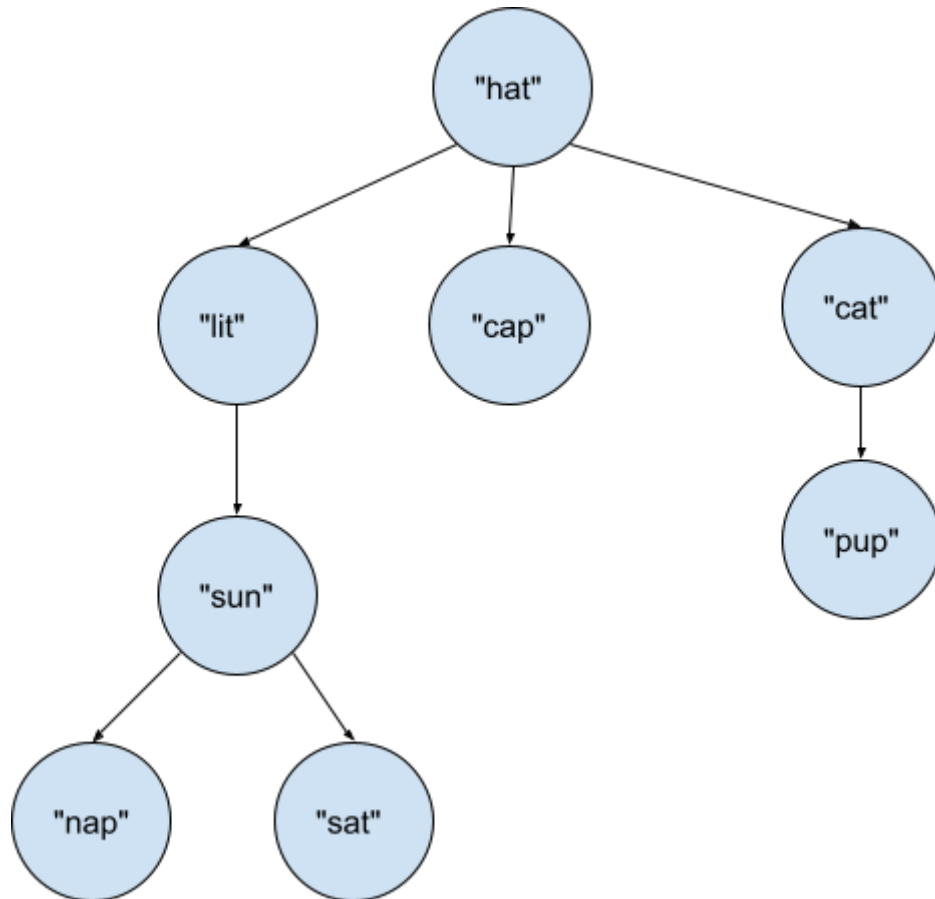Rafid
Shaon
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HW3

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.