Tree EXERCISES

Work with your neighbor.

1. Tree terminology:

   sibling – a set of nodes that all share the same parent
   degree – the number of children a node has
   edge/path – the line that connects a parent to its child
   level – the number of "edges" from the root to a node
   height – the maximum of the levels of the nodes in the tree (or, the length of the longest path in the tree)

Answer the questions below given the tree pictured.

What are the leaves of this tree? ____________________________
Which nodes have multiple children? _________________________
Which nodes have multiple parents? _________________________
What is the root of this tree? _____________________________
Which nodes are siblings of 'um'? _________________________
What is the level of 'at'? ________________________________
What is the height of this tree? ___________________________
2. Draw the tree that represents the main directories and files on your computer.

3. What does the Binary Search Tree look like if we add the numbers below in order from left to right?

   18 10 40 44 7 26

4. Modify the code below for searching a BST T to define insert(T, v).

   ```python
   def search(T, v):
       if T == None:
           return False
       if v == T._value:
           return True
       if v < T._value:
           return search(T._left, v)
       else:
           return search(T._right, v)
   
   def Node:
       def __init__(self, value):
           self._value = value
           self._left = None
           self._right = None
   ```