

Run Time: Linear Search vs Binary Search

Data Size (n)	Search Entries (m)	# of Found	Avg time spent Linear Search	Avg time spent Binary Search	Memory used by Array	Memory used by HashSet	Memory used by Array 2
100	50	2	666.0 ns	520.0 ns	416 bytes	5920 bytes	N/A
10,000	1000	9	11,208.5 ns	344.9 ns	40016 bytes	545632 bytes	N/A
1e6	1000	13	142651.0 ns	531.6 ns	4000016 bytes	56354560 bytes	N/A
1e8	1000	293	2.354 e7 ns	1109.2 ns	400000016 bytes	N/A	400000016 bytes

The second array is used when the data size gets too large to use a HashSet. It does not guarantee no duplicates, just attempts to prevent them.