CS2134 Homework 8 Spring 2016

Today? 2016

Written Part:

1)

```
2a) Recursive function
    Check to make sure node isn't a nullptr
    if X < node, recursively search the left pointer
    if X > node, recursively search the right pointer
    otherwise, x == node so return true

2b) Recursive function
    Check to make sure node isn't a nullptr
    if the min<node<max print and check left and right
    if min== node or max == node print
    if the node>=max check left
    if the min>=node check right
2c)  use a recursive function to create an ordered queue
   Recursive function
       if the left != nullptr, recursively call left
       push the node onto the queue
       if the right!= nullptr, recursively call right
   set the first queue as the root
   set n+1 as the right value of n for all of the queue and null as left

2d)  use a recursive function to find the depth of each node and add them
     together
     use a recursive function to count how many nodes there are
     divide the sum of all the depths by the amount of nodes.
```

2)

a) O(h)
b)O(k+h)
c)O(n)
d)O(n)

3)assuming the use of NULL is valid in this case,this code should work properly. It checks through all the left nodes until the next left node is nullptr. The difference is that it checks if the current or original node is a nullptr.

4)this code might perform properly, but it sets the size of the new node created to 1, even though it's already being incremented later on. Also, it does nothing if there's a duplicate which is fine, but it'd be better if it threw an exception or at least output a warning.

So t = new Node{ x, nullptr, nullptr, 1 };
Should be

```
t = new Node{ x, nullptr, nullptr, 0 };
```

and in the else case there should be

```
throw DuplicateItemException( );
```

5)

a)14,17,18,22,30

b)22,17,14,18,30

c) 14,18,17, 30, 22