

# COMP3506/COMP7505—Algorithms and Data Structures

School of Information Technology and Electrical Engineering

## Week 9 Tutorial

### Question 1

Show the structure of an initially empty splay tree after inserting each of the keys in the following sequence, showing the tree after each insertion:

23, 12, 27, 25, 29, 25

### Question 2

Briefly describe why accessing nodes of a splay tree have a amortised time-complexity of  $O(\log n)$ . Refer to section 10.3.3 of the textbook for a full explanation.

### Question 3

Insert sequential keys from 1 to 10 into a (2,4) tree and a Red-Black tree, showing both of the trees after each insertion.

### Question 4

Compare the (2,4) tree to the red-black tree.

- i) Show which nodes in the (2,4) tree correspond to nodes in the red-black tree.
- ii) Do the two methods directly correspond?