February Assessment

This assignment is due at midnight on Sunday the 14th February. If you have any issues with that get in contact with me.

This assessment needs to be submitted on repl and on Moodle. On repl click the submit button. On Moodle submit a link to your repl and copy the code into the text submission box.

This assignment should have your name at the top of the code and it should be clear what code is answering each question. Either through variable and function names or by using comments.

You will need to create graphs for each question. All of the graphs should be appropriately named.

Total marks - 120

Instructions

You may use this starting code to begin your assignment - https://repl.it/team/AoCDiarmuid/Python4Stats-Assessment. You will find this starting code in the repl teams for education area. This only contains the data that you will be using.

Part 1 - 40 Marks

The information you are given contains the temperature data over 24 hours for three days from the 29th-31st December 2020.

Question 1 - [Marks - 3x5]
Draw a separate line graph to show the data for each of the three days. Name and label the graph appropriately.

Question 2 - [Marks - 5]
Draw a single line graph showing the data for all three days. Name and label the graph appropriately.

Question 3 - [Marks - 10]
Calculate the average temperature for each day. Graph these values on a bar chart. Name and label the graph appropriately.

Question 4 - [Marks - 10]
Determine the minimum and maximum temperatures on each of the days. Graph the range from the minimum temperature to the maximum temperature on a bar chart. **Hint:** This will be similar to a stacked bar chart.

Part 2 - 50 Marks

The information you are given contains the rainfall data over 24 hours for three days during December 2020.

Question 1 - [Marks - 3x5]
Draw a separate line graph to show the data for each of the three days. Name and label the graph appropriately.

Question 2 - [Marks - 5]
Draw a single line graph showing the data for all three days. Name and label the graph appropriately.

Question 3 - [Marks - 10]
Calculate the total rainfall for each day. Graph these values on a bar chart. Name and label the graph appropriately.

Question 4 - [Marks - 10]
Using the same total rainfall for each day, graph the values on a pie chart. Name and label the graph appropriately.

Question 5 - [Marks - 10]
Create a new list combining the rainfall for each day by hour. The resulting list will have 24 values, the total rainfall over the three days for each hour. Graph this data on a line graph.

Part 3 - 30 Marks

Presentation - [Marks - 10]
Making all the code output look nice and making sure it is easily readable.

Neat, clear code - [Marks - 10]
Making sure that the code is neat and easy to read. That all variable names make sense and that the structure is clear.

Change the graph limits to create consistent graphs - [Marks - 10]
You may notice that the line graphs for the temperature data don't seem to line up. This is because the x and y limits on the graph are different. To make the graphs more readable, we can change the limits to the same values.

Below is a sample graph and some sample code to demonstrate how we can change the limits of our graph. Experiment with these functions and use them to improve your graphs.

```
plt.figure(figsize=(5,2))
plt.plot([1, 2, 5, 7])
plt.xlim(0,3)
plt.ylim(0,10)
plt.savefig("Example.png")
plt.show()
```