

COMS W1114 - Java Lab

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

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Note

- HW4 out. Due Tuesday 11a.

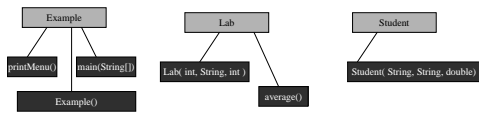
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What we are covering today

- Quick review/question of Lab 8.
- More OOD! (wrap up Java Gently. Ch 8.)
 - overloading/overriding
 - Properties: private and final
 - references

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Structure of our classes



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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

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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

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Some help

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

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Next Time

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

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