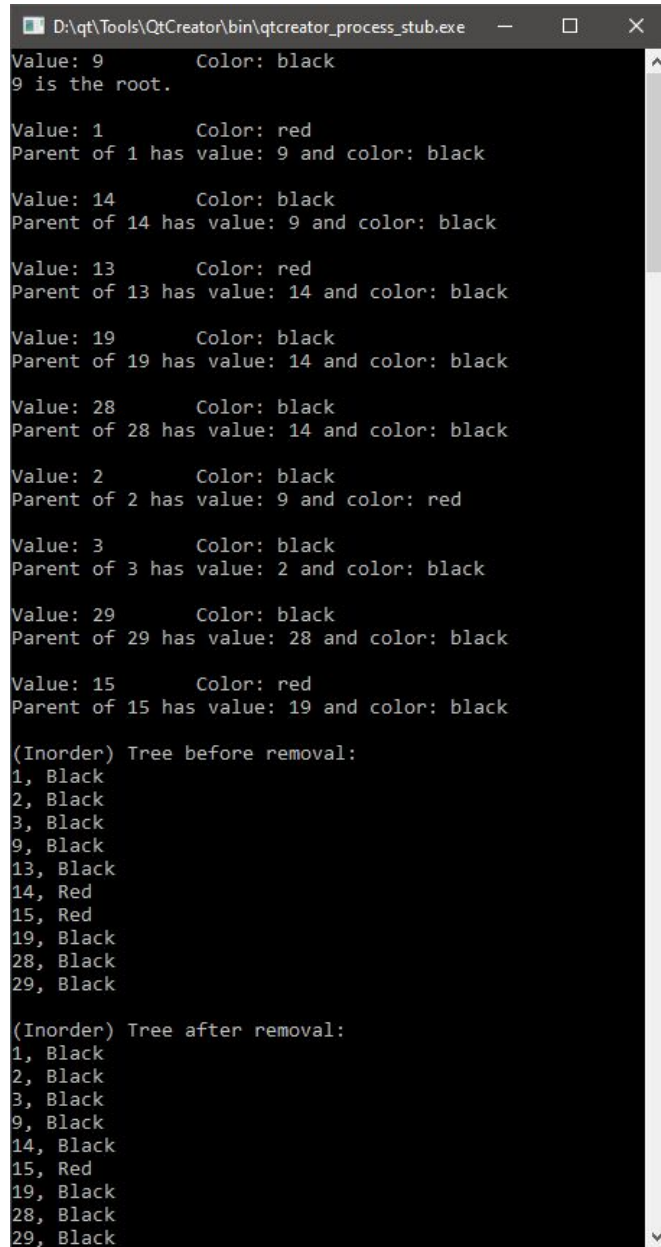


## Documentation

I didn't really use the code provided to us, I recreated the LLRB tree structure within my own files, and modified it to make use of smart pointers because I thought that's what he wanted, and so I could reference my code from Project 3. I did make some minor modifications to the nodes, like removing the key-value pairs and just having them contain only a value, and having them make use of templates instead of storing data in void pointers. Other than that however, the code is pretty much the same as the one provided to us.

Output of code:



```
D:\qt\Tools\QtCreator\bin\qtcreator_process_stub.exe
Value: 9          Color: black
9 is the root.

Value: 1          Color: red
Parent of 1 has value: 9 and color: black

Value: 14         Color: black
Parent of 14 has value: 9 and color: black

Value: 13         Color: red
Parent of 13 has value: 14 and color: black

Value: 19         Color: black
Parent of 19 has value: 14 and color: black

Value: 28         Color: black
Parent of 28 has value: 14 and color: black

Value: 2          Color: black
Parent of 2 has value: 9 and color: red

Value: 3          Color: black
Parent of 3 has value: 2 and color: black

Value: 29         Color: black
Parent of 29 has value: 28 and color: black

Value: 15         Color: red
Parent of 15 has value: 19 and color: black

(Inorder) Tree before removal:
1, Black
2, Black
3, Black
9, Black
13, Black
14, Red
15, Red
19, Black
28, Black
29, Black

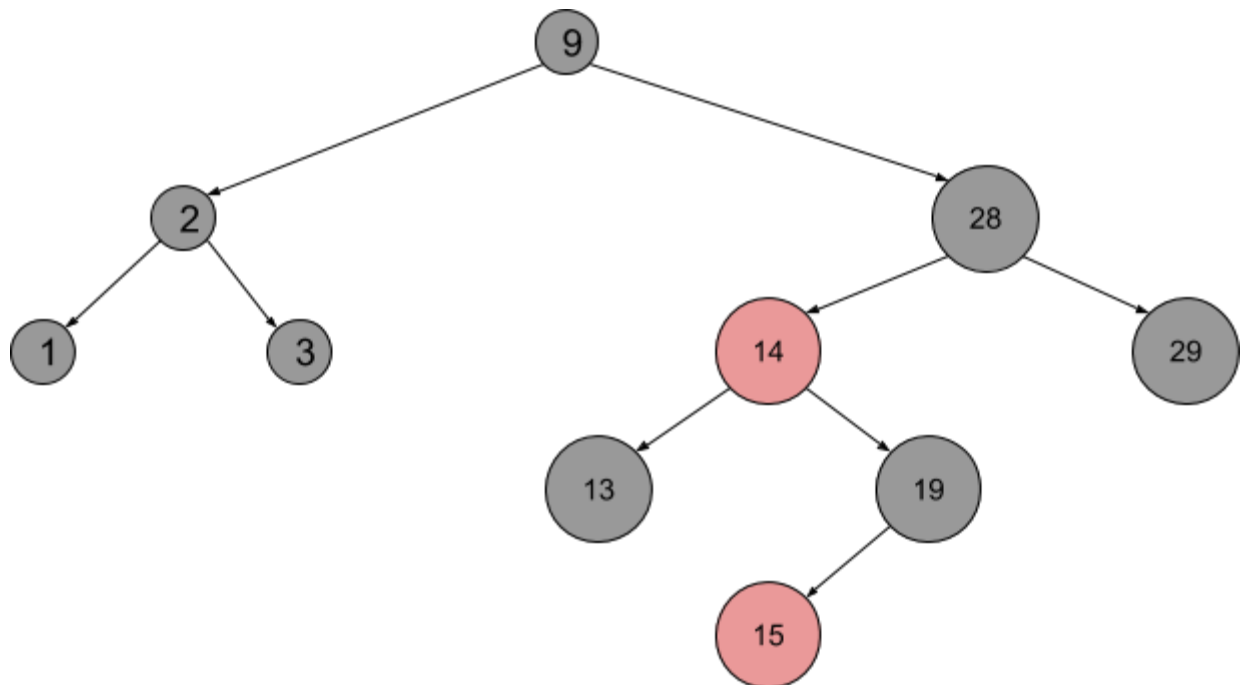
(Inorder) Tree after removal:
1, Black
2, Black
3, Black
9, Black
14, Black
15, Red
19, Black
28, Black
29, Black
```

\*\*\*note: the actual color of the node after all the insertions are done may be different than what is outputted here

Input set:

9, 1, 14, 13, 19, 28, 2, 3, 29, 15

Tree before removal:



Tree after removal (13):

