Week 11 Assignment

PC specs:

Ryzen 5 1600

16 gb ram

Windows 10

1. Time for Search

Zook: 204500 ns

Unger: 191100 ns

Horne: 94800 ns

Aspen (doesn’t exists): 184300 ns

1. Array Size
   1. Array size 1

Zook: 272300 ns

Unger: 468500 ns

Horne: 141500 ns

Aspen (doesn’t exists): 272600 ns

* 1. Array size 3

Zook: 204500 ns

Unger: 191100 ns

Horne: 94800 ns

Aspen (doesn’t exists): 184300 ns

* 1. Array size 10

Zook: 63500 ns

Unger: 68400 ns

Horne: 37500 ns

Aspen (doesn’t exists): 61500 ns

* 1. Array size 100

Zook: 19700 ns

Unger: 24300 ns

Horne: 17200 ns

Aspen (doesn’t exists): 22800 ns

* 1. Array size 1,000

Zook: 8000 ns

Unger: 10900 ns

Horne: 10600 ns

Aspen (doesn’t exists): 10300 ns

* 1. Array size 10,000

Zook: 10600 ns

Unger: 9800 ns

Horne: 12300 ns

Aspen (doesn’t exists): 13400 ns

* 1. Array size 100,000

Zook: 8200 ns

Unger: 11000 ns

Horne: 9000 ns

Aspen (doesn’t exists): 11900 ns

* 1. Array size 1,000,000

Zook: 10000 ns

Unger: 12400 ns

Horne: 10200 ns

Aspen (doesn’t exists): 10800 ns

* 1. Array size 10,000,000

Zook: 9700 ns

Unger: 9600 ns

Horne: 10100 ns

Aspen (doesn’t exists): 10700 ns

* 1. Array size 100,000,000

Zook: 10700 ns

Unger: 11500 ns

Horne: 10600 ns

Aspen (doesn’t exists): 12700 ns

* 1. Array size 1,000,000,000

Zook: 12400 ns

Unger: 15400 ns

Horne: 12300 ns

Aspen (doesn’t exists): 19400 ns

Conclusion

From the data above, the best array size was 1,000 for a record size of 4,500. One thousand, ten thousand, and one hundred thousand had very similar speed, however 1,000 edges out on performance since 10,000 and 100,000 would require more hardware. If one were to take the ratio of 4500 and 1000, they would get 4.5 records to 1 array size. If we apply the ratio and apply it to 4,500,000, we get the optimal array size of 1,000,000.