Maps

associative array, map, symbol table, or dictionary

Properties

- addition of a pair to the collection
- removal of a pair from the collection
- modification of an existing pair
- lookup of a value associated with a particular key

HashMap

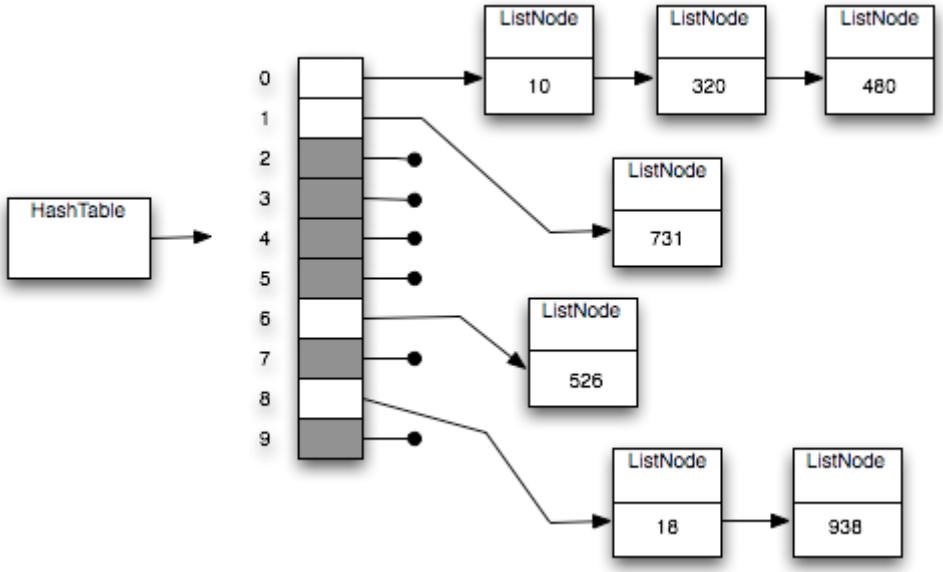
Hash map uses a hash function to compute an index into an array of buckets or slots.

Hash function

- Determinism
- Uniformity
- Defined range

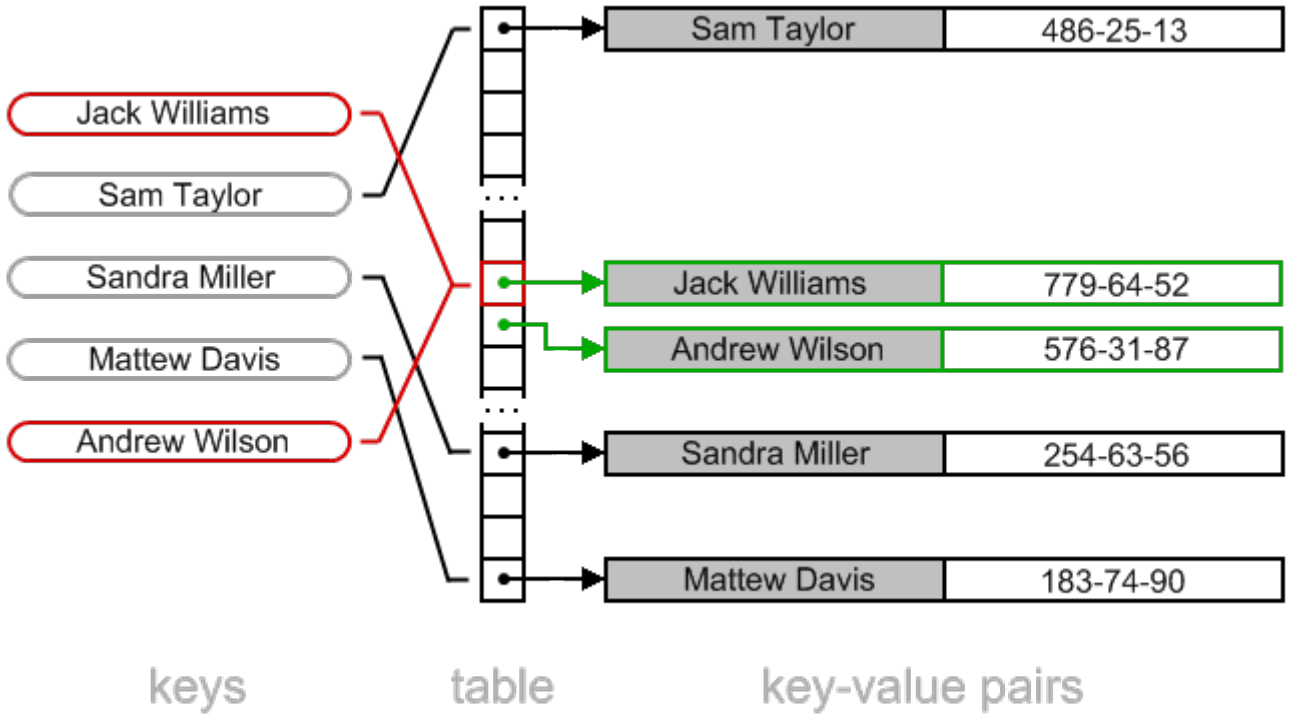
Collision – different objects with the same hash (or bucket number).

Separate chaining



slow

Open addressing

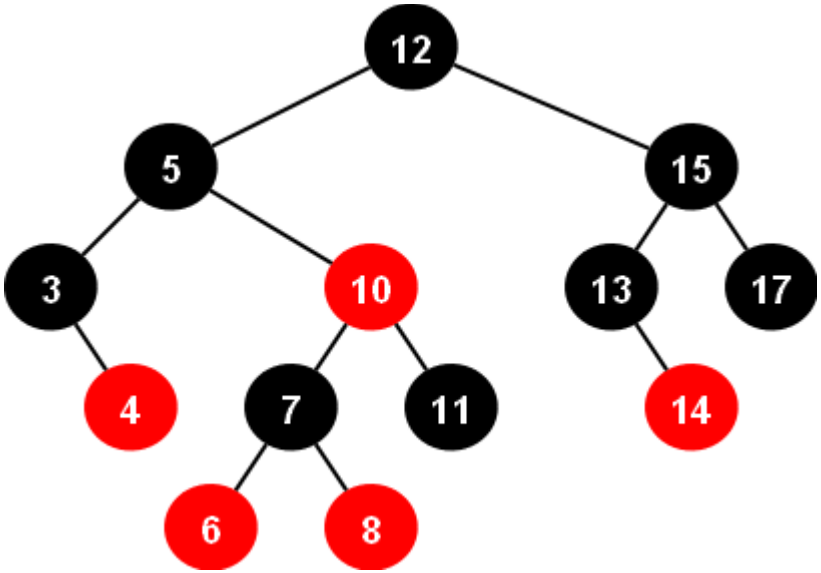


bad for remove

TreeMap

A Red-Black tree based NavigableMap implementation.

The map is sorted according to the Comparable natural ordering of its keys.



keySet() returns a Set view of the keys contained in this map. The set's iterator returns the keys in ascending order.

Comparison

	get	contains	next	Data structure
HashMap	O(1)	O(1)	O(h / n)	Hash Table
LinkedHashMap	O(1)	O(1)	O(1)	Hash Table + Linked List
EnumMap	O(1)	O(1)	O(1)	Array
TreeMap	O(log n)	O(log n)	O(log n)	Red-black tree