1 / 1 points

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).

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

d

Your answer cannot be more than 10000 characters.

Thank you for your response.

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

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1 / 1 points

2.

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

- 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)`.

d

Your answer cannot be more than 10000 characters.

Thank you for your response.

Hint: it's code—try it and see!