CSCA20 - Lab 2

Lists

Learning Objectives

This lab focuses on building and accessing elements of lists, as well as using imported tools. The prelab shouldn't require more than 5 lines of code, but you will need to make sure you know how to find the documentation on how to use the external tool. When testing your code, you may want to "cheat" and only use 2-3 months to save you entering lots of data until you've got your code working

Marks

Your TA will record your marks during the tutorial section. Part of your responsibility is to demonstrate your solutions to your TA accurately.

Arrived with pre-lab completed	/1
Showed up on time & worked through lab	/2
Successfully demonstrated working code	/1
TOTAL	/4

Prelab

You should come to the lab with a program that does the following:

- Plots (using matplotlib.pyplot) a graph of temperatures vs months
- The names of the months and the temperatures should be hard-coded (entered directly into the code)
- Your resulting graph should look something like Figure 1 (feel free to play around to make it prettier)
- You may find The Pyplot tutorial helpful

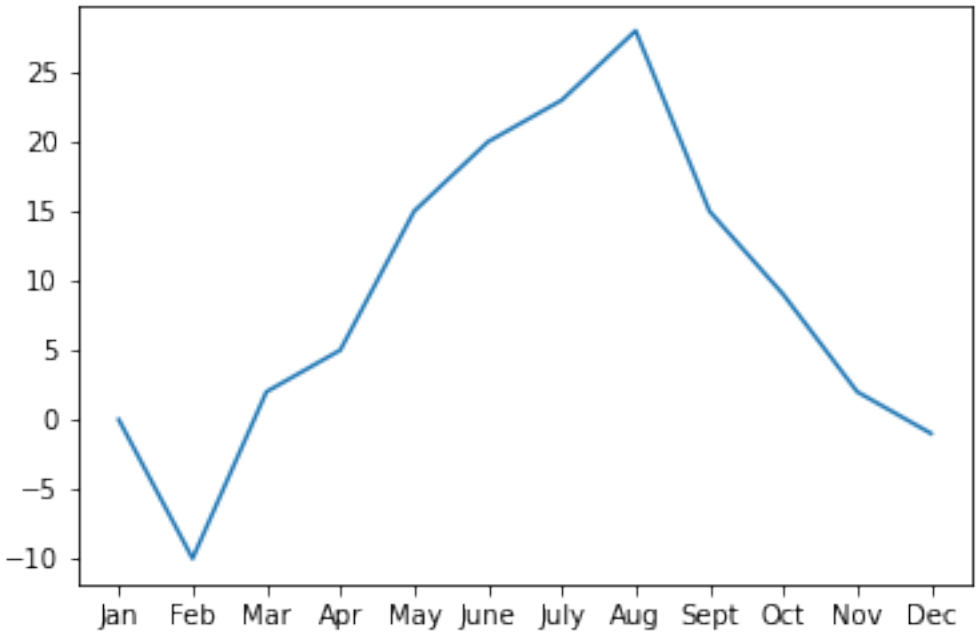

Figure 1: Example prelab output

Lab

In this lab, we are going to graph temperatures across multiple years based on user input.
Your program should:

- Ask the user for a start and end year for the period to be graphed
- For each year in the period, ask the user for the temperature each month (e.g., "Please enter the average temperature in March of 2017:"

- Once all of the data has been entered, plot the data
- Your resulting graph should look something like Figure 2

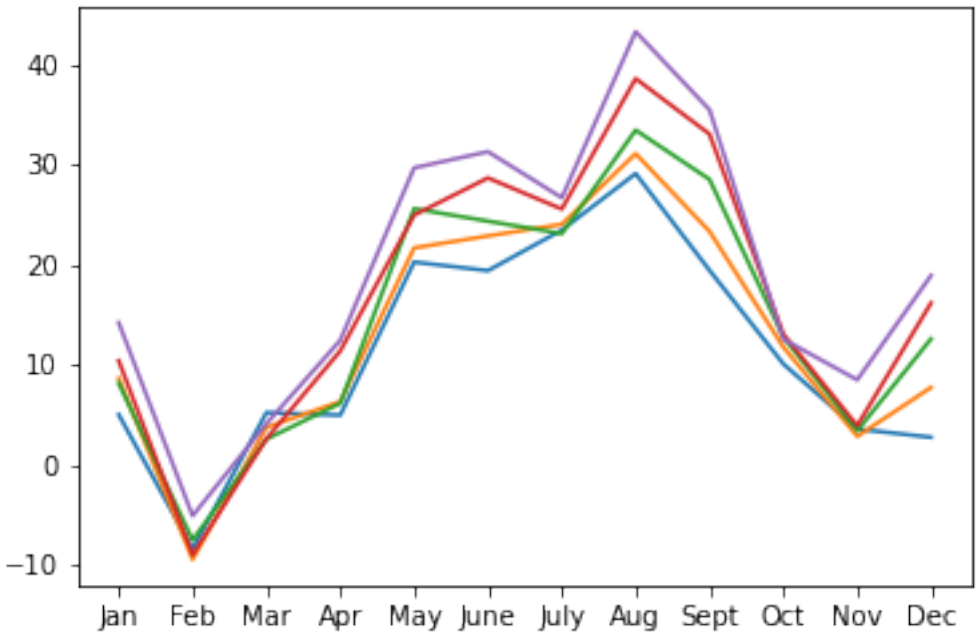

Figure 2: Example lab output

Postlab

(This section will not be marked, but it's good practice if you finish the lab early or want to continue to work at home)

Play around with pyplot to improve your graph. Add a legend and some graphical features, and maybe change the colours so that it's more visually obvious which years are earlier/later in the graph. Basically just play around with the documentation and see what you can do.

You can also improve your program by:

- handling bad input (e.g., if the end year is before the start year)
- allowing the user to choose when to stop (e.g., At the end of each year's data, add a prompt "Do you wish to continue? Y/N")
- Don't throw away any data. Instead of plotting as you go, try to save all the data in one big list of lists and then plot only after all the data has been collected