CS1110 21 Sept 2010

Today: Pick up: A3
Today's slides

Inside-out rule; use of **this**, **super**
Developing methods (using Strings).
Read sec. 2.5, stepwise refinement
Listen to Plive, 2.5.1–2.5.4.

You can do A3 in groups of 2, BUT GROUP EARLY ON CMS

Reading for next lecture: the same

Office hours are being held

Rsrecah on spleilng
Aoccdrnig to a rscheearch at Cmabirgde Uinervtisy, it deosn't mttaer in waht oredr the ltteers in a wrod are, the olny iprmoetnt tihng is that the frsit and lsat ltteer be at the rghit pclae. The rset can be a total mses and you can sitll raed it wouthit porbelm.Tihs is bcuseae the huamn mnid deos not raed ervey lteter by istlef, but the wrod as a wlohe.

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A1
210 out of 211 groups graded at least once

79 out of 210 are done!

Please respond to your feedback within 24 hours if you can. We want to finish up A1 by the weekend.

Make sure you RRequest a RRegrade when you RResubmit.

A3: Adding functionality to A1
Due Wednesday, 29 September

- Keeping class invariant true
- Use already-written functions
- Boolean expressions
- Use of null and testing for it
- Use of static variables

Form groups on the CMS early, well before you submit.

A3: graded in conventional way. Submit once and get a grade.

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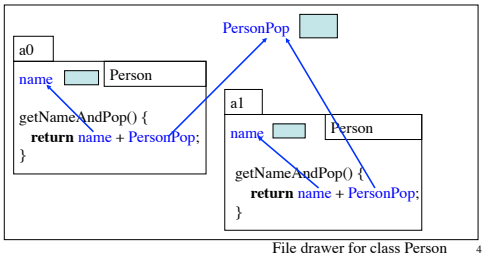
Remember frame boxes and figuring out variable references?
The *inside-out rule* (see p. 83)

Code in a construct can reference any of the names declared or defined in that construct, as well as names that appear in enclosing constructs. (If a name is declared twice, the closer one prevails.)



File drawer for class Person

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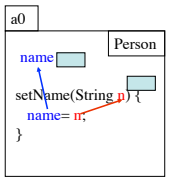
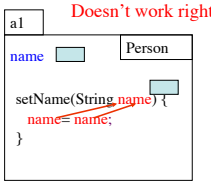
Method parameters participate in the inside-out rule: remember the frame.



Parameter n would be found in the frame for the method call.

Doesn't work right



Parameter name "blocks" the reference to the field name.

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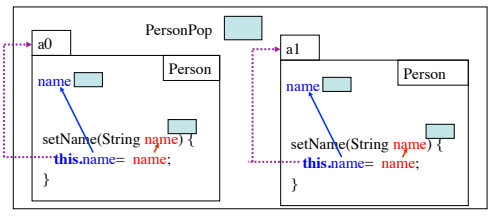
A solution: **this** and **super**

Within an object, this evaluates to the name of the object.

In folder a0, **this** refers to a0

In folder a1, **this** refers to a1



File drawer for class Person

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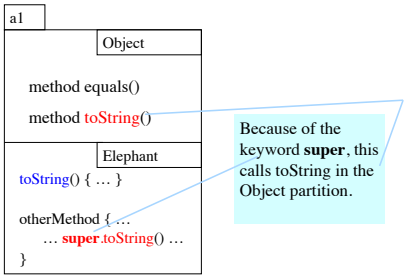
About super

Within a subclass object, super refers to the partition above the one that contains super.

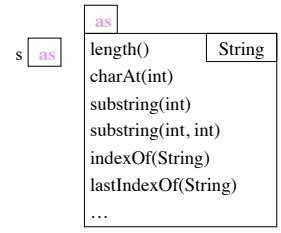


Strings are (important) objects that come with useful methods.

String s= "abc d";

Note the "index (number) from 0" scheme:

```
01234
abc d
```



s.length() is 5
s.charAt(2) is 'c'
s.substring(2) is "c d"
s.substring(1,3) is "bc"

To find specs of methods in String:
1. Visit course website
2. Click Links
3. Click Specs for version 1.6
4. Click String in lower left pane

Strings are (important) objects that come with useful methods.

String s= "abc d";

Note the "index (number) from 0" scheme:

```
01234
abc d
```

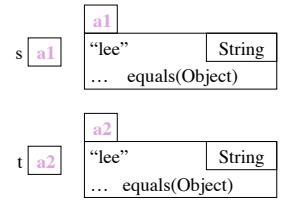
Text pp. 175–181 discusses Strings
Look in CD ProgramLive
Look at API specs for String

s.length() is 5 (number of chars)
s.charAt(2) is 'c' (char at index 2)
s.substring(2,4) is "c " (NOT "c d")
s.substring(2) is "c d"
" bcd ".trim() is "bcd" (trim beginning and ending blanks)
s.indexOf(s1) –index or position of first occurrence of s1 in s (-1 if none)

Strings are objects!!!!!!!!!

What is the value of

s == t



DO NOT USE == TO TEST STRING EQUALITY!

s == t tests whether s and t contain the name of the same object, not whether the objects contain the same string.

Use s.equals(t)

Principles and strategies embodied in stepwise refinement

Develop algorithm step by step, using principles and strategies embodied in "stepwise refinement" or "top-down programming. READ Sec. 2.5 and Plive p. 2-5.

- Take small steps. Do a little at a time
- Refine. Replace an English statement (what to do) by a sequence of statements to do it (how to do it).
- Refine. Introduce a local variable —but only with a reason
- Compile often
- Intersperse programming and testing
- Write a method specification —before writing its body
- Separate concerns: focus on one issue at a time
- Mañana principle: next slide

Principles and strategies for reformatting strings

When dealing with String, always try to use existing methods!! Ones you have written or those that are in class String

- Pick out pieces from the input String
- Build the new String from the Pieces

Principles and strategies

• Mañana Principle.

During programming, you may see the need for a new method. A good way to proceed in many cases is to:

1. Write the specification of the method.

2. Write just enough of the body so that the program can be compiled and so that the method body does something reasonable, but no the complete task. So you *put off* completing this method until another time —mañana (tomorrow) —but you have a good spec for it.

3. Return to what you were doing and continue developing at that place, presumably writing a call on the method that was just "stubbed in", as we say.

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