

Linear Search

CSCI 432

August 23, 2023

Name:

Who did you work with today?

Linear Search Algorithms

The following algorithm takes as input a array L and a query element q , and returns true if the element is in the list and false otherwise.

Algorithm 1 Linear Search I

Input: L , a list of real numbers

Output: q , a query element (a real number)

```
1: for  $i = 1$  to  $|L|$  do
2:   if  $q=L(i)$  then
3:     return TRUE
4:   end if
5: end for
6: return FALSE
```

Algorithm 2 Linear Search II

Input: L , a list of real numbers

Output: q , a query element (a real number)

```
1:  $found \leftarrow$  FALSE
2: for  $i = 1$  to  $|L|$  do
3:   if  $q=L(i)$  then
4:      $found \leftarrow$  TRUE
5:   end if
6: end for
7: return  $found$ 
```

Discuss the following questions:

1. Are these two pseudo-code examples of the same algorithm?
2. Do the two have the same runtimes?