

## Lab 2 – Practice of Arithmetic Operations, Assignments, and Input & Output (10 points)

### Task 1: (4 points)

Write the mathematical expression  $FV = PV \cdot \left(1 + \frac{INT}{100}\right)^{YRS}$  in Python. Prompt users to enter PV (present value, a float value, such as 1530.50), INT (interest rate, a float value, such as 3.5 that represents 3.5%), and YRS (an integer, say 15, for 15 years). Then, compute and print out the FV (future value). The output should be displayed as a real number with two digits after decimal point, i.e. 2450.35. Run two tests: (1) PV = 1000.0, INT = 5.0, YRS = 30; (2) PV = 1530.50, INT = 3.5, YRS = 15.

### Task 2: (2 point)

(a) Convert the following C++/Java like code to Python, run and display results.

```
int v1 = 5, v2 = 2, v3=1;
v1++;
v3 += v1 * v2--;
//now display v1, v2, v3's values
```

(b) Enter three integer values for three variables first, second, and third, write one Python assignment statement (note: only one statement allowed) that swaps the three values such that first will get second's value, second gets first's value and third gets first's (original) value, i.e. if enter three values first = 5, second = 7, third = 2, after swap, first = 7, second = 2, and third = 5.

### Task 3: (4 points)

Convert the following Java code to Python. Run two tests: (1) 12, 35 (2) 35, 13

```
import java.io.*;
import java.util.Scanner;
class Javacode {
    public static void main (String[] args) {
        System.out.println("Enter the value of num1 and num2");
        Scanner sc = new Scanner(System.in);
        int num1 = sc.nextInt();
        int num2 = sc.nextInt();
        int quotient, remainder;
        quotient = num1 / num2;
        remainder = num1 % num2;
        System.out.println("Quotient when " + num1 + "/" + num2 + " is: " + quotient);
        System.out.println("Remainder when " + num1 + " is divided by " + num2 + " is: " + remainder);
    }
}
```

### Submission requirement:

For each problem, copy and paste the result to the end of the code as block comments. (i.e. task 1: code followed by output; task 2: code followed by output; ... respectively). Save all codes and testing results (as comments) in one Python program in .py format. Submit the .py file on Canvas.

### **Supplement: Lab/project requirements (for this semester)**

- (1) Should well comment your program, for example:  
Include comments at the beginning of your source code file that contain your name, the lab assignment number, and the date that you completed the assignment. For example, your comments would look like this:

```
#Authors: Alice Wonderland  
#Assignment: Lab #2  
#Completed (or last revision): 02/05/2023
```

- (2) Use proper file names  
Bad ones: lab1.py, project1.py  
Good ones: lab1\_AliceW.py, project1\_AWonderland.py etc.
- (3) Use meaningful variables unless the variable names are given.
- (4) Use proper and meaningful prompts when asking for inputting values.
- (5) Display results in good output format.