

CS1110 7 Sept 2010 Customizing a class

Summary of lectures: On www.cs.cornell.edu/courses/cs1110/2010fa, click on "Lecture summaries"

Reading for this lecture: Sections 1.4, (p. 41); 13.3.1 (p. 376).

Read all "style notes" and referenced PLive lectures (activities).

Quote for the day:
 I have traveled the length and breadth of this country and talked with the best people, and I can assure you that data processing is a fad that won't last out the year.
 — Editor in charge of business books for Prentice Hall, 1957

Reading for next lecture:

- Fields; getter & setter methods. Secs 1.4.2 (p. 45) & 3.1 (pp. 105–110 only)
- Constructors. Sec. 3.1.3 (p. 110–112)
- Testing. App. 1.2.4 (p. 486)

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One-on-One Sessions

Next two weeks, 1/2-hour one-on-one session on a computer with each student in CS1110

Purpose: See how well you understand what we have done, let you ask questions, give you help. Graded 0-1: 1 if you did a session. Not counted in course grade. Purpose: to help you.

Instructors : Gries, Lee, TAs, consultants.

How to sign up: Visit CMS. Click on assignment One-on-one. Choose from list of times/instructors. First-come-first-served.

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Learning styles

People learn differently.

- **active versus reflective learners**
 learn by doing vs. learn by reflection; groupie vs. loner
- **sensing versus intuitive learners**
 practical/careful vs. fast/innovative
- **visual versus verbal learners**
 pics, charts, films vs. words, explanations
- **sequential versus global learners**
 logical, step-by-step, bottom-up vs. big-picture

Course outline webpage has link to website of Felder and Brent where you can read about this and take a self-scoring test to see your strengths/weaknesses

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This reviews what we did last time.

x **int**

y **Patient**

name "B. Clinton" **Patient**

address "New York"

owes \$250.00

getName() **assume is a function**

deposit(double d) **assume is a procedure**

x has value 6

y has value **c1** **function call**

y.getName() has the value "B. Clinton"

y.deposit(250); **procedure call** will change the value of field owes to 0.

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Class javax.swing.JFrame: an object is a window on your monitor.

x **j1**

y **JFrame**

```

setTitle(String) getTitle()
getX() getY() setLocation(int,int)
getWidth() getHeight() setSize(int,int)
...
    
```

new JFrame()

Expression: create a new object of class JFrame and yield its name

This reviews what we did last time.

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Class definition: The java construct that describes the format of a folder (instance, object) of the class.

```

/** description of what the class is for
 *
 */
public class <class-name> {
    declarations of methods (in any order)
}
    
```

A class definition goes in its own file named <class-name>.java

On your hard drive, have a separate directory for each Java program that you write; put all the class definitions for the program in that directory.

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Class definition for a new subclass:

```

/** description of what the class is for
 */
public class C extends <superclass-name> {

    declarations of methods (in any order)

}
    
```

Class C has all the fields and methods that <superclass-name> does, in addition to those declared in C.

Class C **inherits** the fields and methods of <superclass-name>.

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```

/** description of what the class is for */
public class subclass-name extends superclass-name {
    declarations of methods
}
    
```

folder (object) belongs in file drawer for class subclass-name

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First example of a procedure and of a function.
Note the specifications (comments) on the methods.

```

/** description of what the class is for */
public class subclass-name extends superclass-name {
    /** Set the height of the window to the width */
    public void setHeightToWidth() {
        setSize(getWidth(), getWidth());
    }

    /** = the area of the window */
    public int area() {
        return getWidth() * getHeight();
    }
}
    
```

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```

import javax.swing.*;
/** An instance is a JFrame with methods to square it and
to provide the area of the JFrame */
public class SquareJFrame extends JFrame {
    ...declarations of methods...
}
    
```

folder (object) belongs in file drawer for class SquareJFrame

To the left, draw a manila folder of class SquareJFrame. When we define methods, put them in the proper place

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```

import javax.swing.*;
/** An instance is a JFrame with methods to square it and
to provide the area of the JFrame */
public class SquareJFrame extends JFrame {
    /** = the area of the window */
    public int area() { ... }

    /** Set the height equal to the width */
    public void setHeightToWidth() {...}
}
    
```

The class and every method in it has a comment of the form

/ specification */**

It is a Javadoc comment. Click on javadoc icon in DrJava to extract class specification. **DO THIS AT LEAST ONCE IN LAB.**

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About null

null denotes the absence of a name.

var3.getName() is a mistake! You get a **NullPointerException**.

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