COMS W1114 - Java Lab

Lab 9
Wednesday, March 31, 2004
&
Thursday, April 1, 2004

Note

• HW4 out. Due Tuesday 11a.

What we are covering today

• Quick review/question of Lab 8.
• More OOD! (wrap up Java Gently. Ch 8.)
  – overloading/overriding
  – Properties: private and final
  – references
Questions from Lab8?

- Add an attribute called “average” to your lab object – this will represent the midterm average of the students in the lab.
- In Lab.java, add a method `average()` that will go through each student in the list, and compute the average of their midterm grades.
- After every time you add a new student to a lab, calculate the new average by calling that lab's `average` method.
- In the “lab info” print statement, also print out the lab's midterm average.

Modeling a Point

- Today's Problem: model a point in 2D Cartesian space.
- What do you model? A few things:
  - Access each component of a point independently
  - Shift the point if you are given offset
  - Rotate the point 90 degrees
  - Calculate the Euclidean distance from your Point to another
  - Calculate the midpoint between your point and another
  - Determine if your point is equal to another
Some help

- Rotate a point 90 degrees
  - New x = old y
  - New y = old x * -1
- Distance between two points
  - Difference between each component.
  - Use Pythagorean Theorem to calculate the distance as the square root of the squared distance.
- Midpoint
  - A point
  - Each coordinate is the midpoint of the difference of each component

---

Next Time

- Even More OOD!
  - Inheritance, abstraction (Java Gently. ch 9)