

Lab 9

1. Starting with the values 1, 2, 4, 4, 5, 6, 9, 11, 12, 12, 17, do the following:
 - a. Create a heap H in which these values are the keys.
 - b. Perform the insertItem algorithm to insert the value 7 into H. Show all steps.
 - c. Perform the removeMin algorithm on H and show all steps.
2. Carry out the array-based version of HeapSort on the input array
[1, 4, 3, 9, 12, 2, 4]

Show steps and outputs along the way. Make sure to distinguish between Phase I and Phase II of the algorithm.

3. Carry out the steps of the recursive algorithm BottomUpHeap for the input sequence
11, 5, 2, 3, 17, 24, 1
4. Draw an example of a MaxHeap whose keys are all the odd numbers lie in [1, 21]
(with no repeats), such that the insertion of an item with key 14 would cause up-heap
to proceed all the way up to a child of the root (replacing that child's key with 14).