CIS263 Heaps

Dr. Denton Bobeldyk

Complete the following:

- 1) Write a program that inputs N elements. A minimum heap data structure should be created to hold the N elements using the following two methods:
 - a. Elements inserted into the heap data structure one at a time
 - b. Use all the elements to build a heap in linear time (pass all the elements in at once)
- 2) The input/creation process should be repeated 3 times using the following criteria:
 - a. the input elements should be sorted from smallest to largest
 - b. the input elements should be sorted from largest to smallest
 - c. the input elements should be randomized.
- 3) Compare the run times for each of the 6 different approaches.
- 4) If a d-heap is stored as an array, for an entry located in position i, where are the parents and children? Be sure to note if your index starts at 0 or 1 and give examples demonstrating the correctness of your formula.

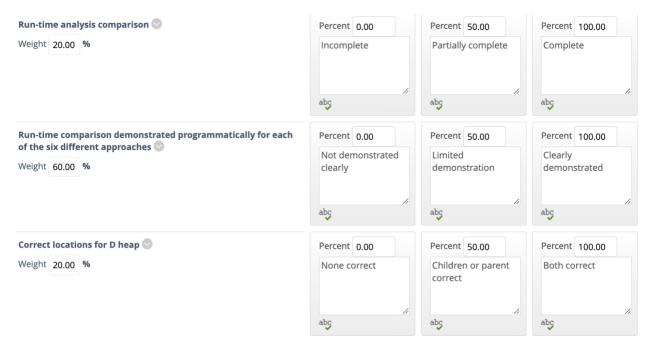
Approved programming languages: C, C++, C#, Python, Java.

Hand-in:

- 1. A file containing the source code for numbers 1 & 2
- 2. The output demonstrating the analysis of your program for numbers 1 & 2
- 3. The analysis for number 3
- 4. The solution to number 4

Note: Please do not upload zip files

Grading Rubric



See blackboard for point breakdown.