Lab W3D2

[1 point] Question 1.

Implement BuildHeap Top-Down.

Write your code in such a way that given an input, your program will return the number of "data item" comparisons.

[1 point] Question 2.

Implement BuildHeap Bottom-Up.

Write your code in such a way that given an input, your program will return the number of "data item" comparisons.

[1 point] Question 3.

Implement Heapsort Phase 2. Write your code in such a way that given an input, your program will return the number of "data item" comparisons. Note that your Heapsort will first call BuildHeap Bottom-Up you had implemented as part of Question 2.

[7 points, see the split below] Question 4.

Validate your code. Run your code using the following FOUR data sets.

Also do it using paper and pencil. Make sure your programs are correct and your counting is correct.

[1 point] Data Set 1: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

[2 point] Data Set 2: 2 1 4 3 6 5 8 7 10 9 12 11 14 13 16 15

[2 point] Data Set 3: 4 2 3 1 5 8 7 6 11 10 12 9 13 14 16 15

[2 point] Data Set 4: 5 6 7 4 2 3 1 8 11 13 14 16 10 12 11 9