COS212 (Data Structures and Algorithms)

Tutorial 3: Exercise
2021/04/06

Question 1 Trees and Recursion ..... (5 marks)

1.1 [1 point] What is the maximum number of nodes that can be contained on level **12** of a Binary Tree?

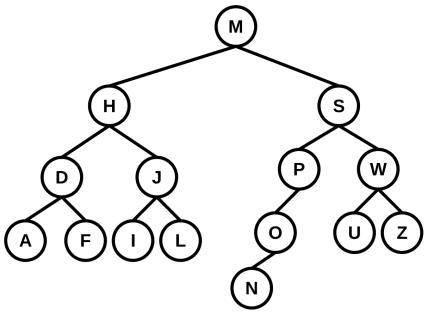
1.2 [4 points] Assume you were given the following Binary Tree Node class:

```
public class BinaryNode<T extends Comparable<T>>
{
        public BinaryNode(T data) {
                key = data;
                left = right = null;
        }
        public T key;
        public BinaryNode<T> left, right;
}
```

Write a recursive method `getHeight` to calculate the height of a Binary Tree. The method should receive the minimal number of parameters.

Question 2 Binary Search Trees ..... (4 marks)

The following binary search tree is given:



2.1 [2 points] Give the order in which the nodes would be visited if **pre-order** depth first traversal was applied.

2.2 [2 points] Give the order in which the nodes would be visited if **post-order** depth first traversal was applied.