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Task 1: **Excel Keyboard Shortcuts**

Here is your task

If you want to be an Excel expert, you will learn the full breadth and depth of advanced functions in Excel. But if you want to be really fast and productive at the most common Excel functions, you need to learn the keyboard shortcuts! There are quite a few, and everyone seems to have their favorites, but there are common ones that you should learn.

**Your task is to learn some key Excel shortcuts, practice them in Excel, and then take the quiz below.**

Start by referring to the list of shortcuts ad watching some brief videos on shortcuts using the links in Additional Resources below. Then, try the shortcuts you learn from those videos and from the Background Information section above. The best way to learn them is to use them – open any spreadsheet in Excel and try out the various keyboard shortcuts. You will quickly find ones you really like and want to use going forward.

<https://www.youtube.com/watch?v=4xanM8XD058>

<https://www.youtube.com/watch?v=Xe4U_-o_EWw>

<https://www.youtube.com/watch?v=c2LHiAwxTt0>

**Common shortcuts to know include**

*Spreadsheet actions and movement:*

* Save: Ctrl-S
* Print: Ctrl-P
* Undo: Ctrl-Z
* Redo: Ctrl-Y
* Jump to Bottom of Data: Ctrl-Down Arrow
* Jump to Top of Data: Ctrl-Up Arrow
* Go to Previous Sheet: Ctrl-Page Up
* Go to Next Sheet: Ctrl-Page Down

*Data selection:*

* Select All Data in Column: Ctrl-Shift-Down Arrow
* Select Whole Column: Ctrl-Space
* Select All Data in Row: Shift-Space
* Select All Data in Region: Ctrl-A

*Data Editing:*

* Filter: Ctrl-Shift-L
* Find: Ctrl-F
* Flash Fill: Ctrl-E
* Select Discontinuous Cells:  Shift-F8
* Spell Check: F7
* Automatically Add Sum Totals for Columns and/or Rows: Alt-=
* Remove Duplicates: Alt-A-M
* Sort A-Z: Alt-A-S-A
* Sort Z-A: Alt-A-S-D
* Delete Row: Ctrl-minus
* Copy Selected Object or Data: Ctrl-D

*Data Formatting:*

* Format Cells: Ctrl-1
* Create Data Table: Ctrl-T
* Autoformat Data Tables: Alt-O-A
* Format As Currency: Ctrl-Shift-4
* Format As 2 Decimal Place Number: Ctrl-Shift-1

There are literally hundreds of others, but start with these and your Excel productivity will increase quickly.

##### **Q1/6: What is the Excel shortcut to jump to the bottom of your dataset?**

Answer: CTRL +DOWN ARROW.

##### **Q2/6: What would you use to quickly add sums to columns or rows?**

Answer: ALT + EQUALS

##### **Q3/6: How would you quickly turn on or off the filter function for your data range?**

Answer: ALT+SHIFT+L

##### **Q4/6: What is the shortcut to opening the Format dialog box?**

Answer: CTRL+1

##### **Q5/6: How do you quickly select all data in a region?**

Answer: CTRL+A

##### **Q6/6: What is the shortcut to make Excel do (redo) the same action again?**

Answer: CTRL + Y

TASK 2 \_ Conditional Formatting

About data cleaning

When working with data in Excel, one of the first things you should do is understand the data you have. What kind of data is it? How is it structured? Is it good quality data, or does it need cleaning up? This is often called “exploring” your data. You want to understand the characteristics of your data and also its limitations.

Exploring the data lets you look for trends or patterns as well as operationally or financially significant values, like negative or positive sales growth, an underwater stock option value, a negative inventory level, or any items sold prior to a certain date.  Becoming aware of such characteristics of the data would then let you ask questions about the source and quality of the data. Does a negative inventory level signify a database that reflects order quantity greater than fulfilled quantity as a negative inventory level? Or does the dataset or its source have errors in it?

When exploring your data, some of the things you can look for include

* Missing values
* Repeated / duplicate values
* Errors in the data or in calculations that drive values in the data
* Trends and patterns
* Values that are negative or positive
* Values that are larger or smaller than a cutoff value
* Values that occur in a certain date range

Conditional formatting is a technique in Excel to make data exploration visual. You format the data (its colors, fonts, highlighting, etc.) based on the criteria you select. This allows you to quickly identify values that are either a data quality problem (missing values, formula errors, nonsensical values, etc.) or a value that drives insights and decisions (i.e., sales growth below a set target; inventory below a set amount, which would trigger re-ordering; etc.)

Excel’s conditional formatting tools are easy to use but have a large and powerful array of options for criteria to base formatting on, including the ability to write your own formulas. You can even use the conditional formatting tools to format colorful and visually easy-to-read reports and simple dashboards of your data, creating visuals such as “heat maps” and even “Harvey ball” rankings to visually indicate data that meet specific criteria.

If you are experienced with Excel’s conditional formatting capabilities, then the task below will be very straightforward. But if you have not spent much time immersed in conditional formatting, now is the time to learn these techniques.

On the next step you'll see some videos about conditional formatting. In less than an hour, you will learn all you need to know about this powerful data exploration tool.

### Here is your task

Your task is to use Excel’s conditional formatting tools to explore and visualize the characteristics of the data in the dataset provided in the Additional Resources section below.

First, familiarize yourself with Excel’s conditional formatting tools by watching the introductory videos using the links provided in Additional Resources. If you are already comfortable with how to use conditional formatting, feel free to refresh your memory with the videos or move on to the exercise.

Then, open the spreadsheet and familiarize yourself with the data. What kind of data is there? What information do the columns contain? What kind of trends could you see with this kind of data?

Then, use the conditional formatting tools (either the menu-based tools or write your own conditional formatting formulas, whichever you prefer) to do the following explorations of the data:

* Highlight any cells with formula errors in purple with white text.
* Highlight any cells with missing values in yellow.
* Identify accounts that have not been cross-sold with Product 2 by highlighting the appropriate Product 2 cells in orange.
* Identify accounts that have a 5-year sales CAGR of at least 100% by highlighting the appropriate CAGR cells in green and any accounts with a negative CAGR in red with white text.
* Identify accounts in the top 10% of unit sales for 2021 by highlighting the appropriate 2021 unit sales cells in blue.

Once you have your conditional formatting working correctly, take a screenshot of your colorfully coded spreadsheet and submit it as a PDF file.

**Estimated time for task completion: 45-60 minutes, depending on your learning style and prior experience with data analysis in Excel.**

##### **Here are some resources to help you**

Example Answer

Great work! Here's an example answer so you can see how your work compares.

Use the example answer to:

* Learn how a professional would complete this task.
* Ensure you’ve understood the key concepts of the task.
* Reflect on what you did well and where you can improve.
* <https://cdn.theforage.com/vinternships/companyassets/tBzY24e4JBKNFmeHu/cTWnNPLBwotEiytGG/1674237252306/Account%20Sales%20Data%20Conditional%20Formatting%20Model%20Answer.pdf>

**Task 3: Visual Basic for Applications (VBA) Macros**

### About Visual Basic for Applications (VBA)

Visual Basic for Applications (VBA) is a useful language to learn and skill to develop because it is built into the entire suite of Microsoft products, meaning VBA is also the programming language built into Word, PowerPoint, and other Microsoft applications. This means you can use VBA to integrate data and reporting across the entire Microsoft suite.

Like any programming language, VBA has its own vocabulary, syntax, and commands to learn. With VBA, you can write sophisticated programs that exceed tasks you could do manually on the keyboard and mouse. While becoming skilled at writing complex VBA programs takes many hours of training, you can learn in just a few minutes to create simple macros to automate common, repetitive tasks in Excel.

A macro is simply a short list of commands written in VBA to automate a set of tasks you could otherwise do manually using the keyboard and mouse. Excel has two methods built-in for creating macros. The easiest way is to “record” the macro, which means telling Excel to “watch” your actions as you do a task using the keyboard and mouse and automatically create a list of commands in VBA that correspond to those actions. Then, you can tell Excel to automatically run that list of commands over and over as needed. That list or script of commands is your macro, and you can assign it to a button on the screen to run it at will. The other method for creating macros is to write the list of commands (the VBA code) yourself without having Excel watch your actions and generate that list for you.

On the next step you'll see some videos on how to record macros and write macro scripts. In less than 30 minutes, you will be creating your own simple macros!

### Here is your task

Your task is to familiarize yourself with recording and using simple macros in Excel, and then create two macros using the same spreadsheet you modified with conditional formatting from Task 1. A clean version of that spreadsheet is available in Additional Resources below so you can work from a fresh copy.

If you have worked with Excel macros before, this task should be relatively easy; if not, now is the time to dig into macros and learn the basics. First, spend some time watching training videos to become familiar with the basics of macros and how to record a simple macro. Start with the links in Additional Resources below for a few short training videos, but feel free to find more online.

In most versions of Excel, you have to enable the “developer” tab in the menu to work with macros and VBA. If your copy of Excel does not have this tab visible, you can right-click on the ribbon and add the tab to the menu. If you are using the online version of Excel, a similar capability exists under the “Automate” tab, where VBA code is called “scripts” and recording macros is called “record actions.” It’s the same general functionality in the online version of Excel as in the desktop version, just re-titled in the menus of the online version.

Then, follow the basic steps outlined in the “Beginners Guide to Macros” video in Additional Resources to create two macros and associate them with buttons you add to your spreadsheet.

You will create two macros and associated buttons:

1. A macro to sort the entire spreadsheet by 5 YR CAGR in descending order to see which accounts have the highest overall 5-year sales growth
2. A macro to sort the entire spreadsheet by 2021 unit sales in descending order to see which accounts have the highest overall unit sales in 2021

When you are finished, you will have two buttons that let you very quickly and easily see two ways of analyzing account sales data to inform account planning and other operational decision-making and quickly switch between them.

Submit a PDF file with a screenshot of your spreadsheet showing your buttons and a screenshot of the VBA code from one of your macros.

**Estimated time for task completion: 60-90 minutes, depending on your learning style and prior experience with macros in Excel.**

##### **Here are some resources to help you**

### Example Answer

Great work! Here's an example answer so you can see how your work compares!

<https://cdn.theforage.com/vinternships/companyassets/tBzY24e4JBKNFmeHu/cTWnNPLBwotEiytGG/1674237404593/Account%20Sales%20Data%20Macros%20Model%20Answer.pdf>

**Task 4: Data Visualization in Excel**

### About Charts and Dashboards

To make data-driven business decisions, the decision-makers need an easy way to understand and draw conclusions about insights from your data and analysis. Insights can be financial, operational, or related to any other management need. One of the easiest ways to make such insights quickly understandable is by using charts or graphs of the data and your analysis of it.

Business decisions that need the same insights routinely benefit from an interactive or dynamic combination of charts called a dashboard. Dashboards allow you to see different views or “slices” of the data, see how different insights relate to each other and gain a complete picture of what the data is saying. This is particularly helpful when making operational decisions like which products to market more or differently, which accounts need more sales activity to drive more sales, or which products need better inventory management to keep in stock. A dashboard is simply a collection of related charts on one page to make visualizing the data easier.

If you are experienced with Excel’s charting capabilities, then the task below will be straightforward. But if you have not spent much time building charts in Excel, or combining various charts into an interactive dashboard, now is the time to learn these techniques.

On the next step, you'll see some videos about creating charts and dashboards in Excel. In less than an hour, you will learn all about this essential toolset in Excel.

### Here is your task

Your task is to create a simple dashboard using the account sales dataset you worked with in prior tasks. A clean copy of that spreadsheet is available in Additional Resources below.

First, do your background learning using the links in Additional Resources below, particularly for the videos on the basics of building a dashboard in Excel.

Then, consider your dataset. What charts and graphs would be useful related to this data? Unit sales by year? Top 10 accounts by unit sales or CAGR? Effectiveness of different marketing programs by the number of sales driven? Sales by account type? There are a variety of different ways you could gain insight from this dataset. Pick the ones you find most compelling, and use those to create your dashboard.

Next, consider how you may need to transform the data in the dataset to simplify your analyses. Raw data is as you find it and often not in the ideal form for analysis. You may need to alter the spreadsheet structure or add calculations to support your analysis. Hint: disaggregating the raw data by building a new sheet that has a row per sales year per account, rather than a row per account that combines sales data for all five years, will make it much easier to use pivot tables for some types of analysis. Could you use one or more macros to make constructing that new sheet easier? You may want to filter the data into different views. You will want to add pivot tables to support some kinds of charts you could create. Feel free to change the dataset in any way that supports your analysis.

Make your data an Excel table (rather than a range). Remember the shortcut for that? It is Ctrl-T. Some of Excel’s more useful capabilities work with data designated as a Table in Excel, including dynamic updating of charts and graphs and much of the pivot table functionality. It is a best practice to use Excel Tables when doing data analysis.

Be creative! Your dashboard will almost certainly look different than the Model Answer below. You will likely have chosen different ways to look at the data and combine those charts into your dashboard. The important part of this exercise is to begin thinking in the mindset of using dashboards to tell the story of your data and support the data-driven business decisions that relate to the data.

Once you have your dashboard working correctly, take a screenshot of it and submit it as a PDF file.

**Estimated time for task completion: 1.5-2 hours, depending on your learning style and prior experience with data analysis and visualization in Excel.**

<https://www.excel-easy.com/data-analysis/charts.html>

<https://blog.hubspot.com/marketing/how-to-build-excel-graph>

<https://www.excel-easy.com/examples/cagr.html>

<https://www.youtube.com/watch?v=9p6tWCHbtPQ>

Example Answer

Great work! Here's an example answer so you can see how your work compares.

Use the example answer to:

* Learn how a professional would complete this task.
* Ensure you’ve understood the key concepts of the task.
* Reflect on what you did well and where you can improve

<https://cdn.theforage.com/vinternships/companyassets/tBzY24e4JBKNFmeHu/cTWnNPLBwotEiytGG/1674237537808/Account%20Sales%20Data%20Dashboard%20Model%20Answer.pdf>

**Task 5: Data-Driven Storytelling**

Story telling using data

Consider the following two statements that communicate data:

1. Eastern Region sales dropped 4% year over year.
2. Our Sales Rewards trip to the Bahamas this summer is in danger of being canceled because our team has underperformed our Eastern Region sales growth target by 9% this year!

Which statement is more compelling? Which statement motivates the reader to want to take action? Data is good, but a narrative or story told with the data is always better.

Telling a data-driven narrative allows you to directly link the issue you want to address, the insights useful to address the issue, and the action or decision you want the reader or listener to take. This linkage depends on the listener’s emotional connection to the story.  The data alone does not convey an emotional connection; the narrative does that.

Telling a story with your data makes it easier to build trust, convey meaningful insight, and drive audience engagement.

Follow certain best practices when telling a data-driven story:

* **Understand your audience.** Who are you communicating with? What are their motivations and needs? What will they find compelling?
* **Focus on a few major points.** Keep your messaging clear and concise, so it’s memorable.
* **Set the context for your story.** Why do your insights matter? Why should the audience care?
* **Actually write a story.** Stories include what is commonly called a story arc: a setup, a tension or issue, a resolution, and/or a call to action.
* **Use visuals where possible.** Tables of numbers are hard to make compelling.
* **Support your credibility as the storyteller.** Be honest about data quality issues, missing insights that are needed, and related risks to the action or decision you are seeking.

So, let's click next to see what you need to do in your final task…

Here is your task

Your task is to write a short PowerPoint presentation to communicate key insights and data from your analysis and visualization work in the prior task. From that work, you have insights into which accounts are and are not performing well, how sales are growing year over year, which account types are selling more units than others, and other kinds of findings that you could communicate. Use your analytical insights and even your Excel dashboard if you like as part of the written story you tell in PowerPoint.

First, do your background learning on data-driven storytelling using the links in Additional Resources below. Then, review your analysis and dashboard from Task 4. What data, ideas, insights, or examples would be compelling to decision-makers about account sales? Don’t limit yourself to just the charts you included in your dashboard. Do other analyses of the dataset if needed to help you tell a compelling story.

Then, write your presentation using the template found in Additional Resources below.  Feel free to add slides to the template if needed, but remember: *clear*, *concise*, and*compelling*. Shorter is almost always better. In no more than 3-5 slides,

1. Write a compelling title to grab the attention of your audience.
2. Convey a key, overarching point using a compelling visual you find online to further grab your reader’s attention. Just copy and paste a photo that you find online; no need for original artwork.
3. Communicate key points and ideas about your account sales analysis, including sales performance (or lack thereof), opportunities for improvement or operational focus, and any other points you think tell a good data-driven story.
4. Make a recommendation for an action that your audience should take as a result of your analysis of account sales.

Use data and examples to make your presentation compelling when appropriate.

**Estimated time for task completion: 45-60 minutes, depending on your learning style.**

<https://www.gokantaloupe.com/blog/best-techniques-for-data-driven-storytelling>

<https://www.revealbi.io/glossary/data-driven-storytelling>

<https://unscrambl.com/blog/data-driven-storytelling-guide/>

<https://phrazor.ai/blog/the-art-of-data-driven-storytelling-what-is-it-and-why-does-it-matter>

<https://virtualspeech.com/blog/importance-storytelling-business>

<https://www.lafabbricadellarealta.com/business-storytelling-the-definitive-guide/>

**Answer:**

<https://cdn.theforage.com/vinternships/companyassets/tBzY24e4JBKNFmeHu/cTWnNPLBwotEiytGG/1674237707012/Data%20Driven%20Storytelling%20Model%20Answer.pdf>