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CSC 4520
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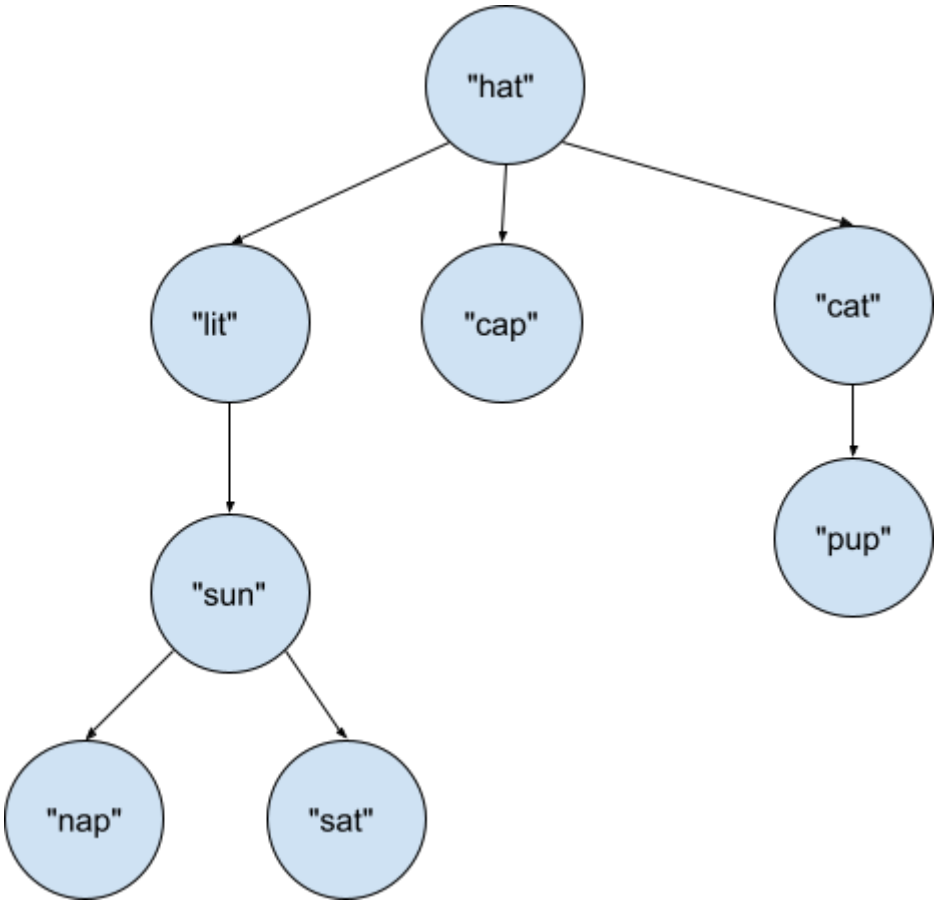
HW3

Given this Tree **T**, answer the following questions:



1 Assuming T is defined in Java, what code do I write to get "sun" back?

My Code:

```
// assuming that children and value are initialized
// prints “sun” value
System.out.println(T.getChildren().get(0).getChildren().get(0).getValue());
```

Explanation:

`T.getChildren()` points to all of the children of the root node (“hat”) in tree (T)

`T.getChildren().get(0)` gets the 0th child in List (“lit”)

`T.getChildren().get(0).getChildren().get(0)` points to the 0th child in the List of the 0th child subtree (“sun”)

`T.getChildren().get(0).getChildren().get(0).getValue()` gets the value of the 0th child in 0th List (“sun”)

2 What will `System.out.println(T.getChildren().get(2).getChildren())` output? Be as specific as possible.

My Output: “pup”

Explanation:

`T.getChildren()` points to all of the children of the root node (“hat”) in tree (T)

`T.getChildren().get(2)` gets the 2nd child in List (“cat”)

`T.getChildren().get(2).getChildren()` points to the child in the List of the 2nd child subtree (“pup”)

The value “pup” is then printed as the expected output.

3 Given the following code, what will we output for mystery(T)?

```
public static void mystery(TreeNode<String> node) {
  List<TreeNode<String>> children = node.getChildren();
  for (int i = 1; i < children.size(); i++) {
    TreeNode<String> child = children.get(i);
    System.out.println(child.getValue());
    mystery(child);
  }
}
```

My Output:

“lit” → “sun” → “nap” → “sat” → “cap” → “cat” → “pup”

Explanation:

`mystery` is a recursive function; it will iterate through every element in the TreeNode List until there are none left. Every child node is called recursively in the `mystery` function, and the method will print all of the child node’s values until the end of the tree. The final output is a printed list of all of the tree’s children’s values/nodes.