IES Consuelo Aranda (Alberic)				
Exam:	**Python. Final Part.**			
Module:	EMS	**Course:**	2CFSN	**Date:**
Student:				

(Module/Course/Date row): Module: EMS | Course: 2CFSN | Date: 25-11-2021

OBJETIVE

We want to model a portfolio of securities of a bank. A portfolio of securities is a set of financial assets where we want to invest our money, that is, a basket of securities where our investment is.

From the securities portfolio you want to store:
- DNI (String)
- Name (String)
- Surname (String)
- Account Number (String -> ES9121000418450200051332)
- Balance (Float)
- Set of stocks (Dictionary)

Create an MVC structure to manage the portfolio, that is, its model, the controller and a view through the console tacking into account the following:

➢ There is a **BaseModel you must use.** This BaseModel you can't modify.

- Add Portfolio
- Delete Portfolio
- Buy stock for a client
- Sell stock for a client
- List a Client's Portfolio

Add portfolio (1 point):
DNI, Name, Surname, Balance, Account Number and the initial Balance. You must check the account number and the balance.

IBAN Number validation (Check if the IBAN code is correct, only spanish IBANs): (**0,75 points**)
    ES9121000418450200051332
✔ Account must have 24 digits
✔ ES represents the country
✔ 91 --> is the code
✔ To check the code:

    ➢ "E" is replaced by 14 and "S" by 28
    ➢ Replace 91 by 00
    ➢ Add 142800 to the end of the digits: 21000418450200051332**142800**
    ➢ Divide this number by 97 and the module that we obtain from that division is subtracted from 98
        21000418450200051332**142800 %** 97 = 7
        The final code is 98 − 7 = **91**

Balance --> positive float (**0,25 points**)

Delete portfolio (1 point):

A portfolio will be eliminated by the DNI. You cannot delete a portfolio that contains stocks.

Buy stock for a client (2,5 points):

A DNI will be requested. The stock values with their prices will be displayed, a stock and the quantity will be selected. A purchase occurs if there is enough balance. The balance will decrease. The stock will be added with the quantity for the corresponding customer. If the stock already exists in the value set, the quantity will be incremented.

Sell stock for a client (2,5 points):

A DNI, the stock and an the quantity will be requested. A sale occurs with the current stock price. The balance for this customer will increase. The quantity of the stock must be decreased for the corresponding customer. You cannot sell more than you have. In case the quantity is 0, the stock must be deleted.
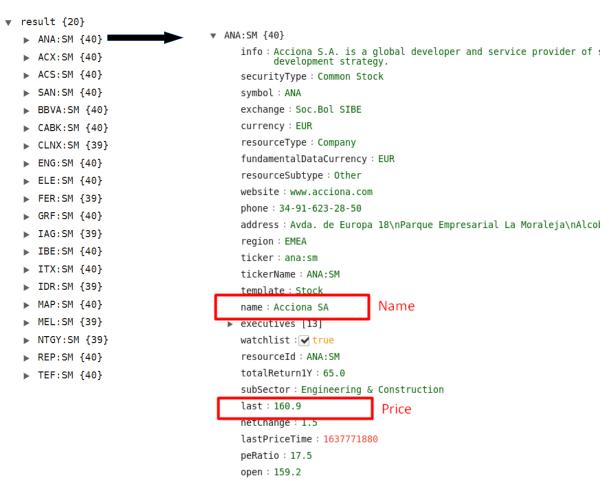
List a client portfolio (2 points):

A DNI will be requested and the portfolio of that client will be listed.

IES Consuelo Aranda (Alberic)					
Exam:	**Python. Final Part.**				
Module:	EMS	**Course:**	2CFSN	**Date:**	25-11-2021
Student:					

To get the stock's prices (getstockapi.py):

```
import requests, json

url = "https://bb-finance.p.rapidapi.com/market/get-full"
querystring = {"id":"ANA:SM,ACX:SM,ACS:SM,SAN:SM,BBVA:SM,CABK:SM,CLNX:SM,ENG:SM,ELE:SM,FER:SM,GRF:SM,IAG:SM,IBE:SM,ITX:SM,IDR:SM,MAP:SM,MEL:SM,NTGY:SM,REP:SM,TEF:SM"}
headers = {
    'x-rapidapi-host': "bb-finance.p.rapidapi.com",
    'x-rapidapi-key': "a365ad1a8cmsh8c4907a923c8b44p1ddecajsn2ec4d759c257"
}

response = requests.request("GET", url, headers=headers, params=querystring)
print(response.text)
```

JSON's result:

```
▼ result {20}
   ▶ ANA:SM {40}  ───────────▶  ▼ ANA:SM {40}
   ▶ ACX:SM {40}                      info : Acciona S.A. is a global developer and service provider of
   ▶ ACS:SM {40}                             development strategy.
   ▶ SAN:SM {40}                      securityType : Common Stock
   ▶ BBVA:SM {40}                     symbol : ANA
   ▶ CABK:SM {40}                     exchange : Soc.Bol SIBE
   ▶ CLNX:SM {39}                     currency : EUR
   ▶ ENG:SM {40}                      resourceType : Company
   ▶ ELE:SM {40}                      fundamentalDataCurrency : EUR
   ▶ FER:SM {39}                      resourceSubtype : Other
   ▶ GRF:SM {40}                      website : www.acciona.com
   ▶ IAG:SM {39}                      phone : 34-91-623-28-50
   ▶ IBE:SM {40}                      address : Avda. de Europa 18\nParque Empresarial La Moraleja\nAlco
   ▶ ITX:SM {40}                      region : EMEA
   ▶ IDR:SM {39}                      ticker : ana:sm
   ▶ MAP:SM {40}                      tickerName : ANA:SM
   ▶ MEL:SM {39}                      template : Stock
   ▶ NTGY:SM {39}                     name : Acciona SA          Name
   ▶ REP:SM {40}                      ▶ executives [13]
   ▶ TEF:SM {40}                      watchlist :☑ true
                                      resourceId : ANA:SM
                                      totalReturn1Y : 65.0
                                      subSector : Engineering & Construction
                                      last : 160.9                Price
                                      netChange : 1.5
                                      lastPriceTime : 1637771880
                                      peRatio : 17.5
                                      open : 159.2
                                      close : 159.4
```

Example:

```
Currently there are  0  portfolios registered!
1.- Add a portfolio
2.- Delete portfolio
3.- Buy stock for a client
4.- Sell stock for a client
5.- List client portfolio
6.- Exit
Choose option:
1
Input DNI:20432847S
Input Name:Alberto
Input Surname:Aparicio Vila
Input Account Number:ES9121000418450200051332
Input initial balance:10000
Portfolio added successfully!!!
Banky portfolio
Currently there are  1  portfolios registered!
1.- Add a portfolio
2.- Delete portfolio
3.- Buy stock for a client
4.- Sell stock for a client
5.- List client portfolio
6.- Exit
Choose option:
3
Input DNI:20432847S
List of stocks
--------------
Stock key: ANA:SM  ->  Acciona SA Price:  160.9
Stock key: ACX:SM  ->  Acerinox SA Price:  10.73
Stock key: ACS:SM  ->  ACS Actividades de Construccion y Servicios SA Price:
22.31
Stock key: SAN:SM  ->  Banco Santander SA Price:  3.032
Stock key: BBVA:SM  ->  Banco Bilbao Vizcaya Argentaria SA Price:  5.190
Stock key: CABK:SM  ->  CaixaBank SA Price:  2.403
Stock key: CLNX:SM  ->  Cellnex Telecom SA Price:  52.32
Stock key: ENG:SM  ->  Enagas SA Price:  20.18
Stock key: ELE:SM  ->  Endesa SA Price:  19.80
Stock key: FER:SM  ->  Ferrovial SA Price:  26.62
Stock key: GRF:SM  ->  Grifols SA Price:  17.77
Stock key: IAG:SM  ->  International Consolidated Airlines Group SA Price:
1.821
Stock key: IBE:SM  ->  Iberdrola SA Price:  10.09
Stock key: ITX:SM  ->  Industria de Diseno Textil SA Price:  31.11
Stock key: IDR:SM  ->  Indra Sistemas SA Price:  10.33
Stock key: MAP:SM  ->  Mapfre SA Price:  1.923
Stock key: MEL:SM  ->  Melia Hotels International SA Price:  5.992
Stock key: NTGY:SM  ->  Naturgy Energy Group SA Price:  23.92
Stock key: REP:SM  ->  Repsol SA Price:  10.526
Stock key: TEF:SM  ->  Telefonica SA Price:  4.044
Select stock:REP:SM
Input quantity:500
```

```
Stock bought successfully!
Banky portfolio
Currently there are  1  portfolios registered!
1.- Add a portfolio
2.- Delete portfolio
3.- Buy stock for a client
4.- Sell stock for a client
5.- List client portfolio
6.- Exit
Choose option:
5
Input DNI:20432847S
DNI:  20432847S
Name:  Alberto
Surname:  Aparicio Vila
Account:  ES9121000418450200051332
Balance:  4737.0
Stocks:
        REP:SM 500
Banky portfolio
Currently there are  1  portfolios registered!
1.- Add a portfolio
2.- Delete portfolio
3.- Buy stock for a client
4.- Sell stock for a client
5.- List client portfolio
6.- Exit
Choose option:
3
Input DNI:20432847S
List of stocks
--------------
Stock key: ANA:SM  ->  Acciona SA Price:  160.9
Stock key: ACX:SM  ->  Acerinox SA Price:  10.73
Stock key: ACS:SM  ->  ACS Actividades de Construccion y Servicios SA Price:
22.31
Stock key: SAN:SM  ->  Banco Santander SA Price:  3.032
Stock key: BBVA:SM  ->  Banco Bilbao Vizcaya Argentaria SA Price:  5.190
Stock key: CABK:SM  ->  CaixaBank SA Price:  2.403
Stock key: CLNX:SM  ->  Cellnex Telecom SA Price:  52.32
Stock key: ENG:SM  ->  Enagas SA Price:  20.18
Stock key: ELE:SM  ->  Endesa SA Price:  19.80
Stock key: FER:SM  ->  Ferrovial SA Price:  26.62
Stock key: GRF:SM  ->  Grifols SA Price:  17.77
Stock key: IAG:SM  ->  International Consolidated Airlines Group SA Price:
1.821
Stock key: IBE:SM  ->  Iberdrola SA Price:  10.09
Stock key: ITX:SM  ->  Industria de Diseno Textil SA Price:  31.11
Stock key: IDR:SM  ->  Indra Sistemas SA Price:  10.33
Stock key: MAP:SM  ->  Mapfre SA Price:  1.923
Stock key: MEL:SM  ->  Melia Hotels International SA Price:  5.992
Stock key: NTGY:SM  ->  Naturgy Energy Group SA Price:  23.92
Stock key: REP:SM  ->  Repsol SA Price:  10.526
Stock key: TEF:SM  ->  Telefonica SA Price:  4.044
Select stockSAN:SM
```

```
Input quantity:200
Stock bought successfully!
Banky portfolio
Currently there are  1  portfolios registered!
1.- Add a portfolio
2.- Delete portfolio
3.- Buy stock for a client
4.- Sell stock for a client
5.- List client portfolio
6.- Exit
Choose option:
5
Input DNI:20432847S
DNI:  20432847S
Name:  Alberto
Surname:  Aparicio Vila
Account:  ES9121000418450200051332
Balance:  4130.6
Stocks:
        REP:SM 500
        SAN:SM 200
Banky portfolio
Currently there are  1  portfolios registered!
1.- Add a portfolio
2.- Delete portfolio
3.- Buy stock for a client
4.- Sell stock for a client
5.- List client portfolio
6.- Exit
Choose option:
4
Input DNI:20432847S
List of stocks
--------------
Stock key: ANA:SM  ->  Acciona SA Price:  160.9
Stock key: ACX:SM  ->  Acerinox SA Price:  10.73
Stock key: ACS:SM  ->  ACS Actividades de Construccion y Servicios SA Price:
22.31
Stock key: SAN:SM  ->  Banco Santander SA Price:  3.032
Stock key: BBVA:SM  ->  Banco Bilbao Vizcaya Argentaria SA Price:  5.190
Stock key: CABK:SM  ->  CaixaBank SA Price:  2.403
Stock key: CLNX:SM  ->  Cellnex Telecom SA Price:  52.32
Stock key: ENG:SM  ->  Enagas SA Price:  20.18
Stock key: ELE:SM  ->  Endesa SA Price:  19.80
Stock key: FER:SM  ->  Ferrovial SA Price:  26.62
Stock key: GRF:SM  ->  Grifols SA Price:  17.77
Stock key: IAG:SM  ->  International Consolidated Airlines Group SA Price:
1.821
Stock key: IBE:SM  ->  Iberdrola SA Price:  10.09
Stock key: ITX:SM  ->  Industria de Diseno Textil SA Price:  31.11
Stock key: IDR:SM  ->  Indra Sistemas SA Price:  10.33
Stock key: MAP:SM  ->  Mapfre SA Price:  1.923
Stock key: MEL:SM  ->  Melia Hotels International SA Price:  5.992
Stock key: NTGY:SM  ->  Naturgy Energy Group SA Price:  23.92
Stock key: REP:SM  ->  Repsol SA Price:  10.626
```

```
Stock key: TEF:SM  ->  Telefonica SA Price:  4.044
Select stockREP:SM
Input quantity:500
Stock selt successfully!
Banky portfolio
Currently there are  1  portfolios registered!
1.- Add a portfolio
2.- Delete portfolio
3.- Buy stock for a client
4.- Sell stock for a client
5.- List client portfolio
6.- Exit
Choose option:
5
Input DNI:20432847S
DNI:  20432847S
Name:  Alberto
Surname:  Aparicio Vila
Account:  ES9121000418450200051332
Balance:  9443.6
Stocks:
        SAN:SM 200
Banky portfolio
Currently there are  1  portfolios registered!
1.- Add a portfolio
2.- Delete portfolio
3.- Buy stock for a client
4.- Sell stock for a client
5.- List client portfolio
6.- Exit
Choose option:
4
Input DNI:20432847S
List of stocks
--------------
Stock key: ANA:SM  ->  Acciona SA Price:  160.9
Stock key: ACX:SM  ->  Acerinox SA Price:  10.73
Stock key: ACS:SM  ->  ACS Actividades de Construccion y Servicios SA Price:
22.31
Stock key: SAN:SM  ->  Banco Santander SA Price:  3.052
Stock key: BBVA:SM  ->  Banco Bilbao Vizcaya Argentaria SA Price:  5.190
Stock key: CABK:SM  ->  CaixaBank SA Price:  2.403
Stock key: CLNX:SM  ->  Cellnex Telecom SA Price:  52.32
Stock key: ENG:SM  ->  Enagas SA Price:  20.18
Stock key: ELE:SM  ->  Endesa SA Price:  19.80
Stock key: FER:SM  ->  Ferrovial SA Price:  26.62
Stock key: GRF:SM  ->  Grifols SA Price:  17.77
Stock key: IAG:SM  ->  International Consolidated Airlines Group SA Price:
1.821
Stock key: IBE:SM  ->  Iberdrola SA Price:  10.09
Stock key: ITX:SM  ->  Industria de Diseno Textil SA Price:  31.11
Stock key: IDR:SM  ->  Indra Sistemas SA Price:  10.33
Stock key: MAP:SM  ->  Mapfre SA Price:  1.923
Stock key: MEL:SM  ->  Melia Hotels International SA Price:  5.992
Stock key: NTGY:SM  ->  Naturgy Energy Group SA Price:  23.92
```

```
Stock key: REP:SM  ->  Repsol SA Price:  10.526
Stock key: TEF:SM  ->  Telefonica SA Price:  4.044
Select stockSAN:SM
Input quantity:200
Stock selt successfully!
Banky portfolio
Currently there are  1  portfolios registered!
1.- Add a portfolio
2.- Delete portfolio
3.- Buy stock for a client
4.- Sell stock for a client
5.- List client portfolio
6.- Exit
Choose option:
5
Input DNI:20432847S
DNI:  20432847S
Name:  Alberto
Surname:  Aparicio Vila
Account:  ES9121000418450200051332
Balance:  10054.0
Valores:
Banky portfolio
Currently there are  1  portfolios registered!
1.- Add a portfolio
2.- Delete portfolio
3.- Buy stock for a client
4.- Sell stock for a client
5.- List client portfolio
6.- Exit
Choose option:
6
```