CompSci 100e
Program Design and Analysis II

Students

Astrachan
Sun
Rodger
Forbes

Ice Cream Flavors

Chocolate
Chocolate Chip
Strawberry

February 1, 2011
Prof. Rodger
Announcements

• APT 0201 due today!
• Assignment Prestidigitation due 2/3
Maps

• Maps are another way of organizing data

• Keys and Values
  – Each key maps to a value
  – Some keys can map to the same value
  – Can change the value a key maps to
Example

- Each student could be mapped to their favorite ice cream flavor

```
<table>
<thead>
<tr>
<th>Students</th>
<th>Ice Cream Flavors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Astrachan</td>
<td>Chocolate</td>
</tr>
<tr>
<td>Sun</td>
<td>Chocolate Chip</td>
</tr>
<tr>
<td>Rodger</td>
<td>Strawberry</td>
</tr>
<tr>
<td>Forbes</td>
<td></td>
</tr>
</tbody>
</table>
```
Implementing a Map

• We will use TreeMap in Java
  – Will also use HashMap, another implementation

• Example:
  ```java
  TreeMap<String, String> fav = new TreeMap<String, String>();
  ```

• Keys map to values
To use a Map

• Put in a key and its value
  fav.put(“Forbes”, “Strawberry”);
• Get a value for a key
  val = fav.get(“Forbes”);
• Change value for key
  fav.put(“Astrachan”, “Coffee Mocha”);
• Get all the keys as a set
  TreeSet<String> ky = fav.keySet();
Change Astrachan’s value
Value could be a set

- **Students**
  - Astrachan
  - Sun
  - Rodger
  - Forbes

- **Ice Cream Flavors**
  - Coffee Mocha
  - Chocolate
  - Vanilla
  - Blueberry
  - Chocolate Chip
  - Blueberry
  - Banana
  - Strawberry
  - Coffee Mocha
Let’s go back to ClassScores

• Find all the modes in an array of ints
• This time solve it using a map