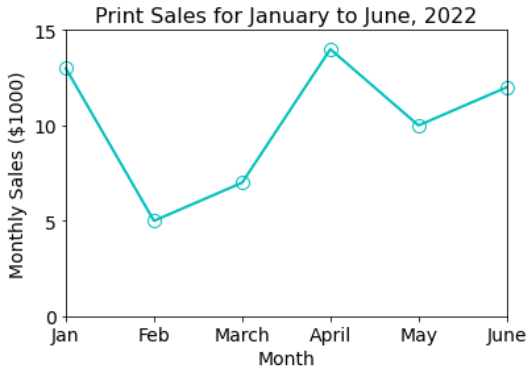
# Lab 04
# Data Visualization I

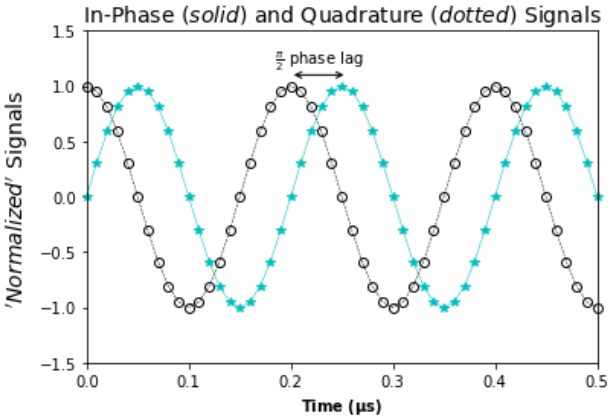
## A. Basic Plotting I (20 points)

Write a script to plot the figure below. The sales from January to June are 13, 5, 7, 14, 10, and 12. Set line width to 2 and marker size to 10. Set font size to 16 for the title, and to 14 for the rests.



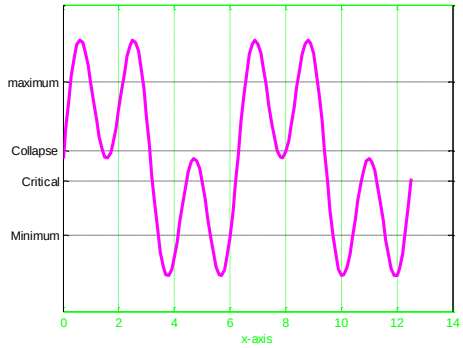

## B. Basic Plotting II (25 points)

Write a script to plot an in-phase and a quadrature sinusoidal signals. The two signals have a frequency of 5MHz and a phase difference of π/2. Set the title font size to 14. Bold the x-label. Italicize specific words in the title and y-label. The result should look like the figure below.



## C. Basic Plotting III (25 points)

Write a script to plot the equation $y = \sin(x) + \sin(3x)$ for $x$ of 0 to $4\pi$. Set line width to 3. Set the ticks on y-axis at -1, -0.3, 0.1, and 1. Label the ticks with the text shown in the figure below. Color the figure accordingly.




## D. Scatter Plot (30 points)

Write a script to plot the figure below. You can get the necessary data from `pokemon_data.csv` which includes the 'Attack' and 'Defense' data of 234 pokemons. We used k-means to partition these pokemons into 3 clusters. The centroids of 3 clusters are (49.875000, 48.075000), (79.801887, 74.386792), and (112.270833, 102.479167) respectively. Please gives different colors to the data points of each cluster. Magenta for cluster 0, green for cluster 1, and cyan for cluster 2. Mark the centroids on the scatter plot. The marker size of centroids is 100. Set the figure size to 9*8 inch2.

[HINT: You may need `matplotlib.lines.Line2D` function for creating the legend]