

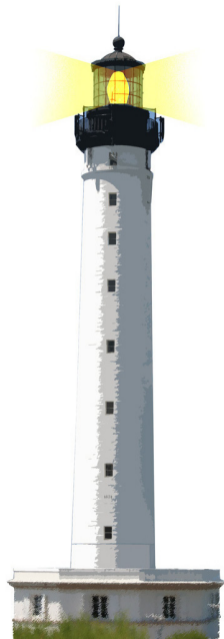
Variable Size Objects

Damien Cassou, Stéphane Ducasse and Luc Fabresse

W7S02



<http://www.pharo.org>



Variable Size Instances?

Array new: 10

```
> #(nil nil nil nil nil nil nil nil nil nil)
```

Array new: 5

```
> #(nil nil nil nil nil)
```

Yes arrays can have different sizes

What You Will Learn

- How to define variable size objects?
- How to instantiate and access variable size objects?



Roadmap

- **How to define variable size objects?**
- How to instantiate and access variable size objects?



Variable Class Definition

Use message `variableSubclass:` instead of `subclass:`

Example

```
ArrayedCollection variableSubclass: #Array  
instanceVariableNames: ''  
classVariableNames: ''  
package: 'Collections-Sequenceable'
```

Example Variable Class

Example

```
Object variableSubclass: #StrangePoint  
  instanceVariableNames: 'x y'  
  classVariableNames: ''  
  package: 'Collections-Sequenceable'
```

- Instances of a variable class have a variable size (indexed) zone after named variables
- Only one indexed instance variable per class (always the last one)

Roadmap

- How to define variable size objects?
- **How to instantiate and access variable size objects?**



Variable Class Instantiation and Index Access

- Create instances with `new:` `max`
- Access indexed values with `at:` and `at:put:`
- First element starts at index 1
- `size` returns the number of indexed instance variables

```
| a |  
a := Array new: 4.  
a at: 2 put: 'lulu'.  
a at: 1  
> nil  
a at: 2  
> 'lulu'
```


Classes with Different Shape

- Classes with named instance variables
 - Counter has an instance variable named count
- Classes with a variable/indexed instance variable
 - Array has only an indexed instance variable
- Classes with some named instance variables **and** one indexed instance variable



Refining the Variable Part

Indexed	Named	Definition Method	Examples
No	Yes	#subclass:...	Color
Yes	No	#variableSubclass:	AdditionalMethodState
Yes	No	#variableByteSubclass:	ByteString
Yes	No	#variableWordSubclass:	Bitmap

Some methods related to class types: isPointers, isBits, isBytes, isFixed, isVariable



Constraints

- Classes defined using `subclass`: can have any kind of subclasses
- Classes defined using `variableSubclass`: can only have `variableSubclass`: **subclasses**



What You Should Know

- How to define variable size objects?
 - define a `variableSubclass`: with an indexed instance variable
- How to instantiate variable size objects?
 - use `new`:
 - use `at:` and `at:put:` to access indexed values



A course by



and



in collaboration with



Inria 2020

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/>