University of Mohamed Kheider – Biskra

Faculty of Science and Technology
Common Core in Science and Technology Module: **Computer science 1**

Academic Year: **2024/2025**
Level: **1st Year**
Duration: 3 **sessions**

PW Serie No. 3: Notions of Algorithm and Program

Exercise 01: **(Hands on Computer Keyboard)**

Using Microsoft Word or Windows Notepad (Bloc Note) write the following texts:

```
abcdefghijklmnopqrstuvwxyz ABCDEFGHIJKLMNOPQRSTUVWXYZ 0123456789
! " # $ % & ' ( ) * + , - . / : ; < = > ? @ [ \ ] ^ _ ` { | }

# Data types and operators:
my_string = "Hello, World!"       # String
my_number = 123                   # Integer
my_float = 45.67                  # Float
my_list = [1, 2, 3]               # List
my_dict = {"key": "value"}        # Dictionary
my_bool = True                    # Boolean

# Operators:
addition = 5 + 3
subtraction = 7 - 2
multiplication = 4 * 6
division = 10 / 2
modulus = 10 % 3
exponent = 2 ** 3
floor_division = 10 // 3

# Comparison Operators:
equal = (5 == 5)
not_equal = (5 != 6)
greater_than = (7 > 3)
less_than = (3 < 7)
greater_or_equal = (5 >= 4)
less_or_equal = (4 <= 5)

# Logical Operators:
and_op = (True and False)
or_op = (True or False)
not_op = not True

# Loops and conditions:
for i in range(5):
    print(i)
```

```
if my_number > 100:
    print("Big number")
else:
    print("Small number")

# Escape characters:
print("Newline: \\n, Tab: \\t, Backslash: \\\\")
```

Exercise 2: What will be the values of variables A and B after the execution of the following instructions ?:

Algorithm example1 **Var** A, B : integer **Begin** A ← 1 B ← A + 3 A ← 3 **End.**	**Algorithm** example2 **Var** A, B : integer **Begin** A ← 5 B ← A + 4 A ← A + 1 B ← A – 4 **End**	**Algorithm** example3 **Var** A, B : integer **Begin** A ← 5 B ← 2 A ← B B ← A **End**

Python

Exercise 3: **(Print Statements)**

1. Write a program that prints your name.
2. Write a program that prints "Hello, World!".

Exercise 4: **(Simple Math Operations)**

Create variables a and b and assign them any numbers you like. Calculate and print the following:

- Sum of a and b
- Difference between a and b
- Product of a and b
- Division of a by b
- Calculate a^b

Exercise 5: **(Swapping two numbers)**

Create two variables x and y and assign them values, say 5 and 10. Swap the values of x and y and print them to check that they've been swapped.

Exercise 6: **(String Manipulation)**

Create a variable my_string and assign it a phrase, such as "Hello, World!". Then:

- Print the length of my_string
- Convert my_string to uppercase
- Replace the word "Hello" with "Hi"

Good Luck