So you can actually read it

Announcements

- Recitation prep grades
  - Resubmit

- APT set 1 – due tomorrow

- Class code
  - on right-hand side of website

- Lecture videos
• Make APT java project
  • Add new class for each APT
  • Class / method names EXACTLY match assignment
    • Helper methods can be named anything
  • Test online many times

• Testing/Debugging
  • Output appears in online APT tester
  • Write your own main
  • Use the debugger!

• Complete required number by due date
• Not keeping up with APTs hurts final APT grade
  • 1/2 of APT grade is completing APTs on time
• “Required” is fair game for exams / recitation
• If you skip an APT you can go back!
  • Keep trying. Hand it in later!
APT Grading

• You can always do more than is required!
  • This will help your grade!
• If you fall behind once - make up for it next time.
  • This won’t hurt your grade. (And please don’t ask me about it)
• Handing in all APTs at the end of the semester WILL hurt your grade!
  • And could hurt your test grades.

Recitation

Java uses CamelCase for naming variables, methods, and classes. What is a Java appropriate format for naming a class?

- className [210]
- class_Name [17]
- class_name [11]
- Classname [1]

<table>
<thead>
<tr>
<th>Format</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>className</td>
<td>18</td>
<td>8%</td>
</tr>
<tr>
<td>class_name</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Classname</td>
<td>1</td>
<td>0%</td>
</tr>
<tr>
<td>ClassName</td>
<td>210</td>
<td>92%</td>
</tr>
<tr>
<td>Class_Name</td>
<td>0</td>
<td>0%</td>
</tr>
</tbody>
</table>

What is a Java appropriate format for naming a method?

- setMethod [2]
- aMethod [36]
- MethodName [4]
- Method_Name [0]

<table>
<thead>
<tr>
<th>Format</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>setMethodName</td>
<td>187</td>
<td>82%</td>
</tr>
<tr>
<td>set_method_name</td>
<td>2</td>
<td>1%</td>
</tr>
<tr>
<td>aMethodName</td>
<td>36</td>
<td>16%</td>
</tr>
<tr>
<td>MethodName</td>
<td>4</td>
<td>2%</td>
</tr>
<tr>
<td>Method_Name</td>
<td>0</td>
<td>0%</td>
</tr>
</tbody>
</table>
Recitation

Why do we have naming conventions?
- Reduce effort to read code
  - make graders happy!
- Enhance code appearance
  - make graders happy!
Recitation

• Write the code to increment through each circle in CirclesCountry

```java
public int leastBorders(int[] x, int[] y, int[] r,  
    int x1, int y1, int x2, int y2) {
    // you may have code here
    for(int i = 0; i < x.length; i++) {
        // stuff goes in here
    }
}
```

Recitation

• $p_1$ and $p_2$
  • Both in the circle
  • Both out of the circle
  • One in and one out
What to keep track of
- Secret word
- Number of misses
- Letters guessed

What data structures should you use?
Arrays

My first data structure
- the organization of data and its storage allocations in a computer

Some Data Structures

- Array
- List
- Set
- Map
Arrays

• An Array – a collection of items selected by index
  • fixed length
  • single type

char[] duke = new char[5];
duke[0] = ‘d’;

0 1 2 3 4
‘d’ ‘e’ ‘v’ ‘i’ ‘l’

Arrays

• How do you create an array of 10 Strings?

a. int[] a = new String[10];
b. String[] b = new String[9];
c. String[10] c = new String[10];
d. String[] d = new String[10];
Arrays

• Fixed length
  • int[] a = new int[5];
  • 5 is the length

• type specific
  • int, char, String, double, Dog, etc.

• Access length of an array
  • int len = a.length;

*Note: arrays are Objects - you can make function calls

Coding!
• Create class ArrayPractice.java
• Add method makeArray that
  • Creates an array of 50 doubles
  • Puts the number 20.5 into every entry
  • Returns the array
Hangman

• What to keep track of
  • Secret word
  • Number of misses
  • Letters guessed

• What data structures should you use?

Hangman

• You have a secret word. How do you save it?
  1. ['_', '_', '_', '_'];
  2. ['_', '_', '_', '_', '_'];
  3. “____”;

• What are the tradeoffs?
Some Data Structures

- Array
- List
- Set
- Map

List

- NOT fixed length

```java
ArrayList<String> list = new ArrayList<String>();

// add to ArrayList
boolean canAdd = list.add("hello");

// check if element is in ArrayList
boolean inList = list.contains("hello");

// get element at index zero
String word = list.get(0);
```
List

- No primitives! Only Objects!

```java
ArrayList<int> list = new ArrayList<int>();

ArrayList<Integer> list = new ArrayList<Integer>();
```

Arrays

- Coding!
  - Modify class `ArrayPractive.java`
  - Add method `makeArray2` that
    - Creates an `ArrayList` of 50 doubles
    - Puts the number 20.5 into every entry
    - Returns the `ArrayList`
Hangman

- What to keep track of
  - Secret word
  - Number of misses
  - Letters guessed

- What data structures should you use?

Some Data Structures

- Array
- List
- Set
- Map