ITICT102A Introduction to Programming Group Assignment–25%

Work in a group of 2 or 3. Due end of week 11

Your brief

The Apple stock information is provided in APPL_Group.txt from 1/04/2020 until 1/04/2022. This file includes various information such as date, opening value, the highest value of the day, the lowest value of the day, closing value, and volume. You should write a program that reads this file and analyse various information. The information in .txt file must be extracted and transferred to suitable lists.

Outputs
Part 1: The program will list the analysed data in the following form:

<div align="center">

Apple Stock Analysis 2020 and 2021

</div>

	2020	2021	Total
Max Volume (Date)	………………	………………..	………………
Min Volume (Date)	………………	………………..	………………
Lowest Open (Date)	………………	………………..	………………
Highest Close (Date)	………………	………………..	………………
Highest Monthly Average (Month)	………………	………………..	………………
Lowest Monthly Average (Month)	………………	………………..	………………
Annual Average	………………	………………..	………………

*The blank area must be filled with the correct values.

Once the modelling has been run, the user should have the option to run it again. Each time it is run, the output should be saved to disk with the following filename: *report_s.txt,* where *s* is a number returned by **int(time.time())** (*time.time()* is a function from the *time* module, which you will need to import).
This returns the number of seconds since 1/1/70 so that each value of s will be a unique timestamp. For example, the file may look like this: *report_1586386072.txt.*
Part 2: In addition, your program must be able to visualise the information. The user should be able to choose the year and see two liner graphs based on monthly averages of trade volume and monthly averages of closing value.

Note that the group's solution should be documented in a **formal report**. **Each student must identify their particular role** in the report by which they will be assessed.

Your report should:
• Indicate the role of each team member
• Provide the results of runs of your program for each year and predict the market behaviour for 2022 based on the results of previous years' trends.
The approximate word length is 600 words.

Note that each student must upload the following saved as a zip file:
1. Python program
2. Formal Report

Marking Criteria

Program uses functions	2	Program should make generous use of functions (at least 2)
Reading the data and put them in lists	2	
Data is correct based on input	4	Gives correct output
Several runs using different data provided as requested	2	1 for each run for each year
Comments used to explain program operation	1	
Table of data displayed as required	2	See above
Data displayed in the correct format (including no decimal places)	1	
Output file written using correct filename (including timestamp)	1	
Visualised data using linear plot	3	
Exceptions for file I/O handled correctly	1	Reading .txt file
Doing data input validation properly for the following: • Input year	2	Data types and ranges tested for each
Opportunity to run program again	1	User-driven
Formal report: • Work distribution between students documented properly • Recommendations	3	1 mark for student roles, 2 marks for recommendations
TOTAL	25	