Lecture 22: Midterm 2 Postmortem

CS 170, Section 000
12 November 2009
Lecture Plan

- Return Exam 2
  - Statistics

- Logistics
  - Exam 2: reprise

- Homework 7
You can lead a horse to water...
Public Service Announcement

• H1N1 Vaccine: TODAY 11am-2pm
  Thursday, November 19, 2009
  Dobbs University Center (DUC)
  Television Lounge, First Floor
  11:00 am – 2:00 pm

• Wash hands
Exam 2 Reprise

- Can **optionally** take Exam 2b **again** (different version, no multiple choice portion)
- Grade for Exam 2 will be the **AVERAGE** of the two scores \((\text{Exam2a} + \text{Exam2b})/2\).
  - **If you do worse on Exam 2b, your grade decreases**
- Available times/dates/place:
  - Monday, Nov 23: MathCS E406, 2pm-5pm
  - Tuesday Nov 24: Mathcs E406, 2:30pm-4pm

11/19/2009  CS170, Section 000, Fall 2009
HW 7: Inheritance & Polymorphism

• Due Wednesday, Nov 25
  – You may submit early (so you can enjoy Turkey day more)

• Based on Programming Exercises 10.1 and 10.4:
  a) 10.1: Implement Triangle - extends GeometricObject
  b) 10.4: Implement MyStack - extends ArrayList
  c) Implement ShapeTester class
     1) creates circles, rectangles, and triangles
     2) Stores them in MyStack
     3) computes total area, and average area of top K shapes in MyStack
  d) Extra credit: TBA
## Example: The `StackOfIntegers` Class

<table>
<thead>
<tr>
<th>StackOfIntegers</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>-elements: int[]</td>
<td>An array to store integers in the stack.</td>
</tr>
<tr>
<td>-size: int</td>
<td>The number of integers in the stack.</td>
</tr>
<tr>
<td>+StackOfIntegers()</td>
<td>Constructs an empty stack with a default capacity of 16.</td>
</tr>
<tr>
<td>+StackOfIntegers(capacity: int)</td>
<td>Constructs an empty stack with a specified capacity.</td>
</tr>
<tr>
<td>+empty(): boolean</td>
<td>Returns true if the stack is empty.</td>
</tr>
<tr>
<td>+peek(): int</td>
<td>Returns the integer at the top of the stack without removing it from the stack.</td>
</tr>
<tr>
<td>+push(value: int): int</td>
<td>Stores an integer into the top of the stack.</td>
</tr>
<tr>
<td>+pop(): int</td>
<td>Removes the integer at the top of the stack and returns it.</td>
</tr>
<tr>
<td>+getSize(): int</td>
<td>Returns the number of elements in the stack.</td>
</tr>
</tbody>
</table>

**TestStackOfIntegers**
Designing the StackOfIntegers Class
Implementing **StackOfIntegers** Class

StackOfIntegers
StackOfInteger (cont’d)
MyStack (details)

- MyStack extends ArrayList{
  
  public boolean push(Object e) {
    // to be implemented
  }

  public Object pop () {
    // to be implemented
  }

}
ShapeTester (details)

• Accepts command-line argument K
• Creates instance of MyStack
• Reads shapes from console, each line contains shape parameters
  – shape (circle, rectangle, or triangle), side1 [, side 2, side3]
• Adds all shapes to myStack
• Computes total and average areas for top K (k=3) objects in myStack
  – use the myStack.pop() method K times.

• Example input:
  bash$ java ShapeTester 3
  circle 23
  rectangle 9 5
  triangle 3 7 9
  circle 15
  ^d