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Assignment 5  
Morse Code

**Final Uml Design  
  
  
MorseCodeTree**

* Attributes
  + root: TreeNode<String>
* Constructors
  + MorseCodeTree()
    - Initializes the tree and calls buildTree()
* Methods
  + getRoot(): TreeNode<String>
    - Returns the root of the tree
  + setRoot(newNode: TreeNode<String>): void
    - Sets the root of the tree to newNode
  + insert(code: String, letter: String): void
    - Inserts a node into the tree based on the Morse code
  + addNode(root: TreeNode<String>, code: String, letter: String): void
    - Recursive method to add a node at the correct position
  + fetch(code: String): String
    - Fetches the letter corresponding to the Morse code
  + fetchNode(root: TreeNode<String>, code: String): String
    - Recursive method to fetch data from the tree
  + buildTree(): void
    - Builds the Morse Code Tree by inserting nodes
  + toArrayList(): ArrayList<String>
    - Returns an ArrayList of the tree’s contents in LNR (Inorder) traversal
  + LNRoutputTraversal(root: TreeNode<String>, list: ArrayList<String>): void
    - Recursive method to traverse the tree in LNR order

**TreeNode<T>**

* Attributes
  + data: T
  + left: TreeNode<T>
  + right: TreeNode<T>
* Constructors
  + TreeNode(data: T)
    - Initializes the node with data, left, and right children set to null
  + TreeNode(data: T, left: TreeNode<T>, right: TreeNode<T>)
    - Initializes the node with data, left, and right children

**MorseCodeConverter**

* Methods
  + convertToEnglish(codeFile: File): String
    - Converts Morse code from a file to English
  + convertToEnglish(code: String): String
    - Converts a Morse code string to English
  + printTree(): String
    - Returns a string with all the tree data in LNR order, separated by spaces