Basic ops for sequential search are : {=,!,&&,<,==,++,[]}

size of input is length of L call it n

worst case for input would be if searchval is at position n

T(n)=7n+3

T(n)=θ(n)

Binary search

basic ops {>,=,+,-,==,/}

size of input n is Size of L the array

worst case for input would be if search val was either at the beginning or end of the list

T(n)= 1 if searchval = middle

T(n)= 8T(n/2) if searchval < or > middle assuming print statements arent basic ops

but T(n/2)=8T(n/4)

therefore

T(n)=8(8T(n/4) T(n/4)=8T(n/8)

=64T(n/4)

=64(8T(n/8))

=512T(n/8) T(n/8)=8T(n/16)

=512(8T(n/16))

=4096T(n/16)

therefore

T(n)=

1=

T(n)=

=

=

| Length of list | Value | SeqSearch/ns \*10^3 | Binsearch time/ns \*10^3 |
| --- | --- | --- | --- |
| 100 | 5,000 | 2.084 | 8.807 |
| 100 | 50 | 1.409 | 7.705 |
| 10,000 | 800,000 | 9.918 | 15.012 |
| 10,000 | 5,000 | 5.556 | 13.118 |
| 1.000,000 | 80,000,000 | 136.853 | 19.195 |
| 1,000,000, | 500,000 | 2.135 | 0.908 |