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**HW 5.1 (MANDATORY 50 points)**

Implement an AVL tree whose node values are integers.  It should be able to support three operations: ***insert***, ***find***, and ***delete***.  Implement any replacement operations to use the **predecessor**.

Input:

* a sequence of commands to stdin that ***insert***, ***find***, or ***delete*** an integers.

Output:

* for each command executed, a list of the node-values within the tree that are traversed to find the initial position in the tree to begin to process the command.
  + for ***insert*** it will be the list of values traversed before initially inserting the new value, followed by the value inserted
  + for ***find***, it will be the list of nodes traversed before finding the value we are looking for or before being able to assert the value is not present in the tree.  Asserts whether value was found or not.
  + for ***delete***, it will be the list of nodes traversed before finding the node to be deleted or before being able to assert the value is not present in the tree.  Asserts whether the node to be deleted was found or not.

**Section 1: Successful compilation of programText

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**Section 2: program running on the provided example from the assignmentTable

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**Section 3: Provided test input**

*~ No Test Input provided on Piazza ~*

**Section 4: Edge Case #1  
Description:** Delete value from empty tree **Input:** delete 10

**Expected Output:** Nothing will be deleted and program should not throw any error

Text

Description automatically generated

**Section 5: Edge Case #2  
Description:** Insert duplicate node **Input:**Insert 5  
Insert 5  
 **Expected Output:** Duplicate value should not be inserted

**Output:**

Text

Description automatically generated

**Section 6: Edge Case #3  
Description:** Find a missing node

**Input:**insert 5  
insert 5  
find 4 **Expected Output:** Not Found!

**Output**

Text

Description automatically generated

**Section 7: Edge Case #4  
Description:** Finding a deleted node

**Input:**Insert 5  
Insert 6  
Insert 4  
delete 5  
find 5  
  
**Expected Output:** Not found!

**Output:  
Text

Description automatically generated**

<https://leetcode.com/problems/binary-tree-pruning/>

A picture containing box and whisker chart

Description automatically generated

<https://leetcode.com/problems/maximum-product-of-splitted-binary-tree/>Graphical user interface

Description automatically generated with medium confidence