Module 7 Lab:
Creating Visualizations

[10pt] Designing a good table. Visualizing data with Tableau.

Imagine you are a data scientist working with the data for the Men's Gymnastics World Championships and the Summer Olympics. Perform the *task a* to help the Championships committee analyze the Men's Gymnastics data and *task b* to help the Olympics Committee better understand the overall Medals by Country.

a. **[5 points] Good table design.** Create a table to display the details of Men's Gymnastics World Championships provided in *worldchamps_mens_gymnastics.csv[1]*. You can use any tool (e.g., Excel, HTML) to create the table.

- The table should contain data from the following columns: *Name, Overall Rank, Nationality, Apparatus, Total Score*
- **Save the table as table.png.**

   You may reorder the columns while creating the table. Review the design recommendations on slide 43 and onwards of the slides. You are not required to use only the techniques described.

b. **[5 points] Tableau:** Visualize the Summer Olympics data as a *stacked bar chart*. Your chart should display the Count of Medals for Olympic using the dataset *summer_olympics.csv[2]* (in Q1 folder). (Optional reading: the effectiveness of stacked bar charts is often debated --- sometimes, they can be confusing to understand and may make data series comparison challenging.)

   Our main goal here is for you to try out Tableau, a popular information visualization tool. Thus, we keep this part more open-ended, so you can practice making design decisions. **We will accept most designs from you all.** We show one possible design in the figure below, based on the tutorial from Tableau, and you are not limited to the techniques

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[1] Source: https://www.kaggle.com/cjdaffern/gymnastic-champs-mens-all-round

[2] Source: https://www.kaggle.com/the-guardian/olympic-games

presented there.

Please follow the instructions below:

- Your design should visualize the Count of Medals during the years 1992-2012 (inclusive) for the countries: France, Germany, United Kingdom, United States, and China.
- Your design should design a stacked bar chart to show the count for each type of medal (Bronze, Silver, Gold) for the following Sports: Aquatics, Athletics, Football, Gymnastics, Rowing.
- For each country, there should be two stacked bars (one for each gender). Make sure the bars are grouped by country.
- Your design should have clear label axes and chart title. Include a legend for your chart.
- **Save the chart as barchart.png.**

Tableau offer student licenses (requested by instructors) for *Tableau Desktop*, available for Mac and Window. Go to tableau activation and select "Tableau Desktop". After the installation, you will be asked to add an activation key.

If you do not have access to a Mac or Windows machine, please use the 14-day trial version of *Tableau Online*:

1. Visit https://www.tableau.com/trial/tableau-online

2. Enter your information (name, email, GT details, etc)

3. You will then receive an email to access your Tableau Online site

4. Go to your Site and create a workbook

Total Medals for Top Countries (1992-2012)

Example for scatter plots, on a single HTML page.

Q1 Deliverables:

The directory structure should be as follows:

> **Q1/**
>
> table.png
>
> barchart.png
> worldchamps_mens_gymnastics.csv
> summer_olympics.csv

- **table.png** - An image/screenshot of the table in Q1.a (png format **only**).
- **barchart.png** - An image of the chart in Q1.b (png format **only)**, Tableau workbooks will not be graded!). The image should be clear and of high-quality.
- **worldchamps_mens_gymnastics.csv** and **summer_olympics.csv** - the datasets