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CMSC 204

<div align="center">Design</div>

TreeNode Class

Class TreeNode<T>:

   - Stores data (T type)

   - Has left and right children

   - Constructor for new node with data

   - Constructor for deep copy of another TreeNode

   - Getters/setters for data, left, and right

MorseCodeTree Class

Class MorseCodeTree implements LinkedConverterTreeInterface<String>:

   - Private root node

   - Constructor calls buildTree()

Method buildTree():

   - Insert each letter into tree based on Morse code path

Method addNode(root, code, letter):

   - Base case: If one symbol, create node at left (.) or right (-)

   - Recursive case: Traverse left or right based on first symbol

     and call addNode on remaining code

Method fetchNode(root, code):

   - Traverse tree based on Morse code

   - Return letter found at final node

Method toArrayList():

   - Return letters in inorder traversal

Method LNRoutputTraversal(root, list):

   - Inorder traversal helper to populate list

MorseCodeConverter Class

Class MorseCodeConverter:

   - Has static MorseCodeTree

Method convertToEnglish(String code):

   - Split Morse code into words (by '/')

   - Split words into letter codes (by space)

   - Use fetchNode to decode each letter

   - Rebuild English sentence

Method convertToEnglish(File file):

   - Read file contents into string

   - Call convertToEnglish(String)

Method printTree():

   - Return space-separated string from toArrayList()