

# SOFTWARE 2 PRACTICAL

## FROM PYTHON TO JAVA

### Week 2 – Practical 1

For this week practical, we will be revisiting some of the exercise we seen in SOF1 and translate the programs from Python to Java. You can program from scratch, or you can look at your own solution or at the model answers I provided.

#### Exercise 1: *User inputs*

Create a class `UserInputs`, with the code given below. Then run the program and test if the output is correct.

```
[1] import java.util.Scanner;
[2]
[3] public class UserInputs {
[4]
[5]     public static void main(String[] args) {
[6]
[7]         Scanner keyboard = new Scanner(System.in);
[8]         System.out.print("Enter a int: ");
[9]         int number = keyboard.nextInt();
[10]
[11]         System.out.println("number entered is: "
[12]                             + number);
[13]     }
[14] }
```

#### Exercise 2:

A fruit company sells bananas for £3.00 a kilogram plus £4.99 per order for postage and packaging. If an order is over £50.00, the P&P is reduced by £1.50. Write a program that takes the number of kilo of bananas as a user input and prints the cost of that order.

#### Exercise 3:

Write a program that takes the age and rate (the heart rate) from a user input and print a description of a person's training zone based on his or her age and training heart rate, `rate`. The zone is determined by comparing `rate` with the person's maximum heart rate `m`:

|                    |        |                    |     |                    | Training Zone      |
|--------------------|--------|--------------------|-----|--------------------|--------------------|
| <code>rate</code>  | $\geq$ | <code>0.9 m</code> |     |                    | Interval training  |
| <code>0.7 m</code> | $\leq$ | <code>rate</code>  | $<$ | <code>0.9 m</code> | Threshold training |
| <code>0.5 m</code> | $\leq$ | <code>rate</code>  | $<$ | <code>0.7 m</code> | Aerobic training   |
| <code>rate</code>  | $<$    | <code>0.5 m</code> |     |                    | Couch potato       |

The maximum heart rate in beats per minute is given by the formula:

$$208 - 0.7 \text{ age.}$$

#### Exercise 4:

Write a program that takes the lengths of the sides of a triangle (a, b, and c) from the user and then prints the area of the triangle using Heron's formula. (Look up Heron's formula if you do not remember it.).

#### Exercise 5: *int*

Write a class `SumInt`, that takes a series of strictly positive integers and returns the sum of the given integers. You should use a while loop, that reads one integer at a time until the user enters the value 0 (to exit the loop). (reuse some of the code from exercise 1).

#### Exercise 6: *Strings*

1. Write a program that takes a sentence from the user without any punctuation and prints the sentence without any white spaces. Note a white space is represented by ' ', and an empty string is represented by "".

```
> enter a sentence: this is a SHORT sentence
thisisaSHORTsentence
```

2. Same as above except that each word in the output should start with a upper case letter and all other letter should be lower case (also known as CamelCase).

```
> enter a sentence: this is a SHORT sentence
ThisIsAShortSentence
```

3. Write a program that takes a sentence from a user written in CamelCase (without any blank spaces), and then prints one word at a time on a different line.

```
> enter a sentence in CamelCase: ThisIsAShortSentence
This
Is
A
Short
Sentence
```

#### Exercise 7:

Write a program that takes two integers from a user input and print a binary string where a character 1 is used if the digits at the same index are the same, a 0 otherwise. Examples are given in the table below.

| Input A | Input B | Output  |
|---------|---------|---------|
| 1213    | 2113    | '0011'  |
| 1213    | 10435   | '10010' |
| 1213    | 121     | '1110'  |

**Exercise 8:**

Write a program to print the Floyd's Triangle. For example:

```
> Input number of rows: 5
1
01
101
0101
10101
```