Computer Science 3A

Practical 8

UNIVERSITY OF JOHANNESBURG

Hash Table ADT

- Hash function h
- Array (table) of size N

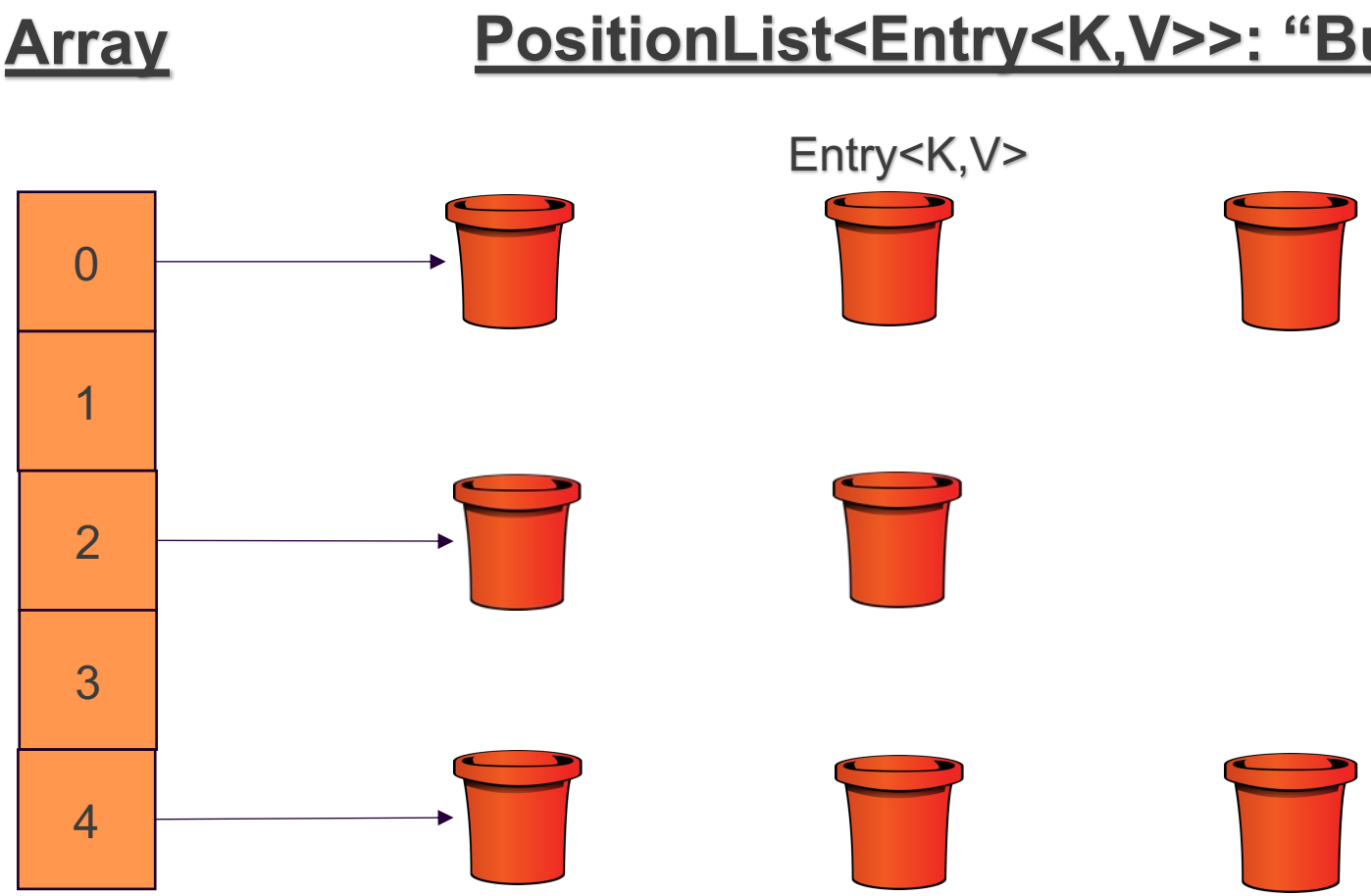
Hash Table ADT

Map with a hash table

$\Rightarrow$ store item with key k at:

Index i = h(k)

Array storing PositionLists<Entry<K,V>>:



createArray:

- Create a new Object array
- Initialize each index to contain a positionList
- Return the array

remove(K key)

- Get the index in your hash table where the key occurs (index = h(k))
- Get a reference to the list at the index
- Get an iterator over the list at index (iterator() method)
- As long as the iterator has a next item:
  - -Check if the item's key equals the given key
  - -If so, remove the item (use the iterator.remove function)
  - -reduce the size
  - -return the item's value
- Otherwise return null

get(K key)

- Get the index in your hash table where the key occurs (index = h(k))
- Get a reference to the list at the index
- Get an iterator over the list at index (iterator() method)
- As long as the iterator has a next item:
  -Check if the item's key equals the given key
  -If so, return the item's value
- Otherwise return null

put(K key, V value)

- Get the index in your hash table where the key occurs (index = h(k))
- Get a reference to the list at the index
- Get an iterator over the list at index (iterator() method)
- As long as the iterator has a next item:
  -Check if the item's key equals the given key
  -If so, change the value of that item
- Otherwise add a new Entry<K,V> last into the list
- Increment hash table size