

Al-Mustaqbal University College Optics Techniques Department Lecturer: Samir H. Mohammed







Computer Applications Microsoft Excel





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Introduction

• What is Microsoft Office?

Microsoft Office is a collection of software programs used for productivity tasks like writing, creating spreadsheets, and making presentations. It includes popular tools like Word (for documents), Excel (for spreadsheets), and PowerPoint (for presentations).

What is Excel?

Microsoft Excel is a powerful spreadsheet application widely used for various tasks, ranging from data entry to advanced data analysis. *Here a breakdown of its benefits and specifications:*

A. Benefits of Excel:

- 1. **Data Management**: Excel allows you to store, organize, and manage large sets of data efficiently.
- 2. **Data Analysis**: With built-in formulas, pivot tables, and charts, it simplifies complex data analysis and reporting.
- **3. Automation**: You can automate repetitive tasks using macros.
- 4. **Visualization**: Excel offers a wide variety of charts and graphs to visually represent data.
- **5. Collaboration**: Excel allows multiple users to work on the same document.
- 6. **Flexibility**: Excel can handle everything from personal budgeting to complex financial modeling.

B. Specifications of Excel:

1. Spreadsheet Layout:

Rows: Excel supports more than 1,000,000 rows.

Columns: There are more than 16,000 columns labeled from A to XFD.

Cells: Each cell can contain data in the form of text, numbers, or formulas.

2. Formulas and Functions:

Formulas: You can perform basic to advanced calculations by creating formulas, starting with =.

Built-in Functions: Excel offers a wide range of pre-defined functions like SUM(), AVERAGE(), COUNT(), MAX(), and MIN() for quick calculations and logic operations.

Array Formulas: You can work with multiple data values in arrays for complex calculations.



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3. Data Handling:

Data Storage: Excel can store large amounts of data, allowing sorting, filtering, and categorizing using tables or ranges.

4. Charting and Visualization:

Charts: You can create bar charts, pie charts, line graphs, and more to visualize data.

Conditional Formatting: Allows setting rules that change the cell format (color, font) based on its value.

5. Integration:

Microsoft Office Suite: Seamless integration with other Microsoft applications like Word and PowerPoint.

7. Security:

Password Protection: You can protect Excel files or specific sheets with passwords.



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Starting Microsoft Excel

After logging on to Windows, the user will be presented with a screen containing a number of different icons. Start Microsoft Excel by clicking the Start button then selecting:

All Programs Microsoft office Microsoft Excel



***** Window Features

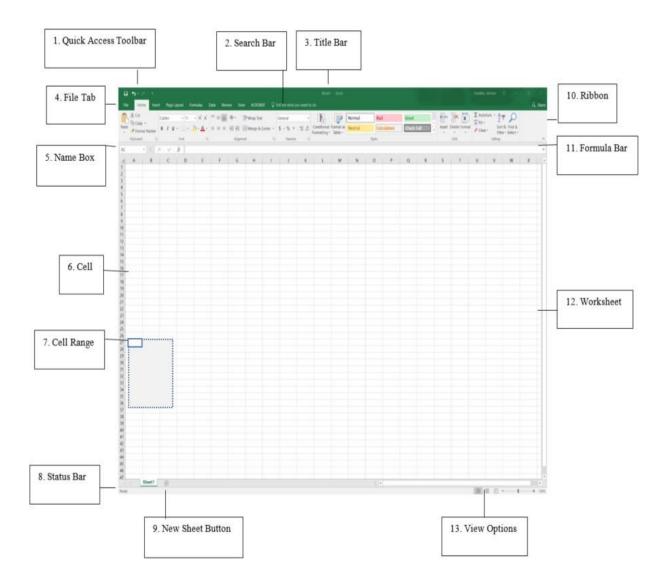
The purpose of the window features is to enable the user to perform routine tasks related to the Microsoft applications. All the Office applications share a common appearance and similar features. The window features provide a quick means to execute commands. Here are some pertinent Excel features:





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Spreadsheet Terms

	Term	Description		
1	Quick Access Toolbar	Displays quick access to commonly used commands.		
2	Search Bar	Advance search will help you find and perform tasks.		
3	Title Bar	Displays the name of the application file.		
4	File Tab	The File tab has replaced the Office button. It helps you to manage the Microsoft application and provide access to its options such as Open, New, Save, As Print, etc.		
5	Name Box	Displays the active cell location.		
6	Cell	The intersection of a row and column; cells are always named with the column letter followed by the row number (e.g. A1 and AB209); cells may contain text, numbers and formulas.		
7	Range	One or more adjacent cells. A range is identified by its first and last cell address, separated by a colon. Example ranges are B5:B8, A1:B1 and A1:G240.		
8	Status Bar	Displays information about the current worksheet.		
9	New Sheet	Add a new sheet button.		
10	Ribbon	Displays groups of related commands within tabs. Each tab provides buttons for commands.		
11	Formula Bar	Input formulas and perform calculations.		
12	Worksheet	A grid of cells that are more than 16,000 columns wide (A-Z, AA-AZ, BA-BZIV) and more than 1,000,000 rows long.		
13	View Option	Display worksheet view mode.		



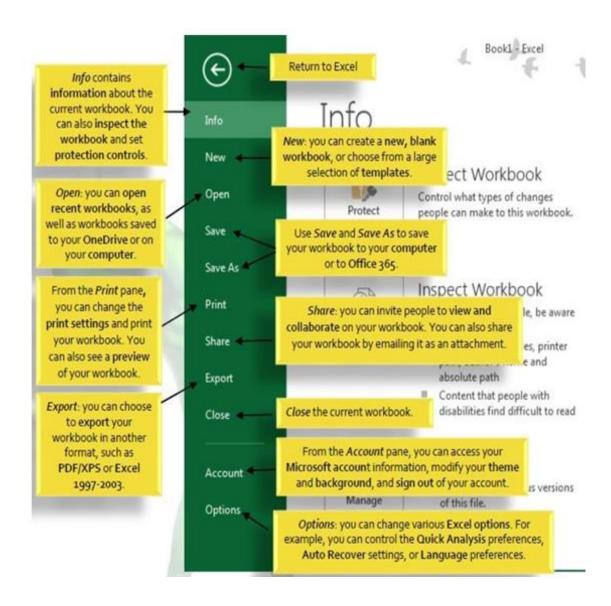


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• The Backstage View (The File Menu)

Click the File tab on the Ribbon. Backstage view will appear.







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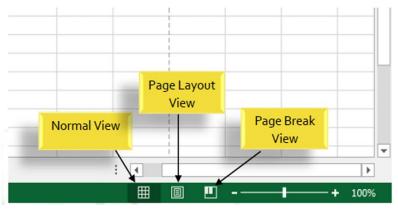
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• The Worksheet Views and Zoom Control

Excel has a variety of viewing options that change how your workbook is displayed. You can choose to view any workbook in Normal view, Page Layout view, or Page Break view. These views can be useful for various tasks, especially if you are planning to print the spreadsheet.

- To change worksheet views, locate and select the desired worksheet view command in the bottom-right corner of the Excel window.
- To use the Zoom control, click and drag the slider. The number to the right of the slider reflects the zoom percentage.



• To insert a new worksheet

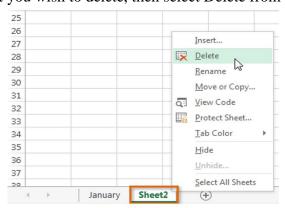
1- Locate and select the new sheet button.



2- A new, blank worksheet will appear.

• To delete a worksheet

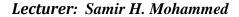
1- Right-click the worksheet you wish to delete, then select Delete from the worksheet menu.



1- The worksheet will be deleted from your workbook.



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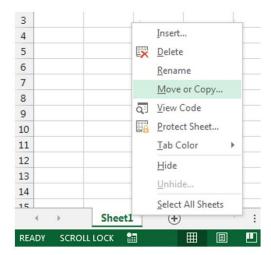




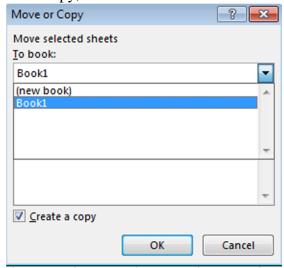
To copy a worksheet

If you need to duplicate the content of one worksheet to another, Excel allows you to copy an existing worksheet.

1- Right-click the worksheet you want to copy, then select Move or Copy from the worksheet menu.



- 2- The Move or Copy dialog box will appear. Choose where the sheet will appear in the before sheet: field. In our example, we well choose (move to end) to place the worksheet to the right of the existing worksheet.
- 3- Check the box next to Create a copy, and then click OK.



4- The worksheet will be copied. It will have the same title as the original worksheet, as well as a version number.



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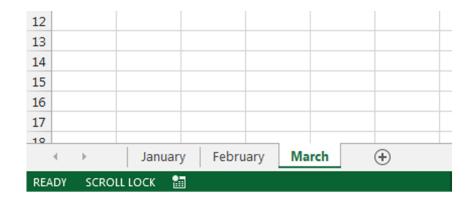
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To move a worksheet

Sometimes you may want to move a worksheet to rearrange your workbook.

- 1- Select the worksheet you wish to move. The cursor will become a small worksheet icon.
- 2- Hold and drag the mouse until a small black arrow appears above the desired location.



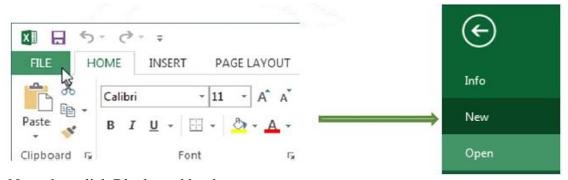
3- Release the mouse. The worksheet will be moved.

• Create a new Blank Workbook

Excel files are called workbooks. Whenever you start a new project in Excel, you'll need to create a new workbook. There are several ways to start working with a workbook in Excel. You can choose to create a new workbook—either with a blank workbook or a predesigned template—or open an existing workbook.

• Create a new blank workbook

1- Select the File tab. backstage view will appear.



- 2- Select New, then click Blank workbook.
- 3- A new blank workbook will appear.



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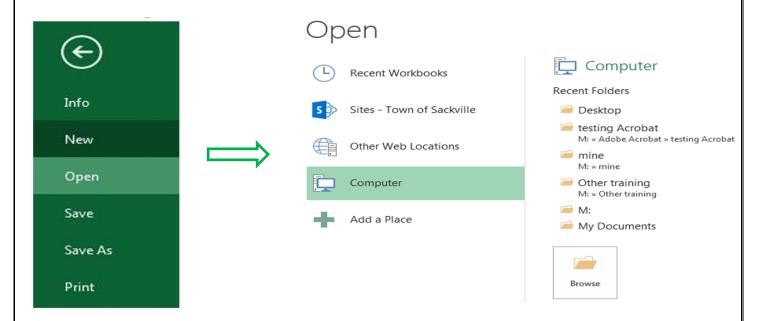
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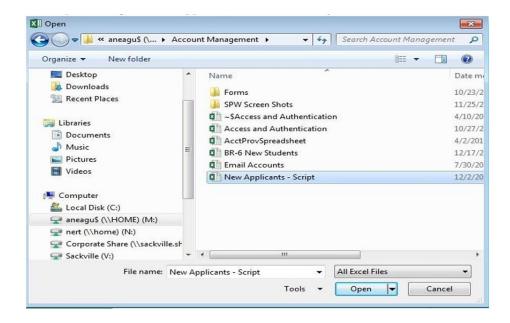
Open an existing workbook

In addition to creating new workbooks, you'll often need to open a workbook that was previously saved.

- 1- Navigate to Backstage view, and then click Open.
- 2- 2- Select Computer, and then click Browse.



3- The Open dialog box will appear. Locate and select your workbook, then click Open.





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Saving and Sharing Workbooks

Whenever you create a new workbook in Excel, you'll need to know how to save it in order to access and edit it later. As with previous versions of Excel, you can save files locally to your computer. But unlike older versions, Excel also lets you save a workbook to the cloud using OneDrive. You can also export and share workbooks with others directly from Excel.

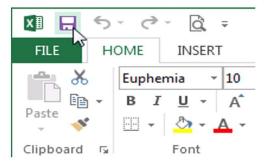
Excel offers two ways to save a file: Save and Save As. These options work in similar ways, with a few important differences:

- 1- Save: When you create or edit a workbook, you'll use the Save command to save your Changes. You will use this command most of the time. When you save a file, you'll only need to choose a file name and location the first time. After that, you can just click the Save command to save it with the same name and location.
- 2- Save As: You'll use this command to create a copy of a workbook while keeping the original. When you use Save As, you'll need to choose a different name and/or location for the copied version.

To save a workbook

It's important to save your workbook whenever you start a new project or make changes to an existing one. Saving early and often can prevent your work from being lost. You'll also need to pay close attention to where you save the workbook so it will be easy to find later.

1- Locate and select the Save command on the Quick Access Toolbar.

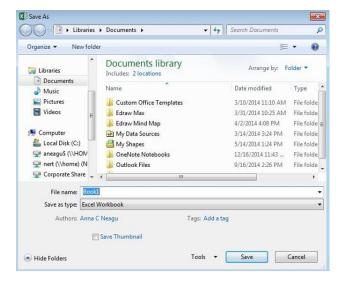


- 2- If you are saving the file for the first time, the Save As pane will appear in backstage view.
- 3- You will then need to choose where to save the file and give it a file name. To save the workbook to your computer, select Computer, and then click Browse. Alternatively, you can click OneDrive to save the file to your OneDrive.
- 4- The Save As dialog box will appear. Select the location where you wish to save the workbook.
- 5- Enter a file name for the workbook, then click Save.





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6- The workbook will be saved. You can click the Save command again to save your changes as you modify the workbook.

• Using Save As to make a copy

If you want to save a different version of a workbook while keeping the original, you can create a copy. For example, if you have a file named "Sales Data" you could save it as "Sales Data 2" so you will be able to edit the new file and still refer back to the original version. To do this, you will click the Save As command in backstage view. Just like when saving a file for the first time, you will need to choose where to save the file and give it a new file name.



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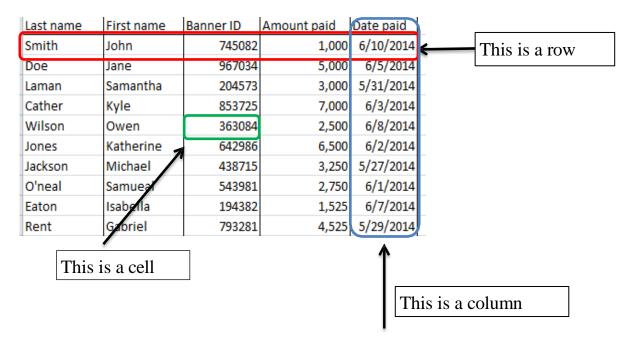


• What is a cell?

A cell, outlined in green below, is an individual block within a table in which you can enter values, such as words or numbers.

What are rows and columns?

Rows, outlined in red below, are a horizontal group of cells. Columns, outlined in blue below, are a vertical group of cells.



Inserting rows and columns

To Add a Row:

1. Select the entire row below where you want to add the new row.

21						
2						
3	Last Name	First Name	Banner ID	Amount	Paid	Date Paid
4	Eaton	Isabella	194382	\$ 1,52	25.50	6/7/2014
5	O'Neal	Samuel	543981	\$ 2,75	0.60	6/1/2014
6	Jackson	Michael	438715	\$ 3,25	0.25	5/27/2014
27	Rent	Gabriel	793281	\$ 4,52	25.75	5/29/2014
8	Cather	Kyle	853725	\$ 7,00	00.30	6/3/2014
	Laman	Samantha	204573	\$ 3,00	0.70	5/31/2014
) -	Jones	Katherine	642986	\$ 6,50	0.35	6/2/2014
1	Smith	John	745082	\$ 1,00	0.95	6/10/2014
2	Doe	Jane	967034	\$ 5,00	00.45	6/5/2014
3	Wilson	Owen	363084	\$ 2,50	0.65	6/8/2014
4						
-						

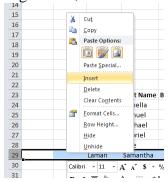


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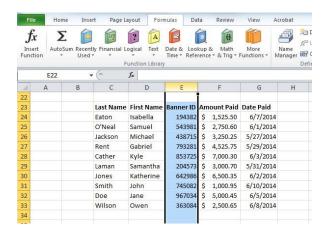


2. Right click, select Insert.

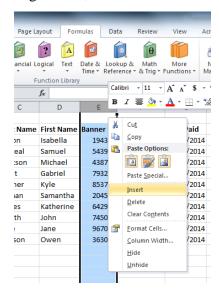


To Add a Column

1. Select the column to the right of where you want to add the new column



2. Right click, select Insert.





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Navigating through your spreadsheet doesn't have to be difficult. Using some very simple keystrokes, you can move from one end of your spreadsheet to the other faster than using the scroll bar.

Moving Between Cells

Use the arrow keys on your keyboard to move from one cell to another

Use the Tab key to move horizontally to the right. Hold the Shift key and press the Tab key to move horizontally to the left.

Use the Enter key to move vertically downward. Hold the Shift key and press the Enter key to move vertically upwards.

Selecting Multiple Cells

To select a range of data:

- 1. Select the first cell in the data range.
- 2. Hold the Shift key.
- 3. Select the last cell in the data range. OR

Select the beginning range of data, drag the cursor to select the range of data

Selecting Entire Rows and Columns

Excel organizes a data sheet by numbering the rows and lettering the columns. To select an entire row:

Select the number of the row

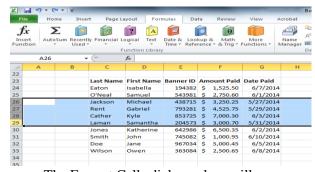
To select an entire column:

Select the letter of the column.

Selecting Multiple Rows and Columns

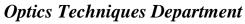
To select multiple rows or columns

- 1. Select the entire first row
- 2. Hold the Shift Key
- 3. Select the entire last row of the range of data



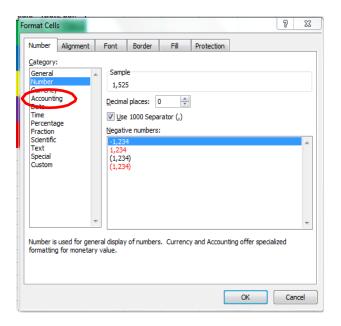
The Format Cells dialogue box will appear



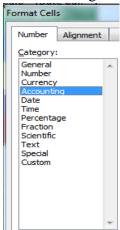




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To convert a numeric value into an accounting value: Select Accounting from the list of Categories.



Click Ok.

Last Name	First Name	Banner ID	Am	ount Paid	Date Paid
Eaton	Isabella	194382	\$	1,525.50	6/7/2014
O'Neal	Samuel	543981	\$	2,750.60	6/1/2014
Jackson	Michael	438715	\$	3,250.25	5/27/2014
Rent	Gabriel	793281	\$	4,525.75	5/29/2014
Cather	Kyle	853725	\$	7,000.30	6/3/2014
Laman	Samantha	204573	\$	3,000.70	5/31/2014
Jones	Katherine	642986	\$	6,500.35	6/2/2014
Smith	John	745082	\$	1,000.95	6/10/2014
Doe	Jane	967034	\$	5,000.45	6/5/2014
Wilson	Owen	363084	\$	2,500.65	6/8/2014



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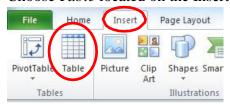
Tables

A table is a way of formatting data so that data may be sorted. Tables also display rows in alternating colors to make the data easier to read.

Choosing a Table Style to Create a Table

To Choose a Table Style:

- 1. Select the range of cells to include in the table.
- 2. Choose *Table* located on the Insert tab.



The Create Table dialogue box will appear.

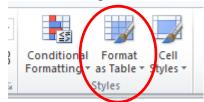


If you selected a range of data to include in the table, the table contents will already be populated in the *Where is the data for you table* field.

To include headers in the table, select the My Table has Headers checkbox.

To Create a Table from the Home Tab:

- 1. Select the range of cells to include in the table.
- 2. Select Format as Table.
- 3. Follow the steps listed above to create a table.





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Adjust the Table Style

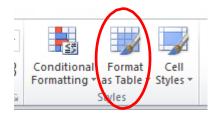
Select the table, and choose the *Table Style* located on the Design tab.



Creating or Deleting a Custom Table Style

To Create a Custom Table:

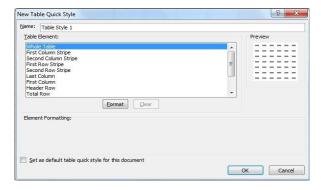
- 1. Select your data
- 2. Choose Format as Table.



3. Select *New Table Style* at the bottom of the dropdown menu.



The New Table Quick Style dialogue box will appear.





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4. Select any of the table elements to format the table as desired.

The Preview box allows you to view the table before completing formatting changes. Select OK to apply the table to your data.

To Set this Table as a Default Table:

1. Select the Set as default table quick style for this document option

To Delete a Custom Style:

- 1. Select Format as Table.
- 2. Find the custom style located within the *Custom* section
- 3. Right click on the style, select *Delete*.



Removing a Table Style

To Remove a Table Style from and Existing Table:

- 1. Select the contents of the table.
- 2. Choose the *More* button.



3. Choose Clear.



This will clear the table style but the data will still remain in a table format



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Mouse Pointer Styles

The Excel mouse pointer takes on many different appearances as you move around the spreadsheet. The following table summarizes the most common mouse pointer appearances:

Pointer	Example	Description
¢	4	The white plus sign will select a single cell to enter data, retype data or delete text from the selected cell. This pointer is also useful for selecting a range of cells.
Ø		The white arrow will drag the contents of the selected cell to a new location (drag and drop).
+	<u></u>	The black plus sign activates the fill handle of the selected cell and will fill the adjoining cells with some type of series, depending on the type of data (e.g., a formula or date) is in the beginning cell.

Spreadsheet Navigation

The following table provides various methods to navigation around a spreadsheet.

Method	Description	
mouse pointer	Use the mouse pointer 🗔 to select a cell.	
scroll bars	Use the horizontal and vertical scroll bars to move around the spreadsheet to view columns and rows not currently visible. Click the mouse pointer once the desired cell is visible.	
arrow keys	Use the left \leftarrow , right \rightarrow , up \uparrow , and down \downarrow arrows to move accordingly among cells.	
Enter	Press the Enter key to move down one cell at a time.	
Tab	Press the Tab key to move one cell to the right.	
Ctrl+Home	Moves the cursor to cell A1.	
Ctrl+End	Moves the cursor to the last cell of used space on the worksheet, which is the cell at the intersection of the right-most used column and the bottom-most used row (in the lower-right corner).	
End + arrow key	Moves the cursor to the next or last cell in the current column or row which contains information.	



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Basic Steps for Creating a Spreadsheet

When creating a spreadsheet, it is recommended to do the following steps:

- 1. Made a draft of your spreadsheet idea on paper.
- 2. Inter the data from your draft onto the actual spreadsheet.
- 3. Format your data after entering onto the spreadsheet.
- 4. Calculate data by using mathematical formulas.
- 5. Save the document.
- 6. Preview and Print the spreadsheet.

***** Enter and Format

Data Create Spreadsheet

1. Illustration of spreadsheet to be completed in exercise below:

Budget for Guest Speakers				
Item	Fall	Spring	Summer	Annual
Research	20	20	10	50
Correspondence/Communication	30	30	15	75
Publicity	50	50	25	125
Honorariums	500	500	250	1250
Travel	750	750	325	1825
Lodging	300	300	150	750
Total	\$1,650.00	\$1,650.00	\$ 775.00	\$4,075.00

2. Open Excel Practice File.xlsx, and then click on the Budget sheet

tab. Budget / Copy / Account / Loan / Percentage / Invoice

(The instructor will indicate the location for this file.)

- a. Select cell A1, and then type Budget for Guest Speakers.
- b. Select cell A3, type Item, and then press the Tab key.
- c. Select cell **B3**, type **Fall**, and then press the **Tab** key.
- d. Select cell C3, type Spring, and then press the Tab key.
- e. Select cell **D3**, type **Summer**, and then press the **Tab** key.
- f. Select cell E3, type Annual, and then press the Tab key.





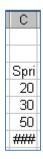
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Adjust Column Width

Initially all columns have the same width in a spreadsheet. Often you will need to make columns wider or narrower. For example, a long text entry in one cell will be cut off/truncated when the cell to its right contains any information. Likewise, numbers will appear as pound symbols ### when larger than cell width. There are several ways to modify column width.

method	Description
dragging method A + B C Budget for Guest Speakers	Move the cursor up to the column heading area and point to the vertical line to the right of the column that you want to change. When the cursor becomes a "plus sign" with horizontal arrows, press the mouse button and drag in either direction to resize the column. Release the mouse button to accept the new size.
double click to auto fit	Move the cursor up to the column heading area and point to the vertical line to the right of the column that you want to change. When the cursor becomes a "plus sign" with horizontal arrows, double click to AutoFit this one column.
AutoFit a range	Use the mouse to select the range of cells that needs to be adjusted and on the Home ribbon in the Cells group, choose Format , and the select the AutoFit Column Width option.

- 1. **Increase** the width of **column A** via the dragging method so that all text entries are visible.
- 2. **Decrease** the width of **column C** via the dragging method until pound symbols ### appear.



3. **Increase** the width of **column C** to return to its original size.



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Type Text and Numbers

Use the plus sign mouse pointer to select a cell then begin typing in that cell to enter data. If there is existing text/data in a cell, the new text will replace the existing text. Press the **Enter** or **Tab** key after typing text in a cell.

1. Type the following text and numbers in rows 10 and 11:

10	Food	90	90	45
11	Total			

Undo and Redo

Use the **Undo** button to undo (reverse) previous actions in reverse sequence. Choose this option immediately after performing an unwanted action. Note that Undo is not available for all commands. The **Redo** button will restore the process that was just undone.

- 1. Click on the **Undo** button. The last item that you typed is removed from the spreadsheet.
- 2. Click on the **Redo** button. The text that you removed with Undo should be replaced.



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Insert and Delete Rows and Columns

Insert rows and columns to add information between existing rows or columns of information.

Procedure	Description
Add Row	Select any cell of the row where you desire to add a new row above. On the Home ribbon in the Cell group, click on the Insert button, and then select Insert Sheet Rows . A new roll will appear above your selected cell row.
Add Column	Select any cell of the column letter where you desire to add a new column to the left. On the Home ribbon in the Cell group , click on the Insert button, and then select Insert Sheet Columns . A new column will appear to the left of your selected column.
Delete Row or Column	Select any cell where you desire to delete a row or column. On the Home ribbon in the Cell group, click on the Delete button, and then selected Delete Sheet Rows or Delete Sheet Columns . The row or column where the cell was selected will be deleted.

- 1. Select any cell in **column C**.
- 2. On the **Home** ribbon in the **Cell** group, click on the **Insert** drop-down arrow, and then select **Insert Sheet Columns**. A new column will appear to the left of your selected column.
- 3. Click the **Undo** button.
- 4. Select any cell in **row 6**.
- 5. On the **Home** ribbon in the **Cell** group, click on the **Insert** drop-down arrow, and then select **Insert Sheet Rows**. A new roll will appear above your selected cell row.
- 6. Select cell **A6**, and then type **Photocopy Services**.
- 7. Press **Tab** and complete the additional columns as follows:

В	С	D
75	65	30



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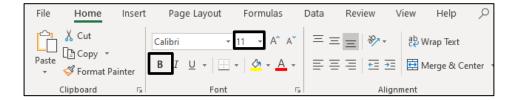
Text and Number Alignment

Microsoft Excel aligns data in a cell in three ways; left, center, and right. Also, a range of cells can be merged into one cell; this is good for text titles. The default text alignment is left, and the default number alignment is right. Alignment can be changed by using the alignment $\equiv \equiv \equiv$ icons located on the **Home** ribbon in the **Paragraph** group. Select a range before changing alignment to more than one cell at a time.

- 1. Select cell **A3**, and then click on the **Center** alignment button, located on the **Home** ribbon.
- 2. Select the range **B3:E3**, and the click on the **Center** alignment button, found on the **Home** ribbon.
- 3. Select the range A1:E1, and then click on the Merge & Center button, found on the Home ribbon.

Format Fonts

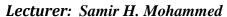
Character formats include changing the font, point size, and style of text or numbers. The fastest way to change fonts is to use the associated buttons on the **Home** ribbon:



- 1. Select cell **A1**, and Increase the point size for the title, by clicking on the drop- down arrow on the **Font size** button.
- 2. Select cell range A3:E3, and then click on the Bold button to bold text.



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Format Numbers

Excel gives many types of numeric formats including currency, percent, comma, scientific, etc. On the **Home** ribbon, the numeric formats are in the **Number** group. Select the drop-down arrow next to **General** to view all format types. Select a range of cell/s before choosing format. In fact, this range can include cell/s that does not yet hold data.



- 1. Select the cell range **B4:E12**.
- 2. Click on the **Comma** button, found on the **Home** ribbon.
- 3. With that same range selected, click on the **Currency** button, found on the **Home** ribbon.
- 4. To display only dollars and no cents, click on the **Decrease Decimal** button, located on the **Home** ribbon.



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Cut, Copy, and Paste Text

Avoid retyping in Excel by moving or copying text and formulas. The following list includes commands and definitions involved in cut, copy, and paste.

Command		Description
Cut	Ж	Removes the selected text from the document and places it in the clipboard (a temporary holding place for the item that has been cut or copied).
Сору		Places a copy of the selected text in the clipboard and leaves the selected text unchanged.
Paste	Paste	Places text from the clipboard in the document where the active cell is located.

Suppose you want to show an identical budget for an additional year. In this exercise, you will copy data in cell range A3:E13, then paste it to sheet2.

- 1. Select cell range A3:E13.
- 2. Click on the **Copy** button, found on the **Home** ribbon.
- 3. Click on the **Copy sheet** Budget Copy Account Loan Percentage Invoice tab.
- 4. **Select** cell **A3**, and then click on the **Paste** button, found on the **Home** ribbon.
- 5. Click on the **Undo** button to clear data from spreadsheet. This sheet will be used again for another exercise.

Print a Spreadsheet

Click on the **File** tab and select the **Print** option. Preview your spreadsheet on the right- hand side of the File screen. If you are satisfied with the preview, click the **Print** button, otherwise click on the Home tab to return to the document and edited document.

Exit Excel

When you are finished using Excel, use click on the **File** tab, and select the **Exit** option or click on the Close button in the upper right-hand corner of the Excel window. If your file has recently been saved, Excel will exit promptly. However, if the file needs to be saved before quitting, Excel will prompt you to save.