Hash Tables

A **hash table** or **hash map** is a data structure that uses a hash function to map identifying values, known as keys, to associated values (e.g., mapping a name to a telephone number). Thus, a hash table implements an associative array. The hash function is used to transform the key into the index (the *hash*) of an array element (the slot or bucket) where the corresponding value is to be sought.

# Performance Complexities

In many situations, hash tables turn out to be more efficient than search trees or any other table lookup structure.

|  |  |  |  |
| --- | --- | --- | --- |
| Search | Insert | Delete | Space |
| 0 (n) | O (n) | O (1) | O (n) |

The hash function calculates an index into the array from the data key and arrayLength (the size of the array).