CSE 373: Section 3

Heaps, Big O, Binary Search Trees

April 13th

isHeap

Implement a method isHeap to verify whether a given array of integers is a valid binary heap. isHeap should return true if the array is a binary heap, false otherwise. You may assume that the array provided represents a valid structure (in other words, check to see if the order property is satisfied. For example, suppose a variable array contains the following sequence of values: [, 2, 4, 6, 10] isHeap(array) would return true.

heapSort

Write pseudocode to sort an array using a minHeap. What is the asymptotic worst case runtime of your method?

Binary Search Tree Dictionaries

Assume we are implementing a Dictionary ADT using a Binary Search Tree where the keys are ints and the values are Strings.

```
public class IntTree {
    private IntTreeNode root;
        private class IntTreeNode {
            IntTreeNode left;
            IntTreeNode right;
            int key;
            String value;
        }
    // Add your methods here....

}
```

Implement the `boolean contains(key k)` method for this class. What is the runtime for this method? How does this method compare to a similar function in a heap or queue?