Advanced Object-Oriented Design

About super

S Ducasse and G. Polito

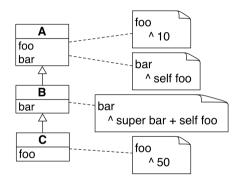




Goals

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

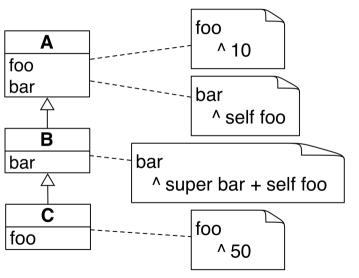
Define what super is!



Take 5 min and write the definition of super

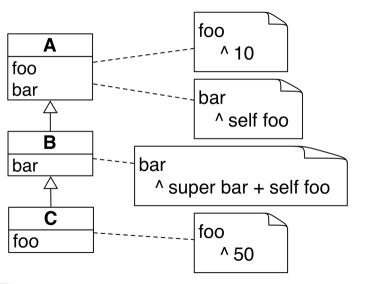
- your definition should have two points:
 - what does super represent?
 - how is a method looked up when a message is sent to super?

Challenge yourself with super!



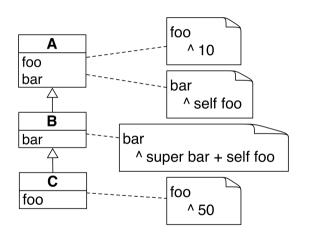
aA bar >>> ... aB bar >>> ... aC bar >>> ...

Challenge yourself with super!



aA bar >>> 10 aB bar >>> 20 aC 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

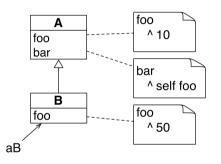
super changes where the lookup starts

- super refers to the receiver of the message (just like self)
- The method lookup starts (Take 1 min to fill the dots)

super in two sentences

- 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

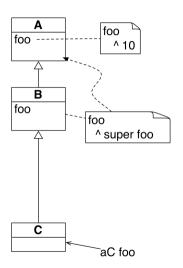
self is dynamic



- At compilation time, we don't know
- to which object self points to
- to which foo method bar refers to

Imagine that we load a new subclass C of B and do C new bar, self will be pointing to such instance

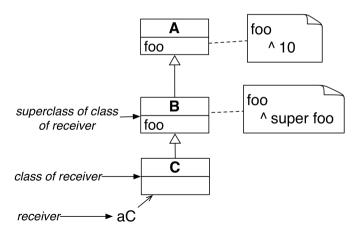
super is static



- 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

A course by

S. Ducasse, G. Polito, and Pablo Tesone



