Homework 5

IE 5374: Visualization Engineering

Once the homework is complete, you need to save all the charts and comments in a **Word** file and your Python file in a **.ipynb** format. Then place all the files (including any additional files such as jpg and html) in a **.zip** folder and upload it by clicking on the link provided in blackboard.

For help with Python language features such as variables, functions, loops, and syntax visit https://www.tutorialspoint.com/python/python_functions.htm

Open **Homework for Python.ipynb** and then proceed to complete the following tasks.

Problem 1: Line Plot [10 Points]

Create a line plot showing the number of marriages and the divorces per capita in the US between 1867 and 2014. Label both lines and show the legend. Don't forget to label your axes!

Problem 2: Vertical Bar Chart [10 Points]

Create a vertical bar chart comparing the number of marriages and the divorces per capita in the U.S. between 1900, 1950, and 2000. Don't forget to label your axes!

Problem 3: Horizontal Bar Chart [10 Points]

Create a horizontal bar chart that compares the deadliest actors in the Hollywood. Sort the actors by their kill count and label each bar with the corresponding actor's name. Don't forget to label your axes!

Problem 4: Pie Chart [10 Points]

Create a pie chart showing the fraction of all Roman Emperors that were assassinated. Make sure that the pie chart is an even circle. Include the labels of the categories and the percentage breakdown of the categories.

Problem 5: Scatter Plot [10 Points]

Create a scatter plot showing the relationship between the total revenue earned by arcades and the number of Computer Science PhDs awarded in the U.S. between 2000 and 2009. Don't forget to label your axes! Color each dot according to its year.

Problem 6: Histogram [10 Points]

Create a histogram showing the distribution of the Roman Emperor's reign lengths. What does this distribution tell you?

Problem 7: Box Plots [10 Points]

Create two box plots to compare the earnings of recent college graduates in majors that are primarily composed of women to the earnings of recent college graduates in majors that are primarily composed of men. Is there a significant difference? (Hint: Use notches.) Remember to label the categories!

Problem 8: Subplots [10 Points]

Use subplots to create a figure with two separate line plots showing the number of marriages and the divorces per capita in the US between 1867 and 2014. Place the two line-plots on top of each other so the years line up. Don't forget to label your axes!

Problem 9: Multiple Plots [10 Points]

Use small multiple-plots to compare the trends in gender ratio of 17 the US college majors between 1970 and 2011. Make sure all the subplots have the same axes and ranges. Place the y-axes labels of the subplots on the left side of the plot-matrix and the x-axes labels of the subplots at the bottom of the plot-matrix.

Problem 10: Visualization of your choice [10 Points]

Pick dataset of your choice and create a visualization that was not covered in problems 1 through 9.