5.5a Is it valid to say that the height of a binary tree is O(n) and Ω(ln(n))?

5.5b Explain why it is undesirable to have a tree height that is ω(ln(n)).

5.5c Is it possible to define balance at only one node within a tree?

5.5d For each of the nodes in the binary tree shown in Figure 1, determine:

1. The difference in the height between the two sub-trees,
2. The null-path length of both the left and right sub-trees, and
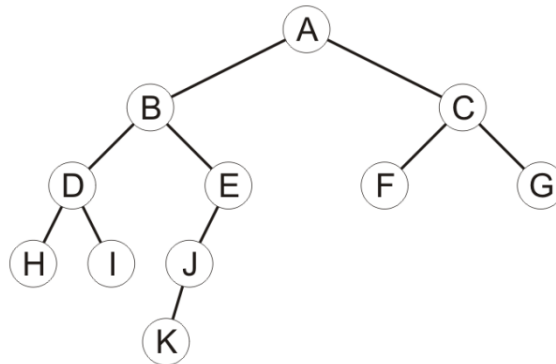3. The number of null sub-trees in each of the left and right sub-trees.

Figure 1. A binary tree.

5.5e Define height, null-path length, and null sub-tree count recursively.

5.5f Does it make sense to discuss *balance* in a general tree?