Gauge Hartwell

Assignment 1 Write Up

2A: size 100: 0.15 Seconds

size 1000: 1.65 Seconds

size 10000: 17 Seconds

size 100000: 176.2 Seconds

2B: Big O = O(n^2)

2C: Wall time for size 1000000:

100000 / 1000000 = 176.2 / x

100000x = 176.2 \* 1000000 = 1762000000

4A:

size 100: 0.000116 seconds

size 1000: 0.00160284 seconds

size 10000: 0.0194371 seconds

size 100000: 0.22051 seconds

4B:

100000 \* log(100000) / 1000000 \* log(1000000) = 0.22051 / x

1660964.04 / 19931568.57 = 0.22051 / x

1660964.04x = 4395110.185

x = 2.646

6A:

low = binaryFindFirstByLastName

high = binaryFindLastByLastName

count = high – low

return count

6B: O(logn) + O(logn) = 2 \* O(logn) = O(logn)

6C:

size 100: 2 ^ -7 seconds

size 1000: 5 ^ -7 seconds

size 10000: 8 ^ -7 seconds

size 100000: 1 ^ -6 seconds

6D:

size 1000000:

100000 \* log(100000) / 1000000 \* log(1000000) = 0.000001 / x

1660964.04 / 19931568.57 = 0.000001 / x

1660964.04x = 19.932

x = 0.0000012