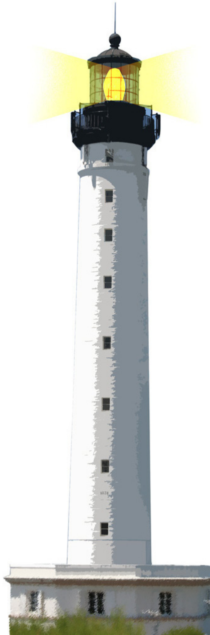
Advanced Object-Oriented Design

About super

S Ducasse and G. Polito

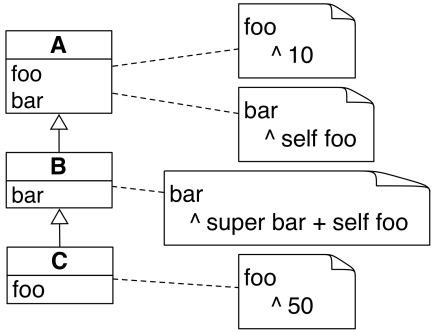
http://www.pharo.org



Goals

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

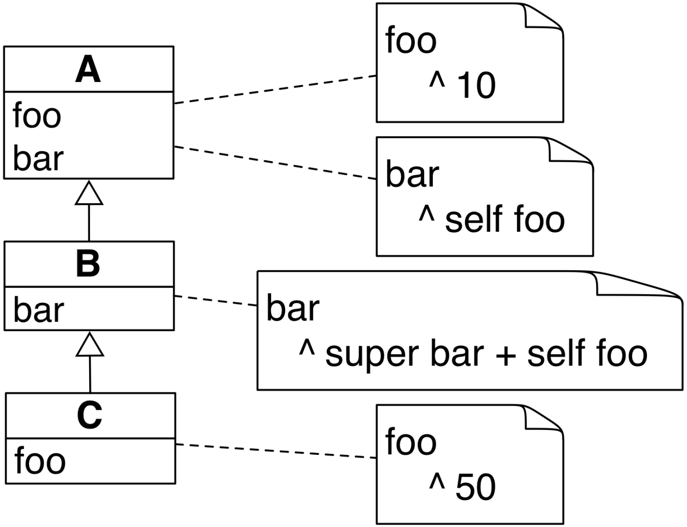
Define what super is!



Take 5 min and write the definition of super

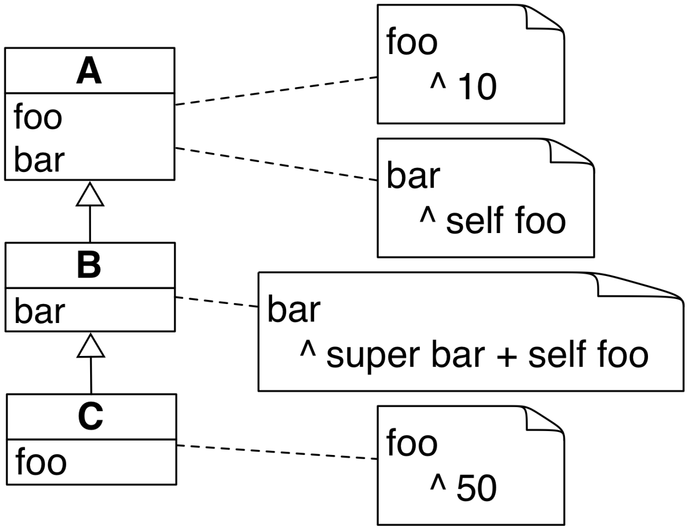
- your definition should have two points:
  - what does super represent?
  - how is a method looked up when a message is sent to super?

Challenge yourself with super!



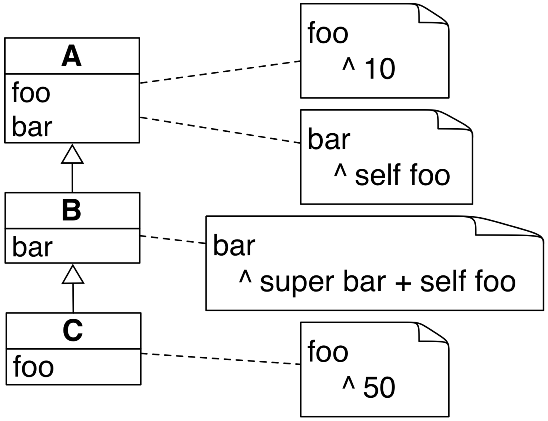
```
aA bar
>>> ...
aB bar
>>> ...
aC bar
>>> ...
```

Challenge yourself with super!



```
aA bar
>>> 10
aB bar
>>> 20
aC bar
>>> 100
```

super changes where the lookup starts



```
foo
  ^ 10
```

```
bar
  ^ self foo
```

```
bar
  ^ super bar + self foo
```

```
foo
  ^ 50
```

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

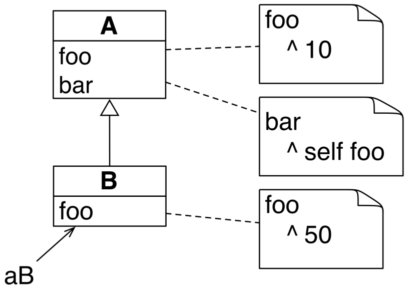
super changes where the lookup starts

- 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**

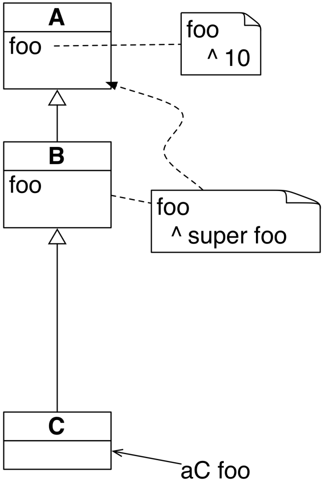
self is dynamic



- 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

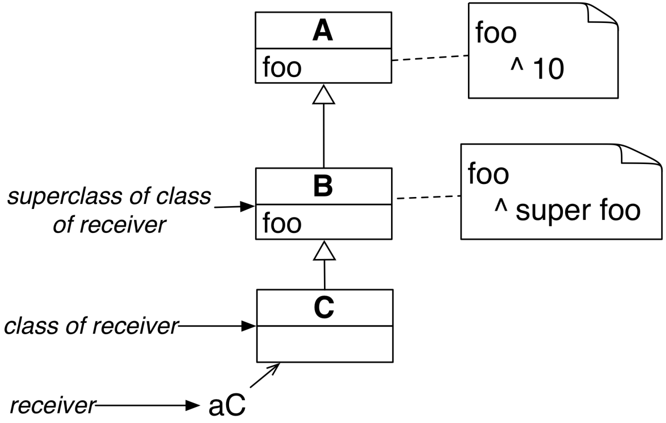
super is static



- 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