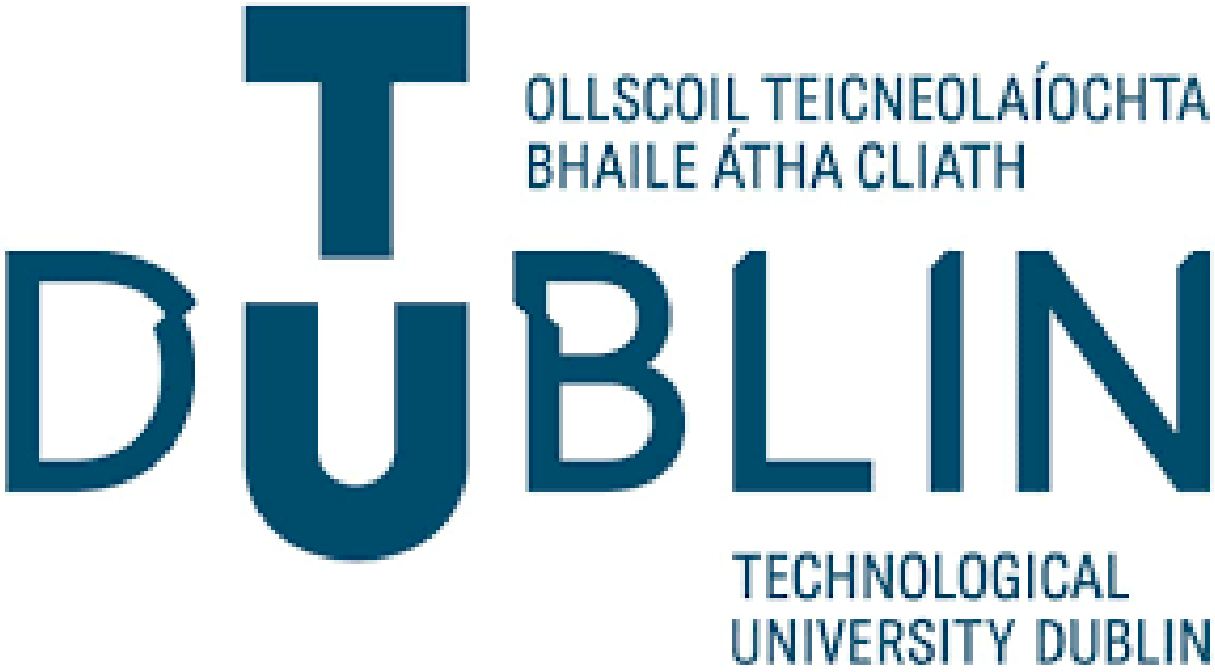

Python Programming for Networks

Formal Element Report

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Opening

This report details my process in creating this piece of code, overviewing the steps taken to work the problem, my way of breaking down the problem and the solutions I came to.

Algorithms:

For my algorithms I decided to break each problem into separate functions, this meant that I could tackle each part of the Assignment one part at a time.

Main function:

Get the file from the internet.

Turn that file into a form recognizable by the code to process the data.

Process the Irish data separately to ensure accuracy.

Process all the data to get the larger scope variables.

Plot the graph using the data from the file.

Download and convert Function:

Get the file from the internet.

Convert the file to a version readable by the code.

Analyze Irish data:

Read file until “Ireland” is the country name.

Extract the correct data.

Print out the appropriate information (For troubleshooting purposes)

Pass that to the new document.

Process all data function:

Read through the whole file.

Get a running sum of the total cases and extract the highest country data.

Working the Problem

As stated, I worked each portion of the problem individually in order to ensure the data was accurate and the Implementation was sound, while my success in the latter is questionable my overall success trumps that.

I started with obtaining the file, this was not a hard task however the lack of encoding gave me a few hiccups initially.

Once I could reliably download the file, I then worked towards extracting the Irish data. I started by reading the data line by line printing it out and ensuring the code was reading each line as intended, I realized that I had a jump in logic and originally had 2 variables reading through the file which was quickly solved. Once I knew the data was being read as I wanted, I had the function loop and check each line until “Ireland” was the country name, once I had that, it was as simple as splitting the data up and extracting the relevant data. Once I had that I had it print out those values for troubleshooting and write the data to the adjoining text file.

After this I began analysing the data as a whole for the broader variables such as the average and the highest cases in the last 24hrs. After completing the code, I realized I could have been slightly more efficient by extracting the global total instead of using a running sum however I have decided to stick with my implementation, so during the running sum I have a list that checks the cases value stored within against every cases value as it gets processed storing the largest one for use later, these values are then printed out (for troubleshooting) and passed to the adjoining text file.

Finally was plotting the Graph, at first I was hopeful to use a dictionary to pick out the data and have a very neat piece of code, however I ran into more problems than I could handle so I defaulted to using lists and somehow I managed to make that even more complicated still, so originally I had extracted the data and plotted it simply to gain an understanding of the matplot library and then I wanted to add the names of each country, and to me the logical course was to read the file again and compare the data I had gathered and arrange the names into a list in the corresponding order, as to be expected this was tricky to execute exactly as I wanted, however after a couple hours of working with it I realized that I had forgotten to re-open the file for each iteration, this meant that only one name was stored, after realizing and rectifying this I finished plotting the graph with the two lists and spent some time styling it.

Conclusion

This code was difficult to tackle, in some places I solved issues first time and moved on but in many cases I spent several hours trying to rectify mistakes and portions of the code, however in the end I have completed a working piece of code that does exactly what it says on the tin.