SOFTWARE 2 PRACTICAL

ARRAYS & STATIC METHODS

Week 2 – Practical 2

For this week practical, you should create a Java project (see last week introduction to VS Code). If you want to test your code in GradeScope, all your code must be written in the class named `TextUtils`, and the class should be in the package `sof2week02softwarelab`.

Exercise 1:

Write a **static method** `int toBase10(String binary)` that take a String representation of a binary number (base 2), convert it into a decimal number (base 10) and return the base 10 value. To compute such a value, we need to understand what a binary number is.

Index	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**0**
Binary	1	0	0	0	1	0	1	1
Decimal **139**	1×2^7	0×2^6	0×2^5	0×2^4	1×2^3	0×2^2	1×2^1	1×2^0
	128	0	0	0	8	0	2	1

The binary number “10001011” represents the number 139, whereas the number “11111111” represents 255.

Exercise 2: *reinventing the wheel! (again)*

For this question we are emulating the method `split()` from the type `str` In Python. In the class `TextUtils` implement the static method `String[] split(String text)` where `text` is a string. The method returns an array of String which contains the words from the text (split by a blank space).

You must NOT use the any existing classes such as `StringTokenizer` to solve the problem.

Exercise 3: *a more flexible* `split`.

In `TextUtils`, overload the method `split(String text, String separators)` where `text` is a string to be split, `separators` is a string containing all the characters used to split the text (for example `“,.!? “`). The method returns an array of String containing the list of tokens separated by one of the separators.

Exercise 4:

Write a static method `rasterise(int[] data, int width)` that transforms a 1D array passed as parameter into a 2D array, where each sub-array have `width` elements. If the length of the 1D array is not a multiple of `width`, the method should return `null`.

For example:

```
rasterise({1,2,3,4,5,6,7,8},4)→ {{1,2,3,4},{5,6,7,8}}
rasterise({1,2,3,4,5,6,7,8},3)→ null
```

Page | 2