



Activity Overview

In this activity, you will use a spreadsheet to build a custom data table and analyze your data with functions. To begin, suppose you're a data analyst working for a recruiting agency. This recruiting agency helps all sorts of companies find skilled people to fill open data analytics jobs. The agency has collected data about job applications for opportunities posted on its website over the course of a year.

Scenario

Review the following scenario. Then complete the step-by-step instructions.

The agency has asked your team to optimize its online application process. Your assignment is to summarize the agency's job application data. In particular, you want to answer the following questions:

- What was the total number of applications received each month?
- How many applications were received?
- In which months were the lowest and highest number of applications received?
- What was the average number of applications received per month?

To do this, you'll work with a spreadsheet. You'll use spreadsheet functions to make calculations based on your data and create a custom data table to summarize your results.

By the time you complete this activity, you will be able to import a spreadsheet file, sort data, create a custom data table, and use spreadsheet functions to work with your data. Spreadsheets are an essential tool for every data analyst. Using spreadsheets to organize and analyze data is an important skill that you will continue to develop throughout your career.

Step-By-Step Instructions

Follow the instructions to complete each step of the activity. Then answer the questions at the end of the activity before going to the next course item.

Step 1: Access the spreadsheet

To use the spreadsheet for this course item, select the link below, then select the "Use Template" button to open your own version of the spreadsheet.

Note: This dataset is large, so it may take a few seconds for the rows to appear.

Link to template: [Untitled Spreadsheet](#)

OR

Download the data:

[Untitled spreadsheet](#)

[XLSX File](#)

Step 2: Understand the data

The agency's data contains information about all of the data analytics job applications received. The data includes the following column headers: Applicant ID, Date, Job Title, Job Location, Hired, and Easy Apply. Below is a description of each column header and sample values.

| Column Name | Column Description | Sample Data |
|--------------|---|-----------------------------|
| Applicant ID | Unique identifier for the applicants | 11578773 |
| Date | The date and time each application was received | 1/1/2023 0:01:00 |
| Job Title | The data analytics position applied for | PHARMACEUTICAL DATA ANALYST |
| Job Location | Where the job is located | Lima, Peru |
| Hired | Indicates if an applicant was hired | TRUE |
| Easy Apply | TRUE if the application was submitted directly on the agency's website; FALSE if the application was downloaded and submitted via email | TRUE |

Step 3: Sort your data

Because you want to answer questions based on a specific timeframe (in this case, applications received per month in 2023), start by sorting the data by date. Sorting involves arranging data into a meaningful order to make it easier to understand, analyze, and visualize. Considering the order in which each application was received can help you discover trends in data analytics job applications.

1. First, rename your spreadsheet. Select Untitled Spreadsheet and enter a new name. Use `data_analyst_jobs_2023` or a similar name that clearly describes the data your spreadsheet contains.
2. When you are working in a spreadsheet, you can have multiple sheets open. Currently, your spreadsheet contains one sheet labeled `2023_data_analyst_job`. Rename this sheet by selecting the sheet tab and choosing Rename from the menu. Then, enter raw data.



3. Make the columns Job Title (C) and Job Location (D) wider by dragging the right boundary of the column headings.
 4. Select all the data in the spreadsheet by selecting the cell where the rows and columns intersect.
 5. From the menu bar, select Data > Sort range > Advanced range sorting options.
 6. In the pop-up window, select the Data has header row box.
 7. In the Sort by dropdown, choose the header Date. Then, select A to Z to sort in ascending order.
 8. Finally, select Sort.
- Your spreadsheet now displays job applications received in chronological order.

Step 4: Create a custom data table

Now that you've sorted your data, you're ready to create a custom data table to help you answer each of your questions. Your table will clearly summarize the data. Plus, if you want to share your results, your table will be well-organized and easy to understand.

Count the number of applications received each month

First, use spreadsheet functions to help you find the total number of applications received in each month.

1. To start, select the Add sheet icon (the plus sign) in the menu bar to add a new sheet to your spreadsheet. You'll create your data table in this sheet
2. Rename the new sheet. Select the sheet tab and choose Rename on the menu. Then, enter summary data.
3. Next, add column headers to your table. In cell A1 of your summary data sheet, enter Month. In cell B1, enter Applications.
4. Underneath the Month label in cell A2, enter January. Press Enter.

5. Now, use autofill to add the rest of the months of the year. Select cell A2 again. The fill handle will appear in the cell. Select on the fill handle and drag it down to cell A13 to autofill all the months of the year.

6. Next, convert the number values in the Date column in the raw data sheet into text. Select the raw data tab to return to the raw data sheet. In cell G1, enter Month.

7. The **TEXT** function converts a number into text according to a specified format. In this case, list them in which an application was received. Use the format “mmmm” for the full name of the month. In cell G2, enter the following code (do not copy+paste):

=TEXT (B2 , "mmmm")

The first entry B2 refers to the cell you want to convert. The second entry ("mmmm") refers to the specific format you want to use. Press Enter.

(Note: It is *very important* that you manually enter all formulas and functions. They should not be copied and pasted from the activity, as this will result in an error message.)

8. If a box pops up with the option to autofill the column, select the check mark or enter Ctrl + Enter (Windows) or Cmd + Return (Mac). If this box does not pop up, select cell G2. Then, double-click on the fill handle to copy the function down the column. This will populate all the cells in the column with the corresponding month.

9. Now you're ready to total the applications by month. You could do this manually, by filtering the data and counting the number of entries for each month, but this would take a long time and be prone to errors. Instead, use the **COUNTIF** function.

10. The **COUNTIF** function quickly counts how many items in a range of cells meet a given criterion.

First, select the summary data tab to return to your summary data sheet. Then, in cell B2, enter **=COUNTIF('raw data'!G:G,A2)**. The first entry 'raw data'!G:G refers to the range where you are counting the data. The range is located on your raw data sheet 'raw data'! and includes all column G G:G entries. This column contains the data for months. The second entry A2 refers to the criterion you want to count. In this case, it's “January,” the value in cell A2 of your summary data sheet. The function calculates how many times January (the criterion) appears in the Month column (the range).

11. Press Enter. You'll notice the value 2387 appears in cell B2. This means that 2,387 job applications were submitted in January.

12. Select cell B2. Double-click the fill handle to copy the function down through cell B13.

Now your table lists the total number of applications submitted for each month:

| Month | Applications |
|----------|--------------|
| January | 2387 |
| February | 2312 |
| March | 2536 |
| April | 2544 |
| May | 2954 |
| June | 2990 |

| | |
|-----------|------|
| July | 3138 |
| August | 2969 |
| September | 2865 |
| October | 2751 |
| November | 2508 |
| December | 2642 |

Step 5: Find the total number of applications received

Now that you've calculated the number of applications received in each month, use spreadsheet formulas to calculate the total number of applications received.

1. Label the cell in which you'll calculate your result. In cell A14, enter Total.
2. In cell B14, enter `=SUM(B2:B13)`. This function calculates the number of applications received from January through December.
3. Cell B14 contains the total number of applications, 32596.

Step 6: Find the months with the lowest and highest number of applications received

Use the **MIN** and **MAX** functions to calculate this information.

1. First, make labels for your results. In cell A16, enter Min. In cell A17, enter Max.
2. The **MIN** function returns the minimum value in a numeric range. In cell B16, enter `=MIN(B2:B13)`. The result, 2312, is the lowest number of applications received in any month in 2023.
3. The **MAX** function returns the maximum value in a numeric dataset. In cell B17, enter `=MAX(B2:B13)`. The result, 3138, is the highest number of applications received in any month in 2023.

Step 7: Find the average number of applications received per month

Use the **AVERAGE** function to calculate this information.

1. First, make labels for your results. In cell A18, enter Avg.
2. The **AVERAGE** function returns the average value in a numeric dataset. In cell B18, enter `=AVERAGE(B2:B13)`. The result, 2716.33, is the average number of monthly applications received in 2023.

Your work will help your team discover important trends and patterns in the agency's data and generate insights for optimizing the application process. For example, because your findings reveal that February was the slowest month, the agency can devote more of its advertising and outreach budget to February and less to the peak month of July. This is the strategic impact of data analysis.

Reflection

1. Which of the following functions counts how many items in a range of cells meet a given criterion?

- a. **COUNTIF**
- b. TEXT
- c. MAX
- d. SUM

In this activity, you learned how to analyze data using spreadsheet functions. In the text box below, write 2-3 sentences (40-60 words) in response to each of the following questions:

- **How does using functions help you quickly gain insights into large amounts of data?**
- **How does creating a data table help you organize and communicate important aspects of your data?**

An effective response would note that spreadsheet functions help data professionals quickly analyze large amounts of data. It would also mention that creating data tables can help summarize and communicate important aspects of data. In upcoming activities, you will continue to explore the ways in which spreadsheet functions can help you work with complex datasets.