Review

2 min

We've learned together what a hash map is and how to create one. Let's go over the concepts presented in this lesson.

A hash map is:

- Built on top of an array using a special indexing system.
- A key-value storage with fast assignments and lookup.
- A table that represents a map from a set of keys to a set of values.

Hash maps accomplish all this by using a hash function, which turns a key into an index into the underlying array.

A hash collision is when a hash function returns the same index for two different keys.

There are different hash collision strategies. Two important ones are separate chaining, where each array index points to a different data structure, and open addressing, where a collision triggers a probing sequence to find where to store the value for a given key.

Instructions

What makes good data to save into a hash map? Can you think of instances where a hash map would help you solve a problem faster?

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Hash map: A key-value store that uses an array and a hashing function to save and retrieve values.

Key: The identifier given to a value for later retrieval.

Hash function: A function that takes some input and returns a number.

Compression function: A function that transforms its inputs into some smaller range of possible outputs.

Recipe for saving to a hash table:

- Take the key and plug it into the hash function, getting the hash code.

- Modulo that hash code by the length of the underlying array, getting an array index.

- Check if the array at that index is empty, if so, save the value (and the key) there.

- If the array is full at that index continue to the next possible position depending on your collision strategy.

Recipe for retrieving from a hash table:

- Take the key and plug it into the hash function, getting the hash code.

- Modulo that hash code by the length of the underlying array, getting an array index.

- Check if the array at that index has contents, if so, check the key saved there.

- If the key matches the one you're looking for, return the value.

- If the keys don't match, continue to the next position depending on your collision strategy.