

Create and Modify Tables



Excel 2021

Tables

- **Definition:** A table is a dataset of contiguous rows and columns treated as a single object by Excel.
- **Functionality:** Tables provide tools to organize, display, and calculate data efficiently while keeping the raw data intact.
- **Creation:** You can convert existing ranges into tables, create empty tables to populate later, or revert tables back to ranges.
- **Naming:** Excel automatically assigns generic names (e.g., Table1, Table2), but you can rename tables for easier reference.
- **Flexibility:** Tables can be expanded to include new data, and you can insert or delete rows and columns as needed.

	A	B	C	D	E
1	Salesperson ▾	Employee ID ▾	Start Date ▾	Years w/ Co. ▾	Annual Sales ▾
2	Ernestine	1002	2/25/2005	16.48	\$432,653
3	Becky	1001	11/13/2001	19.77	\$547,089
4	Noah	1007	7/6/2013	8.12	\$395,263
5	Bernice	1010	11/13/2005	15.76	\$620,444
6	Maurice	1008	9/6/2013	7.95	\$392,224
7	Winston	1004	12/13/2004	16.68	\$321,015
8	Glenn	1003	11/11/2009	11.77	\$529,591
9	Monique	1005	1/2/2003	18.63	\$534,560
10	Rosie	1009	3/24/2010	11.40	\$428,643
11	Jack	1006	6/19/2006	15.17	\$481,062

Table Components

There is a basic set of table components that Excel tables can, but don't necessarily have to, contain. By default, Excel tables contain a header row and appear with banded rows. You can toggle the display of these and other components on or off to suit your needs and to provide access to or suppress various functionality.

The image shows an Excel table with the following data:

	A	B	C	D	E	F
1	Quarter	Region	Product Name	Quantity	Price	Total Sales
2	Q3	Midwest	Cameras	431	\$281	\$121,111
3	Q3	Midwest	Desktops	104	\$547	\$56,888
4	Q3	Midwest	Laptops	409	\$727	\$297,343
5	Q3	Midwest	Printers	277	\$257	\$71,189
6	Q3	Northeast	Cameras	406	\$285	\$115,710
7	Q3	Northeast	Desktops	475	\$472	\$224,200
8	Q3	Northeast	Laptops	127	\$593	\$75,311
9	Q3	Northeast	Printers	468	\$257	\$120,276
10	Q3	Southeast	Cameras	413	\$279	\$115,227
11	Q3	Southeast	Desktops	144	\$498	\$71,712
12	Q3	Southeast	Laptops	311	\$743	\$231,073
13	Q3	Southeast	Printers	328	\$219	\$71,832
14	Q3	Southwest	Cameras	246	\$284	\$69,864
15	Q3	Southwest	Desktops	317	\$436	\$138,212
16	Q3	Southwest	Laptops	494	\$639	\$315,666
17	Q3	Southwest	Printers	463	\$235	\$108,805
18	Q3	West	Cameras	180	\$287	\$51,660
19	Q3	West	Laptops	487	\$558	\$271,746
20	Q3	West	Printers	339	\$208	\$70,512
21	Q3	West	Desktops	327	\$668	\$218,436
22	Total					\$2,816,773

Callouts in the image:

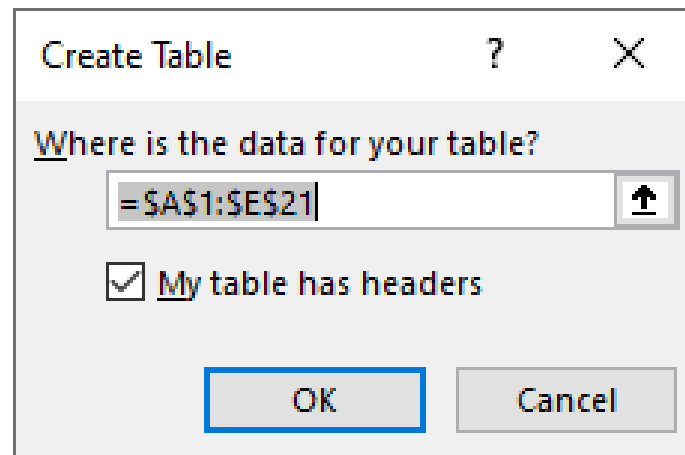
- Header row drop-down arrow**: Points to the dropdown arrow in cell A1.
- Calculated column**: Points to the formula bar showing `=[@Quantity]*[@Price]`.
- Header row**: Points to row 1.
- Total row**: Points to row 22.
- Sizing handle**: Points to the bottom-right corner of the table.

Table Components

Excel Table Component	Description
Header row	Displays column labels for the table and provides you with access to some of Excel's table-organization functionality.
Header row drop-down arrow	Displays a drop-down menu that provides you with access to sorting and filtering commands you can use to organize and change the display of your table data.
Total row	Displays the results of column-specific calculations. The drop-down arrow provides you with access to some of Excel's built-in table summary function capabilities, as well as other functions for performing calculations on table-column data.
Calculated column	Enables you to enter a formula in one cell and have the formula be instantly applied to the remainder of cells in the column.
Sizing handle	Enables you to manually increase or decrease the size of a table. Generally speaking, changing the size of an Excel table does not affect the entries in any of the cells you either add to or remove from the table. But, cell formatting is affected. For example, if you add cells to a table by using the sizing handle to increase the size of a table, the new cells inherit the table's formatting. If you remove those same cells from the table using the sizing handle, the formatting reverts. This only applies, however, to the table's formatting; formatting you manually added to the cells may not change.

The Create Table Dialog Box

- **Purpose:** Converts a simple range of data into a structured Excel table.
 - **Functionality:**
 - Confirms or adjusts the selected range to be converted.
 - Lets you choose whether the top row should be treated as a header row (recommended if column labels are present).
 - **Access:** Available via Insert → Table.
 - **Alternative method:** Home → Format as Table lets you pick a table style first, then confirm the data range.
 - **Difference:** The only distinction is that *Format as Table* applies a style during creation, while *Insert → Table* focuses on structure first.
- In short, the Create Table dialog box provides a straightforward way to transform ranges into tables, while Format as Table adds the option to style them immediately.



The Table Design Contextual Tab



Table Design Contextual Tab Group

Contains Commands or Options For

Properties

Resizing and naming worksheet tables. This group also displays the name of the currently selected table.

Tools

Removing duplicate values from tables; converting tables back into ranges; creating PivotTables out of tables; and adding filtering objects, known as slicers, to tables.

External Table Data

Exporting table data to external applications and managing data links with external sources.

Table Style Options

Toggling the display of table components on or off.

Table Styles

Applying styles to Excel tables.

Table Styles and Quick Styles

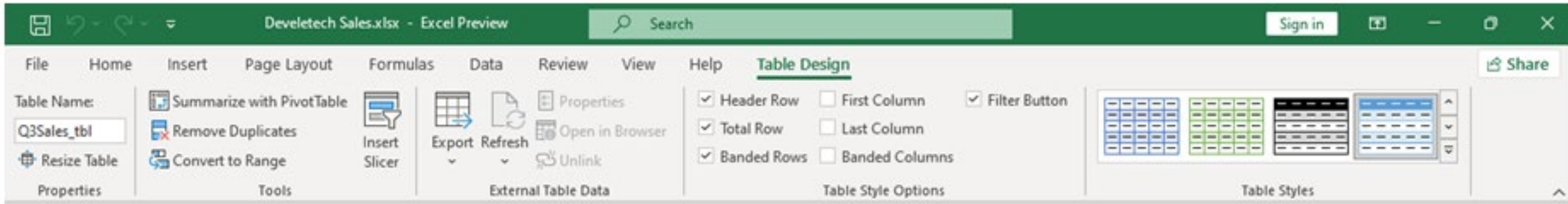
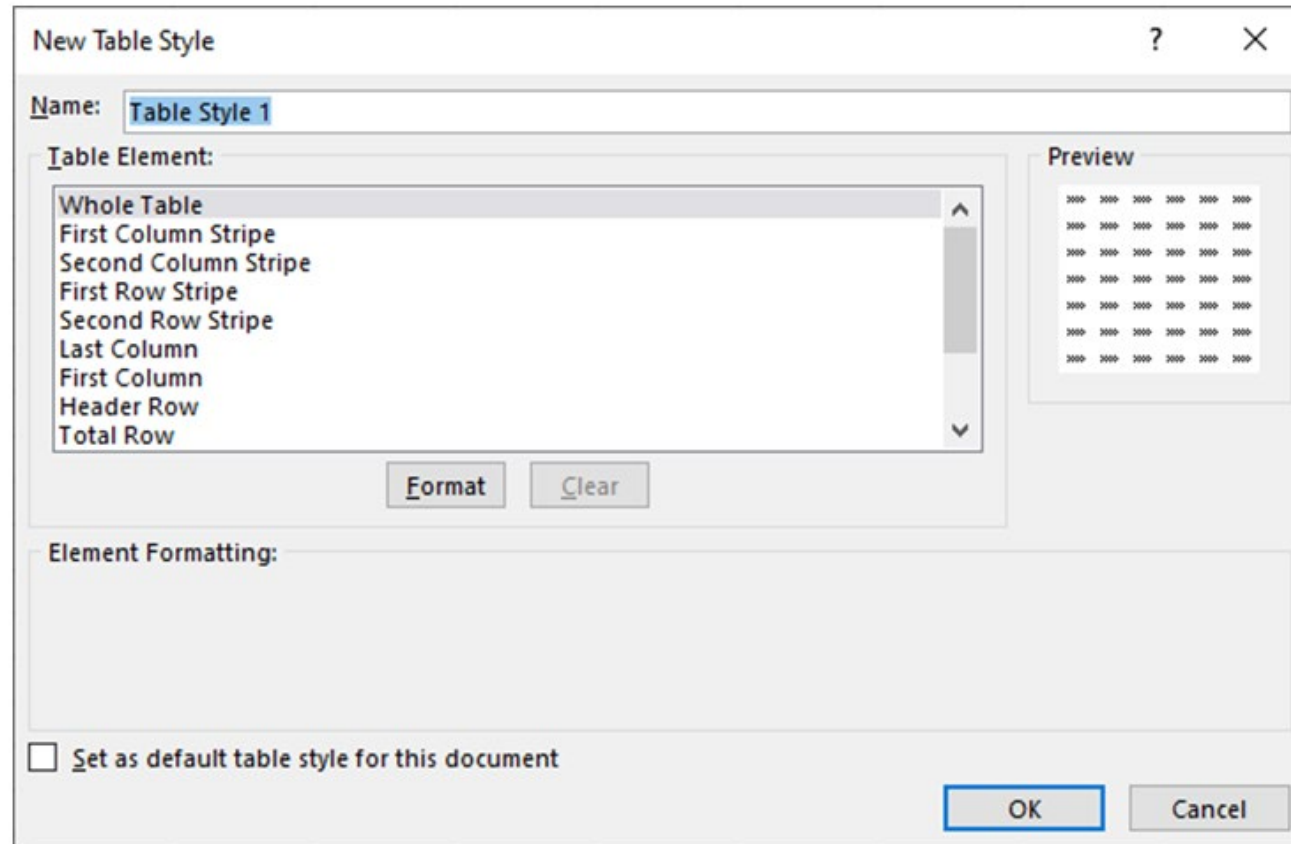



Table Style Option	Description
Banded Rows	Makes it easier to view individual rows of data by applying different formatting to alternating table rows.
Banded Columns	Makes it easier to view individual columns of data by applying different formatting to alternating table columns.
First Column	Sets off the display of the first column of data by applying specific formatting (typically bold) to it.
Last Column	Sets off the display of the last column of data by applying specific formatting (typically bold) to it.

The New Table Style Dialog Box

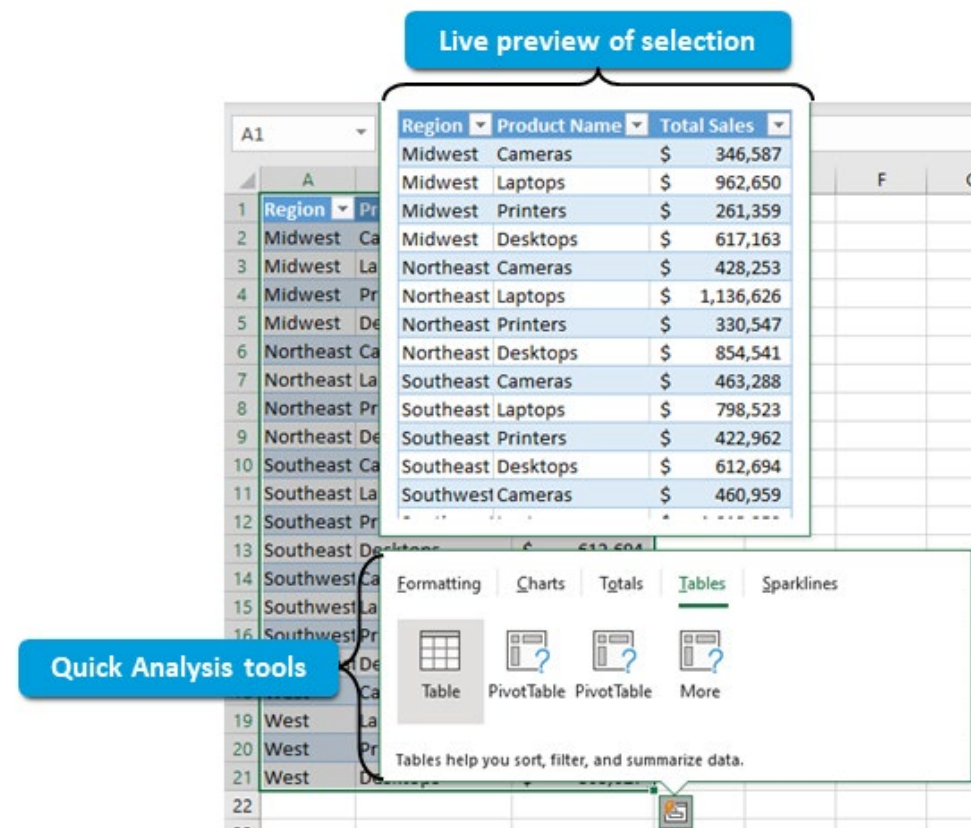
You can use the **New Table Style** dialog box to create and save custom table styles. From here, you can select which table component you wish to apply formatting to; access the **Format Cells** dialog box to configure the desired font, border, and fill formatting; and name and save your custom styles. To access the **New Table Style** dialog box, on the **Table Design** contextual tab, in the **Table Styles** group, select the **Table Styles** gallery's **More** button, and then select **New Table Style**.



Quick Analysis

You've likely already noticed the little icon  that appears whenever you select multiple populated cells, or a combination of populated and empty cells, on your worksheets. This icon is the Quick Analysis button, which provides you with access to a set of commands for quickly performing a variety of common data-analysis tasks. Among these is the ability to quickly convert a range to a table.

Quick Analysis Gallery Tab	Contains Commands For
Formatting	Applying conditional formatting to the current selection.
Charts	Creating charts out of the current selection.
Totals	Automatically inserting various functions to perform calculations on the current selection.
Tables	Converting the current selection to a table or inserting a PivotTable.
Sparklines	Inserting graphical data-analysis objects into the selected cells, based on their values.



Activity 17.Create and Modify Tables

Activity 18.Using Summary Functions in Tables

Apply Intermediate Conditional Formatti



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Custom Conditional Formats

In addition to the preconfigured conditional formatting options available in Excel 2021, you have the option of creating completely custom conditional formats to suit your needs. The tools available in Excel enable you to create specific rules you can use to apply conditional formatting and to tailor the display of conditionally formatted cells using an incredible array of options.

You can start with one of Excel's pre-formatted options and then adjust it to better suit your needs. Or, you can create sets of rules and formatting options completely from scratch.

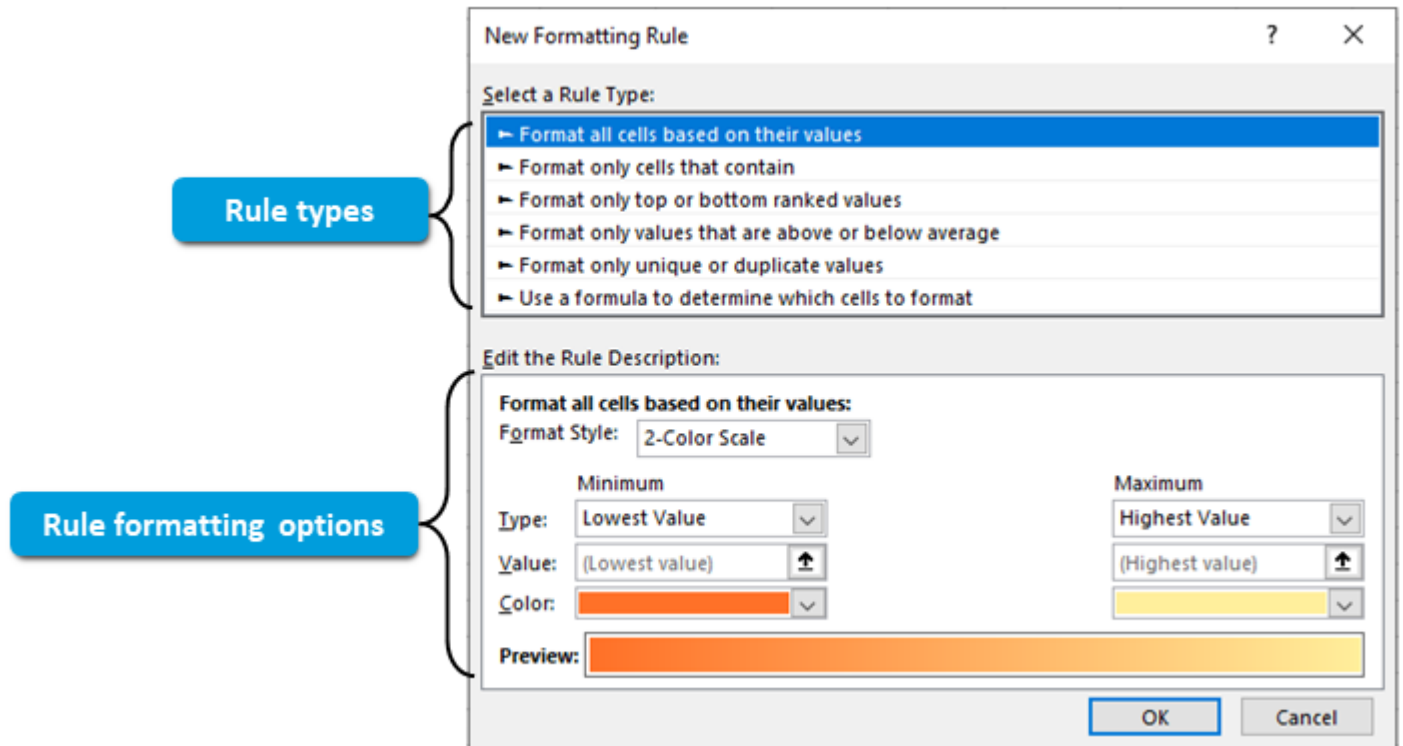
In addition to the built-in cell formatting options and the data bars, color scales, and icon sets, you can use nearly any of Excel's cell formatting options, such as number, font, and border formatting, to format cells that meet the conditions you set. The only cell formatting options not available for use as conditional formats are those on the **Alignment** and **Protection** tabs in the **Format Cells** dialog box.

The New Formatting Rule Dialog Box

The **New Formatting Rule** dialog box enables you to create fully customized conditional formatting rules and to customize the display of cells that meet the given criteria. The dialog box is divided into two sections: the **Select a Rule Type** list and the **Edit the Rule Description** section.

- The dialog box is accessible by selecting **Home → Conditional Formatting → New Rule**.

The **Edit the Rule Description** section displays the commands and options you will use to configure the parameters of whichever rule you select and to customize the display of cell formatting. The commands and options that appear in this section vary dramatically, depending on the rule type you select in the **Select a Rule Type** list. Typically, you will be presented with options for setting the particular values or content types Excel will use as thresholds/identifiers to apply the selected formatting.



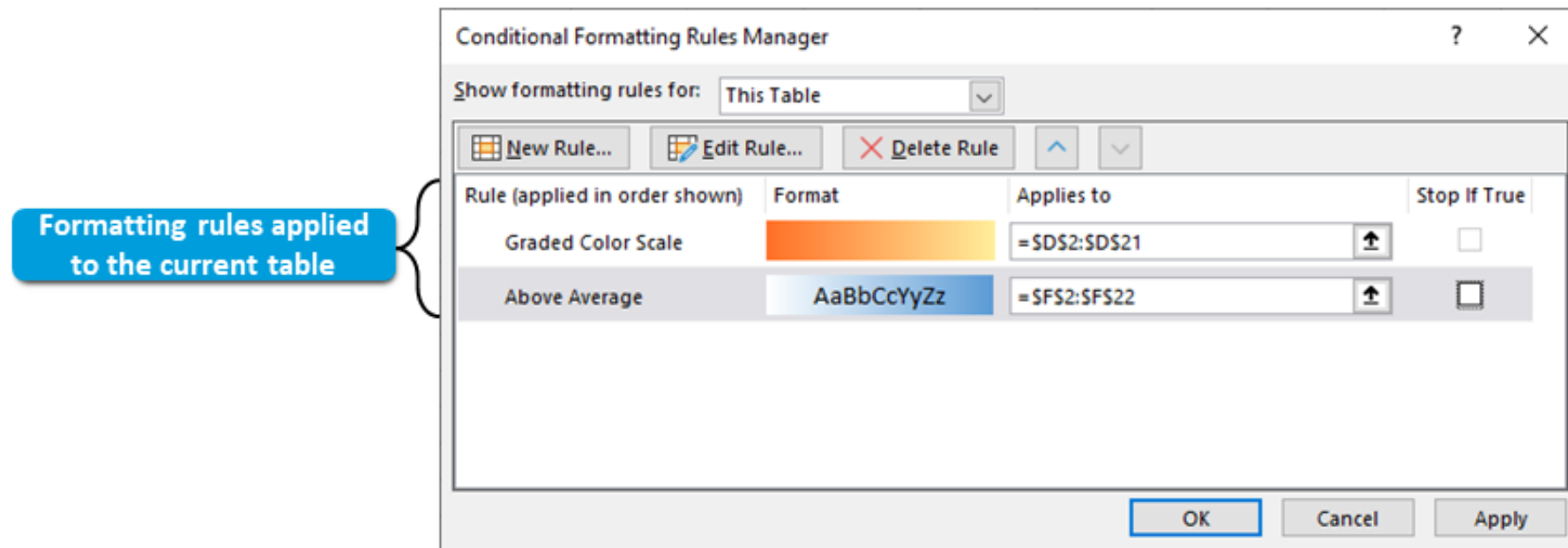
The New Formatting Rule Dialog Box

Rule Type	Will Apply Formatting to Cells
Format all cells based on their values	Based on the relative values of the data in a range. This is the same rule type used by data bar, color scale, and icon set conditional formatting.
Format only cells that contain	Based on both the type of data contained in a specified range and the specific values. You can use this rule type to format cells based on criteria such as numerical values, specific text entries, particular dates, or cell errors.
Format only top or bottom ranked values	Containing values that fall within a specified percentage of the top or bottom range of values. For example, you can apply formatting to the top 5 percent of values or the bottom 22 percent of values.
Format only values that are above or below average	Containing values that are either above or below the average value of all data in the selected range. You can also use this rule type to apply formatting to values that fall either above or below the first, second, or third standard deviation.
Format only unique or duplicate values	Containing data that is either unique in the specified range or that duplicates values in other cells in the specified range.
Use a formula to determine which cells to format	That pass a logical test specified by a formula or function.

The Conditional Formatting Rules Manager Dialog Box

You can use the **Conditional Formatting Rules Manager** dialog box to add, delete, edit, and manage conditional formatting rules in your workbooks. The dialog box contains a number of commands, components, and options that provide you with a high level of control over your conditional formatting rules. From here, you can simultaneously manage all conditional formatting rules present in an entire workbook.

- You can access it by selecting **Home** → **Conditional Formatting** → **Manage Rules**.



The Conditional Formatting Rules Manager Dialog Box

Conditional Formatting Rules Manager Dialog Box Element	Description
Show formatting rules for drop-down menu	Enables you to select which workbook element to display applied formatting rules for. This can be for the currently selected range of cells, for any of the worksheets in the workbook, and for particular objects like tables.
New Rule button	Opens the New Formatting Rule dialog box, which you can use to create a new conditional formatting rule.
Edit Rule button	Opens the Edit Formatting Rule dialog box, which enables you to edit the currently selected rule. This is essentially the same as the New Formatting Rule dialog box, only you use it to edit existing conditional formatting rules.
Delete Rule button	Deletes the currently selected rule.
Move Up and Move Down buttons	Use these to change the order of rule precedence.
Rule (applied in order shown) column	Displays all of the specific rules applied to the selection in the Show formatting rules for drop-down menu.
Format column	Displays a preview of the specific formatting associated with each rule.
Applies to column	Displays the cell or range to which each rule applies.
Stop If True check boxes	Enables you to select how far down the list of displayed rules to stop applying formatting. You use this feature if you need to open a workbook in an earlier version of Excel that does not support the same type or the same number of conditional formatting rules. For example, if you have five conditional formatting rules applied to a particular worksheet, but you have the workbook containing that worksheet open in an older version of Excel that supports only three rules, you could check the Stop If True check box for the third rule to tell Excel to apply only the top three rules.

Rule Precedence

The **Conditional Formatting Rules Manager** dialog box displays all rules applied to the selection in the **Show formatting rules for** drop-down menu in order of rule precedence. This is the order in which Excel evaluates and applies conditional formatting to the cells. Rules that appear above other rules have a higher precedence.

The screenshot shows the Conditional Formatting Rules Manager dialog box for 'This Worksheet'. It lists two rules:

Rule (applied in order shown)	Format	Applies to	Stop If True
Cell Value > 5000	AaBbCcYyZz (Red fill)	=B\$4:\$E\$6	<input type="checkbox"/>
Cell Value > 4000	AaBbCcYyZz (Blue fill)	=B\$4:\$E\$6	<input type="checkbox"/>

Annotations in the image:

- A blue callout box labeled "Rule with higher precedence" points to the top rule (Cell Value > 5000).
- A blue callout box labeled "Rule with lower precedence" points to the bottom rule (Cell Value > 4000).

- Here, most cells meet the criteria for the rule applying blue fill formatting, but only two cells meet the criteria for the red fill formatting. As the red fill formatting rule has precedence, the red fill appears in cells that meet its rule's condition.

Activity 19. Applying Intermediate Conditional Formatting

Apply Advanced Conditional Formatting

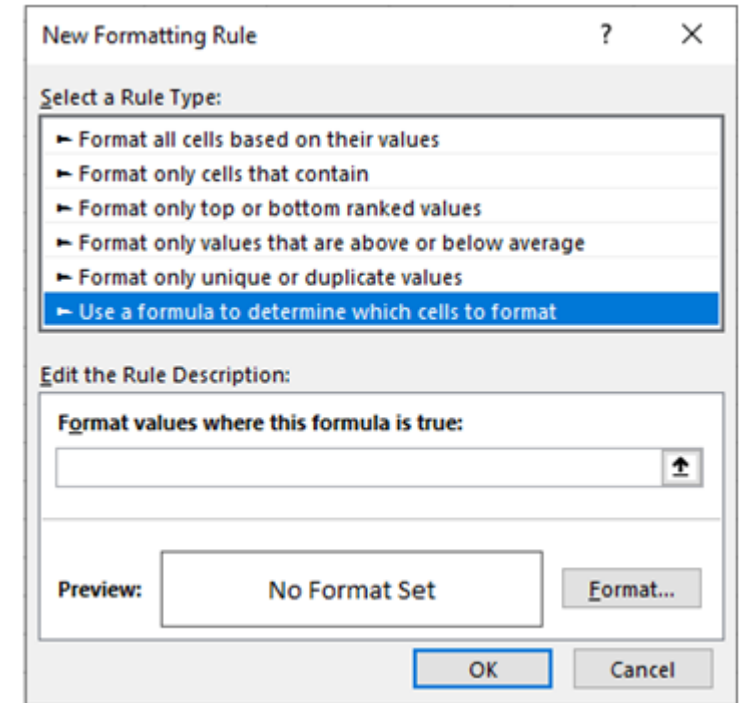
 Microsoft



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The Use a Formula to Determine Which Cells to Format Rule

Excel enables you to define your own custom rules for the application of conditional formatting. This option is, essentially, an IF function that Excel uses to determine which cells to apply formatting to. Excel treats any formula or function you enter in the **Format values where this formula is true** field like the **logical_test** argument in a standard IF function. The difference here is that the **value_if_true** argument is the application of the specified conditional formatting, whereas the **value_if_false** argument is not applying the specified formatting.



	A	B	C	D	E
1	Salesperson	Employee ID	Start Date	Years w/ Co.	Annual Sales
2	Ernestine	1002	2/25/2005	16.48	\$432,653
3	Becky	1001	11/13/2001	19.77	\$547,089
4	Noah	1007	7/6/2013	8.12	\$395,263
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9	Monique	1005	1/2/2003	18.63	\$534,560
10	Rosie	1009	3/24/2010	11.41	\$428,643
11	Jack	1006	6/19/2006	15.17	\$481,062
12					
13					
14					
15					

Select a Rule Type:

- Format all cells based on their values
- Format only cells that contain
- Format only top or bottom ranked values
- Format only values that are above or below average
- Format only unique or duplicate values
- Use a formula to determine which cells to format**

Edit the Rule Description:

Format values where this formula is true:

=SES2 < 500000

Preview: AaBbCcYyZz

OK Cancel

An example of highlighting the sales rep's name if their annual sales were less than \$500,000.

Cell References and Conditional Formatting

Excel provides you with several options for applying a conditional formatting rule to more than one cell, row, or column at a time. You can select the entire range to which you wish to apply the formatting before defining the rule, or you can use the **Format Painter** or the **Paste Special** options to copy and paste the formatting to other cells once you've already defined the rule.

You attempted to use conditional formatting to highlight salespeople with more than 10 years at the company. The rule was created for the first cell and then copied down the column using the Format Painter. However, all names were highlighted incorrectly because the formula referenced cell **D2** as an absolute reference. Excel applied that same fixed cell to every row. The solution is to change the formula to use a **relative reference** (so each row checks its own value), and then reapply the formatting with the Format Painter.

	A	B	C	D	E
1	Salesperson	Employee ID	Start Date	Years w/ Co.	Annual Sales
2	Ernestine	1002	2/25/2005	16.48	\$432,653
3	Becky	1001	11/13/2001	19.77	\$547,089
4	Noah	1007	7/6/2013	8.12	\$395,263
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12					
13					
14					
15					

Select a Rule Type:

- Format all cells based on their values
- Format only cells that contain
- Format only top or bottom ranked values
- Format only values that are above or below average
- Format only unique or duplicate values
- Use a formula to determine which cells to format**

Edit the Rule Description:

Format values where this formula is true:

=D2 > 10

Preview: **AaBbCcYyZz**

OK Cancel

Guidelines for Applying Conditional Formatting to Cells Based on Values in Other Cells

Although you can use formulas and functions to apply conditional formatting to wide ranges of data, when doing so based on data in other cells, you must keep absolute and relative references in mind. Excel treats all conditional formatting rules applied in this manner as if they were entered into a single cell and then dragged across the rest of the range. When applying conditional formatting to cells based on data stored in other cells:

- You must use a formula or a function to define the conditional formatting rule.
- You must enter the formula or function in the **Format values where this formula is true** field in the **New Formatting Rule** dialog box.
- The formula or function must begin with an equal sign (=).
- If you are applying the rule to a single cell, you can use either a relative or an absolute reference to the evaluated cell in the formula or function.
- If you are applying the rule to multiple cells in a single column and the rule will be evaluating the data in only a single cell, you must use an absolute reference to the evaluated cell in the formula or function.
- If you are applying the rule to multiple cells in a single column and the rule will be evaluating the associated data stored in multiple rows in another column, you must use a mixed reference that locks the column for the evaluated cells, but that is relative for rows, in the formula or function.
- If you are applying the rule to a range that includes multiple rows and columns and the rule will be evaluating the associated data stored in a single cell, you must use an absolute reference for the evaluated cell in the formula or function.
- If you are applying the rule to a range that includes multiple rows and columns and the rule will be evaluating the associated data stored in multiple rows in another column, you must use a mixed reference that locks the column for the evaluated cells, but that is relative for rows, in the formula or function.

Activity 20.Using Logical Functions to Apply Conditional Formatting