Assignment 2

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CREATE TREE

1. If the range passed has length 0 or less than the length of interval return null(O(1))
2. Find mideian range from the range passed(O(1))
3. Create node for that range(O(1))
4. Call CREATE TREE for the remaining range less than the current range(O(1))
5. Call CREATE TREE fro the remaining range graeter than the used range(O(1))

Analysis Time Complexity

Here we see the total time for creation of a node is O(1). Hence for all ranges it will be O(n) where n is the number of intervals in which the range is divided.

MERGE

1. If the current node overlaps or lies within the range to merge,then add this to the SubTree.(O(1))
2. Add the node's elements to the list.(O(k) where k =number of elements in the list)
3. Add this node to the stack.(O(1))
4. Call MERGE for right subtree(O(1))
5. Call MERGE for left subtree(O(1))

Analysis Time Complexity

Here we see the total time for merging is propotional to the number of elements added to the new merged node created. Hence for all ranges it will be O(K) where K is the number of elements to be added to the node created. But the number of elements added will be propotional to the

RECREATE TREE

1. Call MERGE for each new interval that will exist in the new tree.(O(K))

Analysis Time Complexity

Since the new tree will contain all the previous data,hence all the numbers will be traversed at least once.So the time complexity will be O(N) where N is the maximum number of elements possible in the list.But even if there are no elements in the list