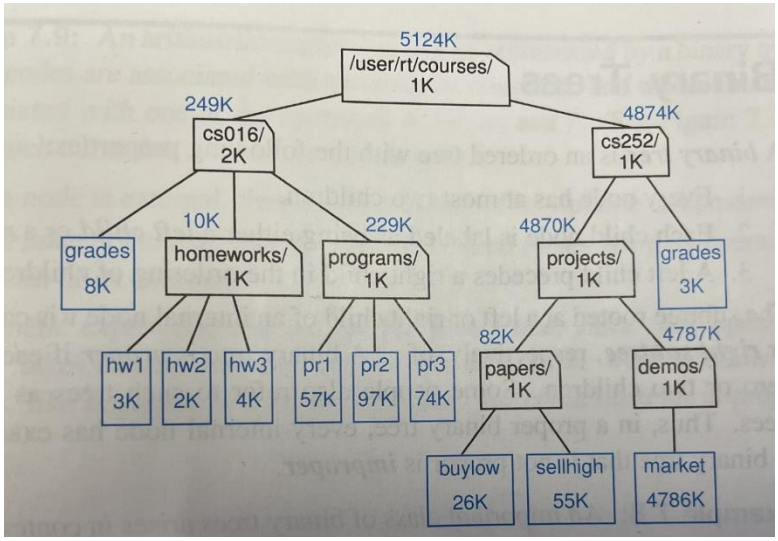
Assignment 02 – Part 02 (Tree Applications)

Q1. Using a generic tree structure, not a binary or binary search tree, implement the below diagram. Each internal node in the tree represents a folder while external nodes represent files in a file system.

Your job is to have a function*, insertFile(self, node, name size)*, that allows you to insert a file into an internal folder node. If the node is external, a file node, raise an exception with the message "Cannot insert a file at this location!".

You also need a function that allows you to insert a new folder. Call this function *insertFile(self, node, name)*. The folder will initial be empty with a size of 0.

You may have additional helper functions as required.



Q2. Using a binary tree structure, not a BST, implement the below diagram. Each internal node in the tree represents a binary arithmetic operation while external nodes represent numeric constants in an arithmetic expression.

As every node, is the result of a binary expression each node will have two children. Write a program that can take a binary tree, such as the one below, as input and compute the result of the expression.