

# Feedback — Interview Questions: Hash Tables

You submitted this homework on **Sun 24 Mar 2013 2:29 PM PDT -0700**. You will be able to view your score after the deadline passes.

These interview questions are for your own enrichment and are not assessed. If you click the *Submit Answers* button, you will get a hint.

## Question 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).

Your Answer	Score	Explanation
Total	0.00 / 0.00	

### Question Explanation

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

## Question 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)`.

Your Answer	Score	Explanation
Total	0.00 / 0.00	

### Question Explanation

*Hint:* it's code—try it and see!