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Assignment 1

1.Input array [1,2,3,4,5,6,7,8,9,10]
Length=6
Uniformly Distributed=No
Sorted=Yes

Searching for 100:
Number of times the loop executed in linear search = 10
Number of times the loop executed in binary search = 4
Number of times the loop executed in interpolation search = 1
Searching for 5:
Number of times the loop executed in linear search = 5
Number of times the loop executed in binary search = 1
Number of times the loop executed in interpolation search = 1
Searching for 10:
Number of times the loop executed in linear search = 10
Number of times the loop executed in binary search = 4
Number of times the loop executed in interpolation search = 1

2.Input array [1,1,1,1,1,1,100,100,100,100,100,100]
Length=6
Uniformly Distributed=No
Sorted=Yes

Searching for 99:
Number of times the loop executed in linear search = 10
Number of times the loop executed in binary search = 4
Number of times the loop executed in interpolation search = 1

3.Input array [1,1,1,1,1,1,1,1,1,1]
Length=6
Uniformly Distributed=No
Sorted=Yes

Searching for 2:
Number of times the loop executed in linear search = 2
Number of times the loop executed in binary search = 2
Number of times the loop executed in interpolation search = 1

4. Input array [1,2,3,4,5,6]
Length=6

Uniformly Distributed=Yes
Sorted=Yes

Searching for 5:
Number of times the loop executed in linear search = 5
Number of times the loop executed in binary search = 2
Number of times the loop executed in interpolation search = 1

5.Input array [1,1,1,1,1,6]
Length=6
Uniformly Distributed=No
Sorted=Yes

Searching for 6:
Number of times the loop executed in linear search = 6
Number of times the loop executed in binary search = 3
Number of times the loop executed in interpolation search = 1

I noticed that the interpolation search is usually the best algorithm to use. The only exception to this was when testing an array that was not sorted and not uniformly distributed. However even on an array that was only uniformly distributed and not sorted it still performed the best. Binary search worked best of the three algorithms when the array wasn't sorted and not uniformly distributed. In the arrays that I used for tests, linear search did not perform the best in any of them. However the best case for linear search would be if the number you're searching for is the first entry in the array.f