

CMPSC-132: Programming and Computation II

Spring 2020

Lab #6

Due Date: 03/22/2020, 11:59PM

Read the instructions carefully before starting the assignment. Make sure your code follows the stated guidelines to ensure full credit for your work.

Instructions:

- The work in this lab must be completed alone and must be your own.
- **Download the starter code file from the LAB6 Assignment on Canvas. Do not change the function names on your script.**
- A doctest is provided as an example of code functionality. Getting the same result as the doctest does not guarantee full credit. You are responsible for debugging and testing your code with enough data, you can share ideas and testing code during your recitation class.
- Each function must return the output (Do not use print in your final submission, otherwise your submissions will receive a -1 point deduction)
- **Do not include test code outside any function in the upload. Printing unwanted or ill-formatted data to output will cause the test cases to fail. Remove all your testing code before uploading your file (You can also remove the doctest). Do not include the input() function in your submission.**
- **As a REMINDER, you are not allowed to use the internet to search for a solution or to use code written by other students that have taken (or are currently taking) the class**

Goal:

[10 pts] In our video lecture, we discussed the Binary Search Tree data structure. In the Hands On session, we implemented the class `BinarySearchTree` that adds elements into instances of that class. Using that code as your starter code, implement the following methods into the `BinarySearchTree` class:

- The property method `getMin` that returns the minimum Node value found in the tree. If tree is empty, method returns None. Note that the entire tree does not need to be scanned to find the minimum.
 - `getHeight(node_object)` that returns the height of the given node as an integer. You can assume the node is in the tree. Recursion could be helpful here
 - `isEmpty()` tests to see whether the tree is empty. It needs no parameters and returns a boolean value.
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- You are not allowed to use any other data structures to copy the elements of the tree for manipulating/sorting purposes
 - You are not allowed to modify the given constructor
 - For `getMin`, you are not allowed to use the min/max built-in methods
 - You can't use queue functions from the Python library, otherwise no credit will be given

Deliverables:

- Submit your code in a file name `LAB6.py` to the Lab6 GradeScope assignment before the due date