Report

Exercise 2

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Implementation for both linear and binary search to find an element in an array of elements.

Exercise 2

Running Time

**The Running times for Linear Search and Binary are completely different.**

**Linear Search has a linear growth {O(n) } in time complexity, whereas**

**Binary search has a time complexity that looks like { O(log n) }.**

***Note*: this running time is measured without the sorting method being inside of the binary search method. However, I submitted the code that includes sort inside the method.**

# Input/ output

Input starts with two integers n and s, where n is the number of integers in the array and s is the number of elements that you search for. Following lines contain n numbers of the array, followed by s numbers that you search for.

## C:\Users\Xiaoxi\Desktop\CodeBlockProjects\BinarySearch\timeGraph.JPGRunning Time

|  |  |  |
| --- | --- | --- |
| N | Time(Linear Search) | Time(Binary Search) |
| 1000 | 0.002276 | 0.00032 |
| 10000 | 0.013818 | 0.000222 |
| 100000 | 5.74265 | 0.030643 |
| 1000000 | 48.3496 | 0.370478 |