CECS 277 Prog 5: Collections

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Part One:                                              Time for the TreeMap loading is: 2759500 nanoseconds
Time for the HashMap loading is: 1630700 nanoseconds   qabala=17
qintar=15                                              qabalah=21
qwerty=17                                              qabalahs=22
qaids=15                                               qabalas=18
qintars=16                                             qadi=14
qabalas=18                                             qadis=15
qi=11                                                  qaid=14
qis=12                                                 qaids=15
qadis=15                                               qanat=14
qabala=17                                              qanats=15
qabalah=21                                             qat=12
qanats=15                                              qats=13
qindars=17                                             qi=11
qaid=14                                                qindar=16
qadi=14                                                qindarka=22
qindarka=22                                            qindars=17
qoph=18                                                qintar=15
qat=12                                                 qintars=16
qabalahs=22                                            qis=12
qwertys=18                                             qiviut=18
qindar=16                                              qiviuts=19
qophs=19                                               qoph=18
qiviuts=19                                             qophs=19
qanat=14                                               qwerty=17
qiviut=18                                              qwertys=18
qats=13                                                Time for the TreeMap printing is: 6587800 nano seconds
Time for the HashMap printing is: 2452800 nano seconds
```

Comparing the loading times a HashMap is clearly much quicker at loading as 1,630,700 is less than 2,759,500. This is because the TreeMap has to begin at the root each time to perform a load. This slows down the loading time to O(n) whereas the loading time for HashMap is constant time. The searching time we have the same outcome where HashMap is quicker than TreeMap (2,452,800 is less than 6,587,800).

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Part Two:
Time for the HashSet insertion is: 96 milliseconds
Time for the TreeSet insertion is: 102 milliseconds
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HashSet insertion is just barely faster than TreeSet insertion. 96 < 102. Again this is because to add something in a HashSet, it takes constant time (O(1)) whereas it is linear time for a TreeSet (O(n)).

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Part Three:
Time for the Alice In Wonderland HashMap insertion is: 90 milliseconds
Total number of items in HashMap is: 4619
Total value of items in HashMap is: 45531
Time for the HashMap iterating is: 7306000 nano seconds
Time for the Alice In Wonderland TreeMap insertion is: 120 milliseconds
Total number of items in TreeMap is: 4619
Total value of items in TreeMap is: 45531
Time for the TreeMap iterating is: 3697300 nano seconds
PS C:\Users\Hagop\Desktop\Java> ▌
```

HashMap insertion is quicker than TreeMap insertion for the same reasons listed above. (90 < 120).

HashMap iterating is much slower than TreeMap iterating (7,306,000 > 3,697,300). However, upon some further tests it seems that the HashMap iterating is faster than the TreeMap iterating. (2,820,499 < 7,928,200).

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Part Three:
Time for the Alice In Wonderland HashMap insertion is: 113 milliseconds
Total number of items in HashMap is: 4619
Total value of items in HashMap is: 45531
Time for the HashMap iterating is: 2820499 nano seconds
Time for the Alice In Wonderland TreeMap insertion is: 315 milliseconds
Total number of items in TreeMap is: 4619
Total value of items in TreeMap is: 45531
Time for the TreeMap iterating is: 7928200 nano seconds
PS C:\Users\Hagop\Desktop\Java> ▌
```