**Week 3 Discussion**

Find a practical article on using hash tables. Why do you think this has become a huge part of tech interviews for data scientists? Your response should be one paragraph and you need to respond to three other student’s posts.

A practical article I found from the website Study Smarter UK explains the use of hash tables with the following example. “Imagine you're creating a hashtable to store student grades. The 'key' can be a student's unique ID and the 'value' can be the student's grade. By checking the non-nullness of both the student's ID and grade, one can ensure that ArgumentNullException is not thrown and invalid data is not added to the Hashtable .” (1) I think this use-case illustrates why hash tables have become such a huge part of tech interviews for data scientists and other jobs requiring programming skillsets. In this case, there is a need to associate the student (key) to the grade (value) since the two elements are tied together. The use of a hash table provides a quick method for both data retrieval and data insertion as the two are associated in the creation of said hash table. It also ensures sound data quality, given a value (grade) cannot be added without a student ID (key). Additionally, on a more technical note, “Given the key, the value can be retrieved in O(1) time complexity.” (1) This is important in the context of writing efficient code. Alternative, brute force methods may also work but could also introduce additional complexity in terms of computing time and resource strain (hardware, software, etc.).

Resources

1. *Hash Tables*. StudySmarter UK. (n.d.). https://www.studysmarter.co.uk/explanations/computer-science/data-structures/hash-tables/