

# *FIT1008 – Intro to Computer Science*

## *Additional Exercise*

Semester 1, 2017

### *Objective of this tutorial*

- To understand Heaps.

### *Exercise 1*

Insert the following elements into an empty heap, in the order shown. After each insertion, show the structure of the heap using a binary tree.

15 12 19 10 18 20 22 40

### *Exercise 2*

Consider the array 10,20,30,40,50,60,70,80, where element 10 is at index 1, 20 at index 2, etc. Is this array a heap? Explain.

Consider now the array 80,70,60,50,40,30,20,10, where element 80 is at index 1, 70 at index 2, etc. Is this array a heap? Explain.

### *Exercise 3*

Is heapsort stable? If you think it is, give an argument to support your position. If not, provide a counter-example.