CS146: Quiz 6
Due Tuesday, March 14, at 7:00AM
10 points

For this quiz you will create a simple heap data structure with several methods including maxHeapify and buildMaxHeap. **To get started, import the starter file (Heap.java) into the heap package you create in a new Java Project**. Please do not change any of the method signatures in the Heap class. Implement the methods described below. You are free to test your code however you prefer. These methods should be completed individually using any IDE you are comfortable with. You are free to use the textbook, slides, class notes, and the [Java API Documentation](#), but **DO NOT** consult any other resources.

Hint: I suggest you look at the pseudocode from the lecture and the textbook to help you. Remember that arrays are indexed starting at 0 in Java. This will change the math in the pseudocode.

`public int parent(int i)`
This method should return the index of the parent of the ith element of the data array. If the ith element is the root, then the method should return -1.

`public int left(int i)`
This method should return the index of the left child of the ith element of the data array. If the ith element is a leaf, then the index will potentially be greater than the size of the data array. That's fine.

`public int right(int i)`
This method should return the index of the right child of the ith element of the data array. If the ith element is a leaf, then the index will potentially be greater than the size of the data array. That's fine.

`public void maxHeapify(int loc)`
The method converts the tree rooted at the loc element in the array to a maxHeap. It assumes that the left and right children of loc are maxHeaps.

`public void buildMaxHeap()`
The method converts the data array into a maxHeap. Note that the entire data array might not be converted into a MaxHeap, just the portion of the array up until HeapSize.

Submission
Please create a jar or zip file of your project. It should include the java file (Heap.java) and submit it on Canvas. If your jar file includes class files or other extraneous files outside of the package folder and java file, you will receive an automatic one point deduction.