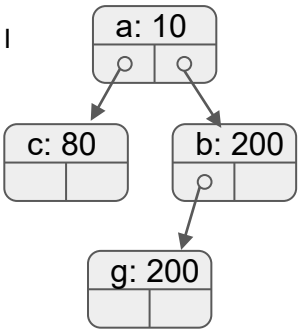
CSE12F20-Nov16-1

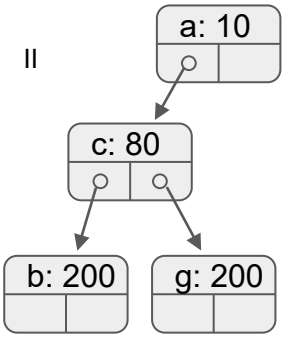
```
class Node<K,V> {
   K key; V value;
   Node<K,V> left, right;
   public Node(K key, V value,
                     Node<K,V> left, Node<K,V> right) {
      this.key = key;
      this.value = value;
      this.left = left;
      this.right = right;
   }
}
```

```
Node<String, Integer> node1 =
   new Node<>("a", 10,
      new Node<>("c", 80,
         new Node<>("b", 200, null, null),
         new Node<>("g", 200, null, null)),
      null);

Node<String, Integer> node2 =
   new Node<>("a", 10,
      null,
      new Node<>("c", 80,
         new Node<>("b", 200, null, null),
         new Node<>("g", 200, null, null)));

Node<String, Integer> node3 =
   new Node<>("a", 10,
      new Node<>("c", 80,
         new Node<>("b", 200, null, null),
         null),
      new Node<>("g", 200, null, null));

// Fill in the definition for the missing one
Node<String, Integer> node4 =
```

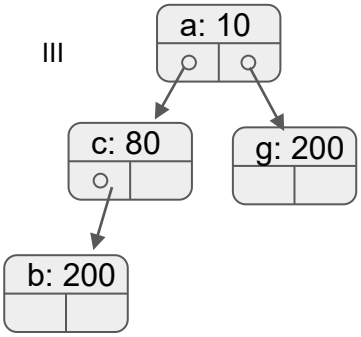
I



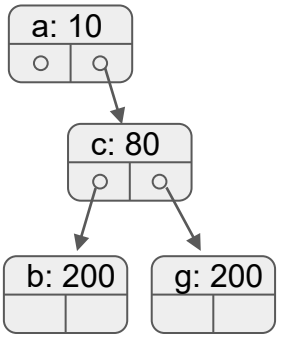
II



III



IV



Which **tree** on the right is **NOT** represented by one of node1, node2, node3?

A: I
B: II
C: III
D: IV
E. More than one of them is not represented

```
class Tree<K,V> {
  Node<K,V> root;
  Tree() { this.root = null; }
  Tree(Node<K,V> root) { this.root = root; }

  int countNodes(Node<K,V> node) {









  }

  int countNodes() {

  }

  V get(Node<K,V> node, K key) {









  }

  V get(K key) {


  }
}
```

Definition: A **binary search tree (BST)** is a tree where at **every** node, all keys to the **left** of that node are **smaller** than that key, and all keys to the **right** are larger.

Which **tree** on the front is a **binary search tree**?

A: I B: II C: III D: IV
E: More than one of them is a BST

```
class BST<K,V> {
    Node<K,V> root;
    BST() { this.root = null; }
    BST(Node<K,V> root) { this.root = root; }

    V get(K key) {

    }

    void set(K key) {

    }
}
```