Searching, Sorting and Complexity Analysis - 2

in

Python

Linear Search

Linear method searches for a particular item (called the target item) within a list of arbitrarily arranged items. In such a list, the only way to search for a target item is to begin with the item at the first position and compare it to the target. If the items are equal, the method returns True . Otherwise, the method moves on to the next position and compares items again. If the method arrives at the last position and still cannot find the target, it returns False .

Linear Search

Exercise :

Make a own definition linear search function use Python Programming Language. You are prohibited to use the python built in function

Binary Search

- The method is used to search an item in sorted data
- How does the binary search method work
  - The search algorithm goes directly to the middle position in the list and compares the item at that position to the target.
  - If there is a match, the algorithm returns the position.
  - Otherwise, if the target is less than the current item,the algorithm searches the portion of the list before the middle position.

Binary Search

- How does the binary search method work
  - if the target is greater than the current item, the algorithm searches the portion of the list after the middle position.
  - The search process stops when the target is found or the current beginning position is greater than the current ending position.

Binary Search

Exercise :

Make the binary search function using Python programming language

Selection Sort

```
def selectionSort(lyst):
    i = 0
    while i < len(lyst) - 1:          # Do n - 1 searches
        minIndex = i                  # for the smallest
        j = i + 1
        while j < len(lyst):          # Start a search
            if lyst[j] < lyst[minIndex]:
                minIndex = j
            j += 1
        if minIndex != i:             # Exchange if needed
            swap(lyst, minIndex, i)
        i += 1
```

Reference

Fundamentals of Python from First Program Through Data Structures Chapter 11