Instructions for Project 3: Consumer Price Index

For this project you will continue to enhance your basic Excel skills, while also learning some new features.

The United States government monthly collects data on the prices paid by an urban consumer for a representative basket of goods and services and collates this information into the Consumer Price Index (CPI). The CPI is used to document the increase/decrease of the cost of the basket of goods and can be used to calculate inflation rates. This project will require you to work with the items in the basket of goods. Specifically you will be asked about the shape of distributions, measures of center and spread, and how these relate to the data.

In the Project 3 solution template, please answer all of the following questions using complete sentences and proper grammar.

# Instructions for Task 1:

For this task you will be using the Basket Items and Cola spreadsheet tabs to answer the following questions.

Steps for Task 1:

1. For this task we will be looking at the changes in the price of cola. To do this we will filter the data, and copy and paste it into a new sheet to work with.
   * Filter the data by selecting “Cola, nondiet, per 2 liters (67.6 oz)”.
   * Highlight all the data that comes up and copy it, including the header row.
   * At the bottom of Excel, next to the tab labeled basket items, there is a tab labeled Cola. Click on this to open the spreadsheet. Paste the data into this spreadsheet, by pasting into cell **A1.**
2. We now want to identify the minimum and maximum values of the data. To do this, we will sort the data.
   * Somewhere in the top part of your Excel program, typically next to your filter button, there is a sort button. Highlight cell **C2**, which should have the value 1.051, the Cola price for July 1995. Click on the sort button. It will look similar to this.

If sorting isn’t working the way you expected it to, here is a useful video to watch: [Sorting Data](https://support.office.com/en-us/article/Video-Sort-and-filter-data-2c146069-50bf-4811-b091-a92b69ad1d01)

* + You can now fill in the minimum and maximum values in the table that starts in cell **H2**.

1. To compute the range use the Excel calculator, like we did in Project 2, to compute the difference between the maximum and the minimum values.
2. We now want to create a class count table, which will be the data for the histogram.
   * First create the classes. Start with the minimum value you just computed and use **a class width of 0.0729**.
   * Now use filtering techniques like we did in Project 2 to find counts for each class and fill in the table.
3. Create the histogram using your class count table from above.
   * Be sure to include proper labels.
   * Make sure the bars touch properly.
   * If you need reminders about histograms, see Project 2 instructions.

# Instructions for Task 2:

For this task we will again use the spreadsheet tab labeled Basket Items and this time Grapes, Wine and Gasoline spreadsheets.

Steps for Task 2:

1. For this task we will be analyzing the cost of grapes. First filter the Basket Items data on grapes, and then copy and paste the data from the main spreadsheet to the grapes tab. Repeat this process for the Wine as well.

As you probably noticed from Task 1, it can be tedious to create a histogram and determine from that the skewness of the data. Luckily for us, Excel has some built in features to help.

1. Calculate the mean of the cost of grapes.
   * To do so we will use the built in formula AVERAGE, which is what Excel calls the mean. In cell **I2**, type the following “=AVERAGE(C2:C254)”. Here **C2**  is the first cell data and **C254** is the last cell with price data
2. Calculate the median cost for grapes. Repeat the same steps from above. The only difference is you should use MEDIAN as your command.
3. Calculate the minimum value for grapes. To do this follow the steps like we did for sorting the Cola.
4. Calculate the maximum value for grapes.
5. Calculate the range of the prices for grapes.
6. Now calculate the mean, median, minimum, maximum, and range for wine.

If you are having trouble with any of these built-in functions consider watching one of these videos or visiting one of these tutorial websites (The tutorial websites have a good visual all the way at the bottom):

* + - [Average](https://support.office.com/en-us/article/Average-a-group-of-numbers-6cced0be-ca49-41c8-a3f2-cb89e566ab90)
    - [Minimum](https://support.office.com/en-us/article/MIN-function-61635d12-920f-4ce2-a70f-96f202dcc152)
    - [Maximum](https://support.office.com/en-us/article/MAX-function-e0012414-9ac8-4b34-9a47-73e662c08098)
    - [Median](https://support.office.com/en-us/article/MEDIAN-function-d0916313-4753-414c-8537-ce85bdd967d2)

1. For one of the questions, you might want to consider the standard deviation for a set of data.
   * If you have Excel version later than Excel 2010 read this. The command works similar to that of the commands above. The command you will want to use is STDEV.S. Here is a tutorial website which at the bottom has an example command: [STDEV.S](https://support.office.com/en-us/article/STDEV-S-function-7d69cf97-0c1f-4acf-be27-f3e83904cc23?ui=en-US&rs=en-US&ad=US)
   * If you have Excel version earlier than Excel 2010 read this. The command works similar to that of the commands above. The command you will want to use is STDEV. Here is a tutorial website which at the bottom has an example command: [STDEV](https://support.office.com/en-us/article/STDEV-function-51fecaaa-231e-4bbb-9230-33650a72c9b0)

The data for this project were obtained from Enigma. The original source of the data can be found at [https://app.enigma.io/table/us.gov.bls.ap.current?search%5B%5D=%40series\_area\_name ("U.S."|"City")&row=0&col=0&page=1&conjunction=and](https://app.enigma.io/table/us.gov.bls.ap.current?search%5B%5D=%40series_area_name%20(%22U.S.%22%7C%22City%22)&row=0&col=0&page=1&conjunction=and) This work is licensed under the Creative Commons Attribution-Share Alike 4.0 United States License. You may copy, distribute, display, and perform this copyrighted work, but only if you give credit to Enigma, and all derivative works based upon it must be published under the Creative Commons Attribution-Share Alike 4.0 International License. The Creative Commons License can be found at [http://creativecommons.org/licenses/by-nc/4.0/legalcode.](http://creativecommons.org/licenses/by-nc/4.0/legalcode" \t "_blank)