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Module 3 – Program Assignment
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In this program assignment, we were to tasked with modifying the given search function to use recursion, create an inOrder, preorder, nodeCount, and call each of these in the main function. This program implements each of these correctly accomplishing all of the requirements of this assignment.

When provided with the numbers in the order 56, 34, 78, 90, 34, 2, 5, 3, 1, 786, 345, 245, 789, we receive the following for each of the function calls:

```
Constructing empty BST
BST is empty

Now insert a bunch of integers into the BST.
Try items not in the BST and some that are in it:
Item to insert (-999 to stop): 56
Item to insert (-999 to stop): 34
Item to insert (-999 to stop): 78
Item to insert (-999 to stop): 90
Item to insert (-999 to stop): 34
Item already in the tree
Item to insert (-999 to stop): 2
Item to insert (-999 to stop): 5
Item to insert (-999 to stop): 3
Item to insert (-999 to stop): 1
Item to insert (-999 to stop): 876
Item to insert (-999 to stop): 345
Item to insert (-999 to stop): 245
Item to insert (-999 to stop): 789
Item to insert (-999 to stop): -999
BST is not empty

Now testing the inOrder() operation.
1 2 3 5 34 56 78 90 245 345 789 876

Now testing the preOrder() operation.
56 1 2 3 5 34 78 90 245 345 789 876

Now testing the nodeCount() operation.
Node count: 15

Now testing the search() operation.
Try both items in the BST and some not in it:
Item to find (-999 to stop): 3
Found
Item to find (-999 to stop): 34
Found
Item to find (-999 to stop): 789
Found
Item to find (-999 to stop): 999
Not found
Item to find (-999 to stop): -456
Not found
Item to find (-999 to stop): 000
```

Which shows prints in order correctly, preorder correctly, gives a node count of 15 correctly, and returns elements that are there and false when not.

When provided with the numbers in the order 652, 5, 3241, 567, 879, 657, 435, 23, 5, 78, 9, 65, 43, 23, we receive the following for each of the function calls:

```
Constructing empty BST  
BST is empty
```

```
Now insert a bunch of integers into the BST.  
Try items not in the BST and some that are in it:  
Item to insert (-999 to stop): 652  
Item to insert (-999 to stop): 5  
Item to insert (-999 to stop): 3241  
Item to insert (-999 to stop): 567  
Item to insert (-999 to stop): 879  
Item to insert (-999 to stop): 657  
Item to insert (-999 to stop): 435  
Item to insert (-999 to stop): 23  
Item to insert (-999 to stop): 5  
Item already in the tree  
Item to insert (-999 to stop): 78  
Item to insert (-999 to stop): 9  
Item to insert (-999 to stop): 65  
Item to insert (-999 to stop): 43  
Item to insert (-999 to stop): 23  
Item already in the tree  
Item to insert (-999 to stop): -999  
BST is not empty
```

```
Now testing the inOrder() operation.  
5 9 23 43 65 78 435 567 652 657 879 3241
```

```
Now testing the preOrder() operation.  
652 5 9 23 43 65 78 435 567 657 879 3241
```

```
Now testing the nodeCount() operation.  
Node count: 14
```

```
Now testing the search() operation.  
Try both items in the BST and some not in it:  
Item to find (-999 to stop): 3241  
Found  
Item to find (-999 to stop): 23  
Found  
Item to find (-999 to stop): 5  
Found  
Item to find (-999 to stop): -999  
|
```

Which shows prints in order correctly, preorder correctly, gives a node count of 14 correctly, and returns elements that are there and false when not.