Task M2 T01

Data structures exercises with Python

- Exercise 1

Create a list that groups the months of the year into quarters (Q1: January, February and March; Q2: April, May, June...), that is, a list with 4 lists inside.

In [1]:
```
Q1 = ["January","February","March"]
Q2 = ["April","May","June"]
Q3 = ["July","August","September"]
Q4 = ["October","November","December"]

Year = [Q1,Q2,Q3,Q4]

print (Year)
```

```
[['January', 'February', 'March'], ['April', 'May', 'June'], ['July', 'August', 'September'], ['October', 'Nove
mber', 'December']]
```

- Exercise 2

Create a code that gives you access to:

- The second month of the first trimester.
- The months of the first quarter.
- September and October.

In [2]:
```
print ('The second month of the first trimester is:',Year[0][1])
print ('The months of the first quarter are:',Year[0])
print ('September and October:', Year[2][2], Year[3][0])
```

```
The second month of the first trimester is: February
The months of the first quarter are: ['January', 'February', 'March']
September and October: September October
```

- Exercise 3

Create a list with unordered numbers and answer the following questions:

In [3]:
```
numbers = [8,3,2,6,7,8,2,4,6,7,3,14,2,4,3]

print (numbers)

print ('- How many numbers are there? ',len(numbers))
```

```
[8, 3, 2, 6, 7, 8, 2, 4, 6, 7, 3, 14, 2, 4, 3]
- How many numbers are there?  15
```

In [4]:
```
print('- How many times does the number 3 appear:' ,numbers.count(3))
```

```
- How many times does the number 3 appear: 3
```

In [5]:
```
print('- How many times do the numbers 3 and 4 appear...' ,'number 3 appears:', numbers.count(3), 'and number 4
```

```
- How many times do the numbers 3 and 4 appear... number 3 appears: 3 and number 4 appears: 2
```

In [6]:
```
print ('- What is the biggest number?', max(numbers))
```

```
- What is the biggest number? 14
```

In [7]:
```
#Firts form
new_numbers = []
for x in numbers:
    if x not in new_numbers:
        new_numbers.append(x)
new_numbers.sort()
print('- What are the 3 smallest numbers?', new_numbers[:3])

#Second form

new_numbers = []
new_numbers = list(set(numbers))
print('- What are the 3 smallest numbers?', new_numbers[:3])
```

```
- What are the 3 smallest numbers? [2, 3, 4]
- What are the 3 smallest numbers? [2, 3, 4]
```

In [8]:
```
print ('- What is the rank of this list? Numbers of ', new_numbers[0],' to ', new_numbers[len(new_numbers)-1])

print ('- or What is the rank of this list? Numbers of ', min(numbers),' to ', max(numbers))
```

```
- What is the rank of this list? Numbers of  2  to  14
- or What is the rank of this list? Numbers of  2  to  14
```

- Exercise 4

Create a dictionary in the following form and answer the questions:

buy = { "Apples" : {"Qty": 5, "€": 0.42}, "Pears" : {"Qty": 3, "€": 0.66} }

- Add some more fruit

In [9]:
```
buy = { "Apples" : {"Qty": 5, "€": 0.42}, "Pears" : {"Qty": 3, "€": 0.66} }

buy["Oranges"] = {"Qty": 12, "€": 3.42}

print (buy)
```

```
{'Apples': {'Qty': 5, '€': 0.42}, 'Pears': {'Qty': 3, '€': 0.66}, 'Oranges': {'Qty': 12, '€': 3.42}}
```

- How much did the pears cost in total?

In [10]:
```
fruit = 'Pears'
for x in buy:
    if x==fruit:
        total_cost_fruit = buy[x]["Qty"] * buy[x]["€"]
texto = 'Total cost of {}: {}'
print (texto.format(fruit, total_cost_fruit))
```

```
Total cost of Pears: 1.98
```

- How many fruits did we buy in total?

In [65]:
```
print ('Total fruits: ',len(buy))
```

```
Total fruits:  3
```

- What is the most expensive fruit?

In [62]:
```
most_expensive = 0

for x in buy.keys():
    if buy[x]['€'] > most_expensive:
        most_expensive = buy[x]['€']
        fruit_expensive = x

print ('Most expensive fruit is: ', fruit_expensive)
```

```
Most expensive fruit is:  Oranges
```