

Data Structures and Algorithms (10)

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Textbook Authors: Ming Zhang, Tengjiao Wang and Haiyan Zhao Higher Education Press, 2008.6 (the "Eleventh Five-Year" national planning textbook)

https://courses.edx.org/courses/PekingX/04830050x/2T2014/





Chapter 10 Search

- 10.1 Search in a linear list
- 10.2 Search in a set
- 10.3 Search in a hash table
- Summary



Basis Concepts

Search

The process of finding a record with its key value equal to a given value in a set of records, or the records whose keys meet some specific criteria.

- The efficiency of search is very important
 - Especially for big data
 - Need special storage processing for data



Methods of Improving Search Efficiency

- Sorting
- Indexing
- Hashing

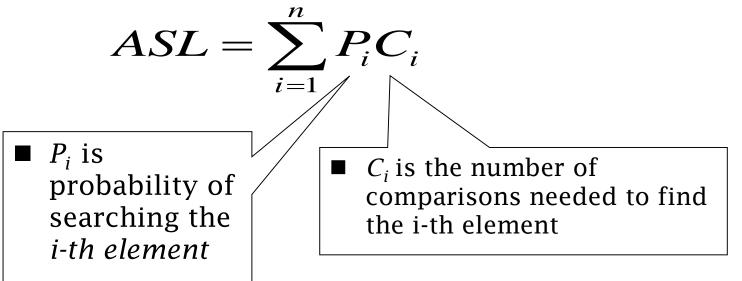
- 日本教報用建作的地名 into a table
 □ BEERING PSSITE OF INTERESTABLE
 □ according to the key values
 □ disadvantages:
 □ Makestheappest of rangeliaen into a table
 □ denote the weather the position of the language into the key values
 □ Sappifies space
- When hashing is not suitable for disk-oriented applications, we can use B trees.

To improve search efficiency



Average Search Length (ASL)

- Comparison of keys: main operation of search
- Average Search Length
 - Average number of comparisons during search
 - The time metric for evaluating search algorithms





Other Metrics for Evaluating Search Algorithms

- Considerations when evaluating search algorithms
 - The storage needed
 - Implementation difficulties

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Thinking

- Assume that a linear list is (a, b, c), and the probabilities of searching a, b, c are 0.4, 0.1, 0.5 respectively
 - What is the ASL of sequential search algorithms? (which means how many times of comparisons of key values are needed to find the specific element on the average)





Data Structures and Algorithms

Thanks

the National Elaborate Course (Only available for IPs in China)

http://www.jpk.pku.edu.cn/pkujpk/course/sjjg/

Ming Zhang, Tengjiao Wang and Haiyan Zhao

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