This is the design file for the different binary heaps. In this test run, the two heap tables were different.

|  |  |
| --- | --- |
| H1 Unsorted: 14 38 19 16 7 4 29 27 4 25 22 33 19 19 37 12 37 22 15 13 16 15 20 29 27 1 12 30 18 6 18 35 39 18 38 0 24 31 17 24 25 33 1 33 38 30 29 14 26 36 34 1 6 6 27 18 33 28 31 33 37 23 20 4 18 38 34 13 12 23 19 3 24 37 14 4 28 27 34 4 36 2 16 28 0 13 17 18 18 6 6 24 6 20 39 20 3 28 3 28  H1 Sorted: [0, 0, 1, 3, 1, 3, 6, 4, 4, 1, 6, 3, 6, 18, 18, 14, 12, 12, 4, 4, 2, 6, 6, 4, 28, 7, 6, 19, 28, 33, 18, 18, 34, 13, 19, 15, 14, 17, 22, 24, 13, 16, 13, 18, 15, 20, 20, 20, 14, 29, 34, 19, 12, 19, 27, 30, 33, 29, 31, 37, 37, 23, 20, 38, 35, 39, 38, 37, 18, 38, 23, 27, 24, 37, 24, 31, 28, 27, 34, 25, 36, 25, 16, 33, 28, 16, 17, 33, 22, 38, 18, 30, 24, 29, 39, 33, 26, 28, 27, 36]  H1: Empty Heap H2: [0, 0, 1, 1, 1, 2, 3, 3, 3, 4, 4, 4, 4, 4, 6, 6, 6, 6, 6, 6, 7, 12, 12, 12, 13, 13, 13, 14, 14, 14, 15, 15, 16, 16, 16, 17, 17, 18, 18, 18, 18, 18, 18, 18, 19, 19, 19, 19, 20, 20, 20, 20, 22, 22, 23, 23, 24, 24, 24, 24, 25, 25, 26, 27, 27, 27, 27, 28, 28, 28, 28, 28, 29, 29, 29, 30, 30, 31, 31, 33, 33, 33, 33, 33, 34, 34, 34, 35, 36, 36, 37, 37, 37, 37, 38, 38, 38, 38, 39, 39] |  |

According to the results, inserting the ids in order as was done in BinaryHeap1, did in fact yield a valid sorted tree. If you take a look at the elements, you can see that each parent is in fact smaller than its children, even though the heap sort is sequentially ordered from least to greatest. I didn’t quite understand this concept at first, and so to make sure that my code was in fact working as intended, I used the buildHeap() method on BinaryHeap1 to make sure that it was in fact following the heap order property. Sure enough, it was.

On the other hand, after inserting the smallest element from the sorted BinaryHeap1 from above, I noticed that a sequentially sorted BinaryHeap is the result. As we went over in class, since the percolate methods will ensure that the heap order property is met while we remove each of the lowest elements, the elements in the heap will be adjusted so that their values become ordered, depending on whether the greatest, or smallest elements are inserted. This ordered percolation is essentially the process of building the heap.