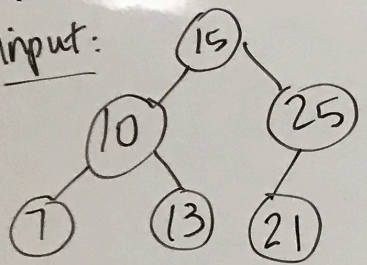
Problem Domain

Given a binary tree as input, write a function that returns the maximum value stored in the tree.

input:



output: 25

Big O( )

time: O(n)
space: O(n)

Edge Cases

- one node in binary tree
  - max value in value of that one node
- empty binary tree returns None

Algorithm

Given a binary tree as input.
Determine if root node is equal to none. Return None if true.
Assign to a local variable node and root_value the binary tree root node
Traverse the left half tree of root node returning the max value of left half.
Traverse the right half tree of root node returning the max value of right half.
Compare the max value of the left half and right half with the root node value.
Return the max value.

Code

```
def find_maximum_value(self, node=None):
    if self.root_node is None:
        return None
    node = root_value = self.root_node
    while node._left_child != None:
        node = node._left_child
    left_max = node.value
    while node._right_child != None:
        node = node._right_child
    right_max = node.value
    if left_max > root_value.value:
        root_value.value = left_max
    if right_max > root_value.value:
        root_value.value = right_max
    return root_value.value
```