CSE 332: Data Structures and Parallelism

Exercises (Heaps)

Directions: *Submit your solutions on* **Gradescope**. *You must submit a pdf file.*

EX06. Heapy Birthday! (20 points)

a. Write pseudocode for an *efficient* algorithm that will print out all the values less than a provided value in a binary min heap. The provided value may not be in the heap.

Your solution should not, in general, examine every element in the heap. You should assume the array layout of the binary min heap as discussed in lecture. *You should assume that the first element of the heap is stored in index 0 of the heap.* You may assume direct access to the heap array. Make sure your algorithm does not change the heap.

Please see the handouts page for guidance on pseudocode here: https://courses.cs.washington.edu/courses/cse332/19au/handouts/Pseudocode.pdf

b. What is the worst case *situation* for your algorithm? What is the asymptotic time complexity of your algorithm for this worst case situation? Explain your answer.