For revision practice

SCHOOL OF SCIENCE AND TECHNOLOGY, SINGAPORE

SECONDARY 3
CLASS TEST 2

COMPUTING

7155
5 May 2022 (Thursday) **50 minutes**

CANDIDATE NAME			
CLASS		INDEX NUMBER	

Additional Materials: Insert Quick Reference Glossary

READ THESE INSTRUCTIONS FIRST

Answer **all** questions.

All tasks must be done in the computer laboratory. You are not allowed to bring in or take out any pieces of work or materials on paper or electronic media or in any other form.

Programs are to be written in Python.
Save your work using the file name given in the question as and when necessary.

The number of marks is given in brackets [ ] at the end of each question or part question. The total number of marks for this paper is 15.

For Examiner's Use		
1	4	
2	3	
3	2	
4	4	
5	2	
Total		**/15**

This document consists of **3** printed pages including the cover page.

SSTarbits, a new coffee joint, would like to do some market research to find out what their most popular drink is.

The drinks ordered are denoted in the shop's system using single letters: "L" for latte, "C" for cappuccino and "M" for mocha. At the end of each hour, an order string, which is a string of letters denoting the drinks ordered during the hour, can be obtained for analysis.

1 Write a user-defined function `count_char(string, char)`, which takes a string and a single character as parameters, and returns the number of times the character appears in the string.

Save your program as **COFFEE**_<your class>_<index number>_<your name>**.py** [4]

2 Write a program to count the number of times each drink was ordered. Your program should:

- use an appropriate input message to take as input an order string, a string with no fixed length which comprises only the letters "L", "C" and "M", representing the drinks ordered
- call the function `count_char()` to count the number of times each drink was ordered
- display the number of times each drink was ordered using appropriate output messages

Save your program. [3]

3 When your program is working, use the following test data to show your test result:

```
LCLLLCMMCML
```

Take a screenshot of your result and save it as:
COFFEETEST_<your class>_<index number>_<your name>

Save your file in either **.jpg** or **.png** format. [2]

4 Save your program as **COFFEE2**_<your class>_<index number>_<your name>**.py**.

Extend your program to find and display the drink names in a **single line**, from most popular to least popular. If there are multiple drinks that are equally popular, they can be in any order.

Save your program. [4]

5 Save your program as **COFFEEPROMO**_<your class>_<index number>_<your name>**.py**.

For one hour each day, SSTarbits holds a one-for-one drink promotion, where customers can buy two drinks for the price of one, provided that both drinks are the same. When customers take up this promotion, the order string will show two of the same letter consecutively. As not every customer may take up the promotion, the order string may also show single letters that are not repeated.

Modify your program to find and display:

- the number of times each drink was ordered among those who do not take up the promotion
- the drink names in a single line, from most popular to least popular, among those who do not take up the promotion.

Your program need not display the outputs for Questions 2 and 4.

Save your program. [2]

END OF PAPER

Bonus Questions (only to be counted if your final score before bonus is ≤ 12)

B1 SSTarbits has expanded their menu. They now have the following drinks:

1. **L**atte
2. **C**appuccino
3. **M**ocha
4. **T**eh O
5. **H**orlick
6. **G**reen tea
7. **R**ibena float
8. **B**andung

The 1st letter of each drink is used in the order string.

Start a new file. Write a program to do the following:
Given an order string *S*, and an integer *K*, output the size of the longest possible substring that has exactly *K* unique characters.
Save your program as **BONUS**_<your class>_<index number>_<your name>**.py**

Example 1:
S = "LLCLMCTCTCT", *K* = 3
Output: 7
Explanation: "MCTCTCT" is the longest substring with K distinct characters. [3]