What are associative arrays?

Selecting transcript lines in this section will navigate to timestamp in the video

- So far, we've looked at many different data structures. We looked at arrays, which store items continuously, and each item is accessed through an index. We also looked at linked lists, which use nodes and pointers to connect one element to the next. We traversed either forward or backward through the data structure. Then, we looked at stacks and queues, which didn't have an index but we were able to easily pop and push items on top of the stack or enqueue and dequeue items in the queue. With this new data structure, we'll get a tool called a key that allows us to access our data in a meaningful way. With arrays, when we assessed an index, usually that index didn't have any meaning. It didn't matter whether the value 32 was at index two or index four. There was no relationship between the index and the value associated with it. We just needed a way to store it in the data structure and access it quickly. Now we can give meaning to the way we store and access it through a key. Let's say I wanted to store all the capitals of the United States. Ideally, I would store the capital by using the name of the state. We can do this with something called associative arrays. Essentially, an associative array is a collection of key-value pairs. In the case of our capitals and states, the state would be the key and the capital would be the value. We could also do the other way around, where the capital is the key and the state is the value. But it really depends on what information you'll have easiest on hand when accessing your data. You might be thinking, where else can I use this? Think of a flash card game. The question on the front of the flash card could be the key and the answer on the back could be the value. You could also add functionality where you check what the user inputs with the value found in the associative array. It's important to remember each key-value pair always stays together, and every key in an associative array must be unique. Just like indices are unique in regular arrays, keys must unique in associative arrays. We don't use the word index with associative arrays because we often don't worry about the order of the key-value pairs. The key is just the way we access the value in the pair. However, we can have duplicate values just like we can have duplicate numbers in an array of integer values. An associative array is an abstract datatype, just like the other data structures we talked about in this course. It's a way we can talk about organizing our data in a specific way.