Security and Collaboration in Excel 2010/2016

Securing documents and collaborating with others are mandatory techniques for success in today's environment. Fortunately, Excel provides a number of powerful options for each of these two activities, and most of these options are available on the **Review** tab of the Ribbon. On the Review tab, you will find multiple options for securing your Excel documents and also for sharing and working with others in real-time on the same Excel workbook. In this chapter, you will learn how to work more effectively with Excel's primary security and collaboration tools.

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Securing Excel in the Trust Center

Excel 2007 and newer offer improved security and privacy controls over previous versions of Excel. Security and privacy settings for Excel workbooks have been centralized in the **Trust Center**. From the Trust Center, you can 1) enable or disable ActiveX controls, 2) enable or disable add-ins, 3) enable or disable macros, 4) enable or disable security alerts on the Message Bar, 5) remove or view trusted publishers, 6) block or unblock external content, and 7) create, remove, or change trusted file locations. Note that Excel's default settings will more than likely suit the security and privacy needs of most users.

The Trust Center is accessible from the **File** tab of the Ribbon (the **Office Button** in Excel 2007) by selecting **Options, Trust Center,** and, finally, **Trust Center Settings**. **Figure 1** shows the setting pane for macro execution.

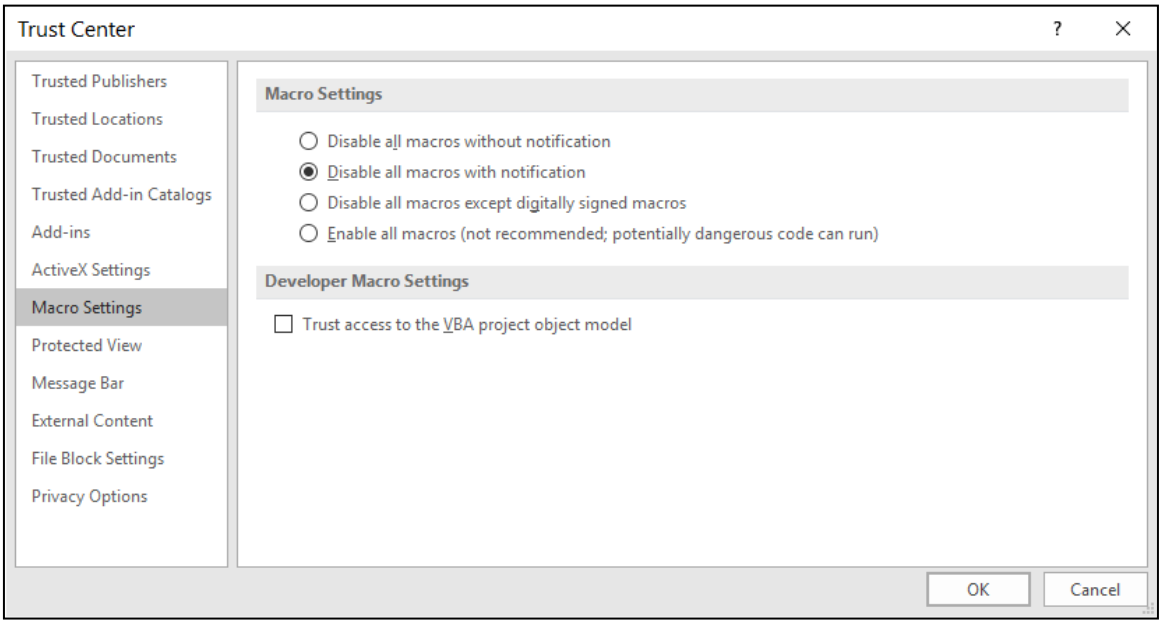

Figure 1 - Accessing the Trust Center to Modify Security and Privacy Settings

Note that in default, macros are *disabled with notification*. Whenever a workbook that contains a macro is opened, users will be able to choose whether to enable the macros as shown in **Figure 2**.

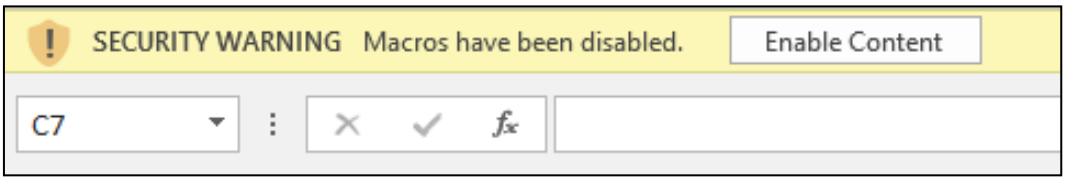

Figure 2 - Enabling Macros in a Workbook

Securing Documents

All of the capabilities for directly securing workbooks are accessible from the **File** tab of the Ribbon (the **Office Button** in Excel 2007). Click on the **File** tab and then select **Info**. Upon doing so, you will see four buttons: 1) **Protect Workbook**, 2) **Inspect Workbook**, 3) **Manage Workbook**, and 4) **Browser View Options**. After clicking the **Protect Workbook** button, you may 1) mark a workbook as final, 2) encrypt a workbook with a password, 3) protect the current worksheet, 4) protect the workbook for structure, 5) restrict access using **Information Rights**

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Management (IRM), and 6) add a digital signature to a workbook. Clicking the **Check for Issues** button enables users to 1) inspect the workbook's properties, 2) check the accessibility of the workbook by those who might find it difficult to read, and 3) check compatibility with prior versions of Excel. Clicking the **Manage Versions** button allows you to manage prior versions of the workbook. Finally, selecting Browser View Options allows you to pick what others can see when they view the workbook on the Web.

Excel provides several levels of protection for workbooks and workbook content. From an accountant's perspective, these protection options are important in that they provide necessary tools to prevent unauthorized changes to financial statements, transaction journals, and other significant documents; they also prevent unauthorized access to these documents. The following list summarizes the levels of protection offered by Excel.

1. **Encrypted workbook with password protection** – The workbook is encrypted with 128-bit AES encryption, and Excel requires a password to open the workbook.

2. **Encrypted workbook with IRM protection** – The workbook is encrypted with 128- bit AES encryption, and you must authenticate to a Rights Management Server to open, modify, copy, print, or distribute the workbook.

3. **Unencrypted workbook with modification protection** – The workbook is not encrypted, and anyone may open it; however, the workbook is protected from modification unless you enter the password to modify at the time the workbook is opened. If the password is not entered, the workbook is opened in read-only mode.

4. **Workbook structure or windows protection** – The workbook is not encrypted, and anyone may open it; however, certain elements of the workbook are protected from modification. Workbook protection may be enabled with or without a password.

5. **User-specified worksheet element protection** – The workbook is not encrypted, and anyone may open it; however, user-specified elements of a worksheet are protected from modification on a worksheet-by-worksheet basis. Worksheet protection may be enabled with or without a password.

6. **Shared workbook protection** – The workbook is not encrypted, and anyone may open it; however, a shared workbook may not be un-shared, and the number of days maintained in the change history cannot be modified. Shared workbook protection may be enabled with or without a password.

   The workbook and worksheet protection options can be used together. For example, to protect and secure a workbook fully from unauthorized access and unwanted modification, you may protect specific worksheet elements, then protect the workbook, and finally encrypt the workbook using a password.

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Encrypting Documents

Excel allows you to *encrypt* and password-protect workbooks. Click **File, Info, Protect Workbook** and select **Encrypt with Password** as shown in **Figure 3**. For those using Excel 2007, click the **Office Button**, select **Prepare,** and then click **Encrypt Document.**

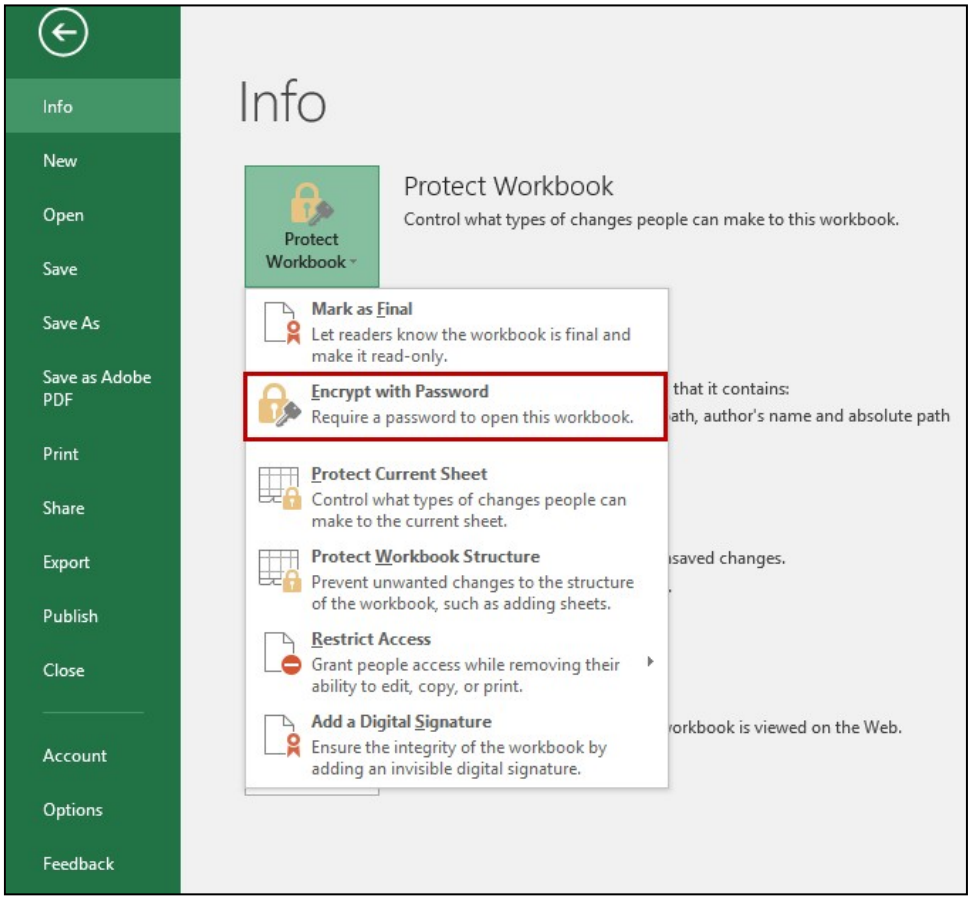

Figure 3 - Encrypting a Workbook

In the **Encrypt Document** dialog box, type a strong password and click **OK**. Confirm the password and click **OK** again to complete the process. In default, Excel 2007 and newer, Excel encrypts workbooks using 128-bit AES encryption. These passwords are not likely to be broken. Of course, you should make sure to record the password in a secure place. Documents saved as Office 97-2003 compatible files are encrypted using 40-bit encryption, which is weak by today's standards. These 40-bit passwords can be easily broken using any of the available online password cracking services like those listed below.

- www.decryptum.com
- www.lostpassword.com
- www.elcomsoft.com
- www.accessdata.com

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Workbook and Worksheet Protection

Workbooks or individual worksheets within a workbook can be protected. To protect individual sheets, first *unlock* any cells or objects that users should be able to change. To unlock cells, highlight the cells to be unlocked and then right-click and select **Format Cells** on the context- sensitive menu. On the **Protection** tab of the **Format Cells** dialog box, uncheck **Locked**. Then, select **Protect Sheet** on the **Review** tab of the Ribbon to open the **Protect Sheet** dialog box as shown in **Figure 4**. In the **Allow all users of this worksheet to** list, check the objects upon which users are *allowed* to act, then enter a password, and click **OK**. Confirm the password and then click **OK** again to protect the sheet. The password prevents users who do not know the password from un-protecting the worksheet. Repeat these steps for every worksheet that must be protected.

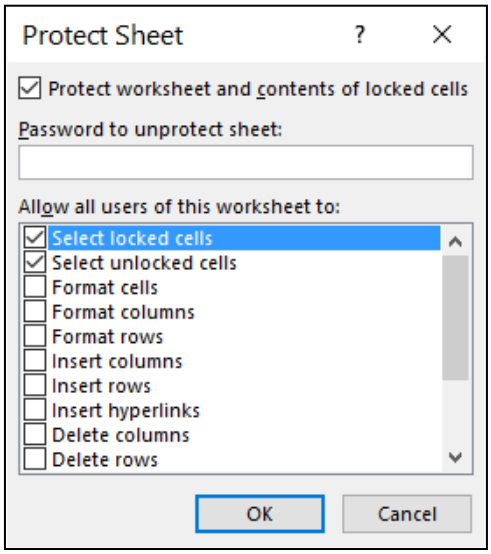

Figure 4 - Protecting an Individual Worksheet

To protect a workbook, select **Protect Workbook, Protect Structure and Windows** on the **Review** tab of the Ribbon to open the dialog box shown in **Figure 5**.

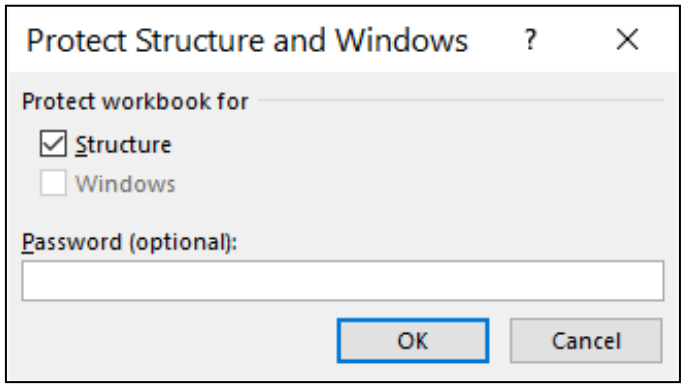

Figure 5 - Protecting a Workbook in Excel

Select the options desired, enter a password, and click **OK**. Confirm the password and click **OK** again. Note that checking **Structure** *prevents* users from taking the following actions:

- Viewing worksheets that are hidden;
- Moving, deleting, hiding, or changing the names of worksheets;

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- Inserting new worksheets or chartsheets;
- Moving or copying worksheets to anotherworkbook;
- Displaying the source data for a cell in the data area or displaying report filter pages on separate worksheets in PivotTable reports;
- Creating a scenario summary report for scenarios; and
- Using the analysis tools from the Analysis ToolPak that place results on a new worksheet.

With Excel 2010 and prior, you can also check **Windows** to *prevent* users from taking the following actions:

- Changing the size and position of the windows for the workbook when the workbook is opened and
- Moving, resizing, or closing a window.

> Note that using passwords to restrict the modification of worksheets or workbooks does *not* encrypt the workbooks. Passwords that restrict modifications (formatting and editing, etc.) are weak passwords that can be easily broken by online password cracking services.
>
> If your business or enterprise uses Windows Server 2003 or newer for domain control, Windows user authentication can be used as an alternative to using passwords. This method encrypts the document, but only specified authenticated users will have access. Note that this method of securing a document cannot be used *across* multiple businesses or enterprises because not all users will be authenticated on the same network.

As mentioned previously and as shown in Figure 5, users of Excel 2010 or newer can also access both worksheet and workbook protection settings by selecting **File**, **Info**, and **Protect Workbook**.

Preventing Changes to Documents

One of the more significant of Excel's newer features is that of marking a document *Final*. When a document – such as a set of financial statements – has been marked final, Excel disallows future changes to that document as long as the document retains its *final* status. While **Mark as Final** is a welcome feature, users should rely on it only to prevent accidental or inadvertent changes to a document. Mark as Final should not be considered a true security feature, because users can easily remove the final status from a document and, once that has been removed, edit the document.

To add the *final* status to a document, click **File**, **Info**, **Protect Workbook**, and **Mark as Final** as shown in **Figure 9**; Excel 2007 users should click the **Office Button** and select **Prepare, Mark as Final**. This makes the document read-only and prevents changes to the document as long as it retains this status.

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To remove the final status from a document, repeat the steps outlined, and the document will return to an editable status.

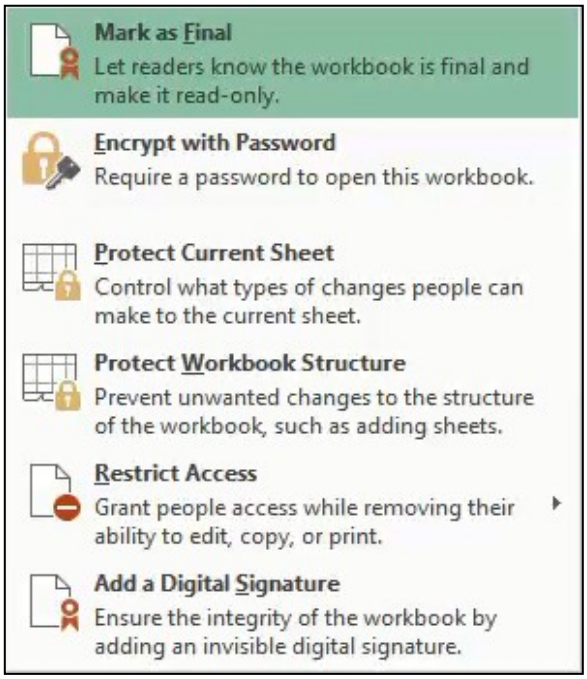

Figure 9 - Marking a Document as Final

Sending Workbooks Via Email

The most common means of collaboration among users is by email. You can send workbooks as attachments to email messages to other users for their input, revision, or review; Excel makes this easier by automating the process. To send a workbook to other users by email, select **File**, **Share, Email**, and **Send as Attachment** as shown in **Figure 10**. If you are using Excel 2007, you perform this function by clicking **Send, Email** from the **Office Button**. Note also that workbooks can also be sent as PDF or XPS attachments or via an Internet-based fax service.

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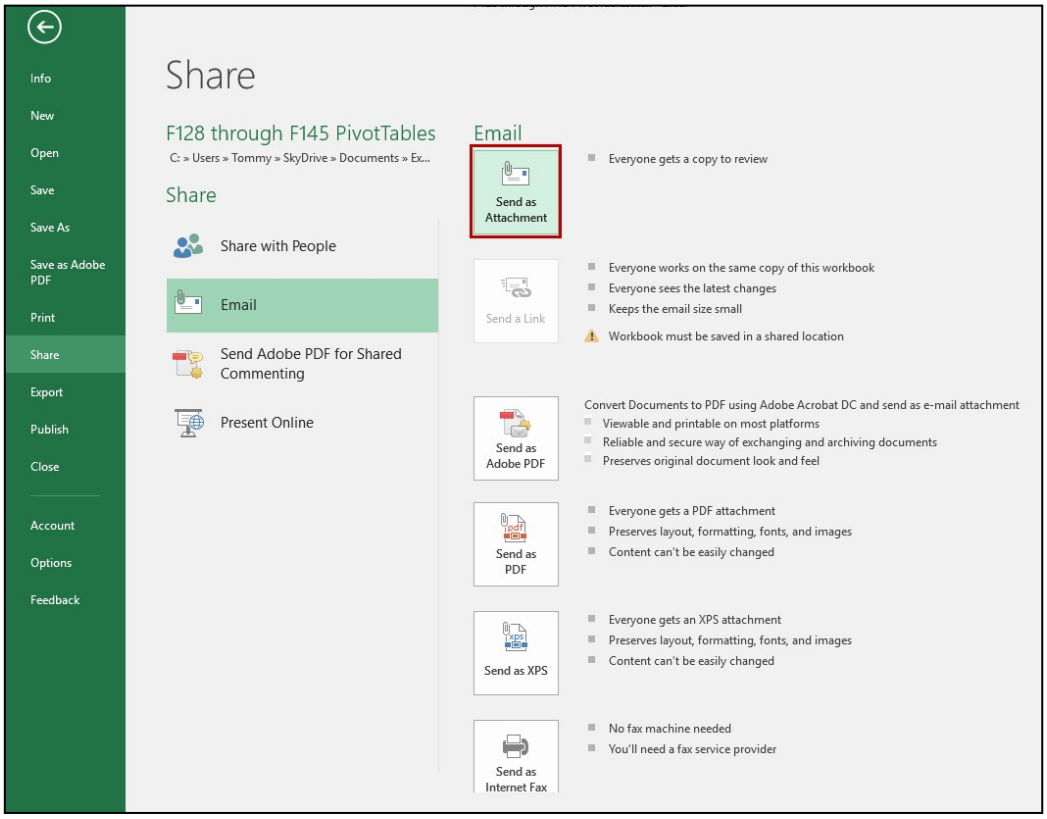

Figure 10 - Sending a Workbook as an Attachment

In addition, depending upon what version of Excel you are running and whether you store your documents in a cloud-based repository such as OneDrive for Business, you may also be able to send a link to your document by choosing the **Send a Link** option in Figure 15. Sending a link can facilitate real-time collaboration as all users of the link will access and edit the same workbook in real-time.

Excel Workbooks and Excel Online

Another means of sharing Excel workbooks is via an Office 2010 and newer feature entitled **Excel Online**. Excel Online allows users to share Excel documents over the Internet. Additionally, similar apps exist for Word, PowerPoint, and OneNote. Remote users can access and edit the documents, and these edits can be performed collaboratively and in real time. Thus, the author of an Excel workbook which is used to calculate the tax accrual for a large corporation could share that workbook through Excel Online so that the accountant in public practice could review and edit the workbook in real time with the author.

To access documents using Excel Online, you must store your document in a cloud-based location such as OneDrive, OneDrive for Business, or SharePoint Online. After you do so, you and other users can simply open the document from that cloud-based storage location and begin collaborating in real time. As shown in **Figure 11**, Excel Online does not offer all the features the desktop version of Excel offers. Nevertheless, Excel Online provides – for many, if not all, users – a superior option for collaborating compared to emailing workbooks to multiple

recipients. Further, if you need access to a feature not provided in Excel Online, you can open the cloud-based workbook with the desktop version of Excel, perform any necessary edits, and then save

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the document back to the cloud.

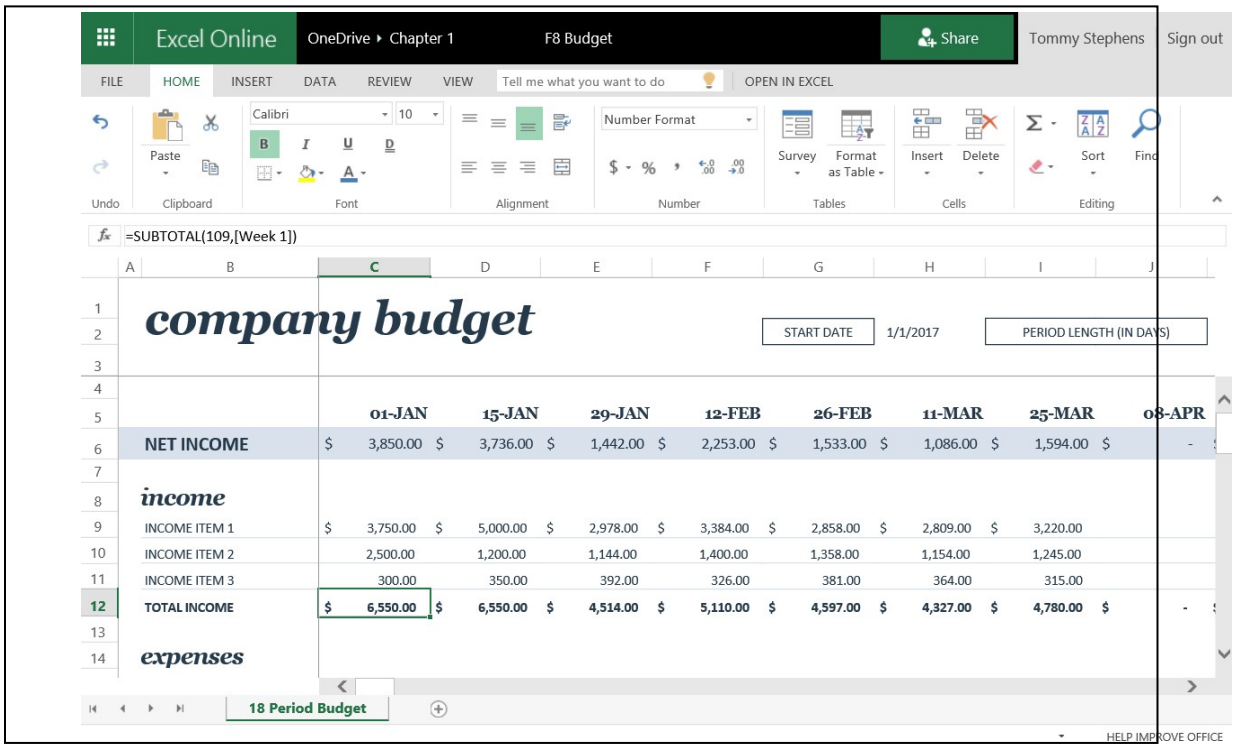

Figure 11 - Editing an Excel Workbook in Excel Online

Sharing Workbooks

Shared workbook functionality allows multiple users to view and make changes concurrently to a workbook located in an accessible network location. For example, if your staff were working on a large project that required the input of several staff members, sharing the project workbook would allow them to work on the engagement document at the same time. Compare that to the commonly used process of using a workbook exclusively – while one staff member is using a workbook, other staff members are prevented from making changes to the same workbook. Hence, work on the project is slowed because access to the project document is restricted when it is being used by other staff members.

In the following example, the CFO for GTM Printing has created a workbook for his office managers to enter budget updates for the third and fourth quarter of the current year. GTM prepares budgets annually but updates budgets every six months. The workbook has a separate sheet for each office, and it has been saved in a shared folder on a server in the home office, accessible by using some form of remote access software. The CFO wants to share the workbook so that managers will be able to enter their budget updates even if another manager is already using the workbook. From the vantage point of the CFO, periodic updates to the budget are important so that managers can routinely compare actual to budgeted results. To share a workbook, open the workbook to be shared. From the **Review** tab of the Ribbon, select

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Share Workbook. In the **Share Workbook** dialog box, check **Allow changes by more than one user at the same time** as shown in **Figure 17**. On the **Advanced** tab, enter the number of days to maintain the change history. The default is thirty days. Enter an arbitrarily large number such as 3650 days to maintain the changes indefinitely.

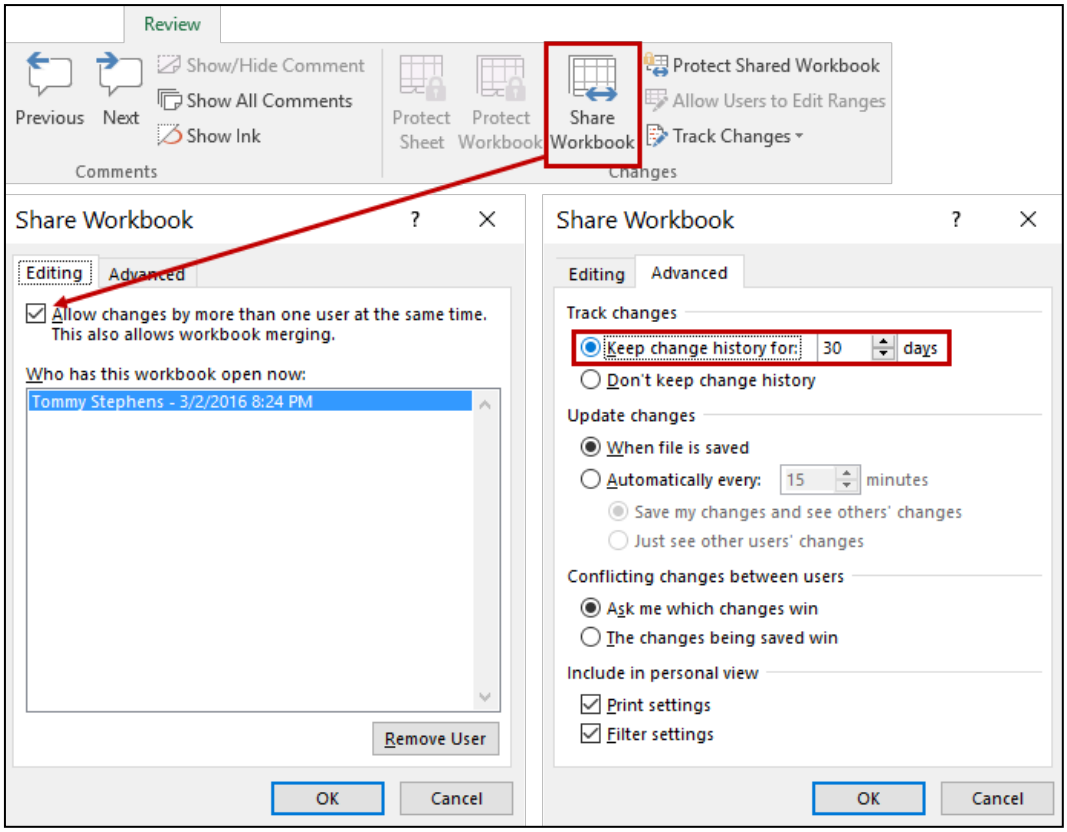

Figure 17 - Sharing a Workbook

After a workbook is shared, multiple users can view and modify the workbook concurrently, and Excel automatically maintains a history of all changes made to the workbook. The change history tracks what was changed, who made the change, and the date and time of the change, etc. The **Keep change history** setting on the **Advanced** tab of the **Shared Workbook** dialog box determines how long the change history is maintained. If the history is set to be maintained for thirty days, changes made on the first day after sharing the workbook will be removed from the history thirty dayshence.

Unfortunately, not all Excel functionality is available in a shared workbook. **Table 1** below lists the functionality that is restricted in a shared workbook, together with possible workarounds.

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SHARED WORKBOOK FUNCTIONALITY	
Users Cannot	**Possible Workaround**
Create an Excel table	
Insert or delete blocks of cells	Entire rows and columns can be inserted.
Delete worksheets	
Merge cells or split merged cells	
Add or change conditional formats	Existing formats continue to appear as cell values change.
Add or change data validation	Cells continue to be validated when you type new values.
Create or change charts or PivotCharts	Existing charts and reports can be viewed.
Insert or change pictures or objects	Existing pictures and objects can be viewed.
Insert or change hyperlinks	Existing hyperlinks continue to work.
Use drawing tools	Existing drawings and graphics can be viewed.
Assign, change, or remove passwords	Existing passwords remain in effect.
Protect or unprotect worksheets or the workbook	Existing protection remains in effect.
Create, change, or view scenarios	
Group or outline data	Existing outlines can be used.
Insert automatic subtotals	Existing subtotals can be viewed.
Create data tables	Existing data tables can be viewed.
Create or change PivotTable reports	Existing reports can be viewed.
Write, record, change, view, or assign macros	Existing macros that do not access unavailable features can be run, and macros can be recorded and stored in another workbook.
Change or delete array formulas	Existing array formulas continue to calculate correctly.
Use a data form to add new data	An existing data form can be used to find a record.
Work with XML data	

Table 1 – Shared Workbook Functionality

Note that with few exceptions, functionality incorporated into a workbook at the time it is shared is still functional

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in the shared workbook. By anticipating the needs of users, a fully functional shared workbook can be built by adding the needed functionality *before* sharing the workbook. Also, note that all of the restricted functionality can be made available by un-sharing a workbook. However, any change history recorded will be deleted when a workbook is un- shared.

To edit a shared workbook, simply open and modify it just as with any other workbook. Excel will maintain the change history in the background. In default, each user has a *personal view* of a shared workbook. Personal views maintain individual filter and print settings for each user. To use the original print and filter settings, open the shared workbook. From the **Review** tab of the Ribbon, select **Share Workbook**. On the **Advanced** tab, uncheck **Print settings** and **Filter settings** in the **Include in personal view** section and click **OK**.

Whenever a user saves a shared workbook, any changes saved by other users during a concurrent session appear in the workbook. If multiple users have made changes, the changes are color-coded by user. Hovering the cursor over a changed cell identifies the change made, the date and time of the change, and the name of the user who made the change as shown in **Figure 18**. Changes by other users remain highlighted until the shared workbook is saved once again.

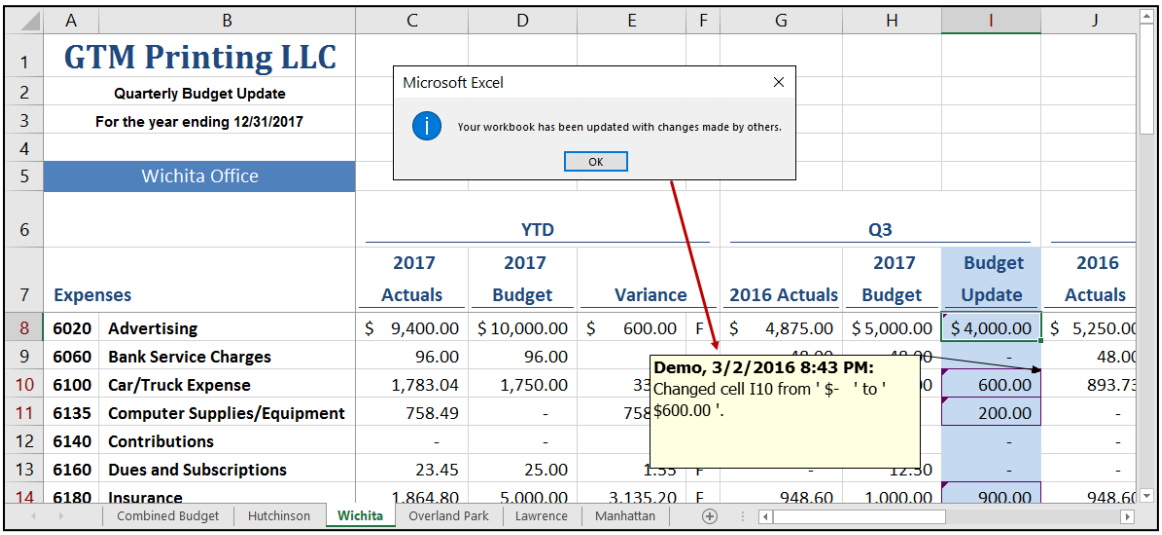

Figure 18 - Changes Identified by Date, Time, and User

If more than one user makes a change to the same cell or cells during a concurrent session, the second and subsequent users who attempt to save their changes will be prompted to resolve the identified conflicts as shown in **Figure19**.

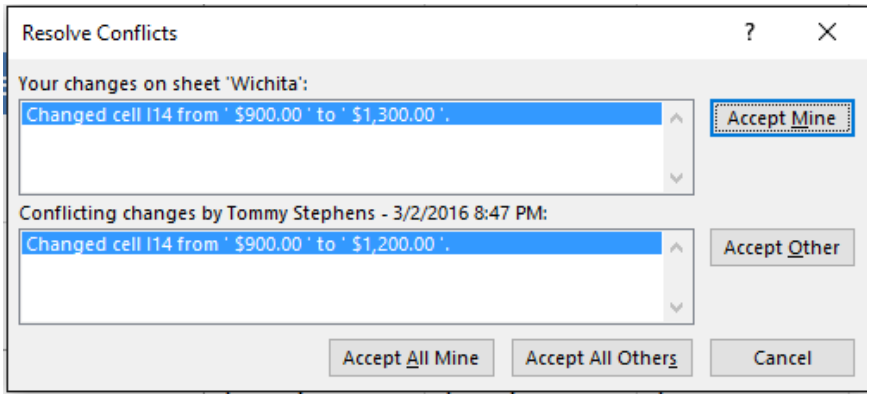

Figure 19 - Resolving Conflicts in a Concurrent Session

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Users can choose to accept their own changes or the changes saved by other users. *All* saved changes are recorded in the change history, regardless of whether a change was accepted or rejected during conflict resolution. This allows a shared workbook *owner* – the user who shares a workbook – to accept or reject changes during a review process. The owner maintains all rights for managing the workbook – an owner can remove users from a shared workbook, accept or reject conflicting changes made by multiple users, and un-share a protected workbook when all changes have been made.

Changes may be tracked at any time until a shared workbook is un-shared, at which time the change history is removed from the shared workbook. To track changes in a shared workbook, select **Track Changes, Highlight Changes** from the **Review** tab of the Ribbon as shown in **Figure 20**.

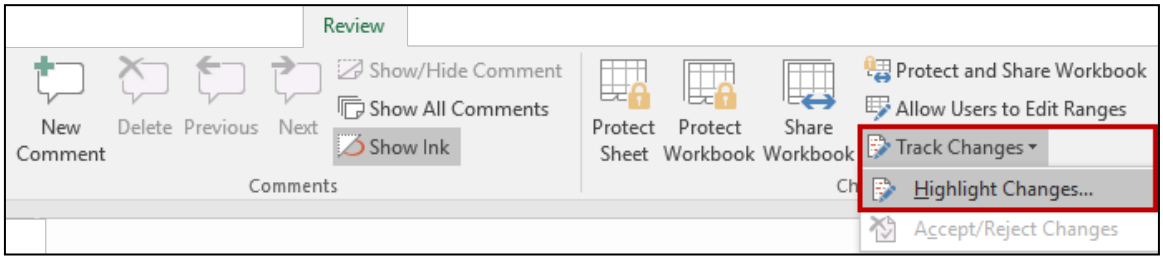

Figure 20 - Tracking Changes in a Shared Workbook

In the **Highlight Changes** dialog box, check **Highlight changes on screen** and/or **List changes on a new sheet** and click **OK** as shown in **Figure 21**.

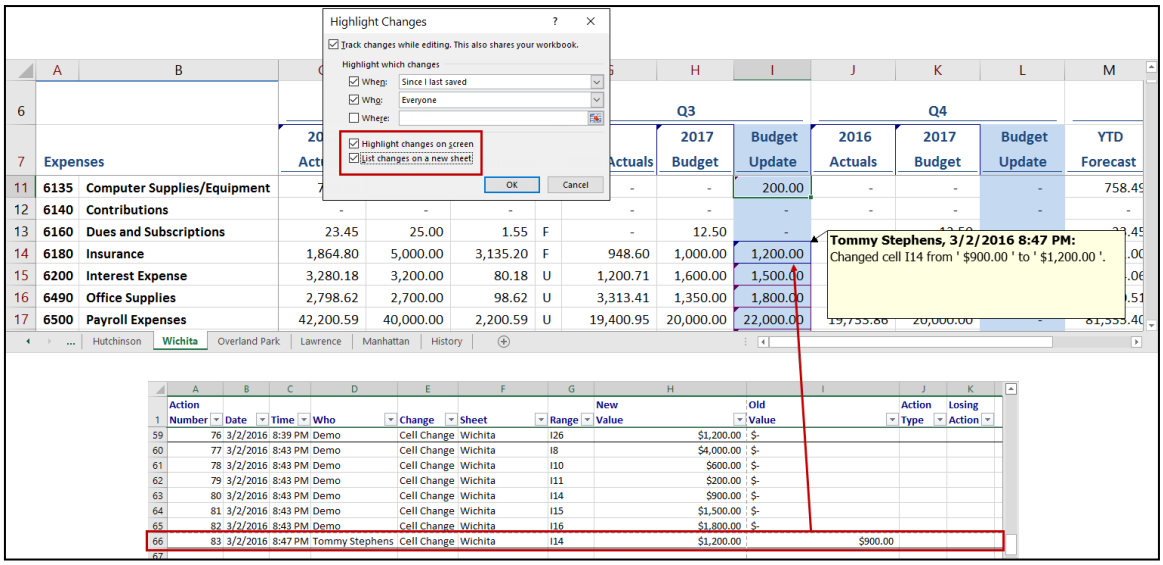

Figure 21 - Displaying Changes on Screen and on a Separate Worksheet

All cells containing changes that meet the criteria set in the **Highlight Changes** dialog box will be surrounded by a navy-blue border and contain a navy-blue arrow point in the upper left corner as shown in Figure 21. Hovering the cursor over a highlighted cell will expose a pop-up containing the name of the user who made the change, the date and time of the change, and the

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nature of the change. If the number of changes is extensive, or if the changes were made over a large range in a worksheet or on multiple sheets, choosing to create a new worksheet listing some or all of the changes is a better alternative. Excel will create a new worksheet named **History** that will contain a chronological list of all changes meeting the selection criteria set in the **Highlight Changes** dialog box. Note that a **History** sheet is not saved when a shared workbook is saved, but an up-to-date history can be reproduced at any time.

Changes may be *accepted* or *rejected* at any time, and the accept-or-reject process may be repeated as often as necessary. All saved changes are available for acceptance or rejection by a reviewing user. In other words, if three users – Tommy, Debbie, and Mac – changed a single cell, all three values would be available for acceptance during the review process, notwithstanding the fact that the value entered by Tommy was the value currently stored in the cell. Further, rejection of a change in one review does not preclude the acceptance of that same change in a subsequent review.

To perform a review to accept or reject changes made to a shared workbook, select **Track Changes, Accept/Reject Changes** from the **Review** tab of the Ribbon. Enter any desired criteria in the **Select Changes to Accept or Reject** dialog box and click **OK** as shown in **Figure 22.** Excel will step through the workbook, stopping at each cell that contains a change matching the selection criteria. At each stop, the **Accept or Reject Changes** dialog box is presented to allow a user to accept or reject any change previously saved.

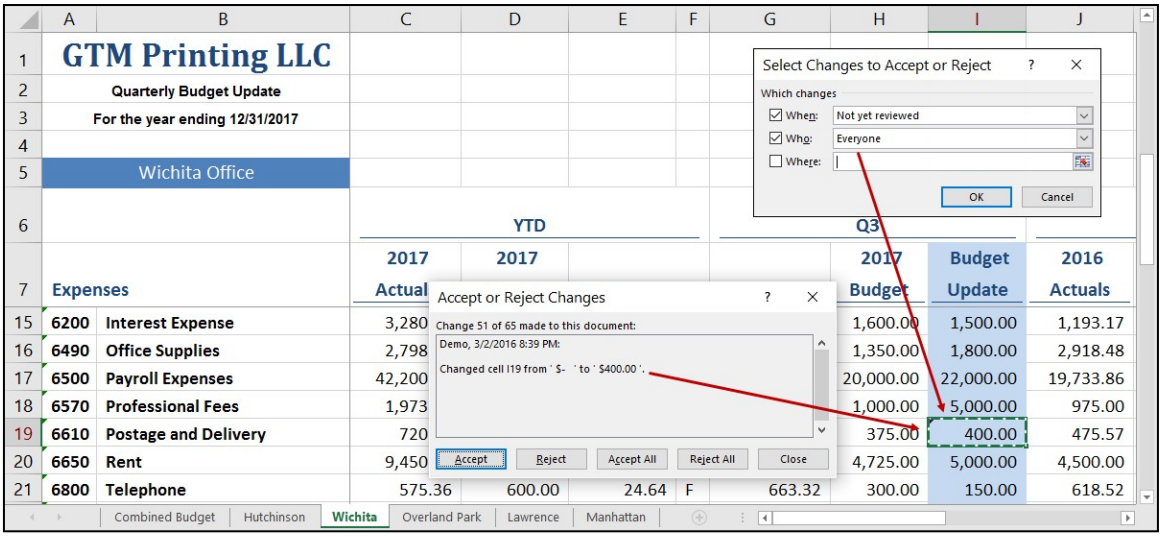

Figure 22 - Accepting or Rejecting Changes

To stop sharing a workbook, select **Share Workbook** on the **Review** tab of the Ribbon.Then, uncheck **Allow changes by more than one user at the same time** on the **Editing** tab of the **Share Workbook** dialog box and click **OK**. *Caution*! When a workbook is un-shared, the change history is deleted. If the change history is important, create an up-to-date **History** worksheet and print it or copy it to a new workbook. After sharing is stopped, the history sheet may be copied back into the workbook, but the worksheet must be renamed because *History* is a reserved sheet name. To prevent unauthorized un-sharing of a workbook, **Protect and Share** a workbook with a password from the **Review** tab of the Ribbon.

While shared workbooks are used primarily to allow multiple users to collaborate on tasks or projects, a workbook may be shared for the sole purpose of enabling change tracking. In other words, a single user may

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share a workbook so that Excel automatically records all changes made on a large project. A user may have no intention of allowing other users to make changes to the project workbook but has enabled sharing just for the change tracking functionality. If the user enters *comments* for all material changes made to the workbook, the workbook itself becomes self-documenting. In the example shown in **Figure 23**, note how the system tracked the change but also how the comment entered by the user at the time of the change explains *why* the change was made. This functionality is very useful in a capital budgeting or business planning exercise.

	A	B	E	F	G	H	I	J
6					Q3			
7	Expenses		Variance		2016 Actuals	2017 Budget	Budget Update	2016 Actuals
17	6500	Payroll Expenses	2,200			0	22,000.00	19,733.86
18	6570	Professional Fees	26			0	5,000.00	975.00
19	6610	Postage and Delivery	30			0	-	475.57
20	6650	Rent				0	-	4,500.00
21	6800	Telephone	24			0	-	618.52
22	6820	Taxes	184			0	-	-
23	6830	Training and Conferences					-	-
24	6900	Meals and Entertainment					-	543.29
25	6920	Tools & Machinery Repairs	-		-	-	-	-
26	6970	Utilities	259.06	F	783.13	1,050.00	-	989.11

Demo, 3/2/2016 8:39 PM:
Changed cell I17 from ' $- ' to ' $22,000.00 '.

[Cell Comment]
Tommy Stephens:
Anticipate hiring a temp employee during Holiday season

Figure 23 - Using Comments to Explain Why Changes Were Made

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