Inheritance and Lookup

3: super

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http://www.pharo.org
Goal

- 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
- B new bar > 20
- C new bar > 100

A
  foo
  bar

B
  bar
  ^ super bar + self foo

C
  foo
  ^ 10
  bar
  ^ self foo
  ^ 50
super Changes Where the Lookup Starts

Evaluation of $aC\text{ bar}$

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

```
In reality it **does not** loop, the definition is wrong
```
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
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in collaboration with


Inria 2016

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