Our Next ADT

Dictionary ADT
state
Set of (key, value) pairs
behavior
insert(key, value) – inserts (key, value) pair. If key was already in dictionary, overwrites the previous value.
find(key) – returns the stored value associated with key.
delete(key) – removes the key and its value from the dictionary.

Real world intuition:
keys: words
values: definitions

Dictionaries are often called "maps"

5

Simple Dictionary Implementations

	Insert	Find	Delete
Unsorted Linked List			
Unsorted Array			
Sorted Linked List			
Sorted Array			

What are the worst case running times for each operation if you have n (key, value) pairs.
Assume the arrays do not need to be resized.
Think about what happens if a repeat key is inserted! (need to replace value)

8

Avoiding the Worst Case

Take II:

Here are some other requirements you might try. Could they work? If not, what can go wrong?
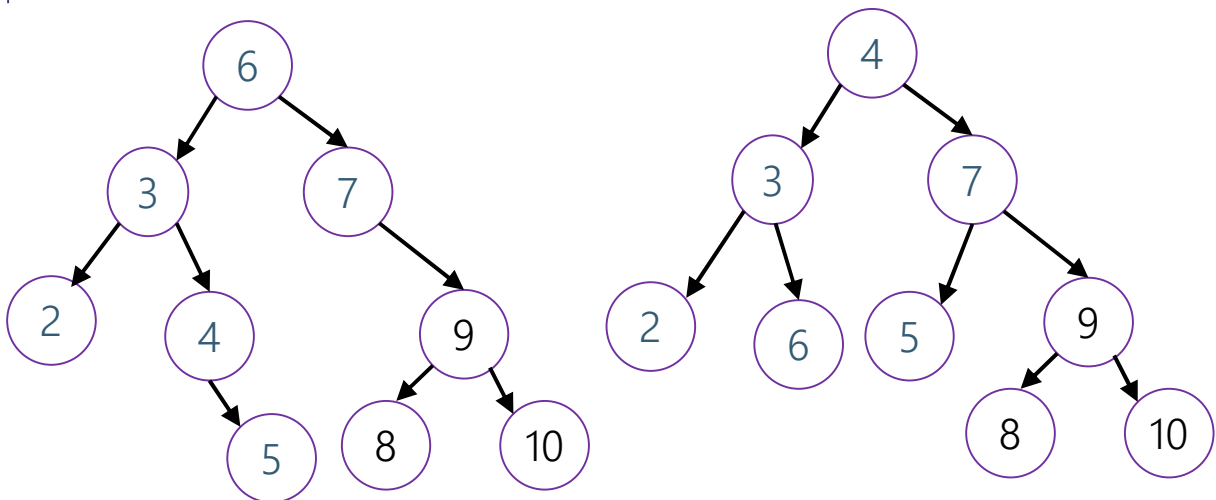
Root Balanced: The root must have the same number of nodes in its left and right subtrees

Recursively Balanced: Every node must have the same number of nodes in its left and right subtrees.

Root Height Balanced: The left and right subtrees of the root must have the same height.

21

Are These AVL Trees?

24