Project Homework 1
Spring 2022

Assigned:
Due:

Assignment Rules:

1) **Project homework can be realized by teams of max two students. You can share your ideas with other teams, however copying/transferring any code portions between teams is forbidden.**

2) **If you have directly taken a piece of code from a web page or a book and used it, clearly state this (where you got that piece of your program from) in the comments lines you will write in that part of your program.**

3) **Submit your project as a single python code with .py/pyw extension (do not zip/rar your file). Any verbal explanation or description should be given as comment lines inside the document. Name your document following the rule below. Do not use Turkish characters (such as ğ,ü,ş,ç…) in document's name.**

   student1name_student2name_p1.py

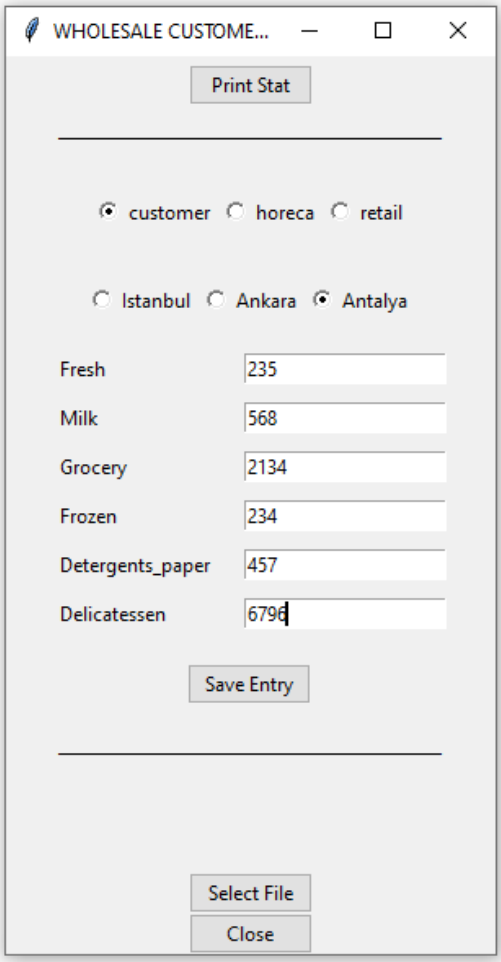
   If you are not working as a team then define your submission as,

   student1name_p1.py

   The names of the team members will be written inside the code document also. Submit your homework to Black-Board system.

For placement of your widgets, use pack() or grid() managers, never use place() for positioning of your layout. Codes using place() utility will not be graded!

Description:



Design and write the code of the tkinter application shown on the right panel. The application will be able to read/write into a selected excel spreadsheet file. For this purpose, the **wholesale.xlsx** document has been shared along with this document.

The excel data set refers to clients of a wholesale distributor. It includes the annual spending in monetary units (m.u.) on diverse product categories. The annotations and any required descriptions about the data sequence has been given inside **"whole data set .txt"**. There are 9 columns and 440 customer entries and the first column stores the id number of the customer entries:

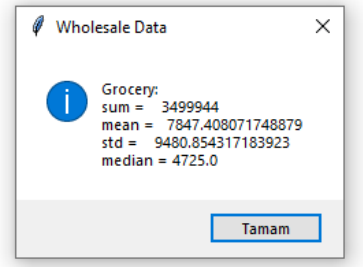
There are **8 widgets to collect the information** from the end user. Two radiobutton widgets collect the selections of CHANNEL and REGION. A total of 6 Entry widgets will obtain integer type entries from the user and the entries are to be stored by **IntVar** tkinter variables. You can embed/attach each widget to a different Frame inside the root window.

Your code will be expected to have **4 main functions**:

1. **Select File:** When pressed, from tkinter.filedialog the **askopenfilename** dialog is shown. The user selects a file, and the selected file is stored inside a tkinter String Variable to be passed as an argument for other functions.

2. **Save Entry:** Writes the new customer information on a selected excel file. This file is supposed to be the wholesale.xlsx which should be selected (by Select File Button) before the use of Save Entry button. The information content is written at the bottom of previous data.

3. **Print Stat:** Prints **location** and **deviation** statistics for the "**GROCERY**" column by reading the wholesale.xlsx file. When this button is pressed, a popup dialog appears. The popup window will be the **showinfo** dialog from the tkinter.messagebox library. The dialog window that is expected to be seen is given below:



4. **Close:** Closes the root window.

You will probably need the mentioned libraries written below. For editing the excel document, you might use **openpyxl** tool.

```
from tkinter import *
import openpyxl as xls

import statistics as stat

from tkinter.messagebox import showinfo
from tkinter.filedialog import askopenfilename
```

Partition your problem into different frames, and try to merge the whole concept after completion of all frames.

You can attach each widget to a different Frame inside the root window. This will make things easier to manage via a step-by-step approach.

For Channel and Region selections, excel files stores the data as integers

CHANNEL: customer channel -> 1, horeca-> 2, retail channel -> 3
REGION: Istanbul->1, Ankara->2, Antalya->3

0) CUSTOMERID: Customer entry
1) FRESH: annual spending (m.u.) on fresh products (Continuous);
2) MILK: annual spending (m.u.) on milk products (Continuous);
3) GROCERY: annual spending (m.u.)on grocery products (Continuous);
4) FROZEN: annual spending (m.u.)on frozen products (Continuous)
5) DETERGENTS_PAPER: annual spending (m.u.) on detergents and paper products (Continuous)
6) DELICATESSEN: annual spending (m.u.)on and delicatessen products (Continuous);
7) CHANNEL: customers' Channel - Horeca (Hotel/Restaurant/Cafe) or Retail channel (Nominal)
8) REGION: customers' Region

	A	B	C	D	E	F	G	H	I
1	CustomerID	Channel	Region	Fresh	Milk	Grocery	Frozen	Detergentspaper	Delicatessen
2	1	2	3	12669	9656	7561	214	2674	1338
3	2	2	3	7057	9810	9568	1762	3293	1776
4	3	2	3	6353	8808	7684	2405	3516	7844
5	4	1	3	13265	1196	4221	6404	507	1788
6	5	2	3	22615	5410	7198	3915	1777	5185
7	6	2	3	9413	8259	5126	666	1795	1451
8	7	2	3	12126	3199	6975	480	3140	545
9	8	2	3	7579	4956	9426	1669	3321	2566
10	9	1	3	5963	3648	6192	425	1716	750
11	10	2	3	6006	11093	18881	1159	7425	2098
12	11	2	3	3366	5403	12974	4400	5977	1744
13	12	2	3	13146	1124	4523	1420	549	497
14	13	2	3	31714	12319	11757	287	3881	2931
15	14	2	3	21217	6208	14982	3095	6707	602
16	15	2	3	24653	9465	12091	294	5058	2168
17	16	1	3	10253	1114	3821	397	964	412
18	17	2	3	1020	8816	12121	134	4508	1080

Evaluation Criteria

Code Organization		**Functionality**				
Is the code readable: The naming of the variables and any attributes are informing and meaningful for the reader. Very long code lines are truncated. Spaces are added between functions and main sections having different functionality.	Are there enough comment lines describing i.e. tkinter variables, descriptions of an important block of code etc. Different sections/blocks of the code are emphasized by adding comment lines.	Does the whole program works without any error?	The Design of the Graphical User Interface is similar to one in the example. (sides, order of widgets etc.)	Save Button works correctly without any error. Select File Dialog appears correctly.	Does Print button works with the mentioned showinfo dialog? Statistical results are correct even after adding new entries?	Is the program able to correctly write different customer records to the given file?
10	10	20	10	20	10	20