FIT9131 Programming Foundations

Week 7 Exercises

A. Homework checklist

To be up to date you should have completed the following:

- Lab exercises from weeks 1– 6.
- Read Chapters 1–4, sections 6.3-6.5, 6.11, 6.12 from Chapter 6, and sections 7.1-7.4 from Chapter 7, sections 9.1-9.2, 9.3.2, 9.4.1, 9.6, 9.8, 9.9 from Chapter 9 of the textbook.

Important:

You MUST ATTEND your lab this week, and make an appointment with your tutor for your interview for Assignment 1. Please remember - if no interview is scheduled, no marks will be awarded for your assignment. Don't forget that Assignment 1 is due at the end of this week - Week 7. There is no extension to the due date.

B. Exercises for Week 7

Create a new project in BlueJ for your work this week. Name the project **`Week7`** and create all your classes for the week in this project.

1. Testing and debugging

a. Explain the following types of errors in programming:
   a. Syntax errors
   b. Execution errors
   c. Logic errors

b. What is the difference between the process of *testing* and the process of *debugging*?

c. What the main goals of *positive* and *negative* testing?

2. More on Strings

a. Consider the following method which attempts to print out a string in upper case. The code doesn't work. Explain why, and rewrite the code so that it will work properly.

```
public void printUpper(String title)
{
    title.toUpperCase();
    System.out.println(title);
}
```

b. Rewrite the following three lines of code so that the same functionality is written in just one line of code (i.e. combine the three lines into one):

```
String input = console.nextLine();
input = input.trim();
input = input.toLowerCase();
```

Assume that **console** is a **Scanner** object, declared elsewhere.

c. The **String** class has a **split** method which can be used to divide a string into separate substrings and returns these in an array of strings. The parameter to the **split** method defines at what characters the original string should be split. For example, the following code will split the string **line** into substrings divided by a **tab** character and store these in the array named **words**:

```
String[] words = line.split("\t");
```

Given the following code:

```
String domesticPets = "cat:dog:bird:fish";
```

Write a line of code that will split the string **domesticPets** into substrings divided by a colon character and store these in an array named **myPets**. Test your answer in the Code Pad in BlueJ.

For more information on the **split** method (and other String methods) have a look at the documentation for the **String** class in the Java API https://docs.oracle.com/en/java/javase/14/docs/api/.

3. Assignment 1

Work on your assignment

C. Homework

1. Finish the lab exercises for week 7.
2. Read sections 6.12-6.15 from Chapter 6 of the textbook, *Objects First with Java.*
3. Finalise and submit Assignment 1.

C. Pre-lab tasks to be assessed in Week 8

The following example will give you practice in using **`Arrays`**. Open the **`weblog-analyser`** project in BlueJ. This project may be found in the chapter07 projects folder. Read the README.TXT file and examine the code and see if you can work out what the project does.

1. Create a **`LogAnalyser`** object, call the **`analyzeHourlyData`** method, then call the **`printHourlyCounts`** method. When is the busiest time of day?

2. What will happen if the loop condition in **`printHourlyCounts`** in the **`LogAnalyser`** class is written using the <= operator, as follows?

```
for (int hour = 0; hour <= hourCounts.length, hour++)
```

3. Rewrite the body of the **`printHourlyCounts`** so that the **`for`** loop is replaced by an equivalent **`while`** loop. Check your code by calling the method.