FIT1008 – Intro to Computer Science
Tutorial 1

Semester 1, 2018

Objectives of this tutorial

- For you to get to know each other and your tutor.
- To understand the organisation of this unit.
- To revise the material you covered in FIT1045 or equivalent.

Exercise 1

Consider the following pseudo code:

```
/* An algorithm to perform a MYSTERY action */

    count <- 0
    sum <- 0
    i <- 0

    while i < length(aList) {
        print "Outside"
        count <- count+1
        sum <- sum + aList[i]
        j <- 0

        while j < length(aList) {
            print "     Inside"
            count <- count+1
            sum <- sum + aList[j]
            j <- j + 1
        }
        i <- i + 1
    }

    print "Sum: " + sum
    return count
```

Discuss the answers to the following questions:

(i) For a list of length 7, how many times does the `mystery` function print `"Outside"` and print `"     Inside"`?

(ii) What is the value returned in `count` for a list of length 7?

(iii) What value is printed for `sum` when the list contains numbers 1,2,3,4,5,6 and 7?

(iv) Discuss the answers to the above four questions for a list of length N.

Exercise 2

A string can be considered as a list of letters, and we could use the notation **w[k-1]** to denote the **k**th letter in the string **w**.
A palindrome is a string which is spelt the same ways forwards as backwards. For example, **abba** is a palindrome but **abbbaba** is not. Write a function which takes as a parameter a string and returns **True** if the string is a palindrome, and **False** otherwise.

Exercise 3

Write a function which takes as parameters two lists, **list1** and **list2**, and prints out all the items that belong to both lists.

Exercise 4

Answer the following questions:

- How does a heap differ from a binary search tree?
- How does a stack differ from a queue?
- How does recursion differ from iteration?