ITI 1120
Labo # 2

Introduction to Python

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Laboratory Objectives

Exercises in Python with:
- Variables
- Assignments
- Computing
- Functions

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Variables

Variables are used to store values, for instance to avoid to recalcule values.

Give them names that will help to understand the code.

Valid variable names – composed of letters, numbers, underscored characters (_)

- Start with a letter or _
- Names with upper case letters are differents from those wth lower cases
- valid names: ninja, Ninja, n_i_n_j_a
- llégal names: 1337, 1337ninja

Python Convention : join words with _

- valid names elite_ninja, leet_ninja, ninja_1337
- Illegal names 1337_ninja

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Assignment

The assignment operator = (equal) is used to provide a value to a variable.

Note: two equal == is used to test equality

Examples
```
mon_nom = "Grace Hopper"
print(my_nom)
my_age = 25
print(my_age)
# anniversary : add one
my_age = my_age + 1
print(my_age)
```

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Exercise 1

Read two integer values from the
keyboard (using input and convert it to
int) then display the result of the
integer division (using //) and the
remainder / modulo (using %).

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Calculations en Python

```
# Examples: Temperature
# transform Fahrenheit in Celsius
# c = 5 / 9 * (f – 32)
# use good variable names!

temp_Fahrenheit = 212
temp_Celsius = 5.0 / 9.0 * (temp_Fahrenheit – 32)

print(temp_Celsius)

# test it! 32 Fahrenheit is 0 Celsius
# 212 Fahrenheit is a 100 Celsius
```

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Fonctions simples: example

```
def fahrenheit_in_celsius(temp_Fahrenheit):
  "Transform temperature from Farenheit to Celsius"
  # temp_celsius is a locale variable,
  # it exists in the body of thefunction
  temp_Celsius = 5.0 / 9.0 * (temp_Fahrenheit – 32)
  return temp_Celsius

# t_fahrenheit and t_celsius are globales variables

t_fahrenheit = 212
t_celsius = fahrenheit_in_celsius(t_fahrenheit)
print(t_fahrenheit, "Fahrenheit is", t_celsius,  "Celsius.")
```

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Exercise 2

Transform the temperature in the other direction, from Celsius to Fahrenheit, using a function.

Call the function several times and display the results.

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Exercise 3

- Implement in Python the algorithm that computes the finale grade. Use a function. Call it.

DATA:
    hw_Average, midterm, final
    (three numbers >= zero)
RESULTS:
    note   *(final note)*
HEADER:
    note ← compute(hw_Average, midterm, final)
MODULE:
   note ← hw_Average *25/100 + midterm*25/100 +
       final*50/100

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Exercise 4

Implement in Python the algorithm that computes the area of a triangle. Use a function.

DATA: side1, side2, side3
RESULTS: area
HEADER:
    area ← computeArea(side1, side2, side3)
HYPOTHESIS: side2, side2 and side3 are >0
MODULE:
   p ← side1 + side2 + side3
   area <- sqrt(p * (p – 2*side1) * (p – 2*side2)* (p – 2*side3))/4

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