Microsoft Office Excel: Teacher Notes

**Welcome!**

This textbook is written for anyone who wants to learn and build practical skills in Microsoft Excel, whether it be for school, work, or personal projects.

**Instructor information**

|  |  |  |
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# General information

Description

We will be creating and using Excel worksheets that can analyze important data for your success. We’ll go over refreshers, recaps, shortcut keys, and helpful tips & tricks to help you work more easily, quickly, & efficiently.

Expectations and goals

In this course, you'll build a strong foundation in Excel by learning to:

* Understand and apply formal Excel terminology
* Master key essential tasks commonly performed by Excel users
* Modify and manage columns, rows, worksheets, and workbooks
* Format worksheets (for clarity and visual appeal!)
* Prepare and print Excel documents effectively

# Course materials

## Required materials

* A computer running the Windows operating system with Microsoft Office installed.

## Prerequisites

To succeed in this course, students should be comfortable using a computer with a keyboard and mouse, working in Windows® environment, opening and closing programs, and managing files and folders. Although no prior Excel hands-on experience is required, students will get the most from the course if they already know how to use formulas, organize and analyze data, and create charts.

Excel Day 1

# Chapter 1 - Microsoft Excel Basics

Microsoft Excel is a software program that allows you to create spreadsheets containing data. Excel is the worlds leading spreadsheet program, with a vast user community and ongoing support from Microsoft. Excel utilizes spreadsheets, which is a file that contains information, but Microsoft defines a spreadsheet as “a digital document used for storing, organizing, and manipulating data.” ([Link](https://www.microsoft.com/en-us/microsoft-365/excel/spreadsheets))

A spreadsheet is a grid that organizes data into columns and rows:

* **Columns** are labeled with capital letters (A, B, C, etc.) and run vertically across the grid. In formulas, column letters always appear capitalized.
  + To select an entire **column**, press **Ctrl + Spacebar**.
* **Rows** are labeled with numbers (1, 2, 3, etc.) and run horizontally across the grid.
  + To select an entire **row**, press **Shift + Spacebar**

Generally, columns usually represent attributes, categories, or fields of data (*what kind of data*) while **rows** represent individual records or entries.

Example:

Name Age

Alice 21

Bob 22

Carla 23

However, data is context-dependent since sometimes a row can represent a category instead of a record.

Example (Transposed Data):

Name Alice Bob Carla

Age 21 22 23

A **data set** is a collection of related information in Excel.

To select an entire data set, simply place your cursor anywhere inside it and press **Ctrl + A**.

* Ctrl + A is the shortcut that selects everything in the current data set.

Data sets usually are comprised of a header row and records.

* The **header row** is the row that contains the column names.
  + It **does** **not** have to be *Row 1* in Excel, but rather it can be any row with your column names.
* Records are entries that represent a single item (e.g. a person or a product) or row of data on a table.

### Cells

A **cell** is the intersection of a row and a column.

* Cells are “boxes” that contain data. You can see its contents in the **formula bar**.
* Cells are the backbone and building blocks of every spreadsheet. “Cells make up ExCELL”.
* The active cell (the one currently selected) has a green border around it.
* Each cell has a **name**, determined by its column letter and row number.
  + Example: The cell in column **E** and row **2** is called **E2**.
  + Even empty cells have a name.
* The cell’s name also appears in the **Name Box** above the worksheet.

### Ranges

* A combination or group of one or more cells. Ranges can be horizontal, vertical, or even empty.
* Naming Convention: A range is named using the **top-left cell** and the **bottom-right cell**, separated by a colon (**:**).
  + Example: The range from D1 ‘to’ F3 is written as **D1:F3**.
* Be careful: only a colon works - other symbols (like semicolon, dot, underscore, or space) will not.

**Shortcuts**

* **Shift + Arrow Keys** -> Resize a selected range.
  + Example: Start at A1, then hold **Shift** and press the arrow keys to expand the selection.
* **Ctrl + Shift + Arrow Keys** -> Select from the current cell to the end of the data set in that direction.
  + Example: If you’re in A1 and press **Ctrl + Shift + ↓**, Excel selects from A1 down to the last filled cell in that column.

**Moving a Range**

1. Select the range.
2. Place your **cursor on the border** until it changes to a **four-headed arrow**.
3. **Click and drag** the range to the new desired location.   
   (As you move it, Excel will even show the new range reference, which is helpful if you forget its original name.)

**Copying a Range**

1. Select the range.
2. Press ‘Ctrl’ + ‘C’ to copy the range.
3. You will see the “marching ants” across the border
4. Place your cursor on a new cell and either press “Ctrl” + “V” or simply press “Enter”.

Alternatively, to copy a range:

1. Select the range.
2. Place your cursor on the border.
3. Hold down Ctrl then Click and drag the range to move it to the new location.

As a result, the original range stays in place, and a duplicate is placed where you drag it.

**Tips:**

* Press **Ctrl + Z** to undo any mistakes.
* Using a **mouse** makes it easier to drag than using a trackpad.

## Excel Interface Overview

The basic layout of Excel includes tools that help you navigate the program more efficiently:

* **Status Bar** (bottom)
* **Quick Access Toolbar** (top)
* **Ribbon** (commands and groups)
* **Backstage View** (File tab)

Let’s break down each section:

**1. Status Bar (Bottom of the Window)**

* Found at the bottom of Excel (and most Microsoft apps).
* Displays the different various worksheets in a workbook (more to be discussed later).
* Displays the status of your document or selection.
  + Selecting a range of cells that contain names will show the count of the selected cells.
  + Provides **zoom controls** to zoom in/out.

**2. Quick Access Toolbar (Top of the Window)**

* A small toolbar at the very top of Excel.
* Provides **quick access** to **commonly used commands**.
  + By default, it usually contains **Save, Undo, and Redo**.
  + Commands can be used either by clicking them or by pressing **Alt** to activate *Key Tips*
* You can add commands by **right clicking a tool** (e.g., Fill Color) → *Add to Quick Access Toolbar*.
* While not heavily used in Excel, it can be handy for frequently used commands like **Clear Formats**.

**3. Ribbon (Below the Quick Access Toolbar)**

* The main command area in Excel, consists of **Tabs** (Home, Insert, Page Layout, etc.).
* Each tab contains **Groups**, which organize related commands (e.g., Font group, Alignment group).
* Within groups are **Commands** (buttons/actions). Hover over a command to see a **screen tip**.
* Some groups include a small **Dialog Launcher** button for advanced options.
* If the window is resized smaller, not all commands appear; you may only see group names. Click the group name to access hidden commands.

**4. Backstage View (File Tab)**

* Clicking **File** opens the **Backstage View (Think of this as the backstage pass to the files concert)**.
* This view provides file-related actions such as **Info, Save, Open, and Print**.
* The **Info** section shows details about the file (name, location, size, last modified, etc.).
* Especially useful when working with shared drives or Teams files, to find out where a file is stored.
* To exit Backstage View, click the back arrow or press **Esc**.

# Chapter 2 - Modifying worksheets

In this lesson we’ll discuss:

* Adjusting, hiding, grouping, adding, and deleting columns and rows.

The general rule for this chapter is that whatever concept applies to columns (e.g. resizing) the same concept can be applied to rows and vice versa.

On the Home tab, in the Cells group, you’ll find commands to insert, delete, and format cells, rows, and columns. Anything you need to add, remove, or format is available there. In this chapter however we will be discussing quicker, more efficient ways to perform these operations.

## Adjusting rows and columns

To adjust a column’s width, place the mouse pointer over the right edge of the column letter header until the double-headed arrow appears, then drag to the desired width. So, say I select column B - if I hover over its right edge border, I can simply drag to make the column wider or narrower.

One thing to note: If a column with numbers becomes too narrow, Excel may display scientific notation (like “1.23E+05”) or just a row of pound signs (#####). This doesn’t mean the data is missing; it simply indicates that the column isn’t wide enough. We can resize the column to fix it or use **AutoFit** to display it properly.

To autofit a column, move the mouse to the right edge of the column letter heading until the double-headed arrow appears, then double-click the border. So, in short instead of dragging, you can **double-click** to use *AutoFit*. That automatically adjusts the column width to fit the content.

If you select columns C through F and change the column width of one, all of them will resize to match.

If you want to adjust *all* columns at once, click the **Select All triangle** at the top-left corner of the worksheet, then apply AutoFit. That resizes every column and row automatically.

As another shortcut, pressing **Ctrl + A** once selects your current dataset, and pressing it again selects the entire sheet. From there, AutoFit works across everything.

## Hiding rows and columns

Now let’s cover hiding and unhiding rows and columns.

Many times, data sets have extra columns that aren’t needed and just take up space. We hide or unhide columns to see or print only the data you need.

To hide a column, select the column letter, right-click, and choose **Hide**. For example, if you hide column C, it will disappear. To bring it back, select the entire columns on either side (in this case, B and D), right-click, and choose **Unhide**.

When you hide a column in Excel, it **won’t appear when you print** the sheet (Ctrl + P). The hidden column is excluded from the printout, even though the data still exists in the spreadsheet. Even if a column is hidden, the data remains searchable using Ctrl + F.

This is true with multiple columns. For example, if I hide columns I through L, my sheet might only display Employee ID and Total. This is especially useful when preparing reports for management, since they usually want a *big picture* rather than every detail.

To unhide everything, you can again use the **Select All triangle**, right-click, and choose **Unhide**.

**Unhiding multiple columns at once:**

* Click the **Select All triangle** in the top-left corner.
* Right-click and select **Unhide**.
* If the sheet is protected, you’ll need to **unprotect** it first.

A participant asked: *“If we send this spreadsheet to employees for entering time, how do we ensure they don’t unhide and use other parts of the sheet?”*

Good question! Hiding columns is mainly a visual boundary, it doesn’t prevent edits. To truly restrict changes, you can **protect the sheet** while allowing specific cells to remain editable. We’ll discuss this in another chapter.

Here’s an advanced trick that managers often use. Let’s say I’m sending a timesheet or expense report to employees. We can hide any extra blank columns and rows to show only the form.

Here’s how:

1. Select the first unused column (say, column P).
2. Press **Ctrl + Shift + Right Arrow** to select all columns to the end.
3. Right-click and select **Hide**.

Now everything beyond column O is hidden, making the sheet look clean and focused.

The same works for rows: select the first unused row, press **Ctrl + Shift + Down Arrow**, and hide them.

If you need everything back, just unhide as before.

And now, all those extra columns are hidden, leaving us with a neat and focused worksheet.

## Grouping Columns

You can also **group columns** to collapse or expand sections for easier viewing:

1. Select the columns to group (e.g., I:L).
2. Go to **Data → Outline → Group**.
3. A small **plus/minus icon** appears to expand or collapse the group.

You can do the same for rows. This is especially helpful for spreadsheets with many columns, allowing users to focus only on the data they need.

**Ungrouping:**

* Select grouped columns or rows and click **Ungroup** to return them to normal.

## Moving Columns

Next, let’s talk about a useful trick: **moving columns**.

Suppose column L contains “Employee ID,” but I want it closer to the beginning of my worksheet. Here’s how to move it:

1. Select the entire column.
2. Place your cursor on the column border (not between two columns). The cursor should change to a four-arrow icon.
3. Hold down **Shift**, then click and drag the column to its new position.

For example, if I drag Employee ID to column B, it shifts over neatly without needing to cut and paste. Personally, this is one of my favorite Excel shortcuts—it’s fast and clean.

## Adding and deleting rows/columns:

Sometimes you need to change your worksheet by adding or deleting columns, rows, or cells.

For example, to add a new record or person, I can insert a row, which moves all existing content down by one. We can insert then:

* Right-click a row (or column!) → **Insert** to add it above/left.

To delete a row:

* Right-click on row → **Delete** to remove.

If you need to add several rows at once (for example, 4 rows for 4 people), select that many rows, right-click, and choose **Insert**. The new rows will appear, ready for your data. You can delete multiple rows the same way.

Please Note: In Microsoft Excel, row numbers are fixed, and sequential. They start at 1 and go up to the maximum row limit (for example, 1,048,576 in current versions). These row numbers are again *constant* and cannot be removed. Inserting or deleting Excel rows moves the content, but the row numbers stay the same. Adding a row at the bottom of the spreadsheet results in the error message:

A screenshot of a computer error

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**Shortcuts:**

* **Ctrl + Shift + Plus** → add a row/column
* **Ctrl + Minus** → delete a row/column
* **Shift + Spacebar** → select a row
* **Ctrl + Spacebar** → select a column

**Navigation tips:**

* **Ctrl + Down Arrow** → go to the last row
* **Ctrl + Right Arrow** → go to the last column
* **Ctrl + Home** → go to cell A1

## Finding/Replacing Data:

To find data in Excel, you can use a command like Microsoft Word: **Ctrl + F** (or **Command + F** on a Mac). This opens the Find tool, allowing you to search for specific words or values in your worksheet. We can also access this via Home -> Editing -> Find & Select

For example, typing “Anderson” and pressing **Find All** will show every cell containing that name. You can also search the entire workbook if needed.

There are two helpful options in the Find tool:

* **Match Case** - Only finds cells that match the exact capitalization you type i.e. it makes the search **case-sensitive**.
  + Suppose your worksheet has these cells:
    - A1: Anderson
    - A2: Anderson
    - A3: ANDERSON
  + If you search for ‘Anderson’ **without Match Case**, Excel will find all three cells, ignoring capitalization.
  + If you search for ‘Anderson’ **with Match Case turned on**, Excel will only find A1.
    - Cells A2 and A3 won’t be found due to different capitalizations.
* **Match Entire Cell Contents** – Only finds cells where the content exactly matches your search term.
  + For example, searching for “West” will ignore “Southwest” if this option is selected.

To replace words, use **Ctrl + H** (or **Command + H** on Mac) to open the Replace tool. This lets you find one word and replace it with another.

It’s highly recommended to first find the data you want to update or replace, so I’ll click “Find All” to confirm the targets.

Task: Replace “Smith” with another name by clicking **Replace All**.

These tools work similarly to the Find and Replace features in Word or Adobe Acrobat, so they should feel familiar if you’ve used those programs. Just remember: Always **find first** to make sure you’re targeting the correct cells before replacing.

## Spell Check

To check spelling in Excel, go to the **Review tab** and select **Spelling**, or press **F7**. Excel will flag misspelled words, though uncommon names may still be marked as incorrect.

# Chapter 3 – Managing Workbooks

Task: Open the file *Sales Tracker FY 2017*.

This workbook contains multiple worksheets—one for each quarter (Q1–Q4) and one for FY 2017 totals.

## Working with Multiple Worksheets (Tabs)

A screenshot of a computer

AI-generated content may be incorrect.Managing a few worksheets is simple, but handling many worksheets can be overwhelming. Microsoft Excel helps by letting you organize, reorder, and hide sheets to stay organized.

A workbook is the same as a file or document.

A workbook is made up of sheets (also called tabs or pages).

We can press Ctrl + Page up or Ctrl + Page down to cycle between sheets.

* To **add a sheet**, right click on a sheet -> click the “**Insert**” button.
  + We can also add a sheet by click on the “+” icon in the status bar.
* To **rename a sheet**, right click on a sheet -> click the “**Insert**” button.
  + We can also double-click the sheet tab and type a new name.
* To **delete a sheet**, right-click on the sheet tab and select **Delete**.
* To **move or copy a sheet**, right-click the tab -> **Move or Copy**.
  + You can duplicate it in the same workbook or move it to a new one.
  + Note: Of course, we can use to select our data to copy and paste somewhere (via Ctrl + C and Ctrl + V) but be careful – this will only copy some of the data on the worksheet. Some spreadsheets have multiple tables or ranges, so pressing Ctrl + A once will not select everything; you’ll need to press Ctrl + A **twice**.
  + **Task:** We can press **Ctrl + N** to open a new workbook. Try duplicating data into that new workbook.

Many of these commands are accessible from the Home tab on the Ribbon as well.

**Organizing Sheets**

* We can protect the sheet to “prevent unwanted changes from others by limiting their ability to edit”.

We can also protect a sheet while still letting certain cells be edited, which is useful for timesheets/forms:

1. Select the cells you want employees to edit (e.g., A1:O28).
2. Right-click and choose **Format Cells → Protection**, then **uncheck Locked**. Click **OK**.
3. Right-click the sheet tab and select **Protect Sheet**. Add a password if desired.
4. Now, employees can type in the unlocked cells but cannot edit or unhide the rest.

Tip: It’s often best to **hide unused columns first**, then protect the sheet. This keeps the sheet clean while still allowing input in the intended areas.

* You can **change tab color** to stay organized.
* You can **hide sheets** if you don’t want users to see them.
* To create a group of sheets, we can **select multiple sheets** by holding **Ctrl** and clicking each sheet. Changes (like formatting or tab color) apply to all selected sheets.

## Freezing Panes

We can create a fixed/sticky header row so that part of a worksheet stays visible while scrolling.

To freeze multiple rows, we must:

* Start by selecting the row or cell immediately below the rows you want to freeze.
  + e.g. if we want to freeze the first three rows, we can select row 4 or simply cell A4
* Go to the View tab and use Freeze Panes to lock rows or columns
* As a result, the frozen rows as marked by a gray line will stay at the top while you scroll down.
  + This is helpful so your header rows (like “Quarter” or “Product”) always stay visible when scrolling.
  + To undo, choose **Unfreeze Panes**.

**Additional things to keep in mind:**

* **Freeze Top Row** keeps row 1 visible while you scroll.
* You can also freeze columns –
  + For example, if we select column B & then click freeze panes, Column A remains visible as we scroll right.

**Alternatives:**

* When we create a table, as long as the table has headers and we select a cell that is within the table, the header row automatically stays frozen and replaces the column letters (A, B, C) as you scroll down.
* We can also use the “Split” command to create separate scrollable sections.

## Arranging Excel Workbooks:

* **Ctrl + N**: Open a new workbook.
* **Ctrl + W**: Close the current workbook window.
* Use **Windows Key + Arrow keys** to snap windows to the side, top, or bottom of your screen.
* On the **View** tab, we can use **Arrange All** to arrange multiple Excel windows (side-by-side or stacked).
* **New Window** (on the View tab) opens another view of the same workbook. You can then use **Arrange All** to compare two sheets in the same file side-by-side (e.g., Q1 vs FY 2017 Totals).
  + Result: We can now view the same document in two windows, allowing us to see the Q1 and Q2 worksheets simultaneously *at the same time*.

# Chapter 4 - Functions

Please see web pages on functions

# Chapter 5 - Formatting

In this section we’ll cover **formatting**. Big worksheets can be hard to read, especially with different types of data. Microsoft Excel has formatting tools that help organize information and make important details stand out, so your worksheets are clear and easy to use.

Most of the tools we’ll use in this chapter are found on the **Home tab**. We won’t go through every single icon since you may already be familiar with them (e.g. the **Font group** is very similar to Microsoft Word). Instead, I’ll highlight the most useful ones. For example, we often do need to change the font and fill color of our cells, and this can be done as shown below:

A couple of symbols

AI-generated content may be incorrect.

A screenshot of a computer

AI-generated content may be incorrect.**Clearing Formats**

Cells have one style with multiple formats such as purple text, bold, underlined, or a larger font size.

A useful command is **Clear Formatting**, which removes all formatting from the selected text and leaves only plain, uniform text.

* Step 1: Select a cell that has formatting
* Step 2: Go to Home (Tab) -> Editing (Group) -> Clear Formats

**Format Painter**

The first tool I want to demonstrate is **Format Painter**. If there is a cell with specific formatting, we can double-click the Format Painter button to have the cursor change into a paintbrush icon. From there, simply select the cells you want to format, and the formatting is then applied and copied over to other cells. Once we’re done, press ‘**Esc’** to turn Format Painter off.

**Font Group & Alignment**

Let’s look at alignment and text overflow. Suppose in cell A1 I type *Sales Ledger Reported on*. Press the command ‘**Ctrl + ;**’ to get current date. If the text is too long, it might overflow into the next cell. To fix that, there are three main ways:

1. **AutoFit the column** by double-clicking the right edge of the column header.
2. Use **Wrap Text** (under the Alignment group). This makes the text stay inside the cell and wrap to the next line automatically.
3. **Merge and Center** cells. Select a large group of cells and then on the Home tab, under Alignment (group), click *Merge & Center*. This combines cells and centers the text.
   * Merged Cells usually have the text centered vertically & horizontally.

To have the text display on two separate lines within the same cell, place the cursor where we want the line break and press **Alt + Enter**. This inserts a line break inside the cell.

For formatting, I can also change alignment settings—such as centering vertically or rotating text slightly for visual effect.

**Number Formats**

Next is the **Number group**. Formats can also be copied with Format Painter, but the dialog box gives more options. For example, you can change a number to different currencies (dollars, yen, pesos, etc.), or you can format cells as dates and times.

Task: Cover the difference between accounting & currency formats.

Task: Press **Ctrl + ;** enters today’s date.

* Dates and times can then be displayed in different styles (e.g., 24-hour or AM/PM).  
  Note that even though the display changes, the underlying value remains the same.

**Styles**

Moving on, let’s talk about **Cell Styles**. Styles are prebuilt combinations of formats - useful for labeling, calculations, or highlighting important cells. We can create and save our custom styles instead of formatting cells manually.

There’s also **Format as Table**, which we’ll cover more in part two.

## Conditional Formatting – Part 1

Finally, let’s cover **Conditional Formatting**.

This feature automatically applies formatting when certain conditions are met.

For example:

* To highlight the bottom 5% of sales totals, I select the range, go to *Conditional Formatting → Top/Bottom Rules → Bottom 10%*, then change it to 5%. Those values are now flagged.
* If I change a number so it no longer qualifies, the formatting updates instantly.

Other common rules include:

* Highlighting cells greater than a certain value (e.g., sales over $700,000 turn green).
* Equal to (e.g., highlighting all cells where the region is “Southwest”).
* Duplicate values (great for finding duplicate emails or names).
* Dates greater than or less than a certain date.

You can also use **Color Scales, Data Bars, and Icon Sets** to visualize trends. And if needed, you can clear all rules or manage them individually under *Manage Rules*.

# Chapter 6 – Printing

You’re almost at the finish line—just a little more, and we’ll be done with this final chapter.

Although most information today is digital, there are still times when you may need a printed copy of a document. Before printing a workbook, we should always check and preview the print settings to make sure everything looks right.

**Task:** Open Printing Example.xlsx

In this example, the workbook looks great with different styles and formatting, but when we press **Ctrl + P** to print, the spreadsheet is spread across five pages. Pages 1–2 show the data from first set of columns, pages 3–4 show the next set, and page 5 shows commission rates and other metrics.

To make the document more printer-friendly, we can prevent extra columns (e.g. anything past like past column M) from printing. There are multiple ways of doing this:

* One way is to simply hide excess columns past Column M, which reduces the page count from five to four.
* A second way is to only print out selected cells.
  + First select the data via Ctrl + A & then press Ctrl + P to go to print settings.
  + Under settings we can then select “Print Selection”

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* The third and final way is to set up a **print area**, so only the selected range prints.
  + First select the data set via Ctrl + A then go to the tab **Page Layout → Print Area → Set Print Area**.

A screenshot of a computer

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Once the print area is set, we can confirm what the print area is in **Page Layout → Print Titles**.

Showing the print preview (via “Ctrl + P”) shows that the page count has dropped. We can improve it further by:

* Changing the orientation from ‘Portrait’ to ‘**Landscape’**,
* Adjusting page margins (Normal → Narrow),
* and finally using **Scaling** option to select “Fit All Columns on One Page”.
  + This reduces the document to just two pages, which is the desired result.
  + Be careful, though — using the option "Fit Sheet on One Page" works but makes the text hard to read.
    - Therefore, "Fit All Columns on One Page" is often the best option.

Additionally, we can add **headers and footers**. Under Page Layout (Tab) -> **Print Titles**, if we select the header/footer tab, we can choose a header (like “Created by [Name]”) and a footer (like “Page 1 of ?”) to appear in Print Preview.

A screenshot of a computer

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Finally, we make the header rows repeat on every page, set **Rows to Repeat at Top** under Print Titles (e.g., rows 1–4). This ensures the headers are visible on all pages.

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And with that, we’ve successfully reduced the workbook from five pages to two, added headers and footers, and repeated header rows for clarity.

Optional Task: Insert a page break so that each page prints only 25 rows.

Congratulations—you’ve completed this exercise!

