Name _____ Date ___/___/_____

Searching Algorithms

Worksheet

Worksheet 2

1) How many loops would be required to find the 3rd item in the list using linear search?

98 47 3 35 46 7

2) Why would linear search be required for the list below?

80 86 9 81 56 92

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

54 5 76 9 35 3

4) Show the steps in pseudocode required to find the number 9 item in the list above using binary search.

5) Which algorithm would be most efficient for an ordered list containing 72 items?

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Searching Algorithms

Answer Sheet

Worksheet 2

1) It would require 3 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 2 is reached, then stop.

4) low = 0, high = 5, mid = (high - low) / 2

```
search = 9
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)