Learning Object-Oriented Programming and Design with TDD

Inheritance and Lookup

3: super

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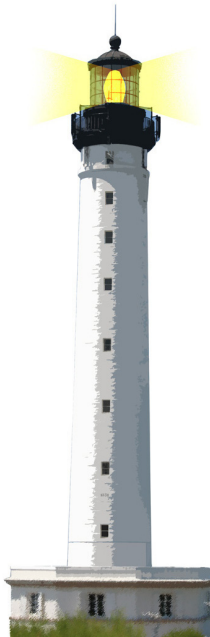


Pharo

http://www.pharo.org

Goal of the Lecture

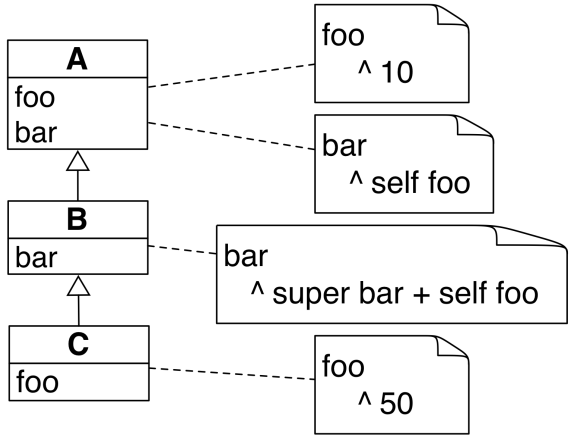
- Sending a message
- Method lookup
- `super` semantics and the differences with `self`

What is super?

Take 5 min and write the definition of super

- your definition should have two points:
  - what does super represent?
  - how is a method looked up when a message is sent to super?

Challenge Yourself With super!

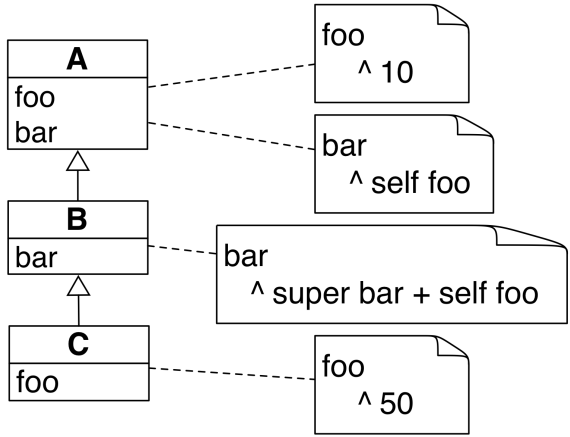


A new bar
>>> ...

B new bar
>>> ...

C new bar
>>> ...

Challenge Yourself With super!

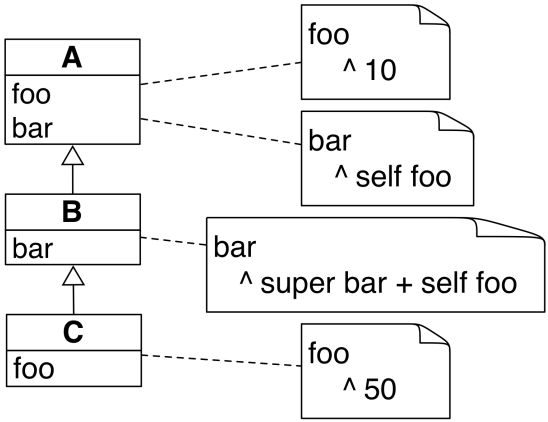


A new bar
>>> 10

>>> 20

C new bar
>>> 100

super Changes Where the Lookup Starts



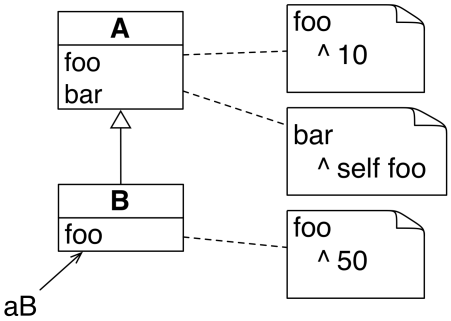
Evaluation of aC bar

1. aC's class is C
2. no method bar in C
3. look up in B - bar is found
4. method bar is executed
5. bar is sent to super
6. super is aC but lookup starts in A
7. bar is found in A and executed
8. foo is sent to aC
9. foo is found in C

super Changes Where the Lookup Starts

- super refers to the receiver of the message (just like self)
- The method lookup starts in the superclass of **the class containing the** super **expression**

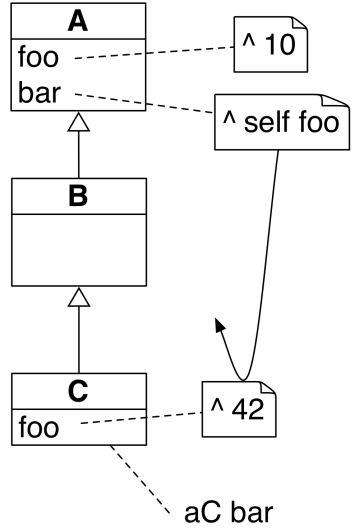
self is Dynamic



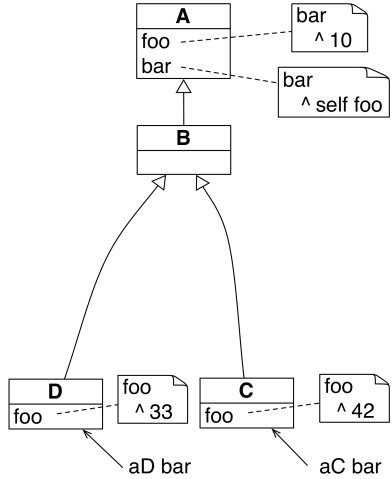
We don't know which foo method bar refers to!

- It is dynamically resolved!

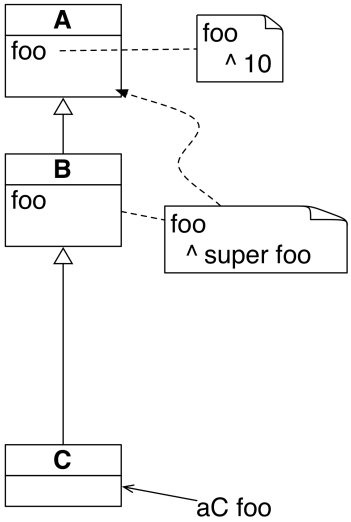
self sends are hooks for subclass code



self sends are hooks for subclass code



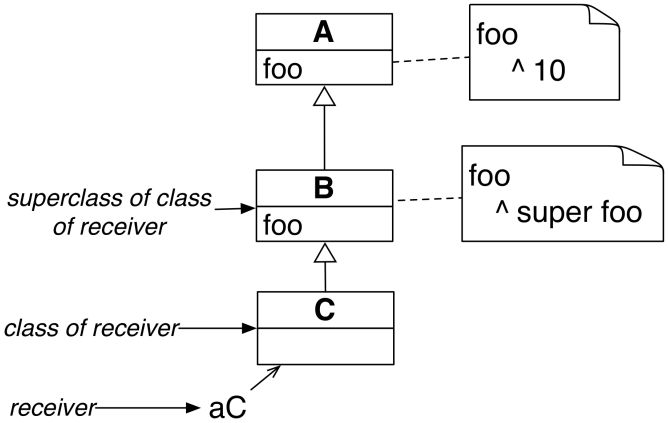
super is Static



- at compilation-time, we know that B>>foo refers to A>>foo
- we should look above the class containing the **method** using super

Even Some Books Got it Wrong

- **Wrong** definition: super *looks for the method in the superclass of the* ***receiver****'s class*
- With this definition, this example would loop forever:



What You Should Know

- self always represents the receiver
- super always represents the receiver
- super changes the lookup:
  - a super send starts the lookup in the class above it
- self sends act as a hook: code of subclasses may be invoked

Resources

- Pharo mooc - Videos W4S03: `http://mooc.pharo.org`
- Pharo by Example: `http://books.pharo.org`

A course by Stéphane Ducasse

http://stephane.ducasse.free.fr

Reusing some parts of the Pharo Mooc by

Damien Cassou, Stéphane Ducasse, Luc Fabresse

http://mooc.pharo.org