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Experimentation

MAX-HEAPS

1. The total number of nodes in the max-heap is 504 nodes. This is for each occupation which was in the struct SOC.
2. The height of the binary tree is 8. It is height balanced as its nodes only differ by about a height of 1. This is a property of max-heaps.
3. This is a relatively efficient as its time complexity is O(nlogn). This is about as good as it gets as finding the max value in an unordered list requires every element to be scanned at least once and compared. Another option to find the max value is to use MergeSort or Quicksort, both of which have time complexities of O(nlogn).

BINARY-TREE

1. The total number of nodes in BST when using 1996 data is 504 nodes.
2. The right side of the tree has a max depth of 19. The left side has a max depth of 15. This is not a height balanced tree. The time complexity to find an element is going to be a but higher than O(logn) but it wont be O(n). Along with inserting it also has to search through the BST so its time complexity become O(n) which is not much different than just searching through a sorted array.
3. Another implementation could be a brute force approach where the min and max is stored and any values that come in between are taken. This would also have a similar time complexity of O(n).