Assessment Submission Form

Student Number (If this is group work, please include the student numbers of all group participants)	Mahdieh Rajabi GH1024695
Assessment Title	build a GUI and visualization
Module Code	M604
Module Title	Adavnced programming
Module Tutor	William Morrison
Date Submitted	21.09.2023

Declaration of Authorship

I declare that all material in this assessment is my own work except where there is clear acknowledgement and appropriate reference to the work of others.

I fully understand that the unacknowledged inclusion of another person's writings or ideas or works in this work may be considered plagiarism and that, should a formal investigation process confirms the allegation, I would be subject to the penalties associated with plagiarism, as per GISMA Business School, University of Applied Sciences' regulations for academic misconduct.

Signed..... Date 21.09.2023

Link of GitHub repository:

https://github.com/Mahdiehrajabi/Advanced-programming

Introduction

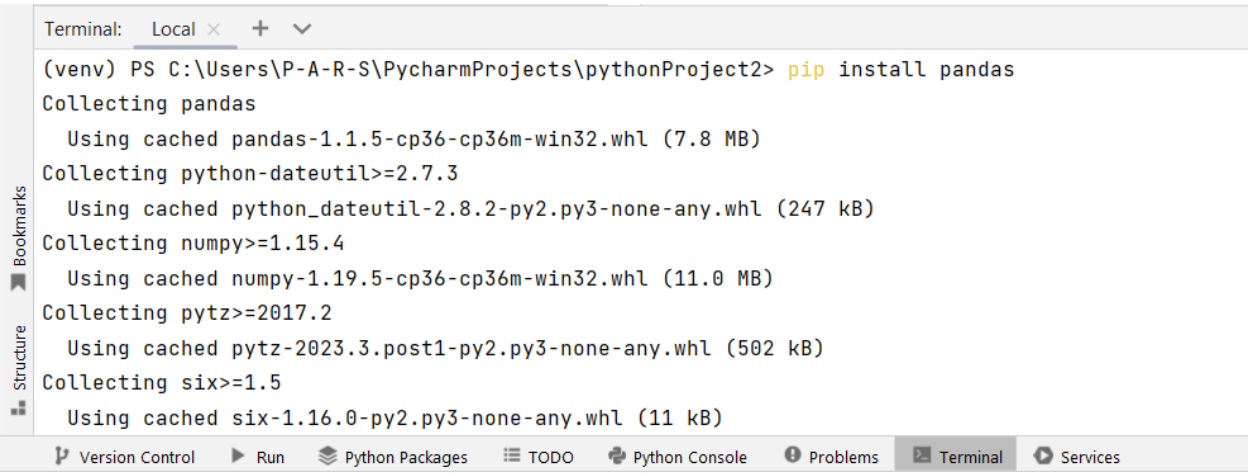
As a new software developer, requested to build a GUI with require dataset. GUI (Graphical user interface) refers to a model that allows users to have interaction with software applications, computers with icon, logo, button, and menu.

According to assessment brief, I found a dataset that is related to most crowded airports which is about society and services. I downloaded it from Kaggle website and uploaded it to GitHub repository as well.

For carrying out this project I used PyCharm.

At first, I installed some related packages like pandas, tkinter etc.

With this command in terminal of PyCharm: pip install pandas.



And for tkinter is the same step.

Then I wanted to build a GUI and I used a function to design it.

At the beginning of the code, I used different libraries or packages with 'import'.

For example:

Import os

With os module, may communicate with the operating system and carry out several operations on files, directories, environment variables, and etc.

Import pandas as pd

It is a popular library in python. Used pandas functions, classes, and objects throughout code. This is a commonly used practice to make sure code which more concise and readable as well.

Import tkinter as tk

The default Python library for building graphical user interfaces (GUIs) is called tkinter. By importing it as ‘tk’, ease the names that must write when utilizing tkinter elements and widgets, making it simpler to reference the library's elements in code.

used the ‘tk’ in code to access and interact with the classes and functions of the tkinter library.

Import csv

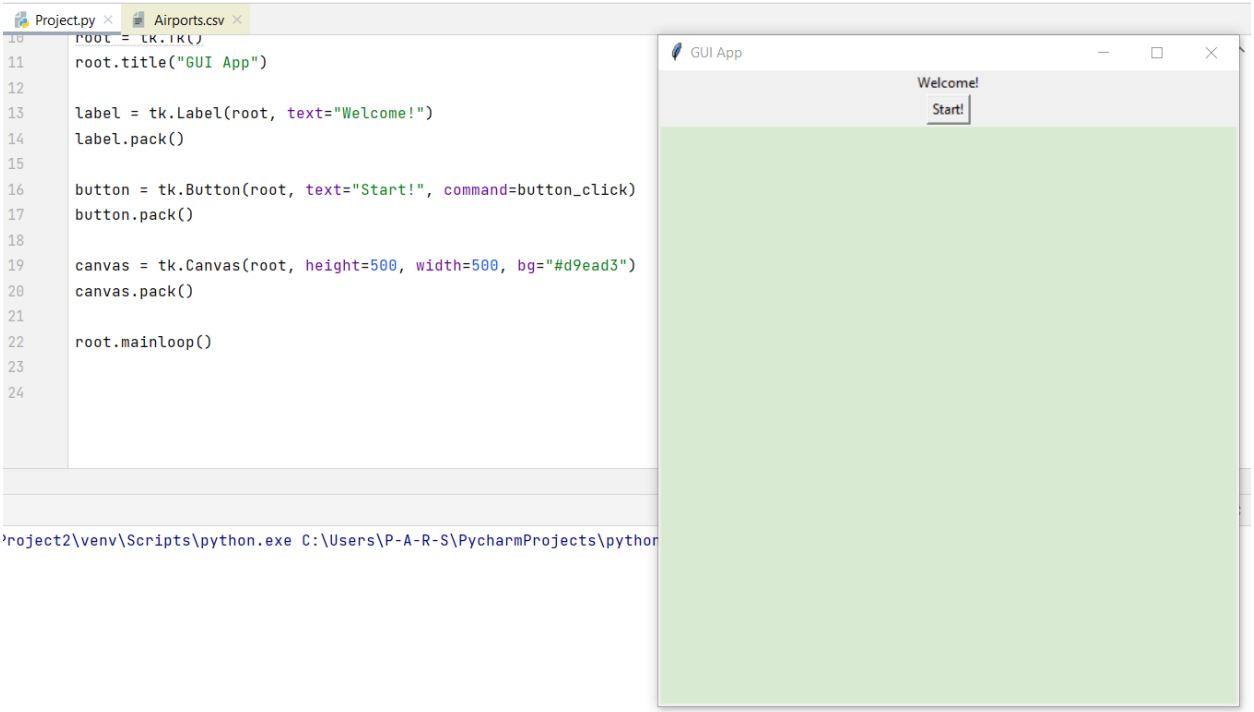
Imports a csv module used to parse tabular-like data structures, such as data in excel format, and these files are saved in. This file can be read and written to using different classes provided by the modules with the.csv extension.

After importing necessary libraries, I wrote a function to build GUI:

Project.py Airports.csv

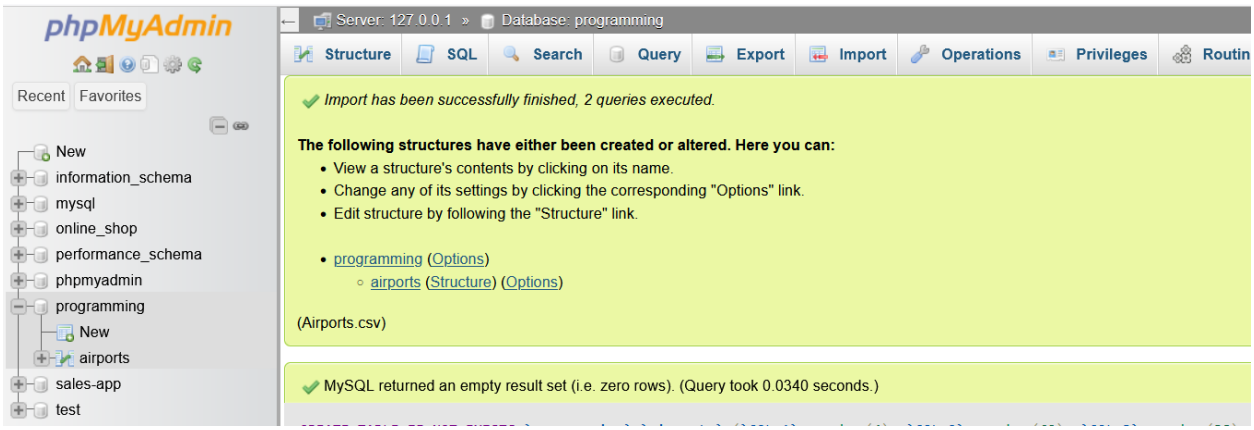
```
import tkinter as tk
import pandas as pd
import os
import csv

df = pd.read_csv('Airports.csv')
1 usage
def button_click():
    label.config(text="Hello!")

root = tk.Tk()
root.title("GUI App")

label = tk.Label(root, text="Welcome!")
label.pack()

button = tk.Button(root, text="Start!", command=button_click)
button.pack()

canvas = tk.Canvas(root, height=500, width=500, bg="#d9ead3")
canvas.pack()

root.mainloop()

```

And result is like this:



I defined the label and button which are needed to show results. Also, used canvas for changing the size of the GUI and color of background.

After these steps I created a database using SQL (phpMyAdmin) that is called ‘programming’. I uploaded the desired dataset (Airports.csv) to this database.



Then I should install MySQL in terminal: pip install MySQL-connector-python

```
(venv) PS C:\Users\P-A-R-S\PycharmProjects\pythonProject2> pip install mysql-connector-python
Collecting mysql-connector-python
  Using cached mysql_connector_python-8.0.33-py2.py3-none-any.whl (390 kB)
Collecting protobuf<=3.20.3,>=3.11.0
  Using cached protobuf-3.19.6-cp36-cp36m-win32.whl (776 kB)
Installing collected packages: protobuf, mysql-connector-python
Successfully installed mysql-connector-python-8.0.33 protobuf-3.19.6
```

And import ‘MySQL. connector’ to code.

And wrote “cursor = connection. cursor ()” for connection with database.

We can execute queries and work with database.

After connection and working with database, there is an essential option that is close database to free resources with this command.

```
34
35
36  cursor.close()
37  connection.close()
38
```

Next step is to import another necessary library for showing the graph or bar chart and etc.

```
import matplotlib.pyplot as plt
```

and another library needed that called ‘requests’ to fetch the data from API. API is Application Programming Interface: set of protocols that allows to communicate different applications with together. (They are fundamental)

Next stage is data visualization that used matplotlib to create resizable visualizations (such as line charts and graphs) of the dataset using matplotlib.