

CMPSC-132: Programming and Computation II
Fall 2019

Lab #12

Due Date: 11/22/2019, 11:59PM (Assignment will be open until 11/26, no late penalty)

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 LAB12 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. As a reminder, Gradescope should not be used to debug and test code!
- 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.**

Goal

[10 pts] As discussed in our video lecture, heap sort is a comparison based sorting technique based on the Binary Heap data structure. We could implement the sequence as a min heap and removes the root node until the heap is empty, producing a sorted list. Using your code from LAB9, write the function `heapSort(numList)` that takes a list of numbers and **returns** the final sorted list.

- You are not allowed to use the `sorted()` method or the sort operator. Your code will not get credit if you use them
- You are not allowed to use the `min()` or `max()` built-in methods
- You must use your code from LAB9
- `heapSort` must be a must be outside the `MinHeap` class

Deliverables:

- Submit your code in a file name `LAB12.py` to the Lab12 GradeScope assignment before the due date