

Name _____

Date ___/___/___

Searching Algorithms

Worksheet



Worksheet 1

- 1) How many loops would be required to find the 4th item in the list using linear search?
68 98 31 13 46 94

- 2) Why would linear search be required for the list below?
97 84 59 11 67 92

- 3) Show the steps required to find the 6th item in the list below using linear search.

95 54 75 41 14 40

- 4) Show the steps in pseudocode required to find the number 41 item in the list above using binary search.

- 5) Which algorithm would be most efficient for an ordered list containing 100 items?

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Searching Algorithms

Answer Sheet

Worksheet 1

- 1) It would require 4 iterations as linear search checks each item in turn from the 1st item.
- 2) The list is not in order which means that only linear search can access the data
- 3) Start at index 0. Check if this is the item of data to be found. If not, move onto to index 1 and check again. Repeat this until index 5 is reached, then stop.
- 4) $low = 0, \quad high = 5, \quad mid = (high - low) / 2$
- ```
search = 41
found = FALSE
WHILE found == FALSE AND low < high DO
 IF arr[mid] == search THEN
 OUTPUT "Item found at " + STR(mid)
 ELSE IF mid < search THEN
 low = mid
 mid = (high-low)/2
 ELSE
 high = mid
 mid = (high-low)/2
 END IF
END WHILE
```
- 5) As the data set becomes larger, binary search is far more efficient than linear search as it performs fewer iterations (loops)