spreadsheets

You can also hide whole spreadsheets if needed. To hide a spreadsheet:

1. Right-click on the **spreadsheet tab**.
2. A *context sensitive* menu will appear. Click on **Hide** (See Figure 30).



Figure 30 - Hide Spreadsheet

3. The selected spreadsheet will be hidden.

Unhiding Rows and Columns

To identify hidden rows/columns in your spreadsheet, pay attention to the numbering (rows) or lettering (columns). If they appear to skip within their sequence, then rows/columns are hidden. To unhide rows and columns:

1. Select the rows/columns surrounding the hidden rows/columns (See Figure 31).

Item	QTR 1	QTR 4	Totals
Hardware	\$ 200.00	\$ 400.00	\$ 1,900.00
Software	\$ 300.00	\$ 600.00	\$ 1,600.00

Figure 31 - Select Hidden Rows/Columns

2. Right-click on the selected **row/column**.
3. A *context sensitive* menu will appear. Click on **Unhide** (See Figure 32).

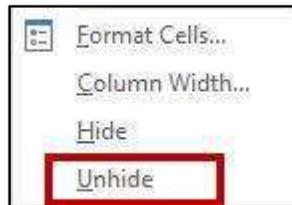


Figure 32 – Unhide

4. The hidden rows/columns will now be visible.

Unhide Spreadsheets

The following shows how to unhide spreadsheets:

1. Right-click on a **spreadsheet tab**.
2. A *context sensitive* menu will appear. Click on **Unhide** (See Figure 33).

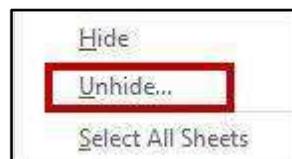


Figure 33 - Unhide Spreadsheet

3. The *Unhide* window will appear. Select a spreadsheet to unhide from the list (See Figure 34).

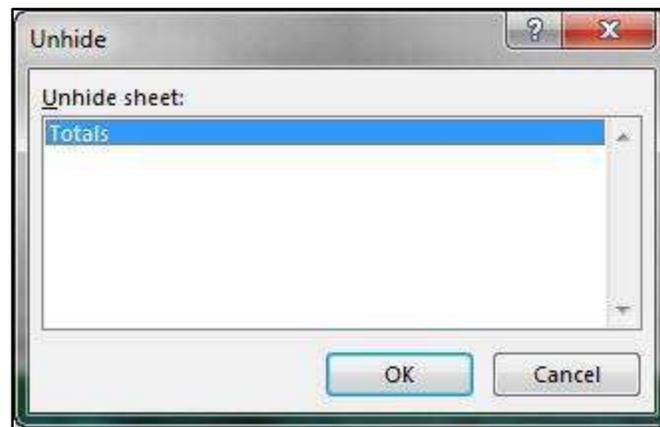


Figure 34 - Unhide Window

4. Click on **Ok**.
5. The spreadsheet will now be visible.

Note: If you right-click on a spreadsheet tab, and *Unhide* is greyed out, then your workbook contains no hidden spreadsheets.

Protecting your Spreadsheets

Protecting your spreadsheet can limit what cells other users can select, and even what types of edits are allowed. This feature is helpful if you have created a spreadsheet with complex formulas that you do not want to be deleted, or if you just want to limit where users can enter information (e.g. an inventory spreadsheet which asks users to fill in specific sections). You can choose to protect/unprotect specific cells in your spreadsheet, or lock an entire spreadsheet.

By default, Excel assumes that you will want to lock all cells in your spreadsheet. If you wish users to be able to edit specific cells, you will first need to prepare the cells so they can be edited while the rest of your spreadsheet is locked.

Preparing your Cells

Before locking your spreadsheet, you will need to unlock the cells that you want users to be able to edit (e.g. you have a quarterly sales spreadsheet with formulas in the totals column. You want users to enter values for their quarter, but let Excel calculate the totals):

1. Select the cells that you want to enable users to edit (See Figure 35).

Western Division					
Item	QTR 1	QTR 2	QTR 3	QTR 4	Totals
Hardware	\$ 100.00	\$ 500.00	\$ 700.00	\$ 400.00	\$ 1,700.00
Software	\$ 200.00	\$ 600.00	\$ 200.00	\$ 300.00	\$ 1,300.00
Furniture	\$ 200.00	\$ 500.00	\$ 500.00	\$ 300.00	\$ 1,500.00
Accessories	\$ 300.00	\$ 300.00	\$ 200.00	\$ 100.00	\$ 900.00

Figure 35 - Selected Cells to Unlock

2. Right-click on the selected **cells**.
3. A *context sensitive* menu will appear. Click on **Format Cells...** (See Figure 36).

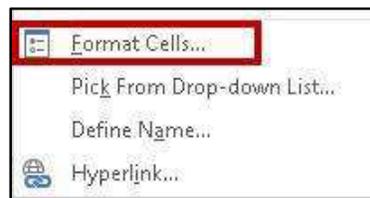


Figure 36 - Format Cells...

4. The *Format Cells* window will appear. Click on the **Protection** tab (See Figure 37).

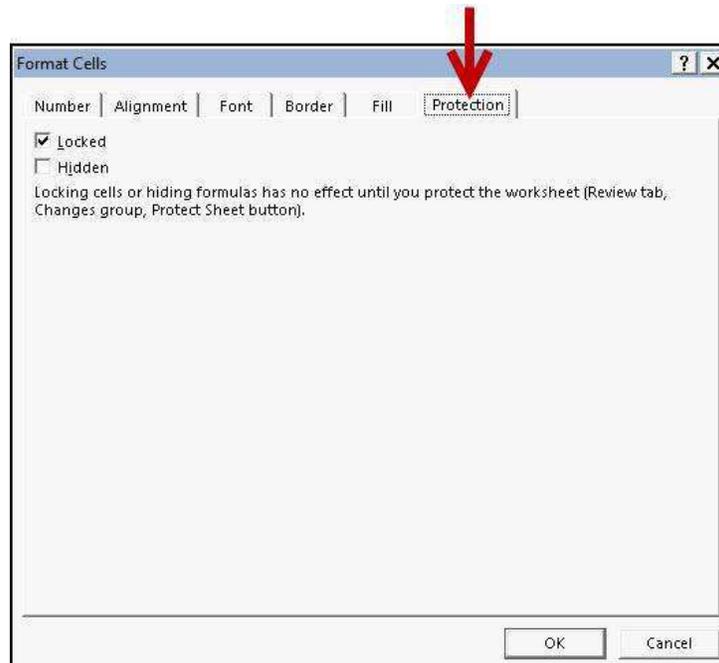


Figure 37 - Protection Tab

5. Uncheck the **checkbox** next to *Locked*. This will allow users to make changes to your selected cells.
6. Click on **OK**.
7. You will need to lock your spreadsheet to enable protection (See Locking your Spreadsheet).

Locking your Spreadsheet

Once you have designated which cells will remain unlocked (See Preparing your Cells), you can protect the spreadsheet to lock the rest of your cells (e.g. cells that contain necessary formulas or instructions for users).

1. In the *Ribbon*, click on the **Review** tab (See Figure 38).



Figure 38 - Review Tab

2. In the *Changes* grouping, click on **Protect Sheet** (See Figure 39).



Figure 39 - Protect Sheet

3. The *Protect Sheet* window will appear. Click the **checkbox** next to *Protect worksheet and contents of locked cell* (See Figure 40).

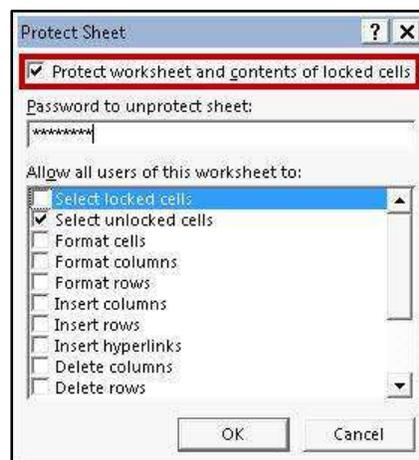


Figure 40 - Protect Sheet Window

4. Enter a password if desired. You will be asked to confirm your password if you create one.

Note: Without a password, anyone can easily unprotect the sheet. If you forget your password, it cannot be retrieved, so make sure to write it down and keep it in a safe place.

5. Next to *Select locked cells*, uncheck the **checkbox**.

Note: Make sure the checkbox next to *Select unlocked cells* is checked. This will enable users to access and make changes to unlocked cells.

6. Click on **Ok**.

7. Your spreadsheet will be protected. Only the unlocked cells will be selectable.

Unprotect Worksheets

The following explains how to unprotect a worksheet that has been locked for editing:

1. In the *Ribbon*, click on the **File** tab (See Figure 41).

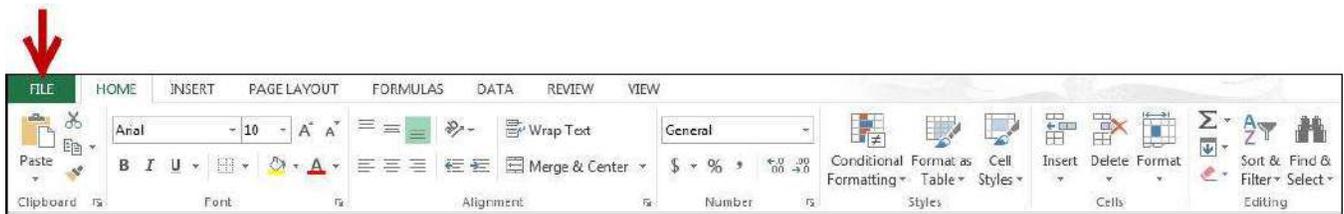


Figure 41 - File Tab

2. The *Backstage View* will appear, and the *protect workbook* information will display any spreadsheets that are currently locked.
3. Click on **Unprotect** next to the *spreadsheet* you want to unprotect (See Figure 42).

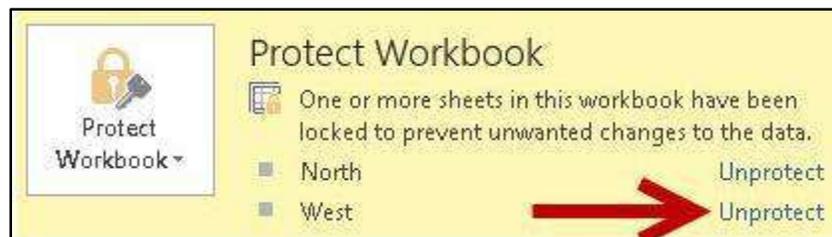


Figure 42 - Unprotect Spreadsheet

4. If the spreadsheet is password protected, you will be prompted to enter the password, then click **ok**.
5. The selected spreadsheet has been unlocked and is ready to be edited.

Protecting Workbooks

You can protect an entire workbook to prevent unwanted changes such as moving, deleting, or adding sheets. Do the following to protect a workbook:

1. In the *Ribbon*, click on the **Review** tab (See Figure 43).



Figure 43 - Review Tab

2. In the *Changes* grouping, click on **Protect Workbook** (See Figure 44).



Figure 44 - Protect Workbook

3. The *Protect Structure and Windows* window will appear. Make sure that the checkbox next to *Structure* is checked (See Figure 45).



Figure 45 - Protect Structure and Windows

4. Enter a password if desired. You will be asked to confirm your password if you create one.

Note: Without a password, anyone can easily unprotect the workbook. If you forget your password, it cannot be retrieved, so make sure to write it down and keep it in a safe place.

5. Click on **Ok**. Your workbook will be protected.

Unprotect Workbooks

The following explains how to unprotect a protected workbook:

The following explains how to unprotect a worksheet that has been locked for editing:

1. In the *Ribbon*, click on the **Review** tab (See Figure 46).



Figure 46 - Review Tab

2. In the *Changes* grouping, click on **Protect Workbook** (See Figure 47).



Figure 47 - Unprotecting Workbook

Note: If the workbook is currently protected, the *protect workbook* icon will be highlighted in green.

3. If the spreadsheet is password protected, you will be prompted to enter the password, then click **ok**.

Creating Templates

The sample below shows a template for calculating first quarter sales for a company. This template was created by modifying an existing spreadsheet and saving it as a template file. The template could also have been created from a new spreadsheet, with the formulas for totals saved in the proper cells.

Company 1st Quarter Sales				
Region	January	February	March	Totals
Eastern Region	\$110.00	\$175.00	\$140.00	\$425.00
Western Region	\$200.00	\$210.00	\$240.00	\$650.00
Southern Region	\$300.00	\$180.00	\$295.00	\$775.00
Northern Region	\$220.00	\$205.00	\$195.00	\$620.00
Total	\$830.00	\$770.00	\$870.00	\$2,470.00
Average	\$207.50	\$192.50	\$217.50	\$617.50

Figure 48 - Template Example

To prepare a spreadsheet as a template:

1. Create your spreadsheet as normal (e.g. formatting, headers, formulas for calculating totals, etc.)
2. In the *Ribbon*, click on the **File** tab (See Figure 49).

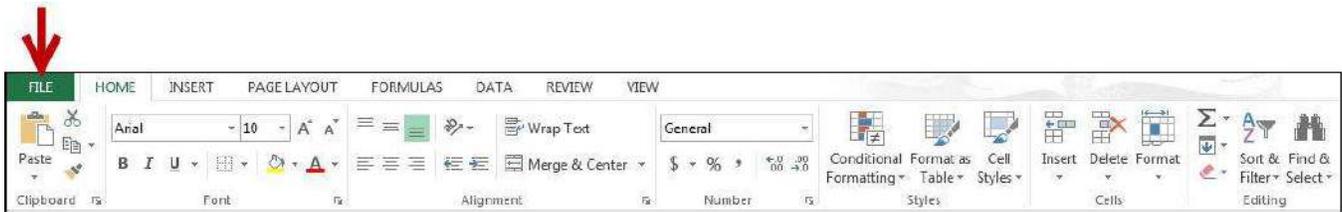


Figure 49 - File Tab

3. The *Backstage View* will appear. Click on **Save As** (See Figure 50).

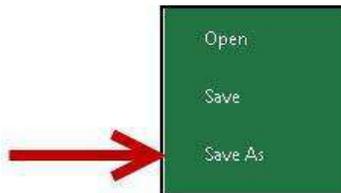


Figure 50 - Save As

4. Select a location to save the document and click on **Browse**.
5. Enter a name for the template in the *File name:* field.
6. In the *Save as type* field, select **Excel Macro-Enabled Template** (See Figure 51).



Figure 51 - Excel Macro-Enabled Template

Note: By default, Excel will save your template in the *My Documents/Custom Office Templates* folder.

7. Click on **Save**.
8. Your template will be saved.

Using a Template

The following explains how to access the custom-made template created in the Creating Templates section.

Note: The following instructions show how to access templates saved to the default *My Documents/Custom Office Templates*.

1. In the *Ribbon*, click on the **File** tab (See Figure 52).



Figure 52- File Tab

2. The *Backstage View* will appear. Click on **New** (See Figure 53).

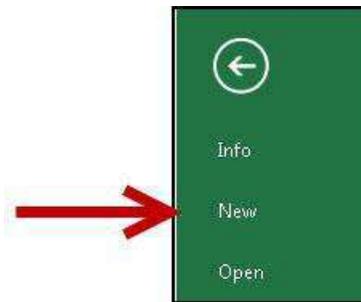


Figure 53 - New

3. Click on **Custom** to access your custom templates (See Figure 54).

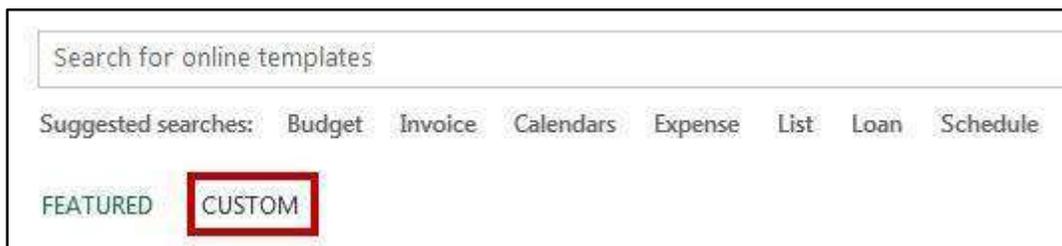


Figure 54 - Custom Templates

4. Click on **Custom Office Templates** (See Figure 55).



Figure 55 - Custom Office Templates

5. Click on your desired template.

Additional Help

For additional help or installation issues, please contact the KSU Service Desk (Faculty & Staff) or the KSU Student Help Desk (Students).

KSU Service Desk for Faculty & Staff

- Phone: 470-578-6999
- Email: service@kennesaw.edu
- Website: <http://uits.kennesaw.edu/faculty-staff/>

KSU Student Help Desk

- Phone: 470-578-3555
- Email: studenthelpdesk@kennesaw.edu
- Website: <http://uits.kennesaw.edu/students/>