Abstract Data Types: Maps

A6

The Map ADT

A Map interface and its implementation

ADT Recap

The Map ADT (A.K.A. Associative Array)

A map consists of (key, value) pairs

- Each key may occur only once in the map
- Values are retrieved from the map via the key
- Values may be modified
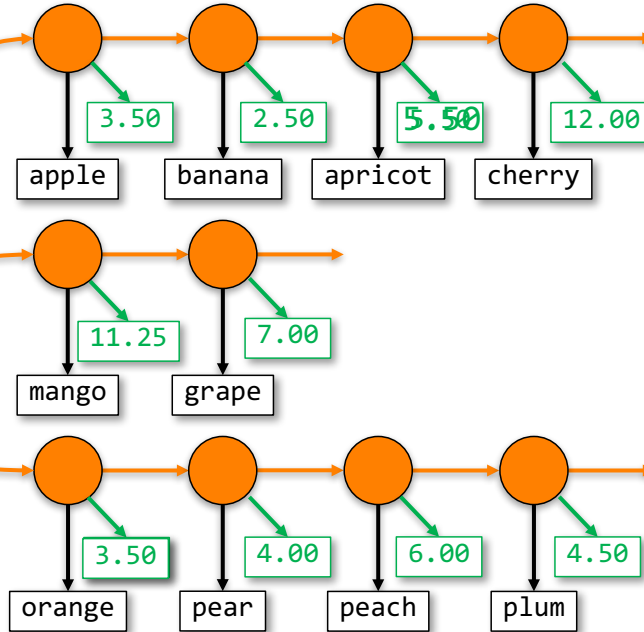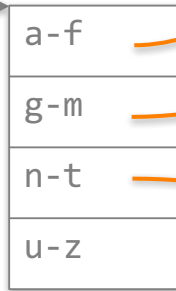- Key, value pairs may be removed

Our Map Interface

We will explore maps using an interface with the following methods:

```
public void put(K key, V value);
public V get(K key);
public void remove(K key);
public int size();
public String toString();
```
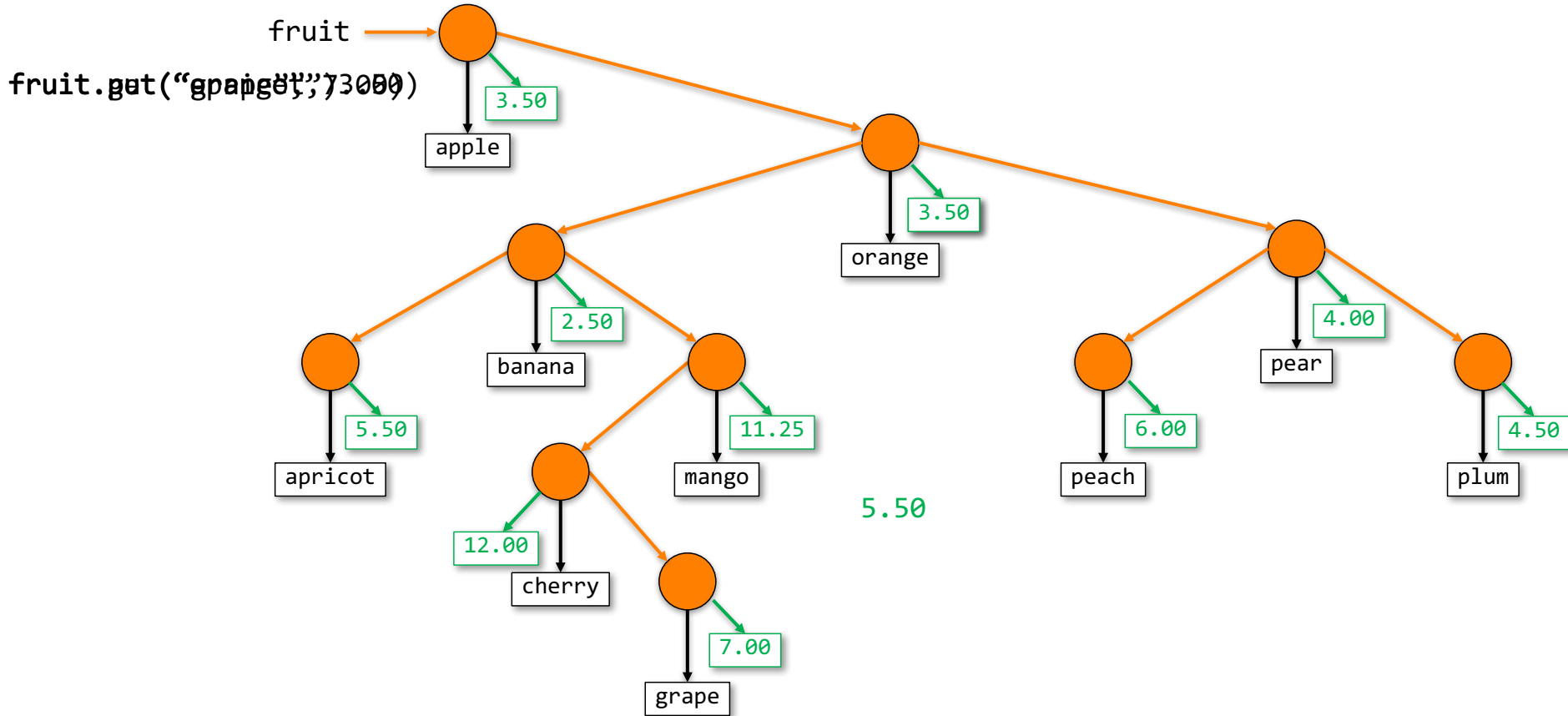
fruit.get("grape", 3.50)

fruit.get("grape", 3.00)

ADT Recap

First-principles implementation of three Java container types:

- List
  - `ArrayList`, `LinkedList` implementations *(A1, A2)*
- Set
  - `HashSet`, `BSTSet` implementations *(A3, A4, A5)*
- Map
  - `HashMap`, `BSTMap` implementations *(A6)*

Introduced hash tables, trees *(A4, A5)*