CS-115 Lab Class 6 02/03/2020

The purpose of this lab is for you to gain experience programming Binary Trees in Java.

☐ Task 6.1

Trees are built up using nodes. Each node contain:

- a data element: a reference to a generic type `T`
- a left node: a reference to the left sub-tree of type `Node`
- a right node: a reference to the right sub-tree of type `Node`

Create a Java class `Node` which contains the above information. Implement reasonable setters and getters in your `Node` class.

Test out your class by creating nodes and calling various methods on the nodes in the main method.

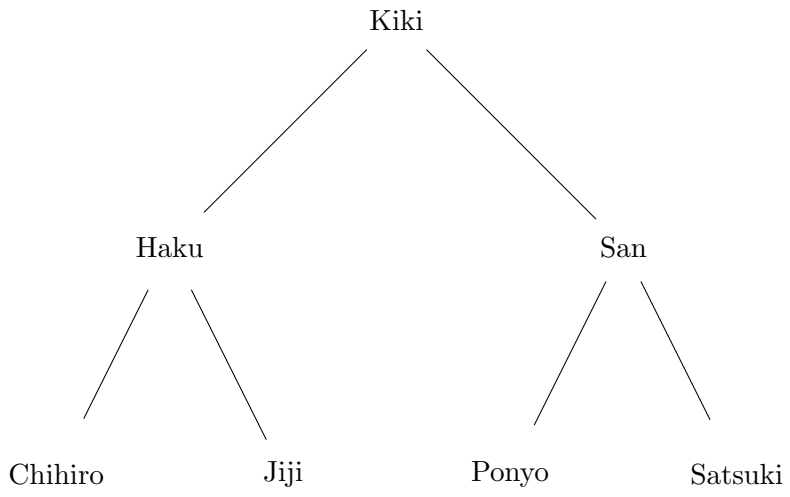
☐ Task 6.2

Create a class `Tree` to model a binary tree. This class should contain a single reference to the root node of the tree. Implement reasonable setters and getters in your `Tree` class.

Again, test out your class by creating a tree and nodes objects; and by calling various methods on the them in the main method.

☐ Task 6.3

Create the following tree using instances of your classes:



Note: the above names are characters in various Studio Ghibli films.

Next task overleaf

□ Challenge Task 6.4

We can traverse the tree in 3 main ways:

- Pre-order
- In-order
- Post-order

Choose one traversal method from the above list and implement a recursive method (in the tree class) which traverses the tree in that order and prints the node's data as it goes. You will need to investigate recursion to do this.