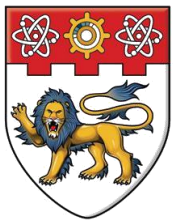

NANYANG TECHNOLOGICAL UNIVERSITY

MINI PROJECT

CE1003/CZ1003:
Introduction to
Computational Thinking

Real-time Canteen Information System

SESSION 2019/2020

SCHOOL OF COMPUTER SCIENCE and ENGINEERING
NANYANG TECHNOLOGICAL UNIVERSITY

Real-time Canteen Information System

1. OBJECTIVES

The purpose of this assignment is to improve your problem solving and programming skill with Python. You can practise and acquire hands-on knowledge with Python programming, in particular on data processing, branching, looping, and file handling.

Here you are asked to write a Python program that allows the user to browse the opening stalls in NTU north spine canteen and their current available menu at any date and time using computer.

You are required to create Real-time NTU north spine canteen information system with the following capabilities

A. Store and display stall information
B. Store and display stall menus
C. Display stall information and menus based on current system date and time
D. Display stall information and menus based on user defined date and time
E. Calculate estimated waiting time for the stall by asking user to enter the number of people in the queue
F. Allow to check the operating hours for all stalls

You should consider the following in your code:

1. Programming style with proper comments
2. Correctness of your program

2. OVERVIEW OF THE PROGRAM

The sample interfaces of a Console version and two GUI versions are as follows:

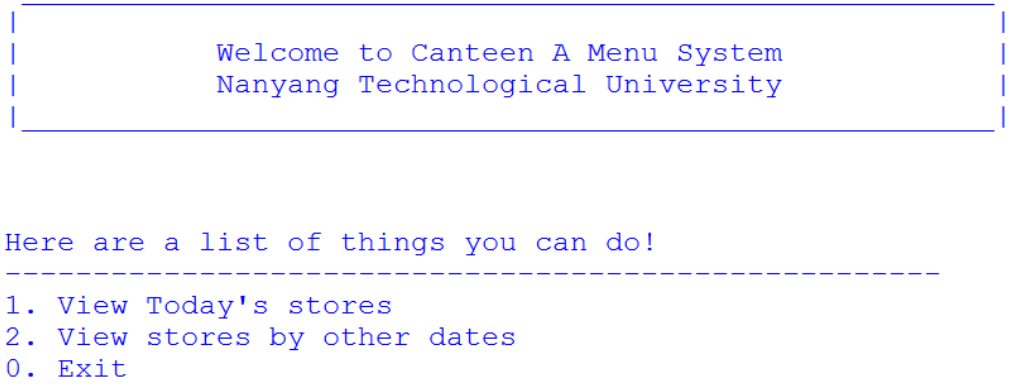

Figure 1. Preview of Console Version

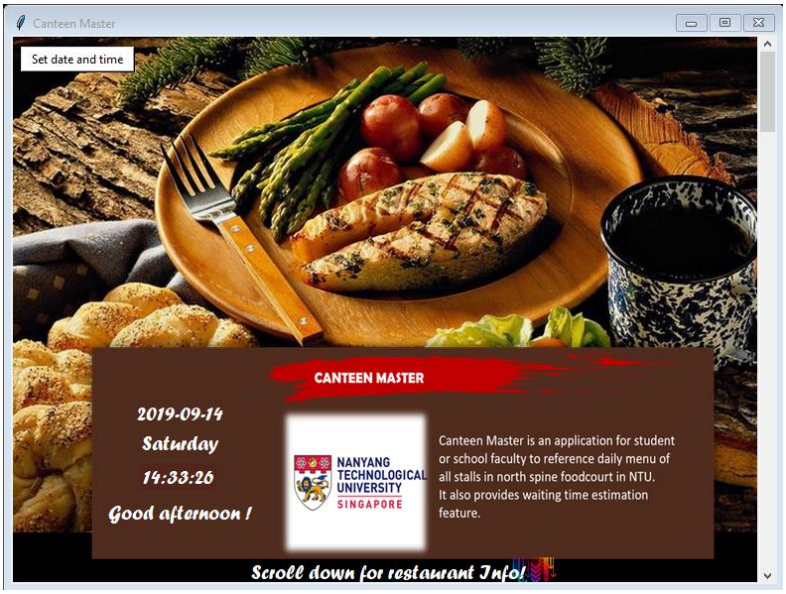

Figure 2. Preview of GUI Version 1

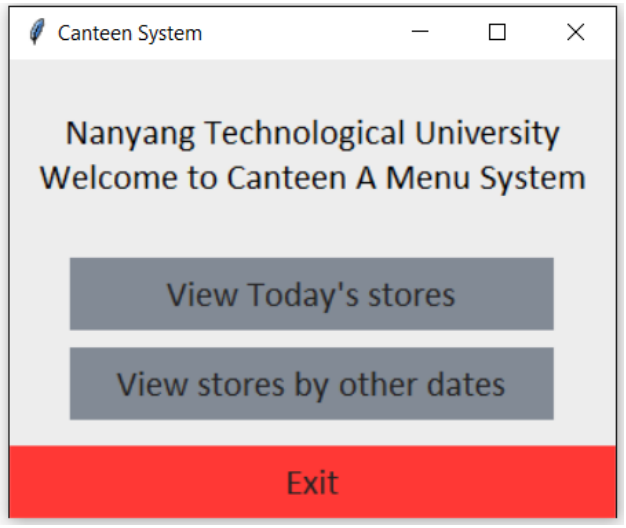

Figure 3. Preview of GUI Version 2

If the GUI version is too challenging for you, console version is sufficient to fulfil the basic requirements.

3. DETAILED FLOW OF THE PROGRAM

Feature C: Display the menu for all stalls based on current system date and time

The sample interfaces of a Console version and two GUI versions are as follows are as follows:

```
Selection: 1

Sunday, 15 September, 2019, 17:40

 _____________________________________
/                                     \
|                                     |
|          3. Macdonald               |
|                                     |
\_____________________________________/

1. Fillet o Fish              $2.50
2. McSpicy                    $8.90
```

Figure 4. Console Version

Figure 5. GUI Version1

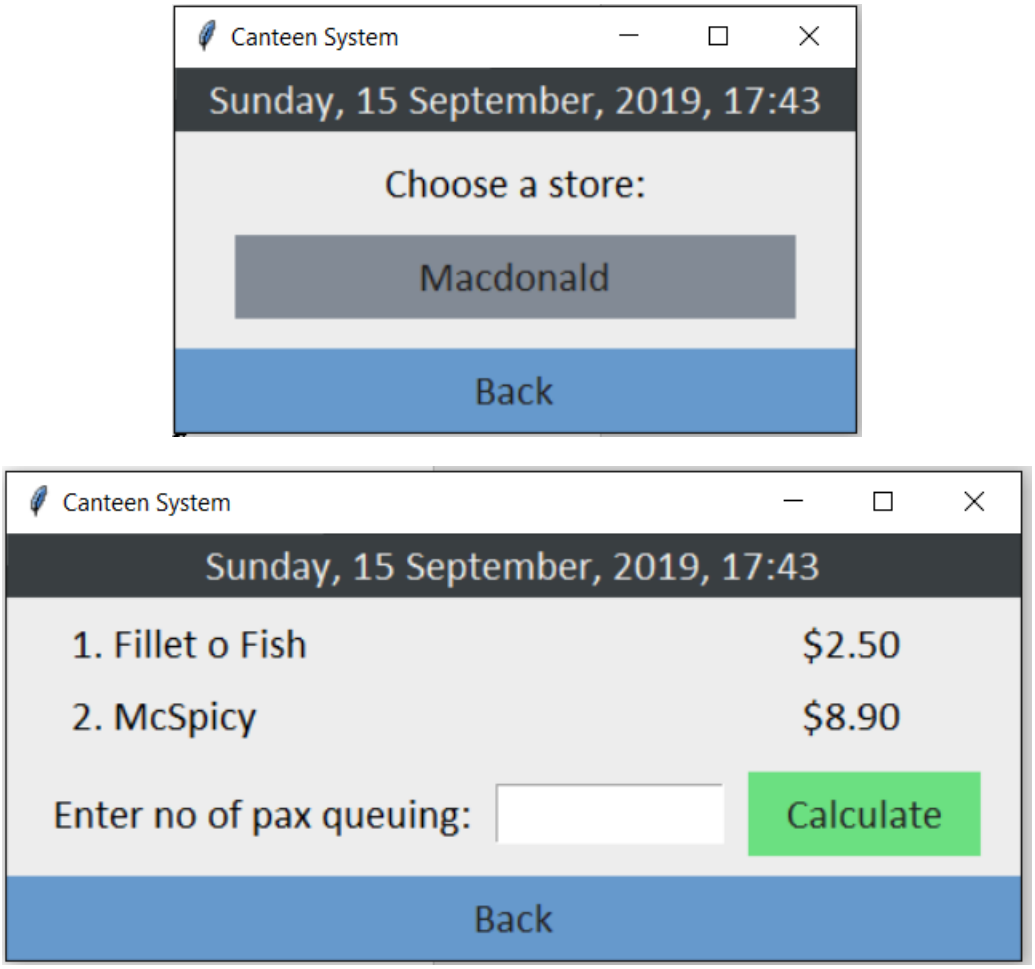

Figure 6. GUI Version2

Requirements details for Feature C:

Branching design

Some stalls will provide different menu at different days, for example on Monday, Wedsday and Friday, Malay Food stall will provide the menu different from the one on Tuesday, Thursday and Saturday.
Similarly, some stalls will provide the breakfast before a certain time. The lunch and dinner menu will be displayed after that period of time.
Based on the current date and time, all stall's menu will be printed to screen according to their operating times.

File handling

A file is used to store all the menus for different stalls in the canteen. When program starts, the file contents will be printed to the screen.
There is another file stored the operating times for all stalls. The program need refer to operating times and decide which stall's menu should be printed to the screen.

Feature D: Allow to set date and time to get opening stalls and their menu

The sample interfaces of a Console version and GUI version 2 are as follows:

```
Selection: 2
Please enter a date(DD/MM/YYYY): 16/09/201
Please enter a time(23:59): 11:30

Monday, 16 September, 2019, 11:30

 _____________________________
/                             \
|                             |
|        1. Mini Wok          |
|                             |
\_____________________________/

1. Chicken Rice          $2.00


 _____________________________
/                             \
|                             |
|    2. The Sandwich Guys     |
|                             |
\_____________________________/

1. Pulled Pork Sandwich  $2.50
2. Cajun Sandwich        $4.50


 _____________________________
/                             \
|                             |
|        3. Macdonald         |
|                             |
\_____________________________/

1. Fillet o Fish         $2.50
2. McSpicy               $8.90


 _____________________________
/                             \
```

Figure 7. Console Version

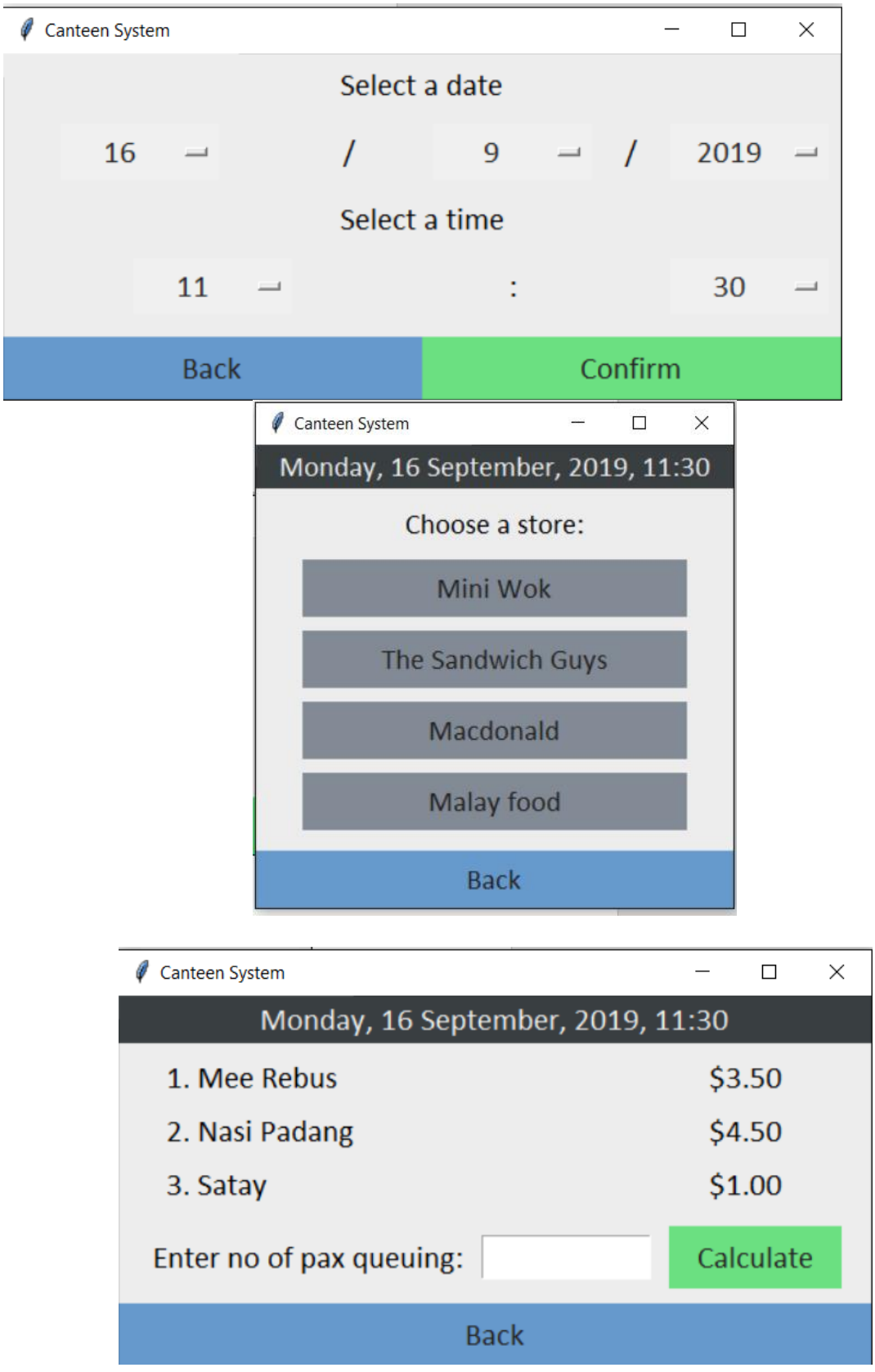

Figure 8. GUI Version

Requirements details for Feature D:

User input handling
Consider how to handle user input and convert it to the data type that we need for comparison purpose.

String operation
Formatted input (e.g.16/09/2019) from the user cannot be directly used for branching condition test, necessary operations should be done on the string in order to get individual inputted date and time.

Loop design
User might enter bad input, hence a loop should be designed for user to re-enter until a correct name is read.

Feature E Allow to enter the number of people in the queue and calculate the corresponding estimated waiting time

The sample interface of GUI version 1 is as follows:

Figure 9. GUI version 1

Requirements details for Feature E:

Calculate waiting time
The algorithm of calculating estimated waiting time will depend on your own. You can observe the time required for particular stall to serve one person and do the multiplication with number of people in the queue.

Feature F: Allow to check the operating hours for all stalls

The sample interface of GUI version 1 is as follows:

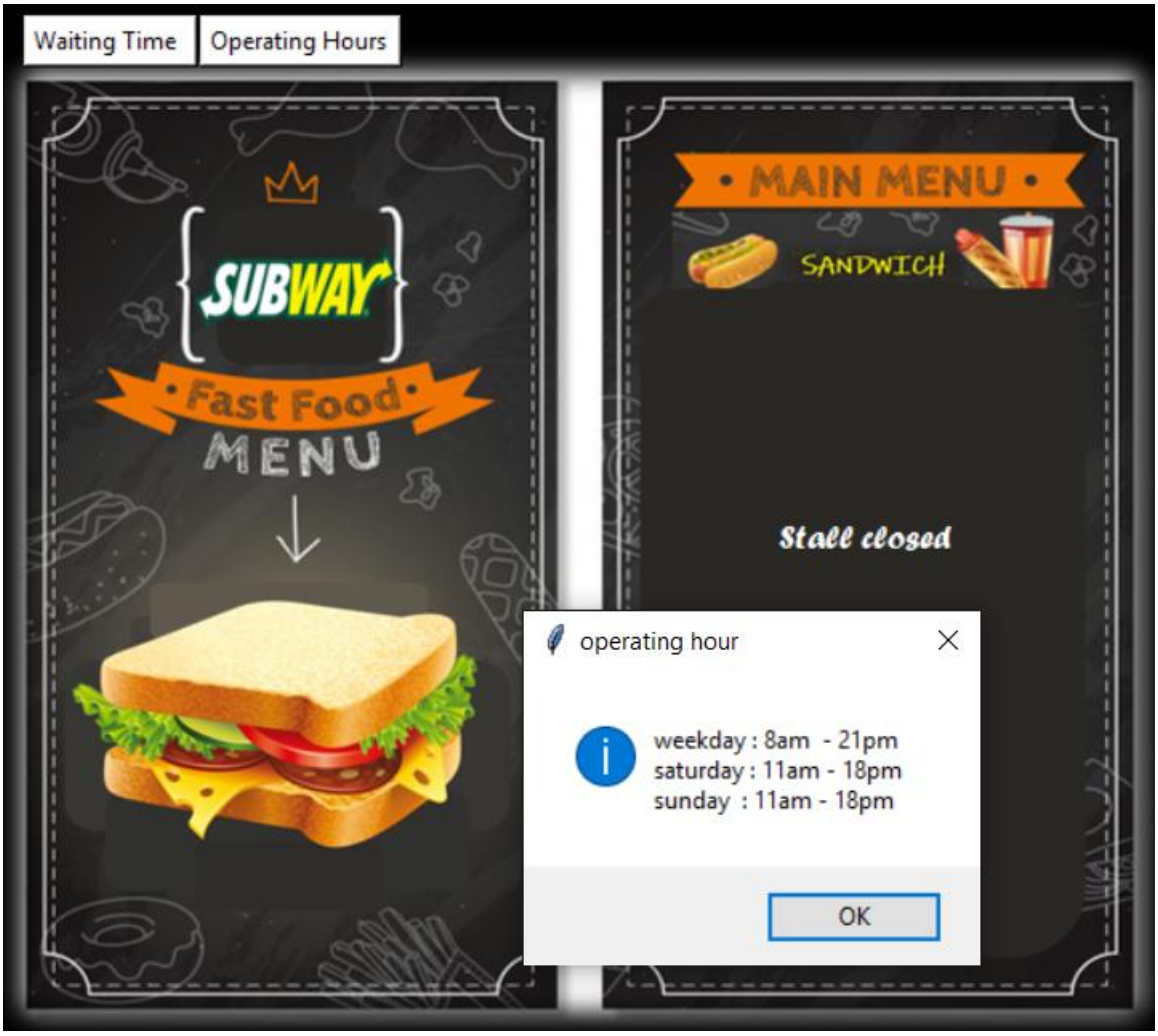

Figure 10. GUI version 1

Additional Suggestions:

1. Try to make use of more python data structures in your program. (For example: Python does not support switch function, try to use dictionary data structure to build your own switch function instead of if-else branches. The code structure will become simpler and easier to read.)

2. It's a good habit to organize your program in modular style, make sure one function only serves one purpose and write necessary comment to indicate its usage.

3. This sample GUI program is build using Tkinter – the standard GUI package of Python because of its' simplicity. Noted that Tkinter is not the only GUI programming toolkit for Python and there are many more powerful tools to build GUI for Python. Tkinter is not the compulsory choice, feel free to explore more toolkits such as pygame, PyQt, and wxPython etc.

Below listed some tutorial resources for different types of GUI toolkits:

Pygame Tutorial
https://www.youtube.com/watch?v=i6xMBig-pP4&vl=en

Tkinter:
https://www.python-course.eu/python_tkinter.php
https://tkdocs.com/tutorial/

PyQt:
https://forum.qt.io/
http://zetcode.com/gui/pyqt4/

wxPython:
https://wiki.wxpython.org/How%20to%20Learn%20wxPython

ASSIGNMENT GROUPING:

The group has been formed within your lab group according to the seat.

4. Assessment:

Program and presentation: 80%
Report 20%.

5. NOTE:

Make sure your program can run on Python 3.4+ (the lab. version).

6. SUBMISSION

I. This assignment will be due at **1159pm on the day of last lab session of each group in week 13**.

II. Please label your python script with your surnames and lab group (and separated by the underscore symbol), e.g., FER1_Tan_Lee_Fu.py. Please refer to "Program assessment form" for assessment rubrics.

III. In addition to your Python code, you need to submit also a PDF file e.g., FER1_Tan_Lee_Fu.pdf, which should show computational thinking process, flow chart, and examples of running your program with different test data. Please refer to "Report assessment rubrics" for assessment rubrics.

IV. In this assignment, you do not need to submit hardcopies but make sure both your Python program file and report PDF file are correctly named. After that, you can zip them into one zip/rar file and submit it through the "Assignment page" on our course website in NTU Learn.

V. Late submission could be penalized. Email your lecturers earlier if you experience critical issues, e.g., illness, accidents, etc.

7. PLAGIARISM

Please be reminded that **PLAGIARISM** (or copying part of/complete assignment) is considered as **CHEATING**, which is strictly prohibited. We will use certain plagiarism checking system to check your work. You will get zero mark on your assignment if you are found guilty of plagiarism (copy from others OR give your work to others for copy).