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P691
MR

Data Structures and Algorithms -- M. Richards

4 Splay trees provides an adaptive mechanism for the representation of sets of keys. Outline the structure used by splay trees and briefly describe how the {\it insert}, {\it lookup} and {\it delete} operations work. [10]

Discuss the advantages and disadvantages of using splay trees compared with the use of hash tables for the representation of sets of distinct keys. [10]

Answer:

Bookwork.

Need to outline the hash table mechanism. Either of closed or open tables (or both) will do. A pathologically bad hashing function is just possible.

Splay tree advantages (1) amortized cost $n \log n$, (2) cost within a constant factor of the optimum, (3) adaptive.
Disadvantages: tree nodes typically take 5 words, operations may occasionally be slow although average behaviour is good. All operations are easy to implement.