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Lab08 Answers
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Lab 8 Answers

1. Write the advantages and disadvantages of leftist heaps.
    a. Advantages: The advantages of the leftist-heap would be the complexity for its functions. For example, merge, insert, deleteMin, and deleteMax can all be done in O(logn) time which is really good. Moreover, the leftist-heap has constant time, O(1), for find min making it excellent for priority queues that favor min priorities.
    b. Disadvantages: The buildHeap, or heapify functionality of the program has complexity of O(nlogn) which is not great and can be improved.
2. Explain the advantages and disadvantages of implementing a leftist heap using a pointer- based implementation instead of an array-based implementation.
    a. Advantages: It is easier to find the child of a node or the node itself through array-based implementations because it can be found mathematically using the index of the node within the array.
    b. Disadvantages: Array sizes are fixed so when the heap grows greater than the array size then the array has to be resized which is more work to implement and another way the heap could fail. By using pointer-based implementation we can continuously dynamically grow the size of the heap without running into issues.