MONDAY

EXERCICE 1

WHAT YOUR PROGRAM SHALL DO

- Write the function **containsOneA()** to check if a word contains at least 1 character "A"
- Write the **main code to test your function** on different cases
    - Example of cases to test: a word with NO "A", an empty word (no character) etc.

Function name	containsOneA
Parameters	word (a **string**)
Return value	A **boolean** - True if the given word contains at least one 'A'
Examples	containsOneA("toto") → False containsOneA("ronan") → True

CORRECTION

2 ways to do it:

```
def containsOneA(text):
    containsnA = False
    for index in range(len(text)):
        char = text[index]
        if char == "A" or char == "a":
           containsnA = True

    return containsnA
```

The second way is faster since we are breaking as soon as we know the answer:

```
def containsOneA(text):
    for index in range(len(text)):
        char = text[index]
        if char == "A" or char == "a":
           return True

    return False
```

EXERCICE 2

WHAT YOUR PROGRAM SHALL DO

- This program asks user to enter a text as follows : <first name>;<last name>
  Example :
  Enter a text : ronan;ogor

- This program will then print the first name and the last name as follow :
  Example :
  First name : ronan
  Last name : ogor

➔ **For this exercise you JUST have to complete the body of the 2 following functions :**

Function name	getFirstName
Parameters	text (a **string**)
Return value	A **string** - The first name extracted, from the text
Example	getFirstName("ronan;ogor") → "ronan"

Function name	getLastName
Parameters	text (a **string**)
Return value	A **string** - The last name extracted, from the text
Example	getLastName ("ronan;ogor") → "ogor"

Copy this code and complete the body of the 2 functions (and remove the blue comments)

⚠ You also need to understand the main code and how the functions are called

```
# Get the first name from following text : <firstName>;<lastName>
def getFirstName(text):
    # complete this body and return the first name !

# Get the first name from following text : <firstName>;<lastName>
def getLastName(text):
    # complete this body and return the last name !

world = input("Enter  a  text : ")
print("First name : " + getFirstName(world))
print("Last name : " + getLastName(world))
```

EXAMPLES	
INPUT	EXPLANATION

> Enter a text: sam oun;songha >First name: sam oun >Last name: songha	The first name is located BEFORE the ";" The last name is located AFTER the ";"

CORRECTION

For this exercise, we have decided to create another extra function to get the index of character ";" in a string

But students are also free to duplicate this code on both function getFirstName and getLastNAme

```
# Get the first name from following text : <firstName>;<lastName>
# If so semicolum, return the whole string
def getFirstName(text):
    indexOfSemi = getIndexOf(text, ";")

    if indexOfSemi != -1:
        result = text[0:indexOfSemi]
    else:
        result = text
    return result

# Get the first name from following text : <firstName>;<lastName>

def getLastName(text):
    indexOfSemi = getIndexOf(text, ";")

    if indexOfSemi != -1:
        result = text[indexOfSemi+1:]
    else:
        result = text
    return result

def getIndexOf(text, character):
    for index in range(len(text)):
        if text[index] == character:
            return index
    return -1

world = input("Enter  a  text : ")
print("First name : " + getFirstName(world))
print("Last name : " + getLastName(world))
```

TUESDAY

WHAT YOUR PROGRAM SHALL DO

- This program asks user to enter a value, a min and a max as follows : Example :
  Enter the value : 145
  Enter the min : 0
  Enter the max : 150

- If the value is in the range [min, max] the program will print
  Correct value

- Otherwise the program will print :
  Error the value <value> is not in the range <min>, <max>

- If the value, min or max are not numbers (integers) the program will print:
  Error : value, min, max should be numbers

➔ **For this exercise you JUST have to complete the body of 2 below functions.**

⚠ You cannot use Python functions like isNumeric or isNumber, you need to code it.

Function name	isInteger
Parameters	text (**string**)
Return value	A **boolean** – True if the text is an integer (contains only numbers)

Function name	isValueInRange
Parameters	value (**integer**), min (**integer**), max (**integer**)
Return value	A **boolean** – True if value is in the range [min, max]

EXAMPLES	
INPUT	EXPLANATION
> Enter the value: AA > Enter the min: 10 > Enter the max: 10 Error : value, min, max should be numbers	AA is not a number
> Enter the value: 5 > Enter the min: 04 > Enter the max: 11 Correct value	5 is in the range [04,11]

Copy this code and complete the body of the 2 functions (and remove the blue comments)

⚠ You also need to understand the main code and how the functions are called

```
# Return True is the text (string) is composed ONLY of digits (0, 1, 2...9)
# Example :
#      isInteger("145")     ->  True
#      isInteger("145A")    ->  False
def isInteger(text):
    # complete this body !

# Return True is the number (integer) is in the range [min, max]
# Example :
#      isNumberInRange(145, 0,200)     ->  True
#      isNumberInRange(145, 0,100)     ->  False
def isValueInRange(value, min, max):
    # complete this body !

valueText = input("Enter the value : ")
minText = input("Enter  the min : ")
maxText = input("Enter  the max : ")

if isInteger(valueText) and isInteger(minText) and isInteger(minText):
    value = int(valueText)
    min = int(minText)
    max = int(maxText)

    if isValueInRange(value, min, max):
        print("Correct value")
    else:
        print("Error : value " + valueText +
              " is not in range " + minText + ", " + maxText)

else:
    print("Error : value, min, max should be numbers")
```

CORRECTION

```
# Return True is the text (string) is composed ONLY of digits (0, 1, 2...9)
# Example :
#      isInteger("145")     ->  True
#      isInteger("145A")    ->  False
def isInteger(text):
    allNumbers = True
    for index in range(len(text)):
        char = text[index]
        isNumber = char == "0" or char == "1" or char == "2" or char == "3" o
r char == "4" or char == "5" or char == "6" or char == "7" or char == "8" or
char == "9"
        allNumbers = allNumbers and isNumber

    return allNumbers

# Return True is the number (integer) is in the range [min, max]
# Example :
#      isNumberInRange(145, 0,200)     ->  True
#      isNumberInRange(145, 0,100)     ->  False

def isValueInRange(value, min, max):
    return value >= min and value <= max

valueText = input("Enter the value : ")
minText = input("Enter  the min : ")
maxText = input("Enter  the max : ")

if isInteger(valueText) and isInteger(minText) and isInteger(minText):
    value = int(valueText)
    min = int(minText)
    max = int(maxText)

    if isValueInRange(value, min, max):
        print("Correct value")
    else:
        print("Error : value " + valueText +
              " is not in range " + minText + ", " + maxText)

else:
    print("Error : value, min, max should be numbers")
```

WEDNESDAY

WHAT YOUR PROGRAM SHALL DO

Let's make again the program to get the integer and the decimal part from a number entered as a string.
This time we will separate the problem into small problems, using functions

What your program shall do :

- Enter 1 float number **as a string** in the console
  CONSOLE : console shall display Enter float:

- Display the **INTEGER** part of this number
  CONSOLE : console shall display Integer part : <integerPart>

- Display the **DECIMAL** part of this number
  CONSOLE : console shall display Decimal part : <decimalPart>

- *Note : if NO decimal part, print only the integer part*

1- First you need to implement the following function :

Function name	getDotIndex
Parameters	text (string)
Return value	The index of the first dot "." found in the given text, or -1 if no dot found in this text *Note : index starts from 0*
Example	getDotIndex("445.5") → 3 getDotIndex("445") → -1

2- Use this function into your main program to perform what is requested

EXAMPLES	
INPUT	EXPLANATION
>Enter float : 35.5 >Integer part : 35 >Decimal part : 5	35.5 has a integer part equal to 35 and a decimal part equal to 5
>Enter float : 12 >Integer part : 12	Here we have only the integer part

CORRECTION

```
# Return the index of the first dot encountred - or -
1 if no dot in the given string
def getDotIndex(text):
    for index in range(len(text)):
        if text[index] == ".":
            return index
    return -1

# 1 - Enter the text
floatString = input("Enter float:")

# 2 - Compute dot position
dotIndex = getDotIndex(floatString)

# 3 - Display interger + decimal parts
if dotIndex != -1:
    integerString = floatString[0:dotIndex]
    decimalString = floatString[dotIndex+1:]
    print("Integer part : " + integerString)
    print("Decimal part : " + decimalString)
else:
    print("Integer part : " + floatString)
```

THURSDAY

WHAT YOUR PROGRAM SHALL DO

We consider the population of 5 countries in the world:

- China: 1,439,323,776
- India: 1,380,004,385
- USA: 331,002,651
- Indonesia: 273,523,615
- Pakistan: 220,892,340

What your program shall do :

- Enter **3 country names** in the console
  CONSOLE : console shall display:
  Country 1 : USA
  Country 2 : India
  Country 3 : China

- Display the country with the largest population
  CONSOLE : console shall display Largest population country is: China

- If one of the country is not China, India, USA, Indonesia, Pakistan, the console shall display:
  Error, bad country name entered

EXAMPLES

INPUT	EXPLANATION
> Country 1 : India > Country 2 : USA > Country 2 : Pakistan > Largest population country is: India	India has the largest population compared to USA and Pakistan

HOW TO DO IT?

1- Write a function to return the population for a given country name

Function name	getPopulation
Parameters	country (string)
Return value	The population of given country name If -1 is this country is not China, India, USA, Indonesia or pakistan
Example	getPopulation ("USA") → 331,002,651 getPopulation ("Cambodia") → -1

2- Write the main code – **You MUST call the function defined above**

```
# Return the population for given country name -
# Or -1 is this country is not:  China, India, USA, Indonesia or pakistan
def getPopulation(countryName):
    countryNameup = countryName.upper()
    if countryNameup == "CHINA":
        return 1439323776
    if countryNameup == "INDIA":
        return 1380004385
    if countryNameup == "USA":
        return 331002651
    if countryNameup == "INDONESIA":
        return 273523615
    if countryNameup == "PAKISTAN":
        return 220892340

# MAIN PROGRAM
country1 = input("Country 1:")
country1Pop = getPopulation(country1)

country2 = input("Country 2:")
country2Pop = getPopulation(country2)

country3 = input("Country 3:")
country3Pop = getPopulation(country3)

if country1 != -1 and country2 != -1 and country3 != -1:
    if country1Pop > country2Pop and country1Pop > country3Pop:
        largestCountry = country1
    elif country2Pop > country1Pop and country2Pop > country3Pop:
        largestCountry = country2
    else:
        largestCountry = country3

    print("Largest population country is:  " + largestCountry)
else:
    print("Error, bad country name entered")
```

FRIDAY

EXERCICE 1

WHAT YOUR PROGRAM SHALL DO
Write a Python function to calculate the factorial of a number (a non-negative integer). The function accepts the number as an argument. Factorial of a number is the product of all the integers from 1 to that number. For example, the factorial of 6 (denoted as 6!) is 1*2*3*4*5*6 = 720.

Function name	factorial
Parameters	number (integer)
Return value	The factorial (integer) of given number
Example	factorial (6) → 720

Correction

```
def factorial(number):
    result = 1
    for i in range(number):
        if i == 0:
            result = 1
        else:
            result = result * (i + 1)
    return result

#Example
numbers = factorial(6)
print(numbers)
```

EXERCICE 2

WHAT YOUR PROGRAM SHALL DO

Write a Python function **to sum all the numbers** given as parameter.

Numbers are given using a string, containing all numbers separated by a ";"

- Example : 10;5;6

Note 1 : we suppose the string is ALWAYS in the correct format (numbers separated by a ";")
Note 2 : you need to extract each numbers from the given string

Function name	sum
Parameters	numbers (string)
Return value	The sum of the numbers extracted from the given string
Example	sum ("10;5;2;") → 17 sum ("1;2;100;") → 103

HOW TO DO IT?

How to get the numbers 2, 4, 55 from the string `"2;4;55;"`

You can process as follows:

1. You can substring the string till the next semi column (";") to get the next number

2. Then to need to continue with the string without this number and without the semi column

For example, here we get the number “2” and we continue with the string “4;55;”

```
def sum(numbersAsString):
    result = 0

    # Get the next semi column index
    while nextSemiColumnIndex(numbersAsString) != -1:
        index = nextSemiColumnIndex(numbersAsString)

        number = int(numbersAsString[0:index])
        result += number

        # continue by substracting the first number
        if len(numbersAsString) > index:
            numbersAsString = numbersAsString[index+1:]
        else:
            numbersAsString = ""

    return result

def nextSemiColumnIndex(text):
    for index in range(len(text)):
        if text[index] == ";":
            return index
    return -1

text = "45;45455;100000;"
print(sum(text))
```