

Fundamental Algorithms 5

K-Exercise 1

Modify the algorithm SeqSearch, such that it works on sorted arrays (i.e., stops the search as soon as the elements become too large). Make a reasonable assumption for the probability that x is found at position i or not found at all, and give an estimate of the expected number of comparisons that are required. How does the complexity differ from the “regular” SeqSearch algorithm?

K-Exercise 2

For the algorithm BinarySearch, as discussed in the lectures, formulate a recurrence equation for the number of comparisons and solve the recurrence to estimate the time complexity of BinarySearch.

Homework

Recapitulate the following basic data structures:

Linked Lists: i.e., representing a sequence of data via objects connected by pointers;

Binary Trees: i.e., representing a collection of data via hierarchically organized objects, where each “parent” may have a fixed or variable number of “child” objects. A

You should understand how standard operations – such as insert/attach, delete, connect/combine, etc.) – can be implemented on lists and trees.