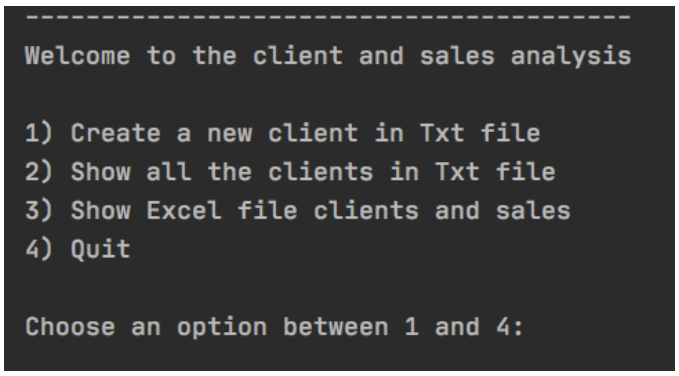
Project : "Clients and sales" analysis interface

We are going to create a program in Python that will invite the user to choose among a small number of task that she/he wants to do. According to the choice of the user, the program will do the specific task.

Here is the main menu when we start our program:



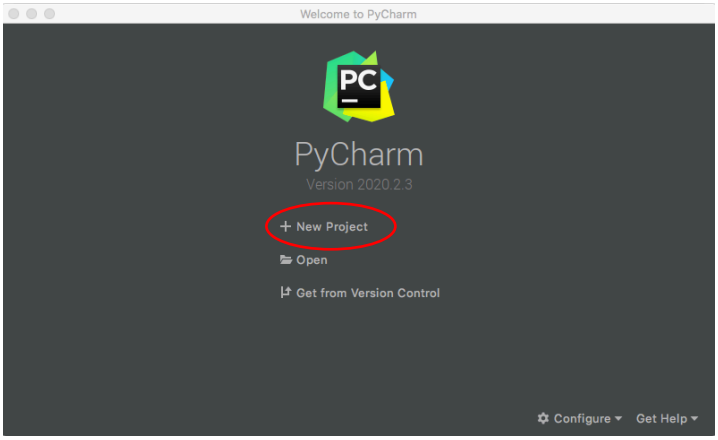
You can code the project inside Replit, or use a standalone Python working environment on your machine.

The next introduction is optional, if you have already a working standalone Python environment on your machine. You can skip to Part 1. Just copy and paste the content of the main.py file given on the Moodle of the session 10 in your main.py file.

Introduction: installing Python and PyCharm (optional)

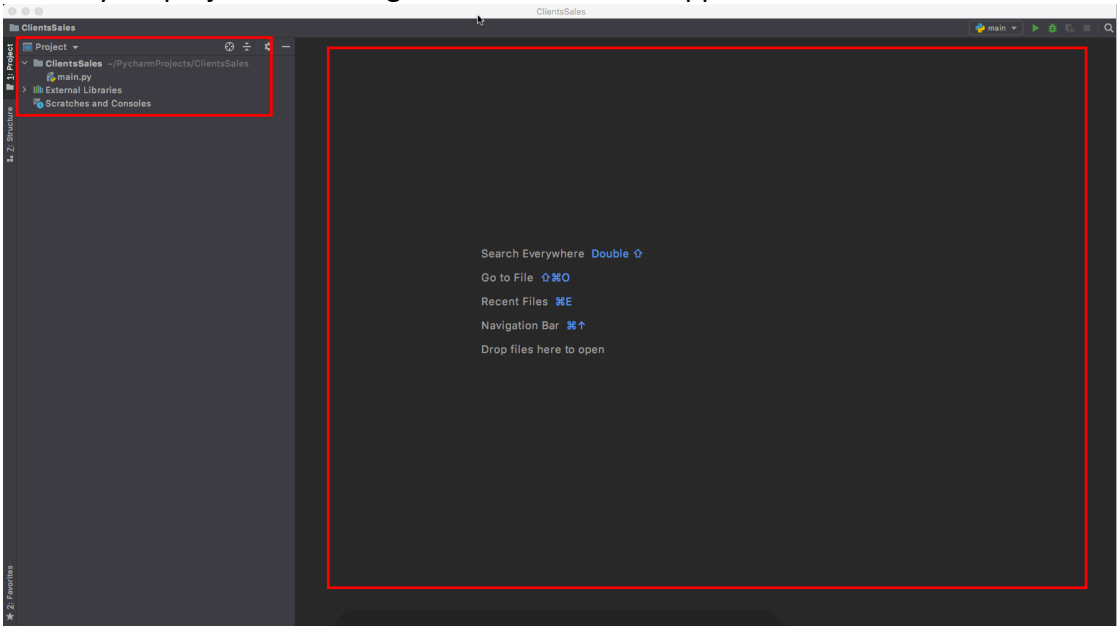
Here is the explanation to install the PyCharm environment, so called IDE (Integrated Development Environment) on your machine:

1) Go on the official Python website python.org and download the latest version of Python for your OS (Windows or Mac).
2) Go on the site https://www.jetbrains.com/pycharm/download/ and download the Community version of PyCharm (free).
3) Install PyCharm
4) Launch PyCharm
5) The first window below will be displayed. Click on New Project



6) In the next window, you must configure your project:
    a. Specify in the Location field, the name of your project, in our case "ClientsSales" and the path on your hard disk where you would like it to be stored. **TIP**: You can leave it in the sub directories of PyCharm.
    b. Below Location, you have to specify which version of Python you will use. Click on the little triangle on the left of "Python interpreter". Check the 3rd option "Existing interpreter" et verify that it is the same path as the Python you installed at first.
    use a version of Python that is 3.x. You should have something that looks similar as the option below for Python 3.9:
        - Windows:
          C:\Users*your_user_name*\AppData\Local\Programs\Python\Python39
        - Mac:
          /usr/local/bin/Python3.9
    c. Click on "Create"
    d. A main.py file should be created and opened on PyCharm. You can see the tree of your projects on the left side panel, just like Replit.

7) The main window of PyCharm let you see on the left side the list of the folders and files of your project. On the right side the code will appear.



8) Double click on the main.py file.
9) Copy and paste the content of the main.py file given on the Moodle of the session 10 in your main.py file.

Part 1: Creation of the user interface and interaction with text file

The first part will start with the creation of the user interface.

With PyCharm as with Replit, the code is corrected as soon as you write it, by being underlined in **red** in case of programming errors. You can ignore the **yellow** underline, which are warnings and the **green** one which are just misspelling errors.

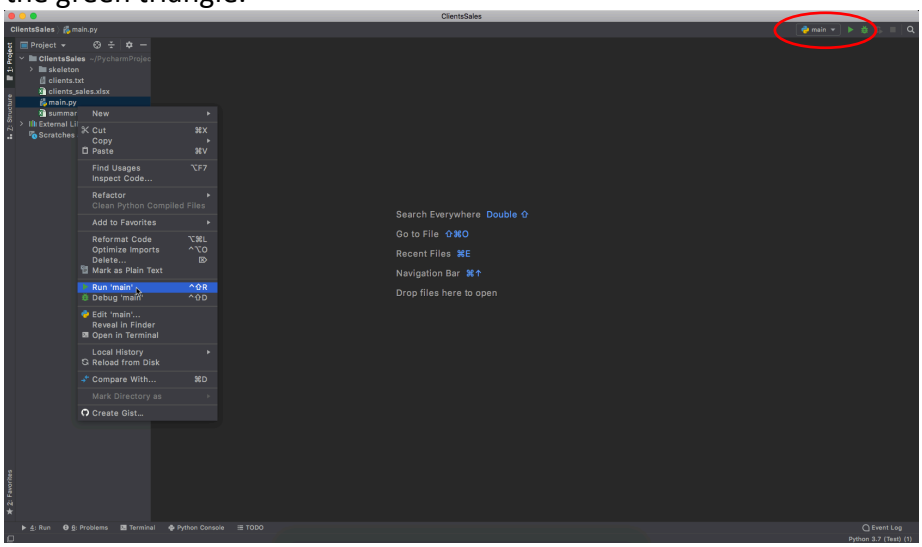
Do not forget to comment your code. As part of the grading, the commenting is essential to show that you understand what your code do.

1) **Write the names of your group's members in the comment lines at the top of your main.py file.**
2) Here is the main menu where the program must display these options and the user will have the possibility to choose an option between 1 and 4 by typing a number between 1 and 4. The code to generate this menu is given to you.

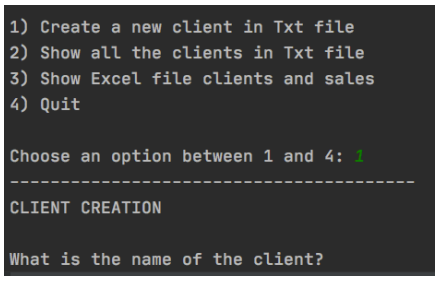
```
----------------------------------------
Welcome to the client and sales analysis

1) Create a new client in Txt file
2) Show all the clients in Txt file
3) Show Excel file clients and sales
4) Quit

Choose an option between 1 and 4:
```

This menu must always be shown when the task has been completed. It is only when the user selects the option 4 "Quit" that the program stops.

Important!: for those of you on PyCharm, when you want to execute your code for the first time, you have to right click on your "main.py" and choose "Run main.py". The console will then appear.
This is necessary when you execute for the first time. After that, you can directly click on the green triangle on the top right of the screen. You will see the name of your file and next to it the green triangle.



3) Here is the sub menu of the option 1



You can see after having typed 1, a new menu appears where the user can create a new client by typing first its name.

TIP : It is better to create functions dedicated for each option. You will call them each time an option will be typed. This will allow you to share the work among the persons of your group and each one of you can take care of specific functions.

After this screen, you will be asked the date of birth, city of birth and email of the client.

4) You must now create a class inside your code to represent a client and its properties of name, date of birth, city of birth and email.

You must also write a method inside it, to show the information of the client the following way:

Client name : *name of the client*
Client date of birth : *date of birth of the client*
Client city of birth : *city of birth of the client*
Client email : *email of the client*

5) At this step, you must create a « clients.txt » file to write the info of the clients created in our code. We would like to follow this format:
name, date of birth, city of birth, email

Meaning if a client with the name “tata”, the date of birth “13/11/2000”, city of birth “Paris” and email as “tata@essec.edu” is given. You will add this line in the file:
tata,13/11/2000,Paris,tata@essec.edu

ATTENTION: We want to add the data in the clients.txt file, not replace all the data.

6) After you have added the client’s information to the file, you can display a message to the user that the client has been created and saved.

"The client has been created and saved."

Here is the screenshots of the result of the steps 4 to

```
----------------------------------------
CLIENT CREATION

What is the name of the client? tata
What is the date of birth of the client? 08/07/2001
What is the city of birth of the client? Paris
What is the email of the client? tata@essec.edu

Client name : tata
Client date_birth : 08/07/2001
Client city_birth : Paris
Client email : tata@essec.edu

The client has been created and saved.
```

7) The screen for the option 2 of the main menu should show all the client's information saved in the « clients.txt » file. You just have to display all the lines of the file "clients.txt", like below and come back to the main menu.

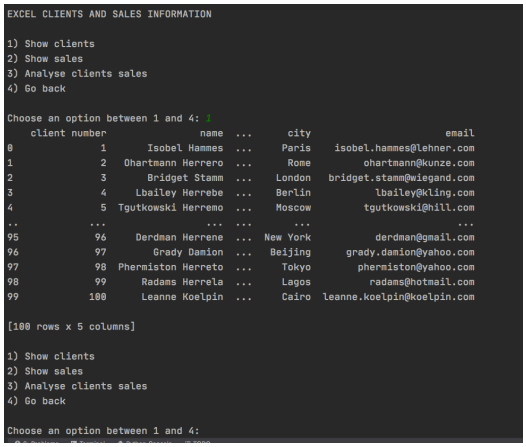
```
----------------------------------------
Welcome to the client and sales analysis

1) Create a new client in Txt file
2) Show all the clients in Txt file
3) Show Excel file clients and sales
4) Quit

Choose an option between 1 and 4: 2
----------------------------------------

CLIENT INFORMATION
toto,07/11/2002,Paris,ads@da.edu

tata,08/07/2001,Paris,tata@essec.edu

tutu,04/05/1999,Lyon,tutu@essec.edu

----------------------------------------
Welcome to the client and sales analysis

1) Create a new client in Txt file
2) Show all the clients in Txt file
3) Show Excel file clients and sales
4) Quit

Choose an option between 1 and 4:
```

Part 2: Interaction with Excel file

In this second part, we are going to make some analysis of the Excel file “clients_sales.xlsx”.

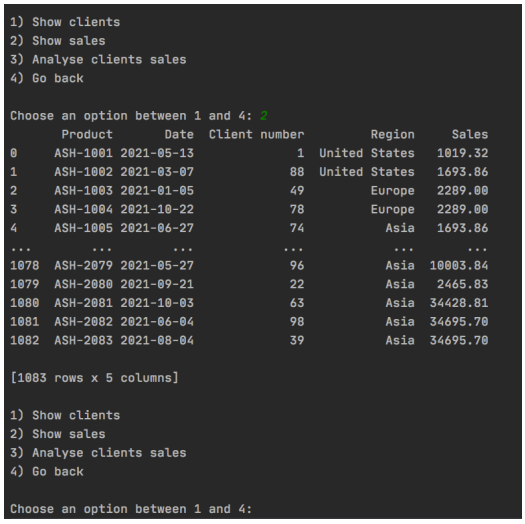
1) The first 2 options of this sub menu will only show the DataFrame of each sheet, clients and sales as below, depending which option the user chose:

   Show Clients information:



```
EXCEL CLIENTS AND SALES INFORMATION

1) Show clients
2) Show sales
3) Analyse clients sales
4) Go back

Choose an option between 1 and 4: 1
    client number             name  ...      city                      email
0               1      Isobel Hammes  ...     Paris    isobel.hammes@lehner.com
1               2   Ohartmann Herrero  ...      Rome         ohartmann@kunze.com
2               3      Bridget Stamm  ...    London   bridget.stamm@wiegand.com
3               4    Lbailey Herrebe  ...    Berlin          lbailey@kling.com
4               5  Tgutkowski Herremo  ...    Moscow        tgutkowski@hill.com
..            ...                ...  ...       ...                       ...
95             96    Derdman Herrene  ...  New York          derdman@gmail.com
96             97       Grady Damion  ...   Beijing      grady.damion@yahoo.com
97             98  Phermiston Herreto  ...     Tokyo       phermiston@yahoo.com
98             99     Radams Herrela  ...     Lagos         radams@hotmail.com
99            100     Leanne Koelpin  ...     Cairo  leanne.koelpin@koelpin.com

[100 rows x 5 columns]

1) Show clients
2) Show sales
3) Analyse clients sales
4) Go back

Choose an option between 1 and 4:
```

   Show Sales information:



```
1) Show clients
2) Show sales
3) Analyse clients sales
4) Go back

Choose an option between 1 and 4: 2
       Product       Date  Client number         Region     Sales
0     ASH-1001 2021-05-13              1  United States   1019.32
1     ASH-1002 2021-03-07             88  United States   1693.86
2     ASH-1003 2021-01-05             49         Europe   2289.00
3     ASH-1004 2021-10-22             78         Europe   2289.00
4     ASH-1005 2021-06-27             74           Asia   1693.86
...        ...        ...            ...            ...       ...
1078  ASH-2079 2021-05-27             96           Asia  10003.84
1079  ASH-2080 2021-09-21             22           Asia   2465.83
1080  ASH-2081 2021-10-03             63           Asia  34428.81
1081  ASH-2082 2021-06-04             98           Asia  34695.70
1082  ASH-2083 2021-08-04             39           Asia  34695.70

[1083 rows x 5 columns]

1) Show clients
2) Show sales
3) Analyse clients sales
4) Go back

Choose an option between 1 and 4:
```

2) The 3rd option is to show that you have understood the basic notion of Pandas analysis. We are going to ask the user which client we must analyse:

```
1) Show clients
2) Show sales
3) Analyse clients sales
4) Go back

Choose an option between 1 and 4: 3

RETRIEVE CLIENTS SALES INFORMATION

What is the name of the client ? :Isobel Hammes
The client has bought 9 products.
Here is the mean of its sales 4412.988888888888
Here is the maximum spend for a sale 14259.0
Here is the sum of sale 39716.899999999994

Would you like to continue (y or n):
```

Your code will manage to retrieve the client number from the Client sheet of the Excel and retrieve the Sales information of the client in the Sales sheet according to its client number.
According to the client name, you will then retrieve all the sales of the client using the client number. **Be aware that you have to use the client number to retrieve the sales.**

3) The last question as you can see in the screenshot will ask the user if she/he wants to continue.

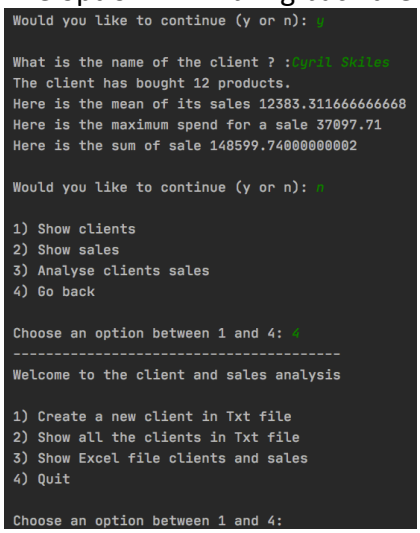
   If the user answers y, the question "What is the name of the client ?" is displayed again letting the user continue its analysis. Otherwise we go back to the Excel Clients and Sales Information menu as below.

   TIP: you will need to use the iloc property to get the client number. Take a look at the API of Pandas to see how it works. It is pretty much like loc but it uses a numbering index to access data.

```
RETRIEVE CLIENTS SALES INFORMATION

What is the name of the client ? :Isobel Hammes
The client has bought 9 products.
Here is the mean of its sales 4412.988888888888
Here is the maximum spend for a sale 14259.0
Here is the sum of sale 39716.899999999994

Would you like to continue (y or n): y

What is the name of the client ? :Cyril Skiles
The client has bought 12 products.
Here is the mean of its sales 12383.311666666668
Here is the maximum spend for a sale 37097.71
Here is the sum of sale 148599.74000000002

Would you like to continue (y or n): n

1) Show clients
2) Show sales
3) Analyse clients sales
4) Go back

Choose an option between 1 and 4:
```

4) Round the numbers given by each one of these operation to 2 digits.

5) The option 4 will bring back the user to the main menu.

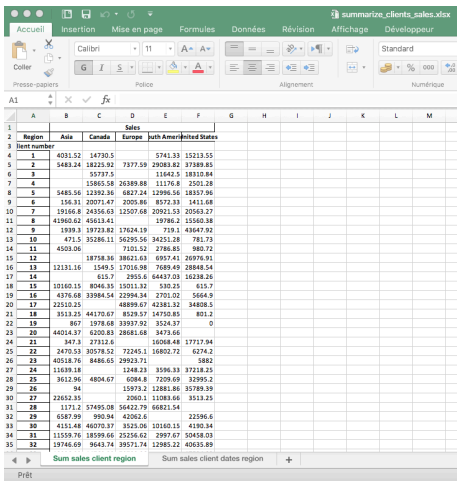


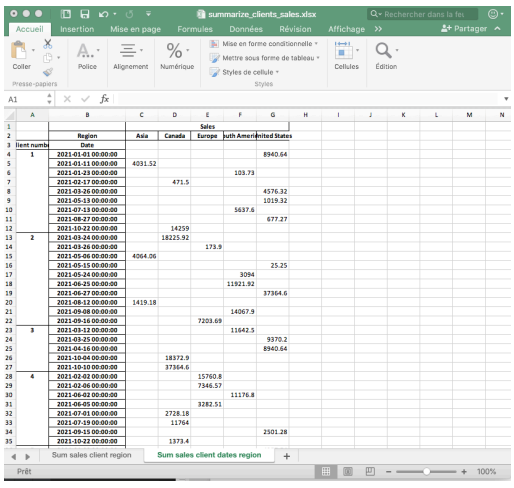
BONUS (optional)

Create a fifth option in the main menu summarizing the data of the sales in the following way :

```
Welcome to the client and sales analysis

1) Create a new client in Txt file
2) Show all the clients in Txt file
3) Show Excel file clients and sales
4) Summarize clients sales
5) Quit

Choose an option between 1 and 5: 4
----------------------------------------
--------------- THE SUM OF SALES PER CLIENT NUMBER (ROWS) PER REGION (COLUMNS) ---------------
                  Sales
Region              Asia    Canada    Europe South America United States
Client number
1                4031.52  14730.50       NaN       5741.33      15213.55
2                5483.24  18225.92   7377.59      29083.82      37389.85
3                    NaN  55737.50       NaN      11642.50      18310.84
4                    NaN  15865.58  26389.88      11176.80       2501.28
5                5485.56  12392.36   6827.24      12996.56      18357.96
...                  ...       ...       ...           ...           ...
96               10003.84       NaN  72487.18      36563.93      27484.09
97                6408.71   7986.90  53801.51           NaN      28816.62
98               41111.08   5553.98   1502.52       8014.62        732.25
99                  61.10  37213.70  11804.75      15509.48      18785.42
100                  NaN  11015.60  29370.77      19034.60       7729.15

[100 rows x 5 columns]
--------------- THE SUM OF SALES PER CLIENT NUMBER PER DATE (ROWS) PER REGION (COLUMNS) ---------------
                            Sales
Region                       Asia   Canada Europe South America United States
Client number Date
1             2021-01-01      NaN      NaN    NaN           NaN       8940.64
              2021-01-11  4031.52      NaN    NaN           NaN           NaN
              2021-01-23      NaN      NaN    NaN        103.73           NaN
              2021-02-17      NaN   471.50    NaN           NaN           NaN
              2021-03-26      NaN      NaN    NaN           NaN       4576.32
...                           ...      ...    ...           ...           ...
100           2021-06-12      NaN  7659.19    NaN           NaN           NaN
              2021-06-17      NaN  1009.01    NaN           NaN           NaN
              2021-07-19      NaN   858.50    NaN           NaN           NaN
              2021-10-04      NaN  1488.90    NaN           NaN           NaN
              2021-10-24      NaN      NaN    NaN       1437.16           NaN

[1062 rows x 5 columns]
---------- THE FILE SUMMARIZE_CLIENTS_SALES.XLSX HAS BEEN GENERATED ----------
----------------------------------------
Welcome to the client and sales analysis

1) Create a new client in Txt file
2) Show all the clients in Txt file
3) Show Excel file clients and sales
4) Summarize clients sales
5) Quit

Choose an option between 1 and 5:
```

You can see that 2 pivot tables have been generated and a file summarize_clients_sales.xlsx has been generated containing in each sheet the pivot tables as below:





Use the API of pandas to retrieve the way to create this file with 2 sheets inside it.