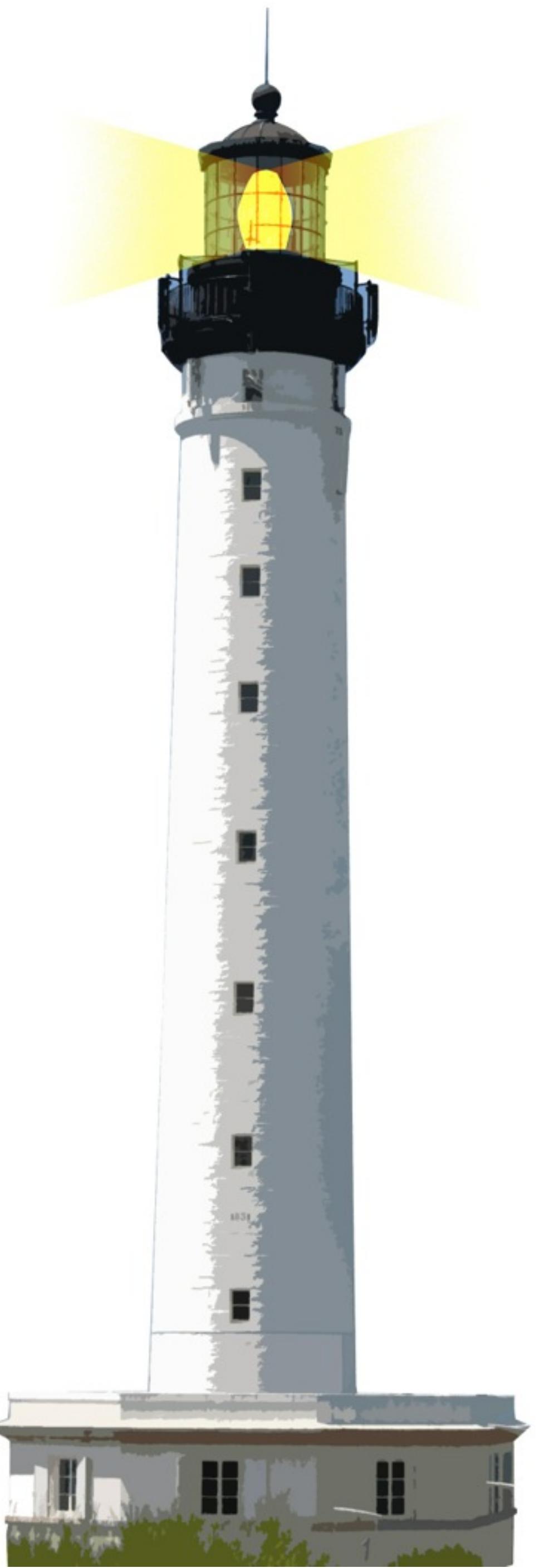


# Pharo: an immersive object-oriented system

Damien CASSOU, Stéphane DUCASSE and Luc FABRESSE

[www.pharo.org](http://www.pharo.org)

W1S02



# Pharo?

---



# Pharo!

---

- \* System: Pure object language + full IDE
- \* Inspired by Smalltalk
- \* Powerful, elegant and fun to program
- \* Great community
- \* Living system under your fingers
- \* 100% MIT



# Elegant!

---

- \* Full syntax on a postcard
- \* Simple and powerful objet model



# Full Syntax!

```
exampleWithNumber: x
```

“A method that illustrates every part of Smalltalk method syntax”

```
<menu>
```

```
| y |
```

```
true & false not & (nil isNil) ifFalse: [self halt].
```

```
y := self size + super size.
```

```
#($a #a 'a' 1 1.0)
```

```
do: [ :each | Transcript
```

```
    show: (each class name);
```

```
    show: (each printString);
```

```
    show: ' '].
```

```
^ x < y
```

Leuchttürme



# Full Model!

- \* Dynamically typed
- \* Everything is an object instance of a class
- \* All methods are public virtual
- \* All attributes are protected
- \* Single Inheritance



# Fully Written in Itself

---

- \* Everything is written in Pharo
- \* Pharo itself
- \* One simple syntax/model to access everything



# Immersive?

---



# Immersive

- \* Pharo is not a blackbox
- \* Pharo is fully inspectable and reflective
- \* You can get immersed in objects



# Immersed and interacting

- \* You can interact with objects

# Immersive

The image shows a screenshot of a Smalltalk IDE interface. On the left, a dark-themed workspace pane titled "Workspace" contains the following code:

```
| elements lay |  
  
elements := (1 to: 5) collect: [ :ob |  
  (R3CubeShape new) elementOn: ob ].  
  
lay := R3WallLayout new.  
lay on: elements.  
  
UberPresenter present: elements
```

On the right, a dark-themed browser pane titled "Uber Presenter" displays a 3D rendering of five gray cubes arranged in a wall-like structure.

# Pharo by Example

---

- \* <http://books.pharo.org>
  - \* translated to french, merci!
  - \* translated to spanish, gracias!
  - \* translated to japanese, ありがとう!
- \* Currently updated to Pharo 50



# Deep into Pharo

---

- \* <http://books.pharo.org>
- \* Some advanced topics
  - \* Libraries
  - \* Core language
  - \* Tools



# Enterprise Pharo

---

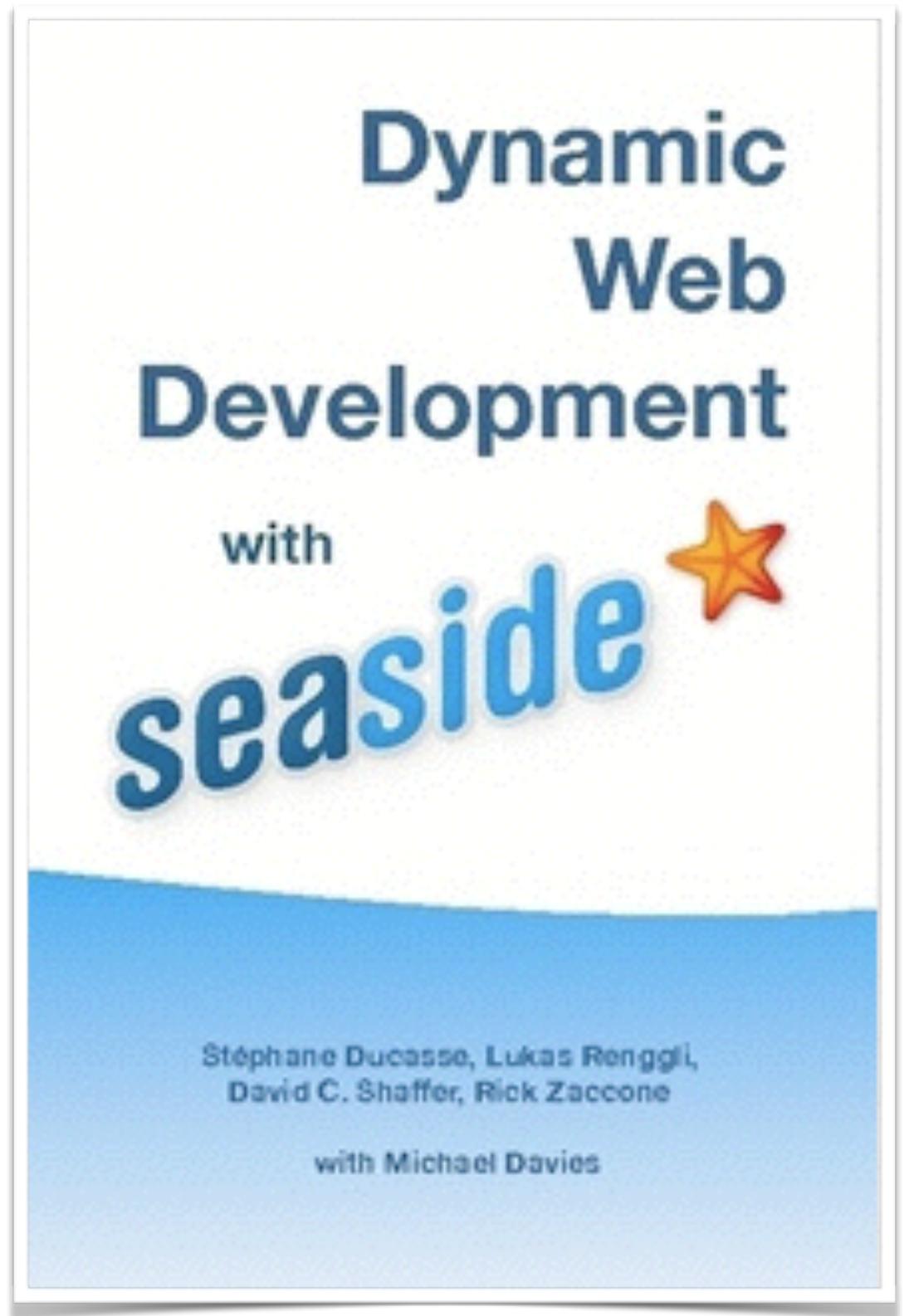
- \* <http://books.pharo.org>
- \* Web related
  - \* Encodings,
  - \* Mustache
  - \* JSON
  - \* WebSockets
  - \* HTTP/HTTPS



# Dynamic Web with Seaside

- \* <http://book.seaside.st>
- \* Full framework explained
- \* DSL + Call:/answer:
- \* Automatic form generation
- \* Deployment

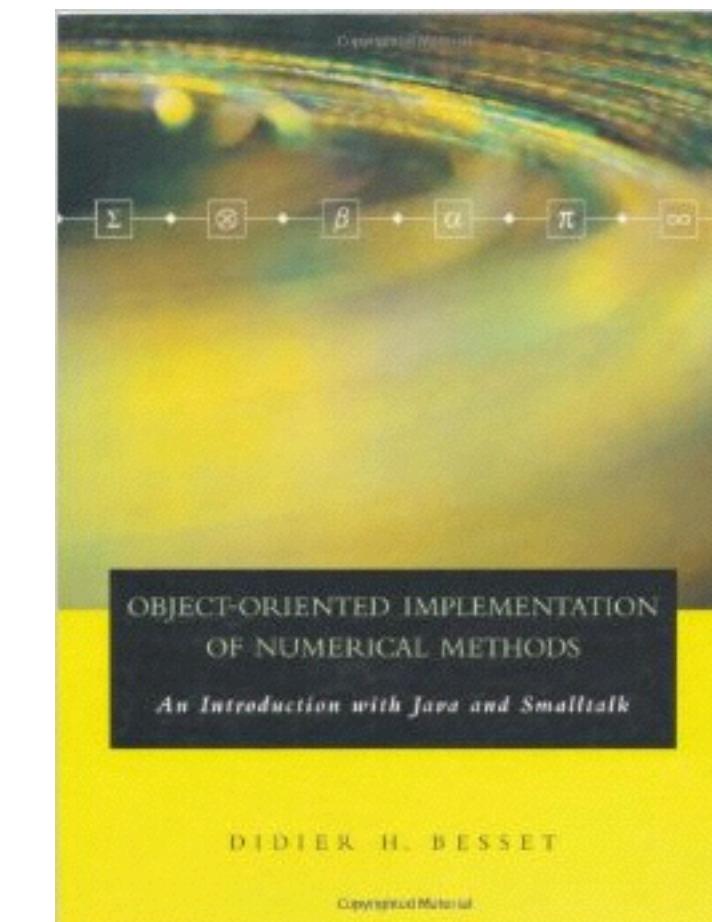
seaside\*



# Numerical Methods

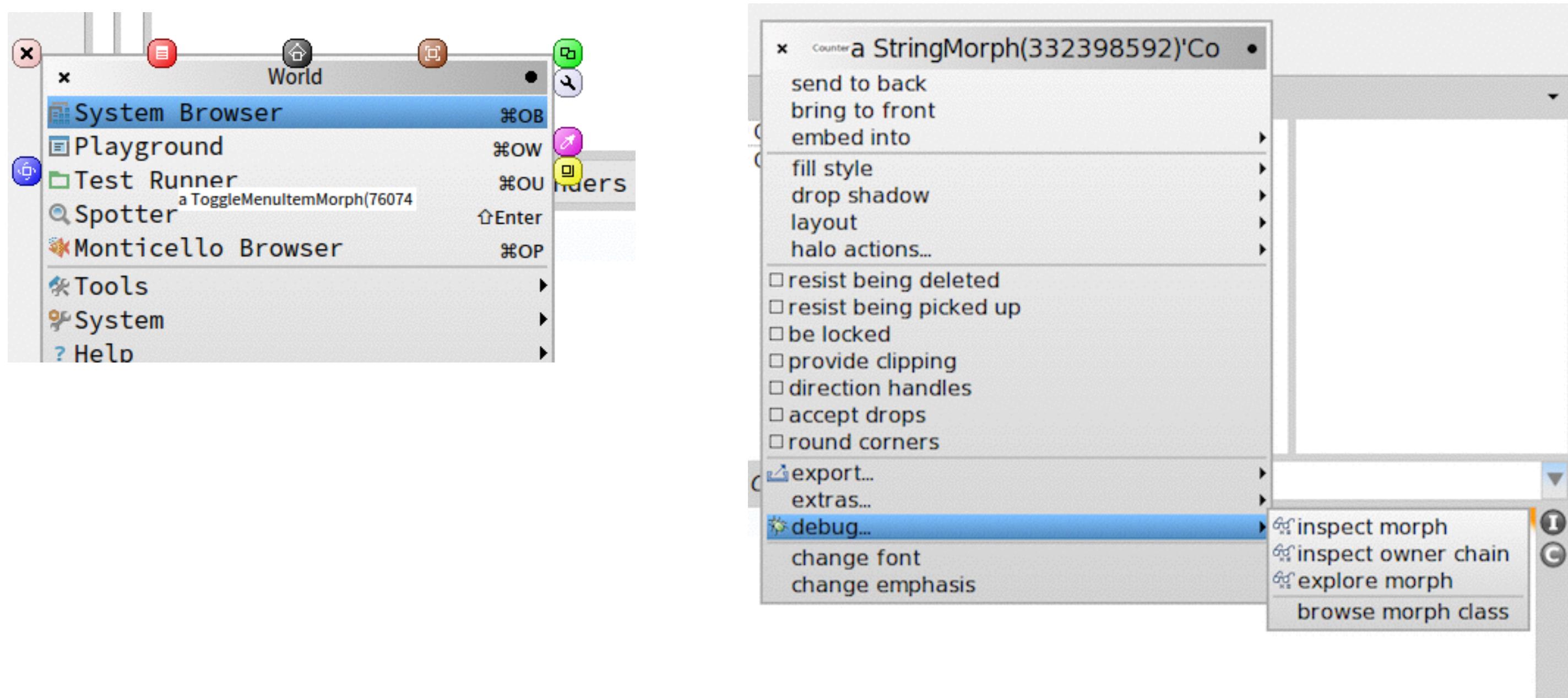
---

- \* <https://github.com/SquareBracketAssociates/NumericalMethods>
- \* Data mining
- \* Clustering
- \* Iterative algorithms
- \* Series
- \* Statistical analysis



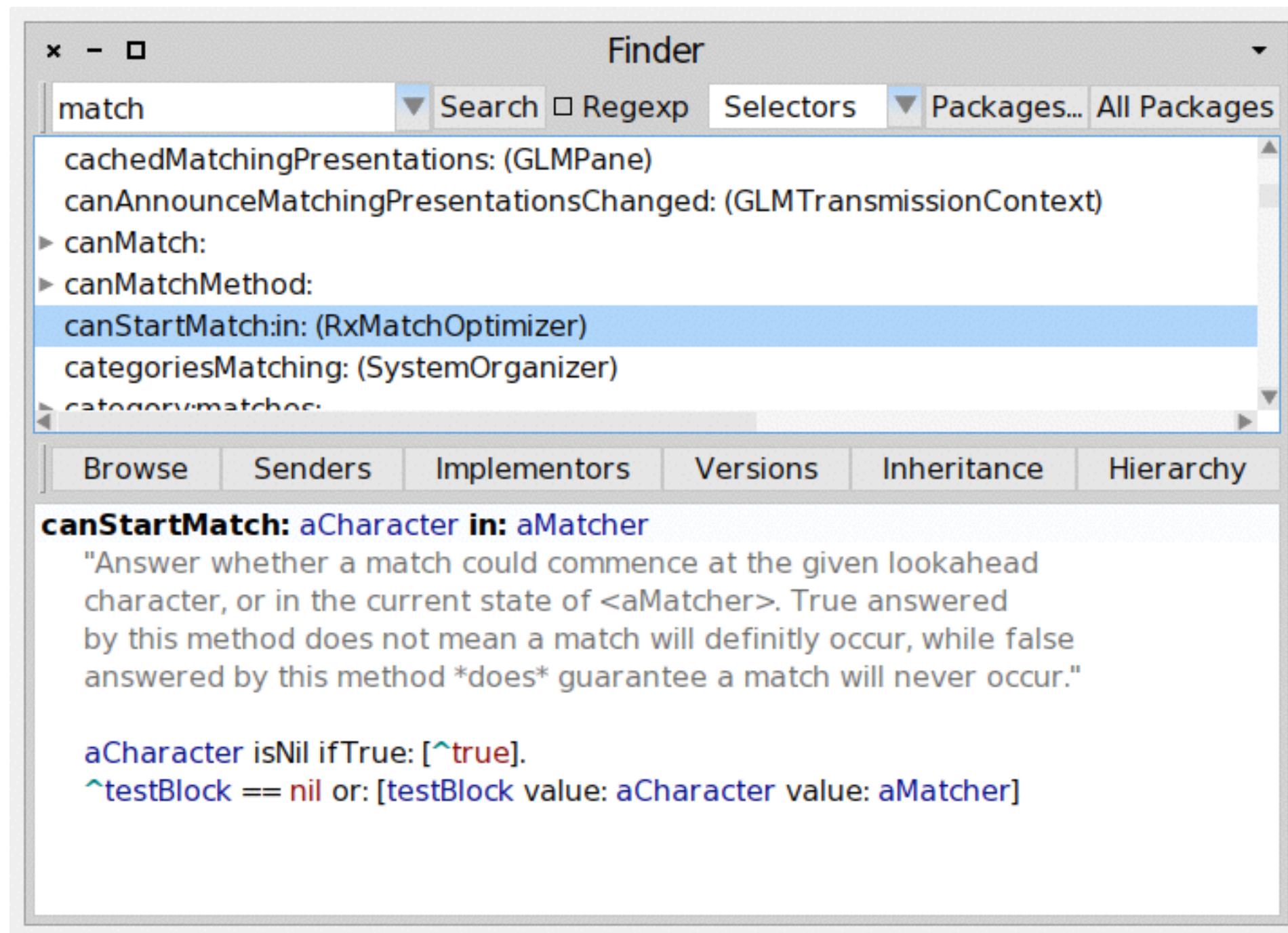
# A System to Learn From

- \* Click on it
- \* Cmd+Shift+Option



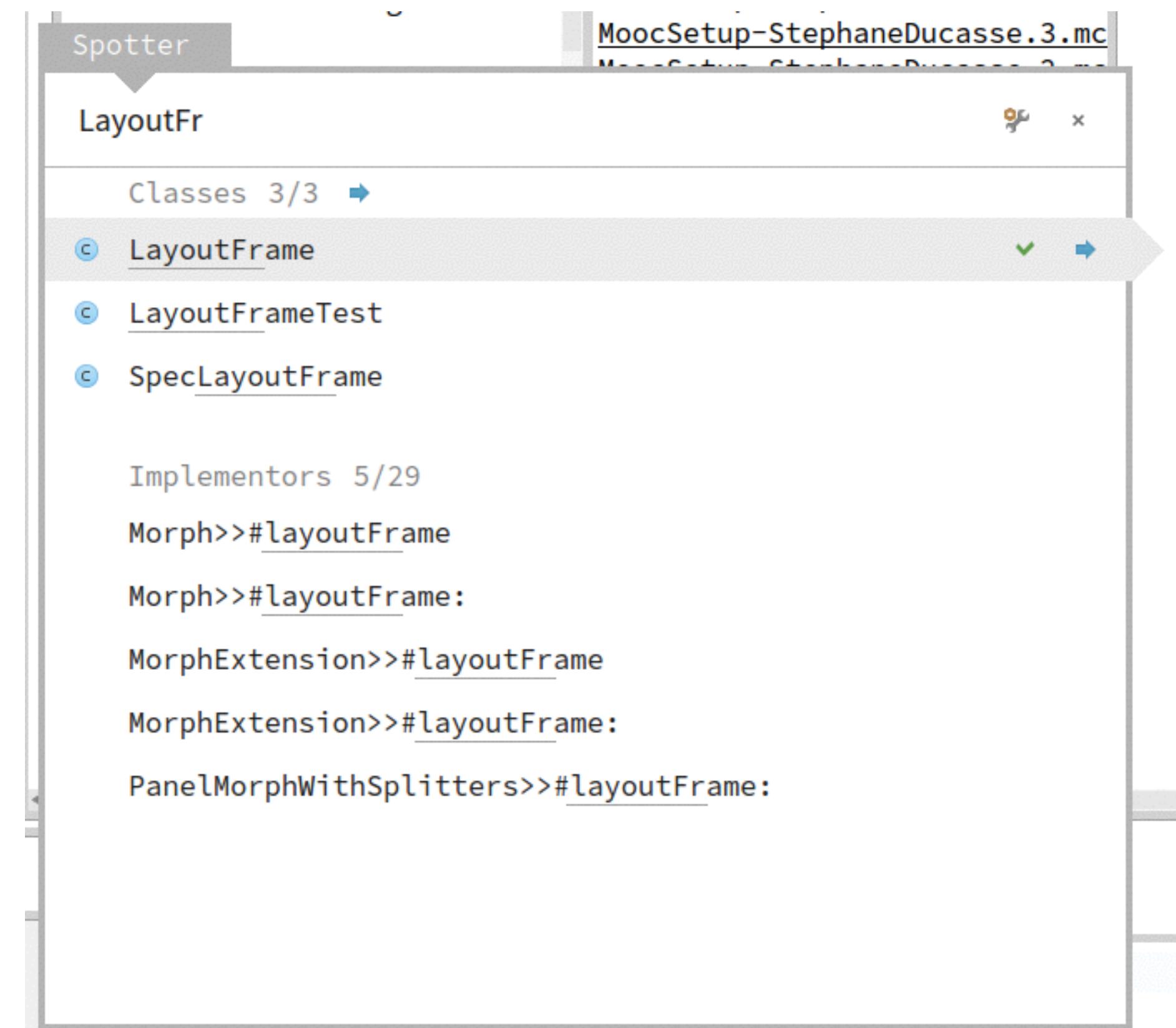
# Ask the Finder

---

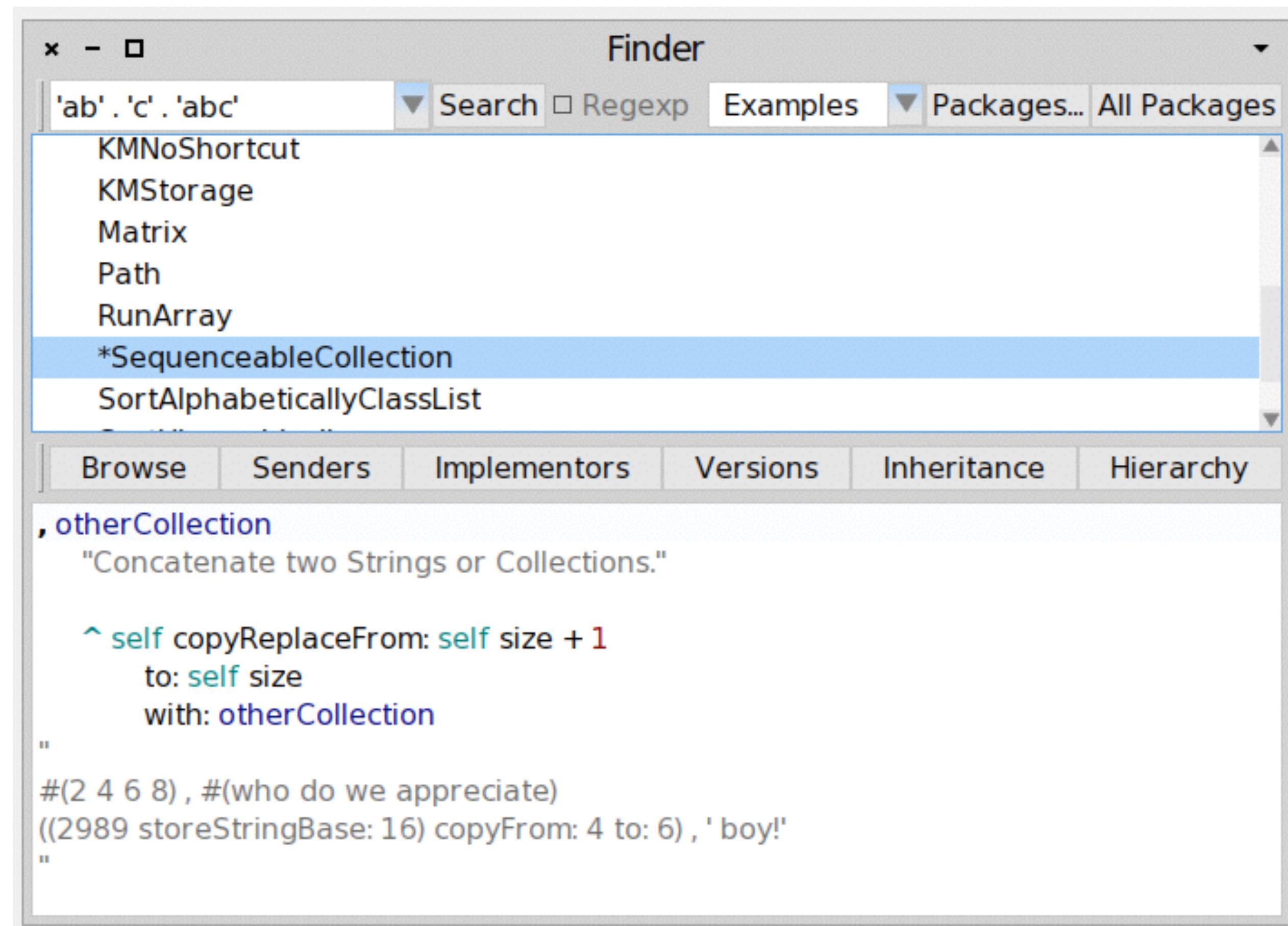


# Ask Spotter

- \* Shift + Enter



# From Examples to Messages



# About OO Design

---

Programming in Pharo will change  
the way you program and think OO



# How not is implemented?

---

- \* false not -> true
  - \* true not -> false
- 
- \* Why such question illustrates something so deep?



# Try Pharo now!

---

<http://pharo.org/download>



The screenshot shows the Pharo website's download section. At the top, there is a navigation bar with links: News, Download (which is highlighted in blue), Documentation, Community, Contribute, Stories, and About. Below the navigation bar, the title "Download Pharo" is centered in a large, blue, sans-serif font. Underneath the title, a descriptive text reads: "Version 4.0 for OS X, GNU/Linux, and Windows. The zip files contain all necessary files. Just download and run the executable." Below this text are three blue rectangular buttons, each with a white icon and text: "Mac OSX" (with an Apple icon), "Windows" (with a Windows icon), and "GNU/Linux" (with a Linux icon).



<http://www.pharo.org>

---

Pure & elegant  
Fun, simple  
Highly productive  
Excellent for  
teaching  
Empowering  
Full access



A course by



and



in collaboration with



Inria 2016

Except where otherwise noted, this work is licensed under CC BY-NC-ND 3.0 France  
<https://creativecommons.org/licenses/by-nc-nd/3.0/fr/>