Hash Tables

(1) what defines them?

The most important thing about hash tables is how and where they store data, and how that helps them be fast when retrieving data.

They use a key that is paired to a value through a hash function. The key is converted to a hash and this value points to a specific location in the memory being used by the hash table. Given the same key, the hash function will always return the same value and always point to the same memory location. Then we store a value in this location.

(2) what are its properties?

Because the key is directly linked to a location in memory, if we know the key we can immediately (in 1 step) retrieve the value related to the key..

(3) What kind of operations can you do on it and what are their time complexities?

So because of this the time complexity of **retrieving (accessing)** an element is O(1).

You can **create a new element** (key/value pair) in it, O(1).

You can **change an entry**, O(1).

Delete an entry, also O(1).