Interview Questions: Hash Tables (ungraded)

HTML Content

1.4-SUM. Given an array $a[\,]$ of n integers, the 4-SUM problem is to determine if there exist distinct indices i, j, k, and l such that $a[i] + a[j] = a[k] + a[l]$. Design an algorithm for the 4-SUM problem that takes time proportional to n^2 (under suitable technical assumptions). 1 1

Note: these interview questions are ungraded and purely for your own enrichment. To get a hint, submit a solution.

Double index technique

Correct

Hint: create a hash table with $\binom{n}{2}$ key-value pairs.

2.Hashing with wrong hashCode() or equals(). Suppose that you implement a data type OlympicAthlete for use in a java.util.HashMap. 1 1

- Describe what happens if you override hashCode() but not equals().
- Describe what happens if you override equals() but not hashCode().
- Describe what happens if you override hashCode() but implement public boolean equals(OlympicAthlete that) instead of public boolean equals(Object that).

Not working propertly

Correct

Hint: it's code—try it and see!