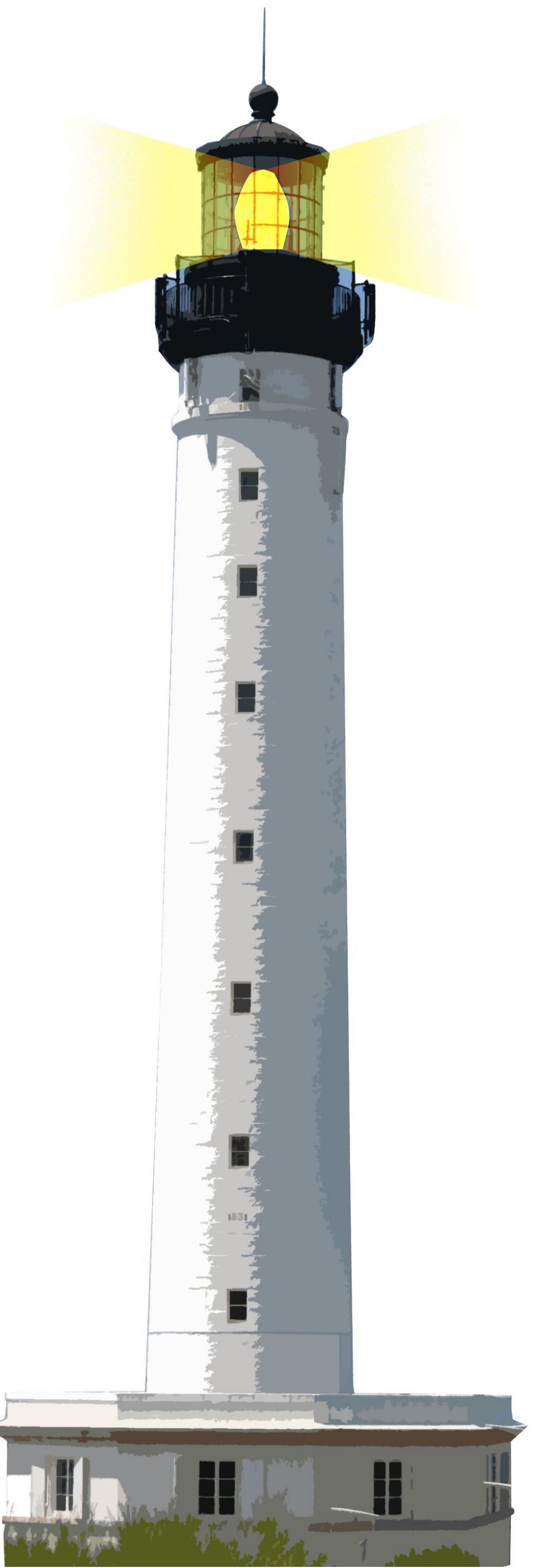


Pharo: an immersive object-oriented system

Damien CASSOU, Stéphane DUCASSE and Luc FABRESSE

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
- * Works on Mac OSX, Linux, iOS, Android,
Windows, Pi
- * 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 VR interface with two windows. On the left is a 'Workspace' window containing a code editor with the following Smalltalk 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 is an 'Uber Presenter' window displaying a 3D visualization of five gray cubes arranged in a wall layout. The background is dark, and there is a small logo in the bottom right corner.

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 80



Deep into Pharo

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



Enterprise Pharo

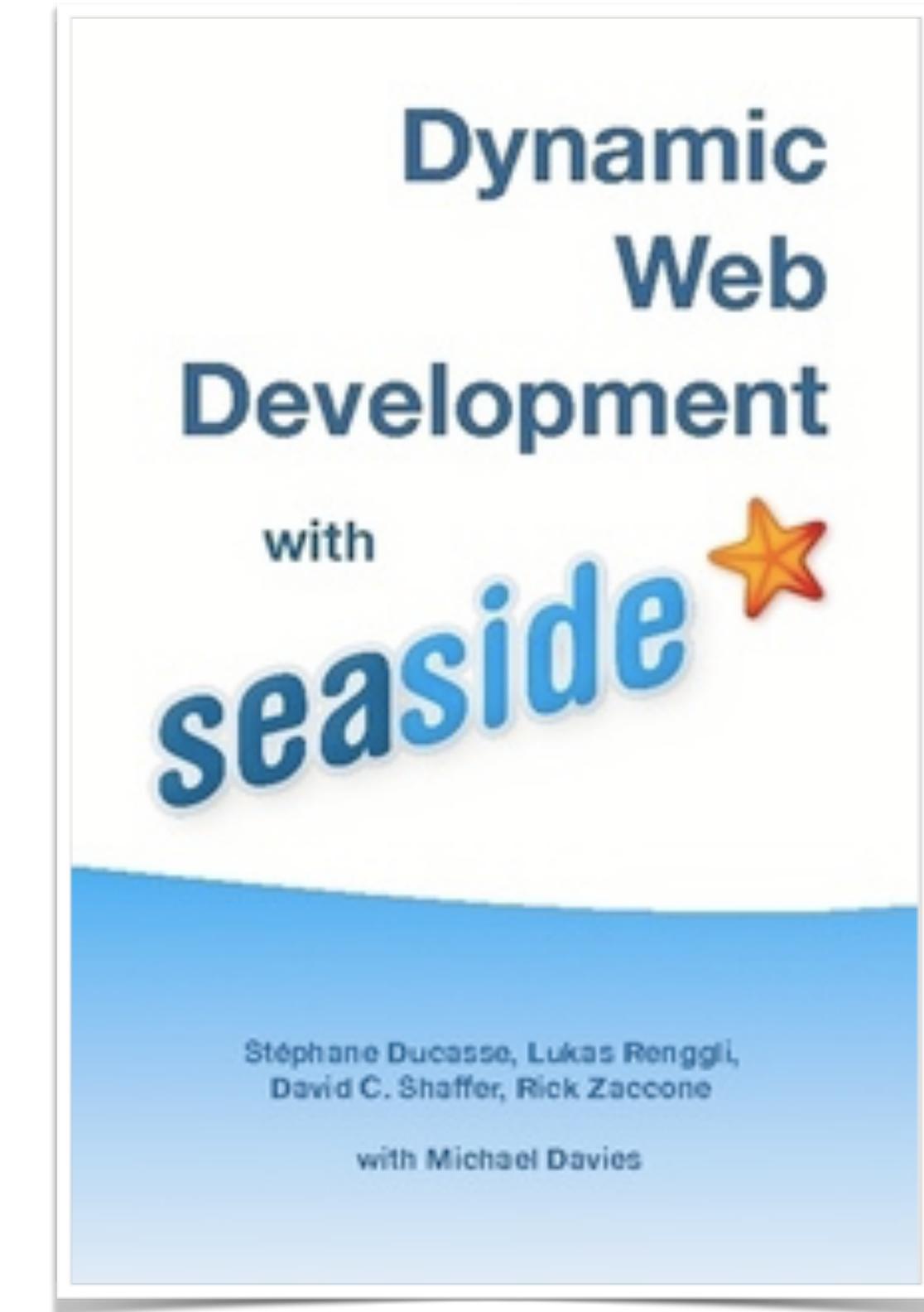
- * <http://books.pharo.org>
- * Web related
 - * Encodings,
 - * Mustache
 - * JSON
 - * WebSockets
 - * HTTP/HTTPS



Dynamic Web with Seaside

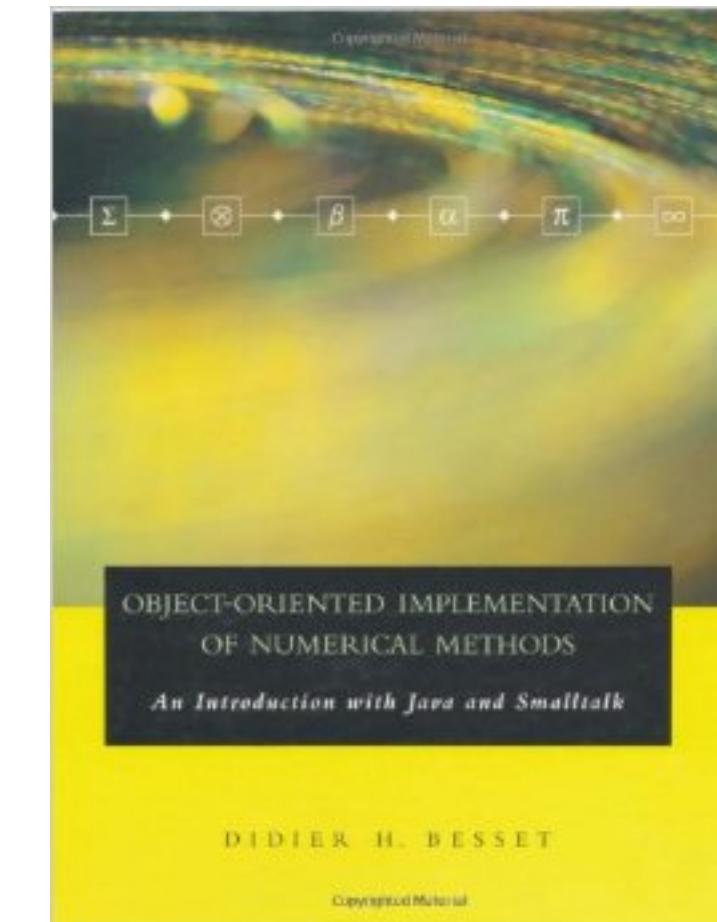
- * <http://book.seaside.st>
- * Full framework explained
- * DSL + Call:/answer:
- * Automatic form generation
- * Deployment

seaside*



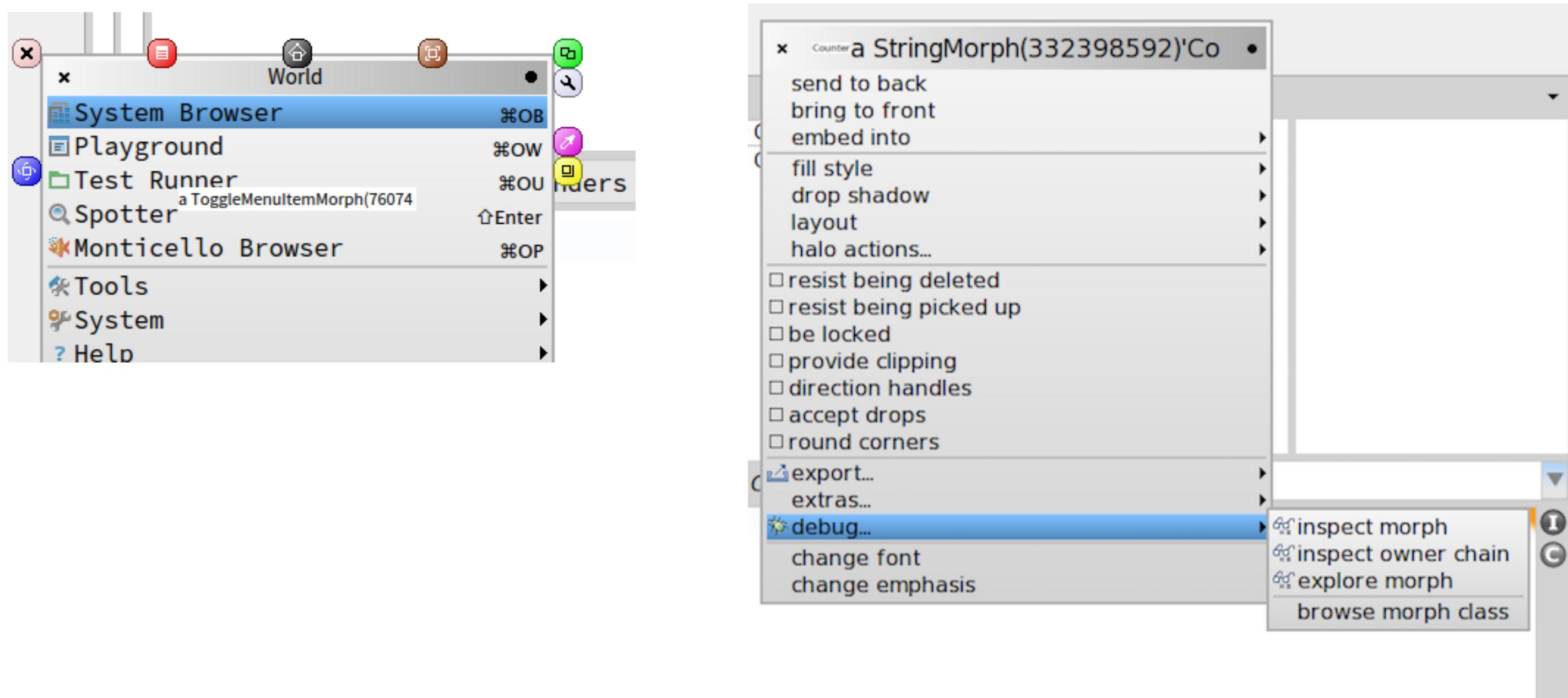
Numerical Methods

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

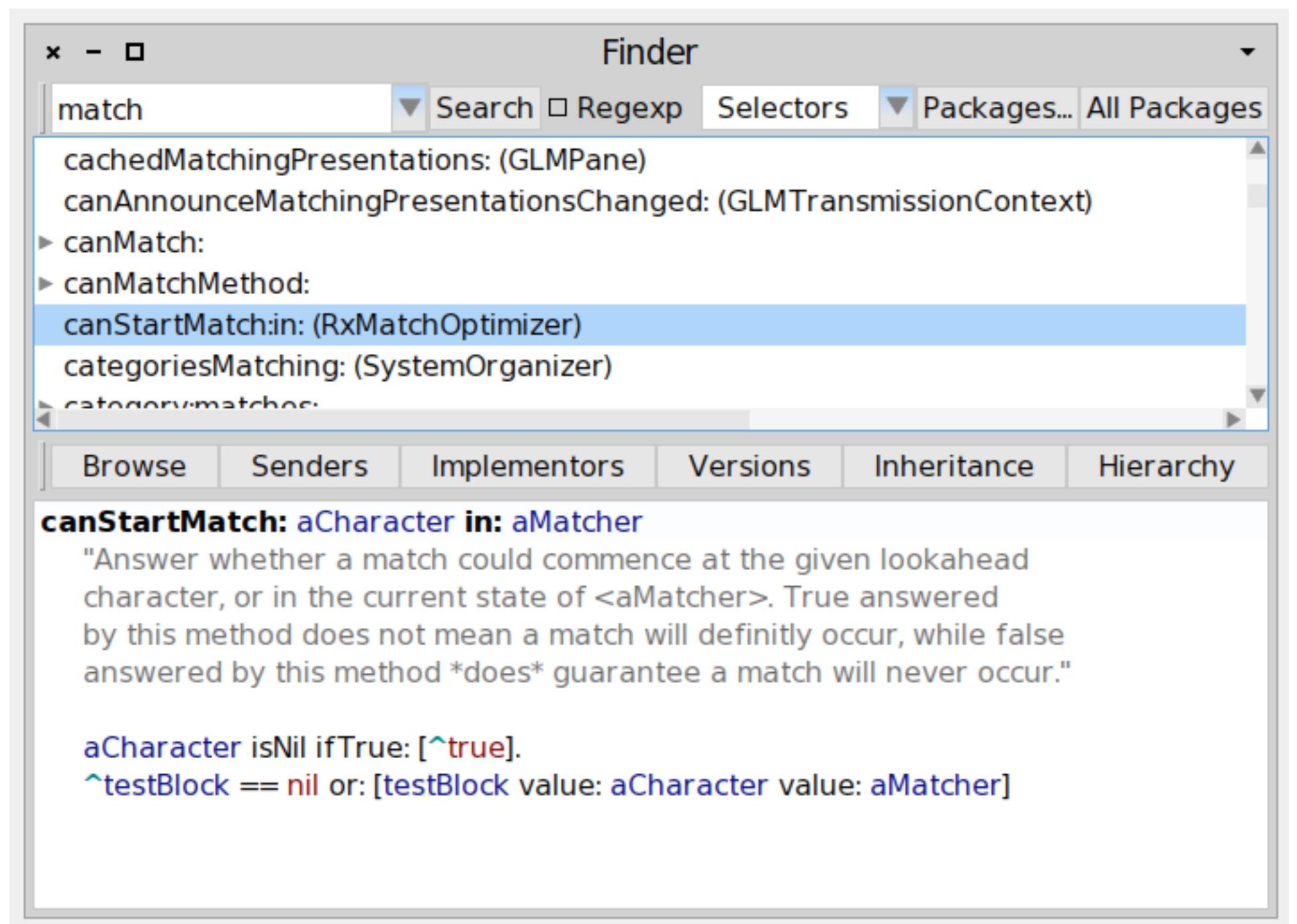


A System to Learn From

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

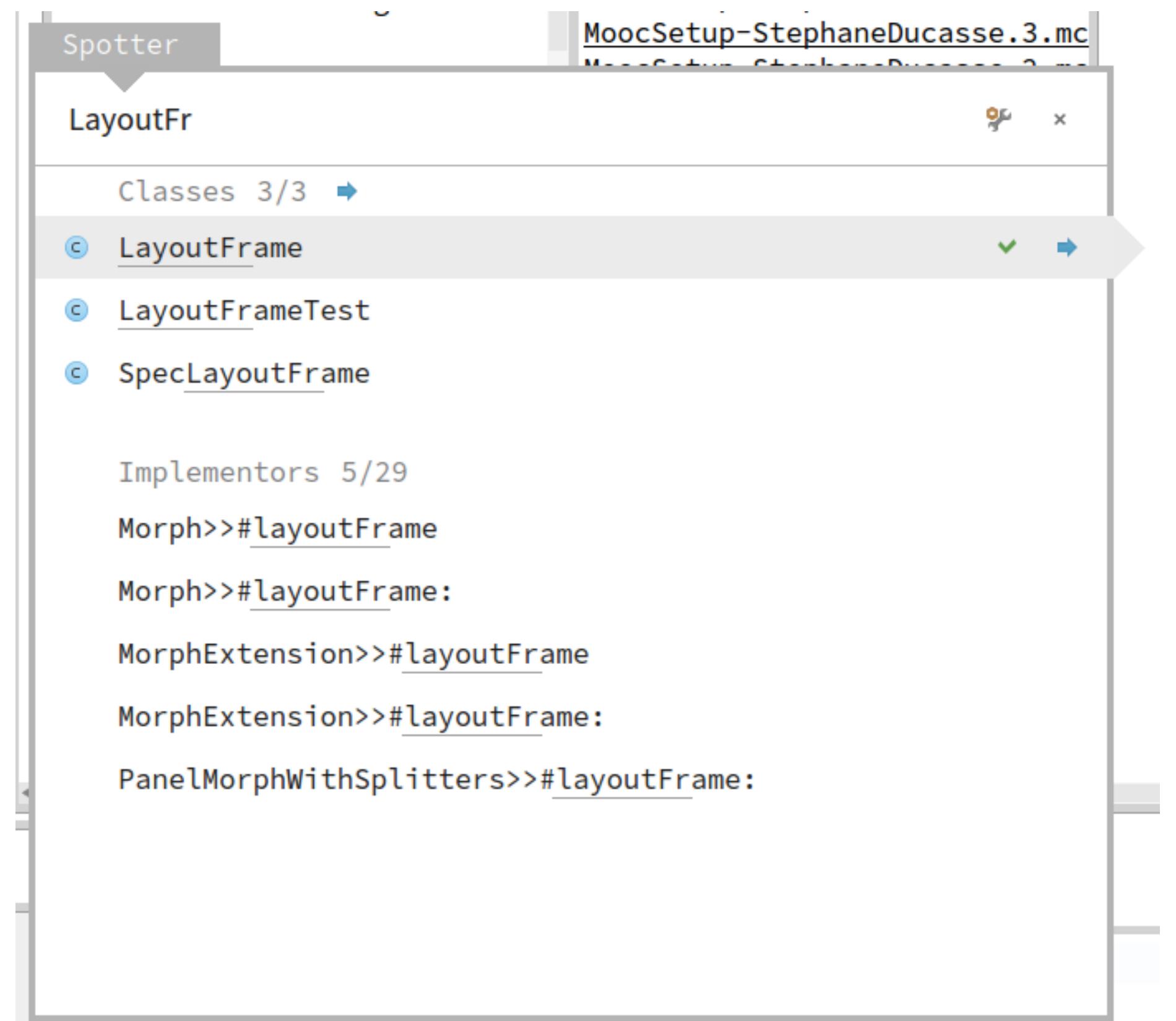


Ask the Finder

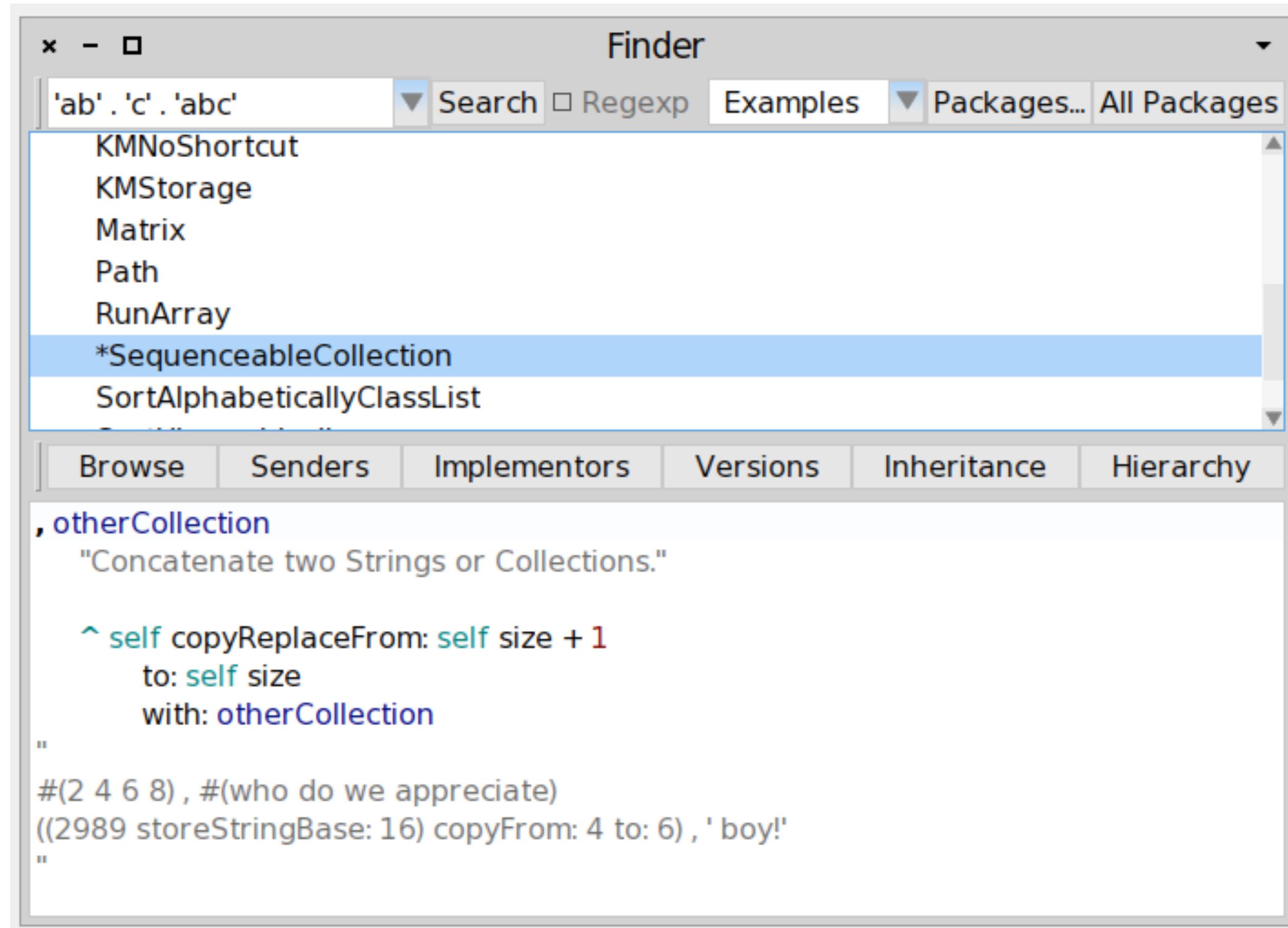


Ask Spotter

- * Shift + Enter



From Examples to Messages



The screenshot shows the Squeak IDE's Finder window. The search bar at the top contains the query `'ab' . 'c' . 'abc'`. The "Examples" tab is selected. The results list includes several items: `KMNoShortcut`, `KMStorage`, `Matrix`, `Path`, `RunArray`, `*SequenceableCollection` (which is highlighted), and `SortAlphabeticallyClassList`. Below the list are tabs for `Browse`, `Senders`, `Implementors`, `Versions`, `Inheritance`, and `Hierarchy`. The `Senders` tab is selected. The detailed view below shows the code for the `copyReplaceFrom:to:with:` method of `*SequenceableCollection`:

```
, otherCollection
    "Concatenate two Strings or Collections."
    ^ self copyReplaceFrom: self size + 1
        to: self size
        with: otherCollection
"
#(2 4 6 8) , #(who do we appreciate)
((2989 storeStringBase: 16) copyFrom: 4 to: 6) , ' boy!
"
```



About OO Design

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



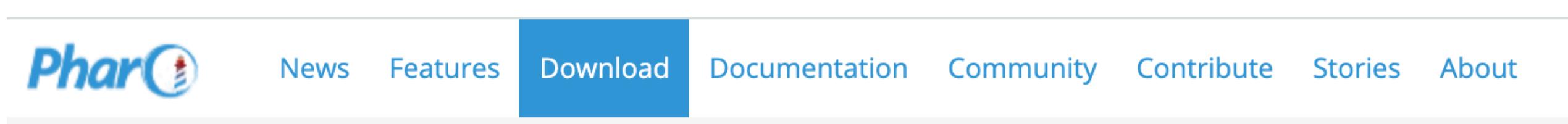
How not is implemented?

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



Try Pharo now!

<http://pharo.org/download>



Download Pharo Launcher

Pharo Launcher for OS X, GNU/Linux, and Windows.

 Windows

 MacOS

 GNU/Linux



<http://www.pharo.org>

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



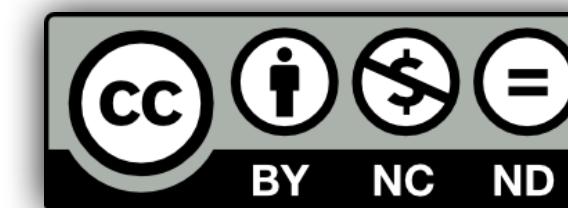
A course by



and



in collaboration with



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