THE UNIVERSITY of ADELAIDE

ASSESSMENT 1 PART A PRACTICAL 3

Due Date: Sunday 11:59 pm, end of Week 3.

Weighting: 6% (this is the third of five practical assessments totalling 30%).

Introduction: Files and functions

Purpose

The purpose of this assessment is for you to demonstrate your ability to apply what you have learnt each week in the creation of a program to solve a problem.

Your tasks

Demonstrate your understanding of working with data files and creating functions by completing the following in a Jupyter Notebook

Q1: Reading data from files

a. Read the data in the file weatherAUS.csv into a Python dictionary
b. Show the first 5 lines to show that the data has been read in

Q2: Creating functions

a. Write a function called *daysOver* that takes three arguments: a dictionary, a location (such as 'Sydney', 'Adelaide',etc) and a temperature and returns the number of days that were over the given temperature for the given location.

   For example, if we call the function using the line:

   total = daysOver(dictionaryData, 'Adelaide', 40)

total will hold the number of days that Adelaide had a temperature greater than 40 celsius in the data.

As a test, there were 54 days over 40 celsius in the data. Check that total is 54 for the example when you run your code.

b. Use the daysOver function to print the number of days over 35 celsius for each of the following cities: 'Adelaide','Perth','Melbourne','Canberra','Sydney','Brisbane','Darwin'
c. Which of the Australian cities has the most number of days over 35 celsius?

Q3: Creating data files with functions

a. Write a function called *writeTempsData* that takes 3 arguments: a dictionary, a filename and a temperature.
This function should iterate over the cities:
'Adelaide','Perth','Melbourne','Canberra','Sydney','Brisbane','Darwin' and call *daysOver* to build a dictionary entry for each city and its count of days over the given temperature and write this dictionary to the specified file in csv format.

The file when finished should look like (assuming 40 is passed in as the temperature argument):
City,Temp Count
Adelaide,54

Perth,28

Melbourne,16

Canberra,6

Sydney,7

Brisbane,0

Darwin,0

Directions

Submit your assessment via online submission, as a Jupyter Notebook, providing your responses to questions in this Assessment brief. This assessment will be written in Python.

Save your notebook and upload it through the assignment link. Your tutor will assess your work based on the rubric. Make sure you have a look at the rubric so you understand what your tutor will be looking for.

Requirements

You must submit your Jupyter notebook file (containing your Python code) through the Canvas submission link.

Rubric

Assessment Criteria	**Level of performance**					
Jupyter notebook structure	**N/A**	**Distinction (5/5)** All problems include a header related to what data is being presented and a clear description of the data.	**Credit (3.7/5)** All problems include a header related to what data is being presented and a minimal description of the data. (for example, a list instead of text describing the data)	**Pass (3.3/5)** All problems include a header and a description of the data but relation to data unclear	**Fail 0/5)** No headers or description of the process.	**/5**

Python code	**High Distinction (15/15)** Q1, Q2 and Q3 correctly answered	**Distinction (12.6/15)** Q1 and Q2 answered correctly, Q3 has structure but some errors	**Credit (11.1/15)** Q1 & Q2 answered correctly, Q2 makes use of iteration to iterate over cities	**Pass (9.6/15)** Q1 & Q2 correct function structure (returning value, correct arguments) Logic error means value not correct	**Fail 0/15)** Q1 & Q2 incorrect	**/15**
TOTAL						**/20**