# Worksheet #6

***Charts (matplotlib)***

1. Based on the code below, experiment with several possible values for the color , linewidth , linestyle and marker parameters of the plot() function, for the titles, for the loc parameter of the legend() function , and for the limits and marks of the axes

import matplotlib.pyplot as plt

x = [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10]

y = x

y1 = [i + 1 for i in x]

y2 = [i + 2 for i in x]

y3 = [i + 3 for i in x]

y4 = [i + 4 for i in x]

plt.plot(x, y, label="x")

plt.plot(x, y1, color="red", label="x+1")

plt.plot(x, y2, c="red", linewidth=2, label="x+2")

plt.plot(x, y3, c="red", lw=2, linestyle="--", label="x+3")

plt.plot(x, y4, c="red", lw=2, ls="--", marker="o", label="x+4")

plt.title('Chart Title')

plt.xlabel('X axis title')

plt.ylabel('YY axis title')

plt.legend(loc='upper left')

plt.xlim([-5, 15])

plt.ylim([-10, 20])

plt.xticks([0, 5, 10])

plt.yticks([0, 2, 4, 6, 8, 10, 12, 14])

plt.savefig("graf/graf.png")

plt.savefig("graf/graf.jpg")

plt.savefig("graf/graf.pdf")

1. From the lists of values:

x\_values = [1, 2, 3, 4, 5]

y\_values = [10, 8, 6, 4, 2]

* 1. Create a line chart
  2. Insert text in the legend of both axes
  3. Give the chart a title

1. From the lists of values:

x\_values = ['A', 'B', 'C', 'D', 'E']

y\_values = [10, 8, 6, 4, 2]

* 1. Create a bar chart
  2. Use the xticks() function to use x\_values as the xx-axis labels
  3. Insert text in axis labels
  4. Give the chart a title

1. From the lists of values:

x\_values = [1, 2, 3, 4, 5]

y\_values = [10, 8, 6, 4, 2]

* 1. Create a scatterplot (scatterplot)
  2. Insert text in the legend of both axes
  3. Give the chart a title

1. From the lists of values:

months = ['January', 'February', 'March', 'April', 'May', 'June'] values = [105235, 107697, 110256, 109236,   
108859, 109986]

* 1. create a chart
  2. Bound the yy-axis values to [100,000, 120,000]
  3. Add chart and axis titles
  4. Turn the chart into a bar chart

1. The temperatures.txt file contains the average temperatures in Lisbon, Coimbra, Porto and Faro during a year.
   1. Plot a line graph of temperatures with the following characteristics:
      1. Different styles/markers for lines
      2. Chart and axis titles
      3. Scale of temperatures between 0ºC and 25ºC, with marks of 5 in 5
      4. Legend with the names of the cities
   2. Calculate average annual temperature by city
      1. Plot a bar graph of average temperatures
   3. Calculate annual maximum and minimum temperatures by city
      1. Plot a bar graph (side by side) of minimum and maximum temperatures