Pharo 9 Status

Pharo Consortium General Assembly

consortium-adm@pharo.org

27 May 2021

Original Roadmap for Pharo 9

- Headless VM
- FFI improvements
- Spec 2: Morphic & GTK Backend
- Sista Bytecodes w/ Full Block Closures
- Memory Management Configuration
- Integration with Windows
- Tools migration (with improvements)
    - Debugger
    - Inspector
    - Playground
- Clean-ups / Bugfixes / Improvements

Pharo 9 is getting ready

Thanks for your Contributions!!!

- Only in Pharo image repository:
  - 250+ Forks in Github
  - 2124+ Pull Requests integrated
  - 140+ Different Contributors
- Much more in other projects
  - Spec, NewTools, Iceberg, Roassal
  - Pharo VM

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  - Pharo VM

Now in stabilisation!!!

Pharo VM Status

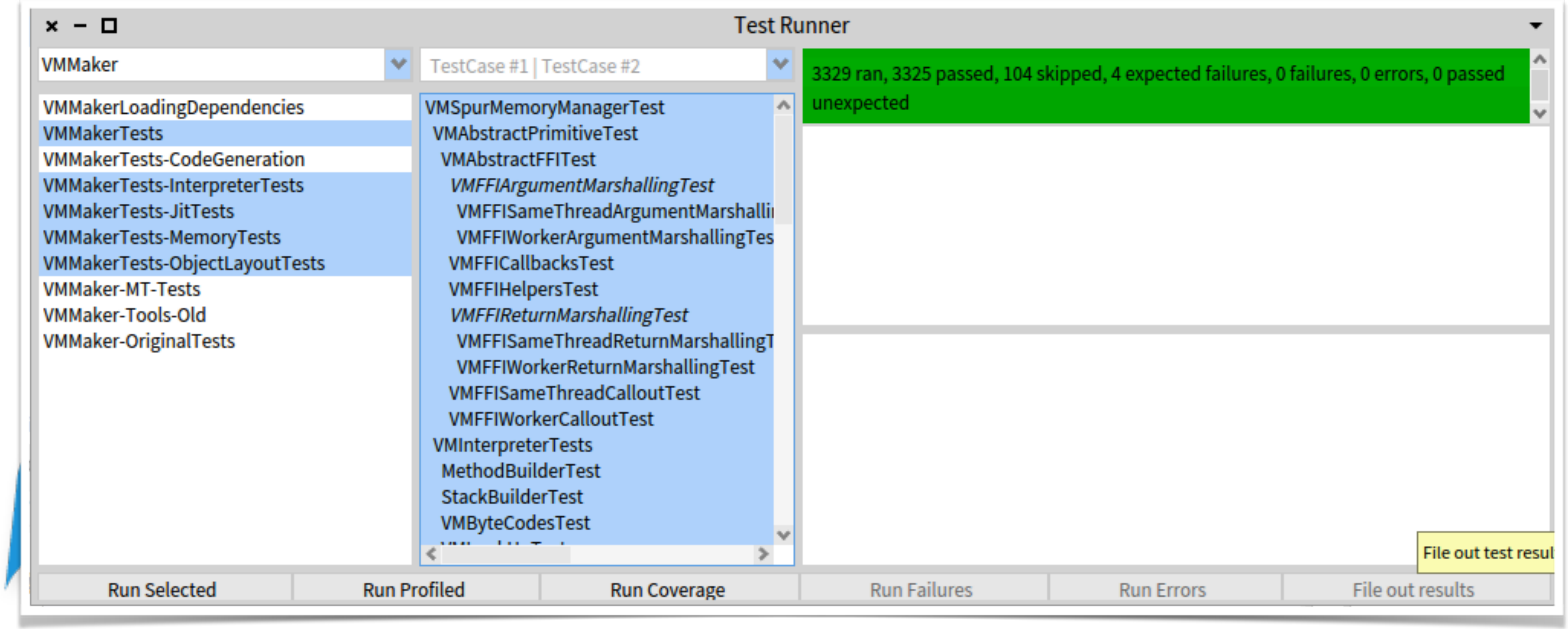
VM Status

General Improvements

- Event Management
  - Idle VM (less CPU consumption)
  - Passing event handling to the image (SDL/GTK/Other backends)
  - Improved Socket handling (removing remaining polling code)
- Foreign Function Interface
  - Threaded FFI backend for UFFI
  - Different running strategies (Worker / Same Thread / Main Thread)
  - Struct and Memory Access implemented as Machine Code primitives
  - Speed improvements in marshalling and callouts / callbacks.
  - Using LibFFI as backend (portability / robustness)
  - Variadic Function Support

Testing

VM Tests



VMMaker

VMMakerLoadingDependencies
VMMakerTests
VMMakerTests-CodeGeneration
VMMakerTests-InterpreterTests
VMMakerTests-JitTests
VMMakerTests-MemoryTests
VMMakerTests-ObjectLayoutTests
VMMaker-MT-Tests
VMMaker-Tools-Old
VMMaker-OriginalTests

TestCase #1 | TestCase #2

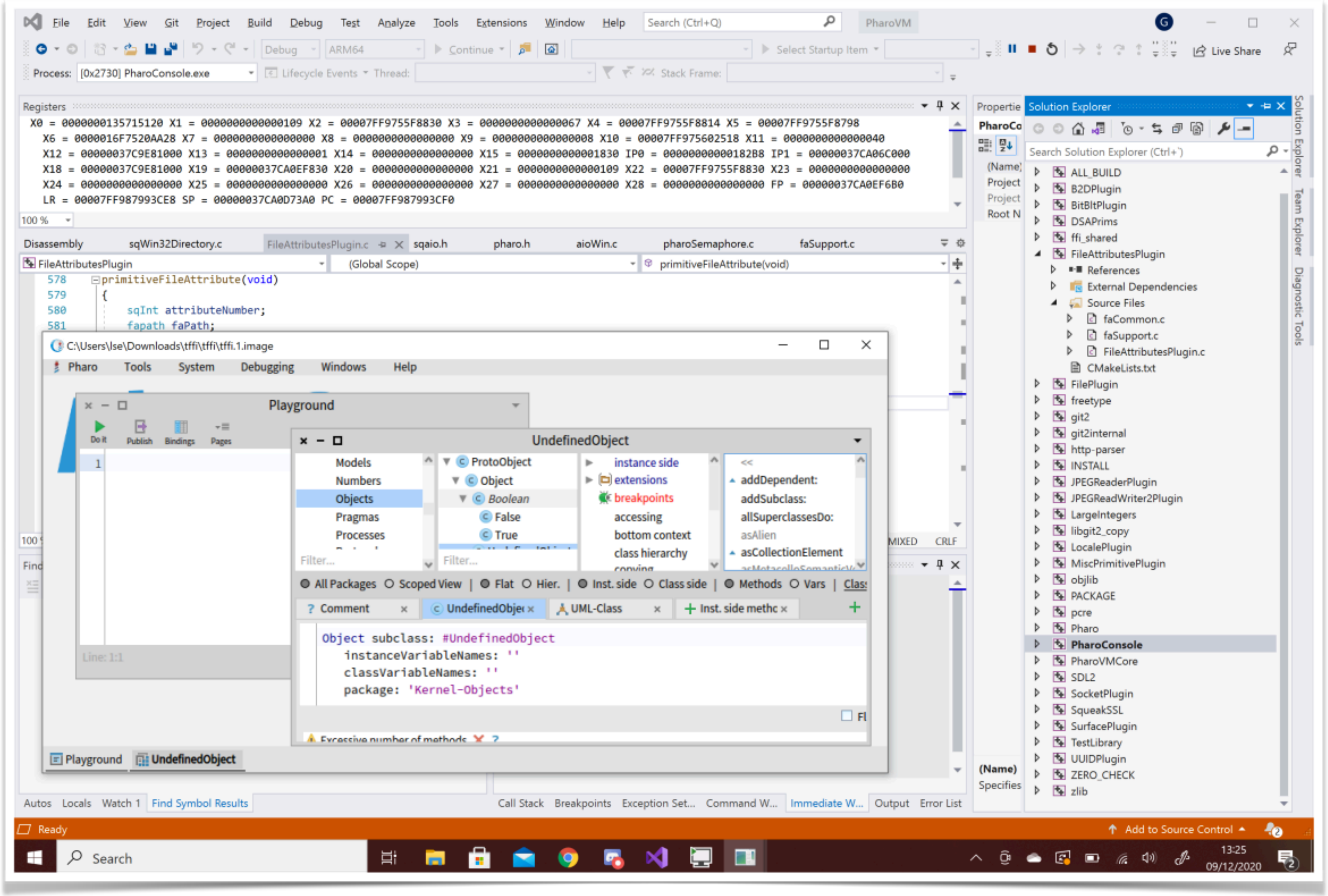
VMSpurMemoryManagerTest
VMAbstractPrimitiveTest
VMAbstractFFITest
VMFFIArgumentMarshallingTest
VMFFISameThreadArgumentMarshalli
VMFFIWorkerArgumentMarshallingTes
VMFFICallbacksTest
VMFFIHelpersTest
VMFFIReturnMarshallingTest
VMFFISameThreadReturnMarshallingT
VMFFIWorkerReturnMarshallingTest
VMFFISameThreadCalloutTest
VMFFIWorkerCalloutTest
VMInterpreterTests
MethodBuilderTest
StackBuilderTest
VMByteCodesTest

3329 ran, 3325 passed, 104 skipped, 4 expected failures, 0 failures, 0 errors, 0 passed unexpected

- FFI
- Interpreter
- JIT
- Memory Model
- Code Translation
- Machine Code generation
- …

Visual Studio Support

Building & Debugging



```
X0 = 0000000135715120 X1 = 0000000000000109 X2 = 00007FF9755F8830 X3 = 0000000000000067 X4 = 00007FF9755F8814 X5 = 00007FF9755F8798
  X6 = 0000016F7520AA28 X7 = 0000000000000000 X8 = 0000000000000000 X9 = 0000000000000008 X10 = 00007FF975602518 X11 = 0000000000000040
  X12 = 00000037C9E81000 X13 = 0000000000000001 X14 = 0000000000000000 X15 = 0000000000001830 IP0 = 00000000000182B8 IP1 = 00000037CA06C000
  X18 = 00000037C9E81000 X19 = 00000037CA0EF830 X20 = 0000000000000000 X21 = 0000000000000109 X22 = 00007FF9755F8830 X23 = 0000000000000000
  X24 = 0000000000000000 X25 = 0000000000000000 X26 = 0000000000000000 X27 = 0000000000000000 X28 = 0000000000000000 FP = 00000037CA0EF6B0
  LR = 00007FF987993CE8 SP = 00000037CA0D73A0 PC = 00007FF987993CF0
```

```
primitiveFileAttribute(void)
{
    sqInt attributeNumber;
    fapath faPath;
```

```
Object subclass: #UndefinedObject
   instanceVariableNames: ''
   classVariableNames: ''
   package: 'Kernel-Objects'
```

MSVC - No cygwin

Support for Debugging & Tooling

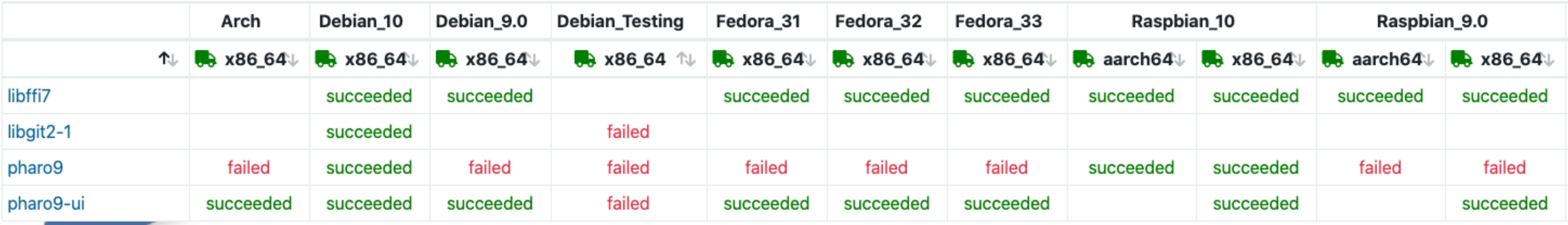
Build process improvements

Simple VM Building

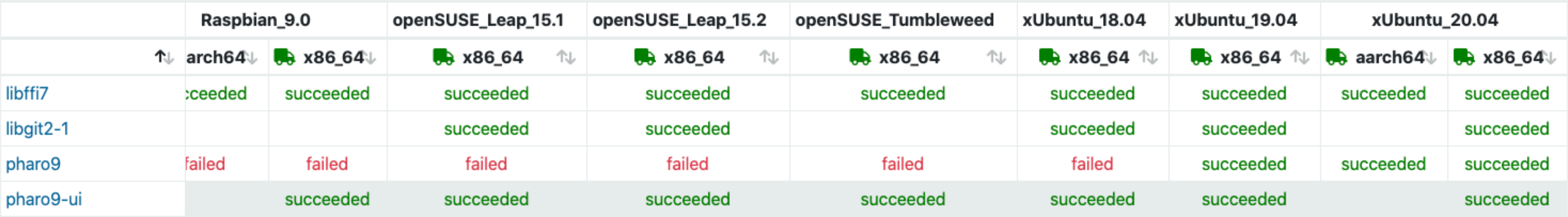
- Better integration with System libraries
- Better integration with IDEs (Visual Studio / Eclipse / Xcode)
- Better support for compiler toolchains (gcc / clang / MSVC)
- Selectable Features at build time

Open Build Service

Better Support for Linux Distributions



	Arch	Debian_10	Debian_9.0	Debian_Testing	Fedora_31	Fedora_32	Fedora_33	Raspbian_10		Raspbian_9.0	
	x86_64	x86_64	x86_64	x86_64	x86_64	x86_64	x86_64	aarch64	x86_64	aarch64	x86_64
libffi7		succeeded	succeeded		succeeded	succeeded	succeeded	succeeded	succeeded	succeeded	succeeded
libgit2-1		succeeded		failed							
pharo9	failed	succeeded	failed	failed	failed	failed	failed	succeeded	succeeded	failed	failed
pharo9-ui	succeeded	succeeded	succeeded	failed	succeeded	succeeded	succeeded		succeeded		succeeded



	Raspbian_9.0		openSUSE_Leap_15.1	openSUSE_Leap_15.2	openSUSE_Tumbleweed	xUbuntu_18.04	xUbuntu_19.04	xUbuntu_20.04	
	arch64	x86_64	x86_64	x86_64	x86_64	x86_64	x86_64	aarch64	x86_64
libffi7	:ceeded	succeeded	succeeded	succeeded	succeeded	succeeded	succeeded	succeeded	succeeded
libgit2-1			succeeded	succeeded		succeeded	succeeded		succeeded
pharo9	ailed	failed	failed	failed	failed	failed	succeeded	succeeded	succeeded
pharo9-ui		succeeded	succeeded	succeeded	succeeded	succeeded	succeeded		succeeded

Available:

- Arch / Manjaro
- Debian 9/10
- Raspbian 9/10
- Ubuntu 18.04-20.10

On going:

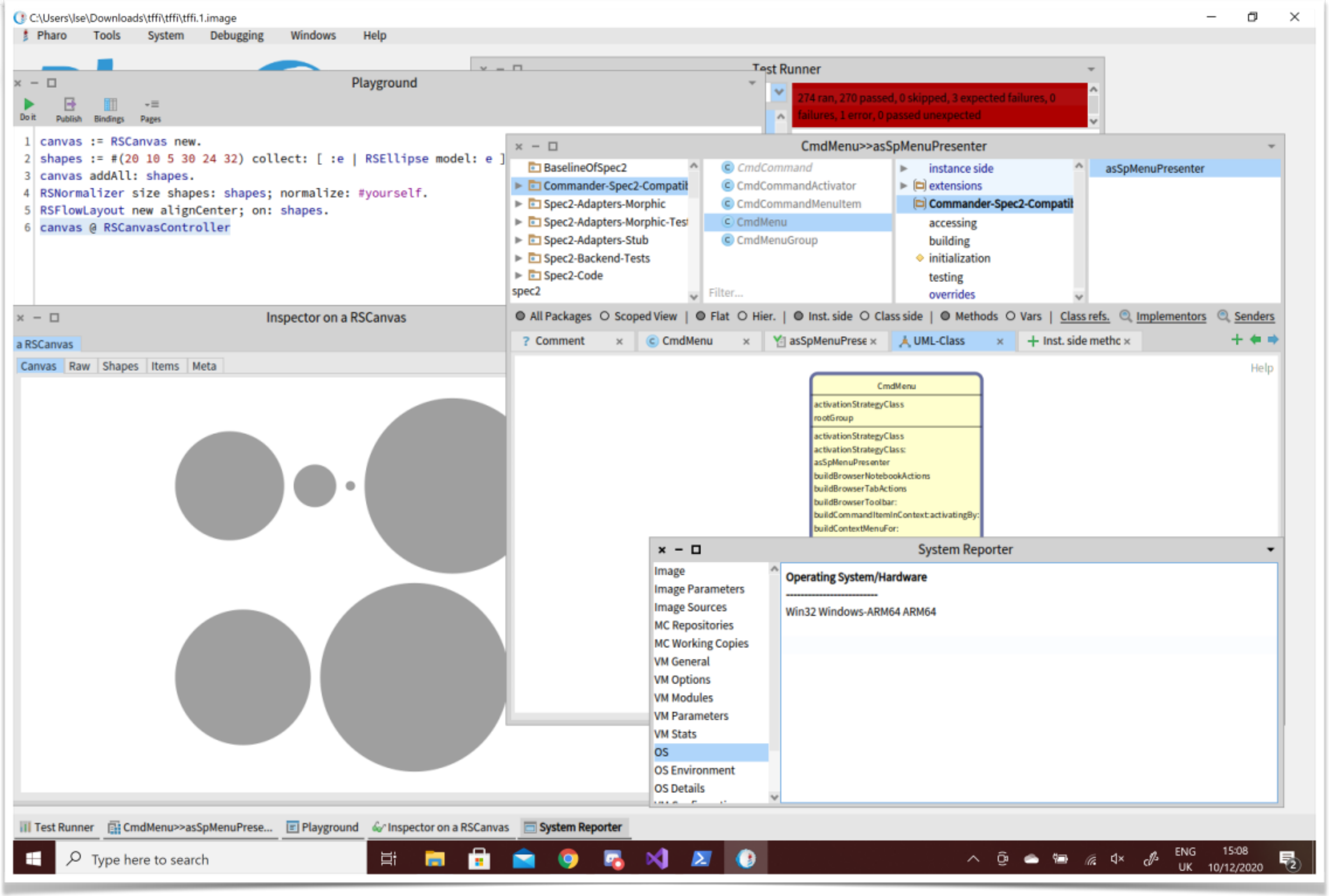
- Fedora 31/32/33
- RHEL 6/7
- openSuse Leap/Tumbleweed

Multiple Architectures

Supporting system packagings

Building using existing system libraries

Windows ARM



C:\Users\lse\Downloads\tffi\tffi\tffi.1.image

```
canvas := RSCanvas new.
shapes := #(20 10 5 30 24 32) collect: [ :e | RSEllipse model: e ]
canvas addAll: shapes.
RSNormalizer size shapes: shapes; normalize: #yourself.
RSFlowLayout new alignCenter; on: shapes.
canvas @ RSCanvasController
```

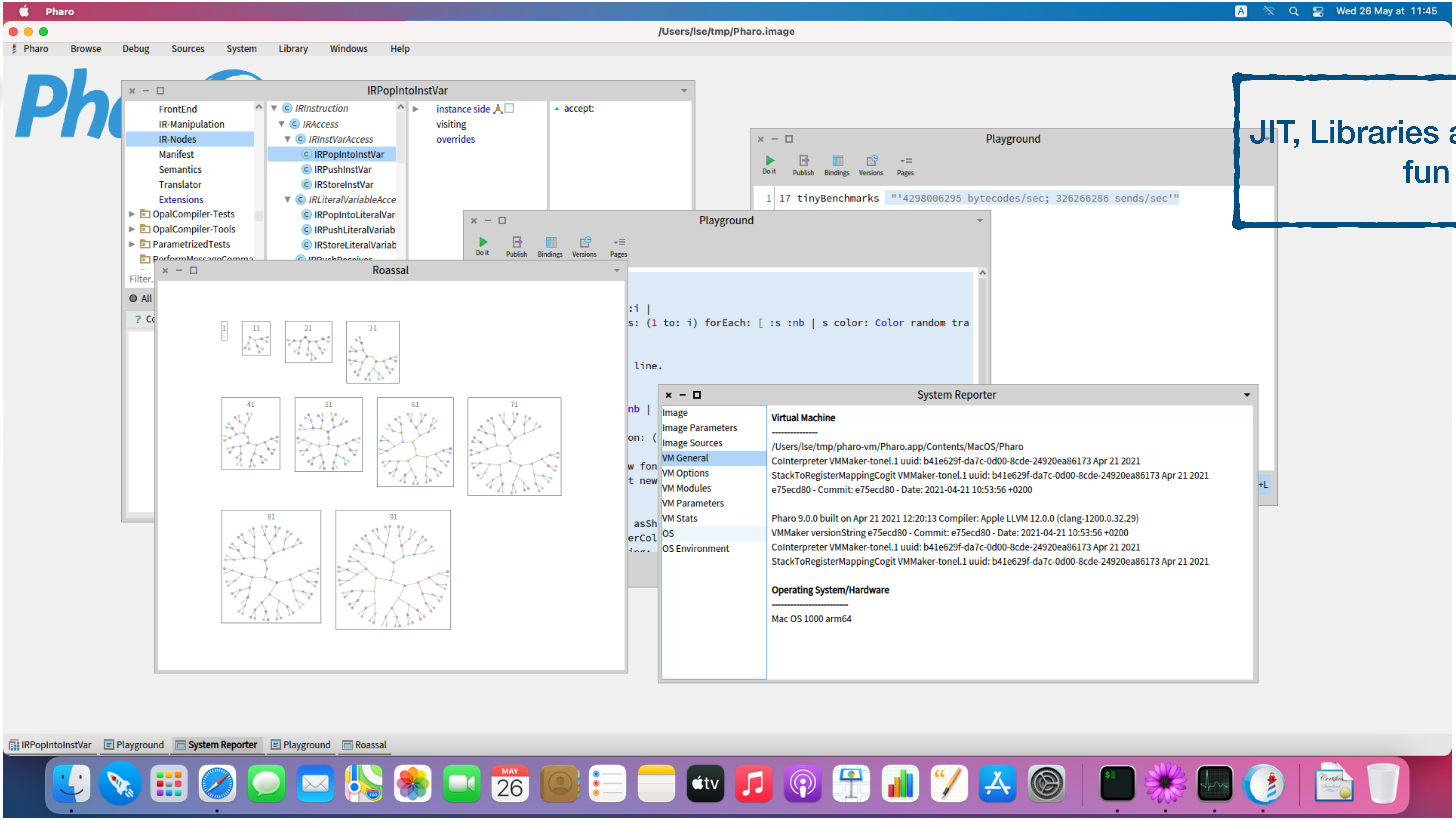
274 ran, 270 passed, 0 skipped, 3 expected failures, 0 failures, 1 error, 0 passed unexpected

```
Operating System/Hardware
---------------------
Win32 Windows-ARM64 ARM64
```

MSVC - No cygwin

Everything ready to use

MacOS Apple Silicon



```
17 tinyBenchmarks  "'4298006295 bytecodes/sec; 326266286 sends/sec'"
```

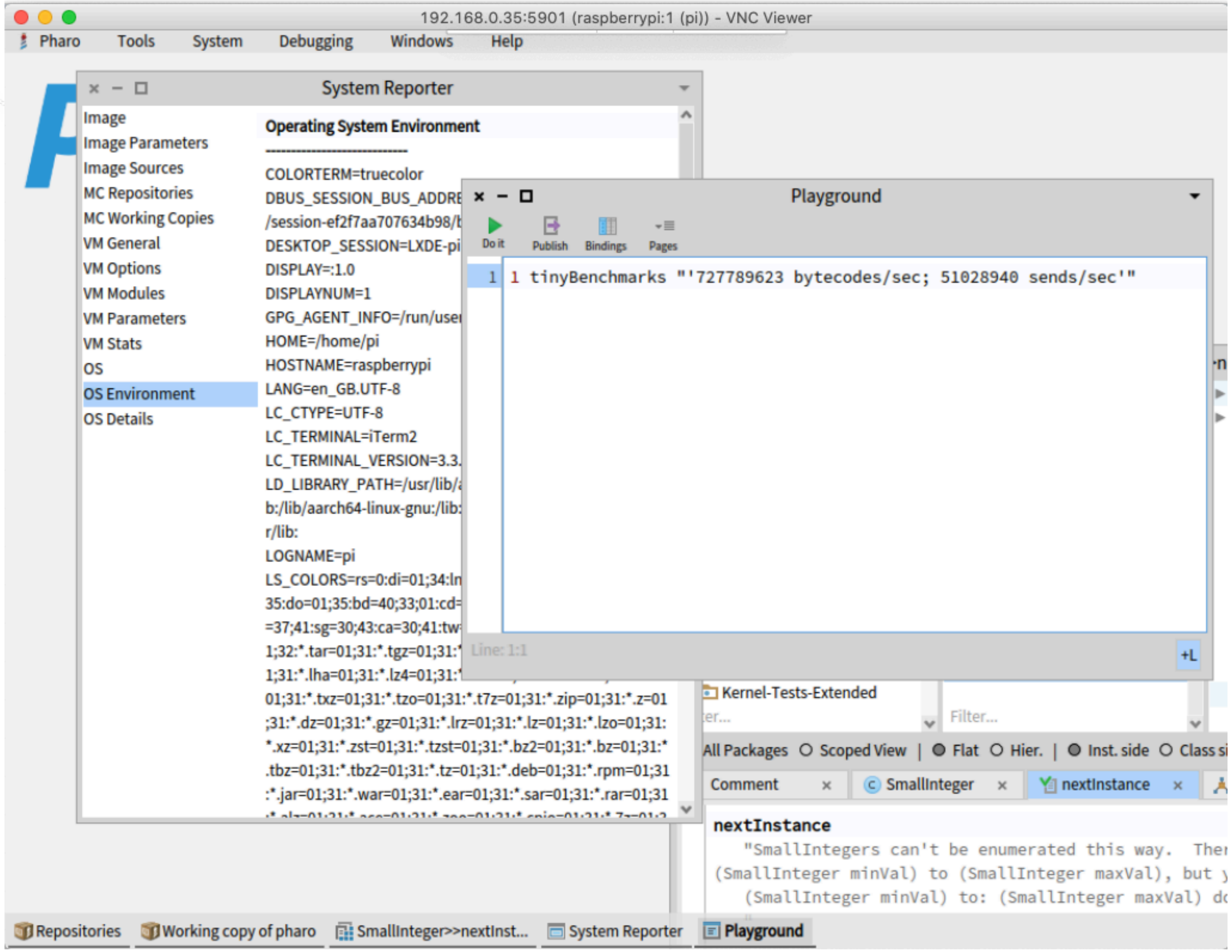
```
:i |
s: (1 to: i) forEach: [ :s :nb | s color: Color random tra

 line.

nb |

on: (

w fon
t new

 asSh
erCol
```

Image
Image Parameters
Image Sources
VM General
VM Options
VM Modules
VM Parameters
VM Stats
OS
OS Environment

```
Virtual Machine
---------------
/Users/lse/tmp/pharo-vm/Pharo.app/Contents/MacOS/Pharo
CoInterpreter VMMaker-tonel.1 uuid: b41e629f-da7c-0d00-8cde-24920ea86173 Apr 21 2021
StackToRegisterMappingCogit VMMaker-tonel.1 uuid: b41e629f-da7c-0d00-8cde-24920ea86173 Apr 21 2021
e75ecd80 - Commit: e75ecd80 - Date: 2021-04-21 10:53:56 +0200

Pharo 9.0.0 built on Apr 21 2021 12:20:13 Compiler: Apple LLVM 12.0.0 (clang-1200.0.32.29)
VMMaker versionString e75ecd80 - Commit: e75ecd80 - Date: 2021-04-21 10:53:56 +0200
CoInterpreter VMMaker-tonel.1 uuid: b41e629f-da7c-0d00-8cde-24920ea86173 Apr 21 2021
StackToRegisterMappingCogit VMMaker-tonel.1 uuid: b41e629f-da7c-0d00-8cde-24920ea86173 Apr 21 2021

Operating System/Hardware
-------------------------
Mac OS 1000 arm64
```

JIT, Libraries and all the fun

Raspbian



```
Operating System Environment
-----------------------------
COLORTERM=truecolor
DBUS_SESSION_BUS_ADDRE
/session-ef2f7aa707634b98/l
DESKTOP_SESSION=LXDE-pi
DISPLAY=:1.0
DISPLAYNUM=1
GPG_AGENT_INFO=/run/user
HOME=/home/pi
HOSTNAME=raspberrypi
LANG=en_GB.UTF-8
LC_CTYPE=UTF-8
LC_TERMINAL=iTerm2
LC_TERMINAL_VERSION=3.3.
LD_LIBRARY_PATH=/usr/lib/
b:/lib/aarch64-linux-gnu:/lib:
r/lib:
LOGNAME=pi
LS_COLORS=rs=0:di=01;34:ln
35:do=01;35:bd=40;33;01:cd=
=37;41:sg=30;43:ca=30;41:tw
1;32:*.tar=01;31:*.tgz=01;31:*
1;31:*.lha=01;31:*.lz4=01;31:*
01;31:*.txz=01;31:*.tzo=01;31:*.t7z=01;31:*.zip=01;31:*.z=01
;31:*.dz=01;31:*.gz=01;31:*.lrz=01;31:*.lz=01;31:*.lzo=01;31:
*.xz=01;31:*.zst=01;31:*.tzst=01;31:*.bz2=01;31:*.bz=01;31:*
.tbz=01;31:*.tbz2=01;31:*.tz=01;31:*.deb=01;31:*.rpm=01;31
:*.jar=01;31:*.war=01;31:*.ear=01;31:*.sar=01;31:*.rar=01;31
```

```
1 tinyBenchmarks "'727789623 bytecodes/sec; 51028940 sends/sec'"
```

```
nextInstance
   "SmallIntegers can't be enumerated this way.  Ther
(SmallInteger minVal) to (SmallInteger maxVal), but y
   (SmallInteger minVal) to: (SmallInteger maxVal) dc
```

VM Status

Supported Platforms

	Linux	Windows	Mac OS
x86_64	Launcher / ZeroConf / OBS	Launcher / ZeroConf	Launcher / ZeroConf
ARM 32bits	ZeroConf / OBS	-	-
ARM 64bits	ZeroConf / OBS	ZeroConf	ZeroConf

Soon to be available in the launcher in missing platforms!

Spec 2 & New Tools

Spec 2

Main Elements

- Core & Basic Layouts
- Basic Presenters
- Application Support
- Styles / Themes
- Code Presenter

Spec 2

Extended Features

- Different Layouts and Composition
- Extended support for Dynamic Layouts
- New Dialog Building
- Transmissions
- Direct Support for Roassal & Cairo
- Multiple Backends (GTK / Morphic)
- Spec Tests and Testing Support

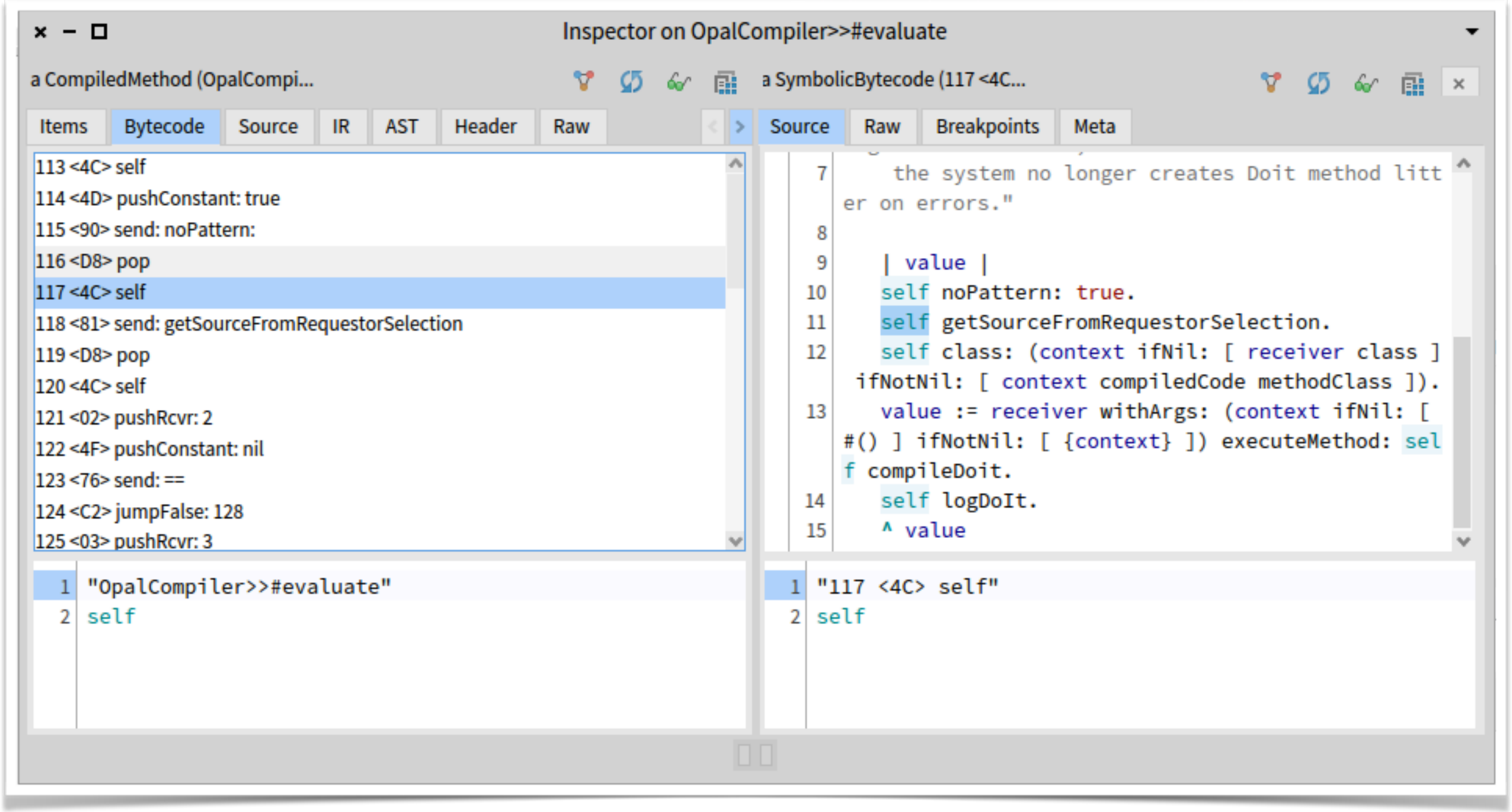
Spec 2

Documentation

- Layouts
- Widgets
- Tutorial (Ongoing)
- Book (Ongoing / Delayed)

New Tools in Spec2

Inspector


Inspector on OpalCompiler>>#evaluate
a CompiledMethod (OpalCompi...
Items
Bytecode
Source
IR
AST
Header
Raw
a SymbolicBytecode (117 <4C...
Source
Raw
Breakpoints
Meta

```
113 <4C> self
114 <4D> pushConstant: true
115 <90> send: noPattern:
116 <D8> pop
117 <4C> self
118 <81> send: getSourceFromRequestorSelection
119 <D8> pop
120 <4C> self
121 <02> pushRcvr: 2
122 <4F> pushConstant: nil
123 <76> send: ==
124 <C2> jumpFalse: 128
125 <03> pushRcvr: 3
```

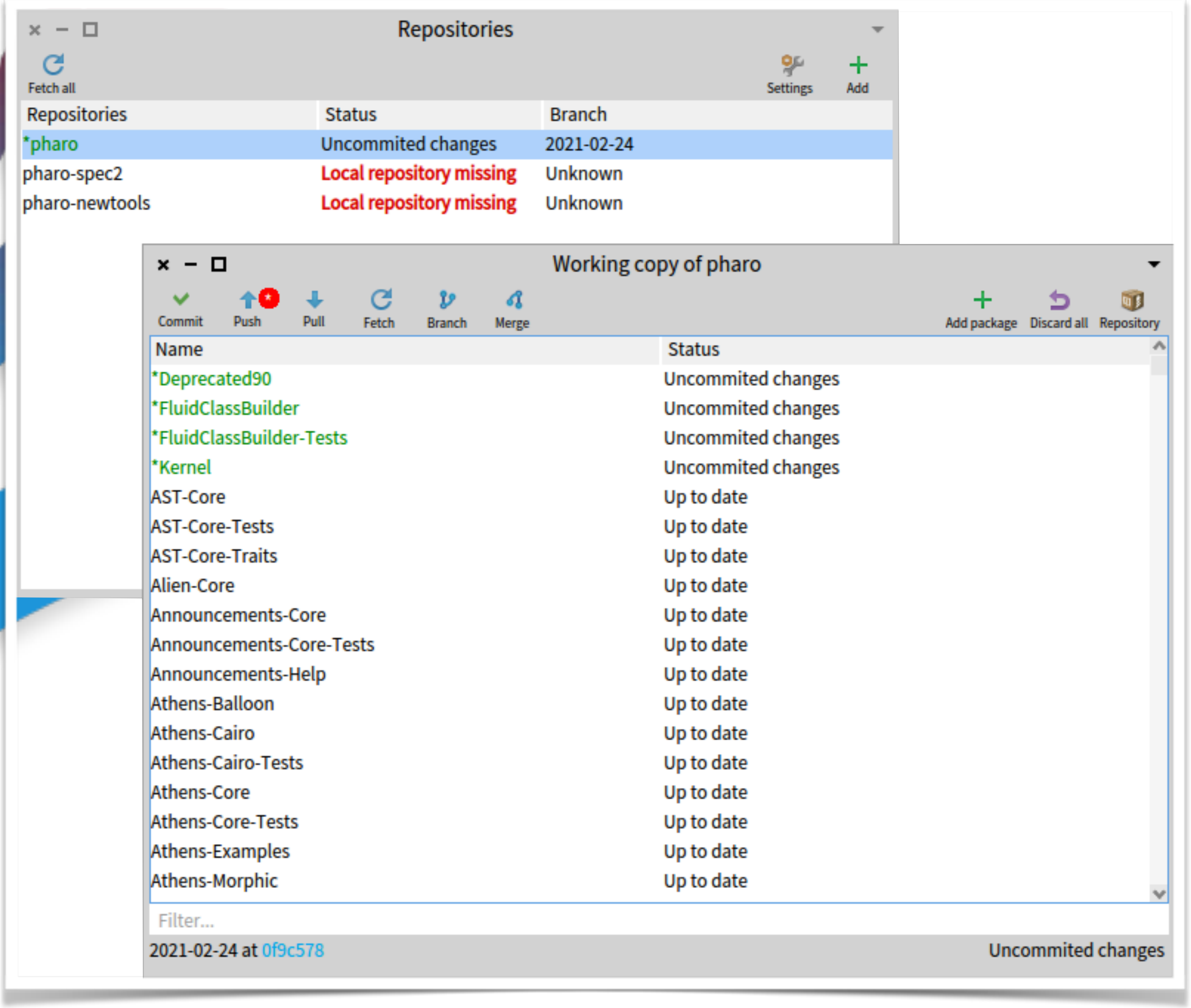
```
    the system no longer creates Doit method litter on errors."

  | value |
  self noPattern: true.
  self getSourceFromRequestorSelection.
  self class: (context ifNil: [ receiver class ] ifNotNil: [ context compiledCode methodClass ]).
  value := receiver withArgs: (context ifNil: [ #() ] ifNotNil: [ {context} ]) executeMethod: self compileDoit.
  self logDoIt.
  ^ value
```

```
"OpalCompiler>>#evaluate"
self
```

```
"117 <4C> self"
self
```

New Tools in Spec2

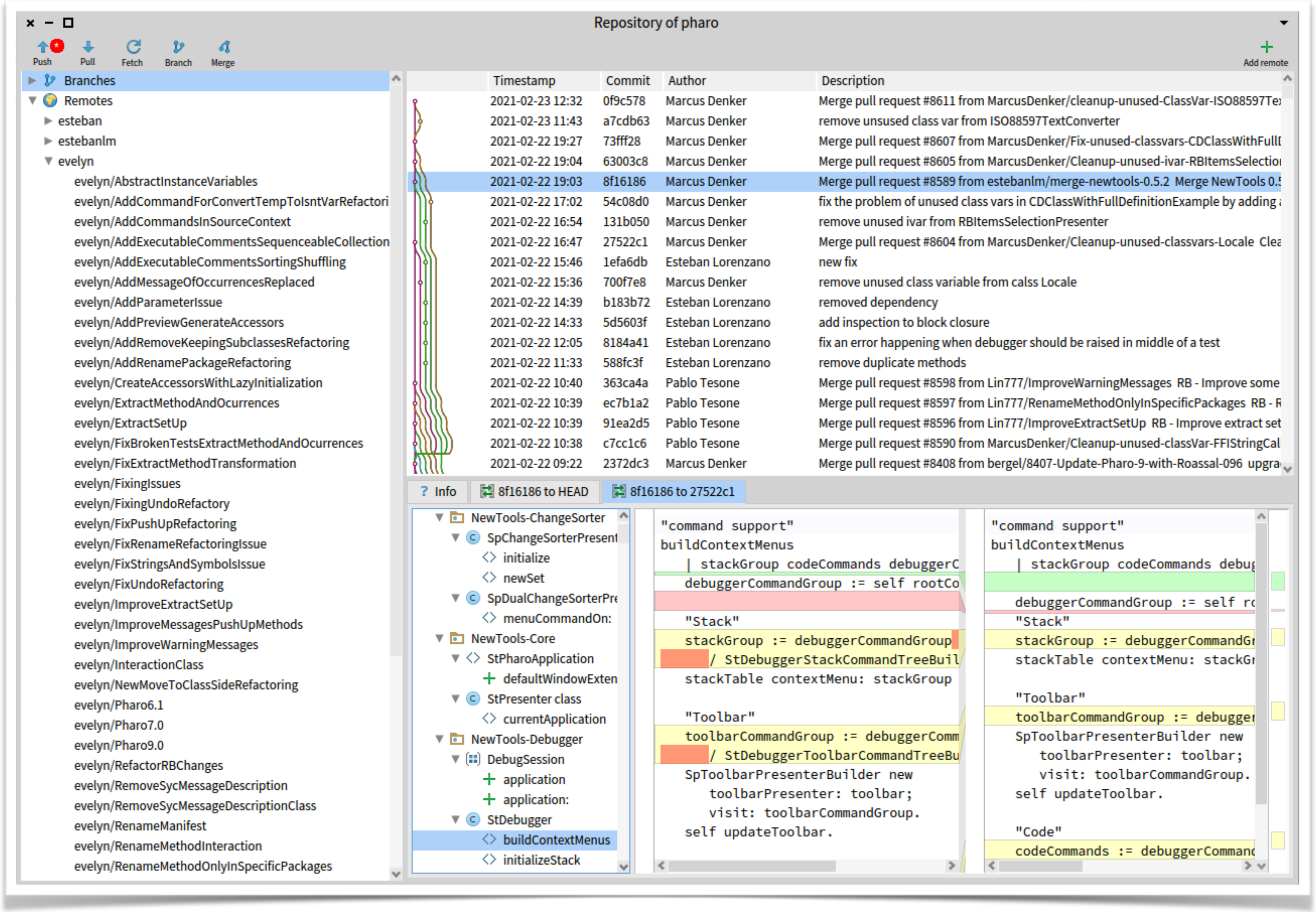
Iceberg



Repositories	Status	Branch
*pharo	Uncommited changes	2021-02-24
pharo-spec2	Local repository missing	Unknown
pharo-newtools	Local repository missing	Unknown

Name	Status
*Deprecated90	Uncommited changes
*FluidClassBuilder	Uncommited changes
*FluidClassBuilder-Tests	Uncommited changes
*Kernel	Uncommited changes
AST-Core	Up to date
AST-Core-Tests	Up to date
AST-Core-Traits	Up to date
Alien-Core	Up to date
Announcements-Core	Up to date
Announcements-Core-Tests	Up to date
Announcements-Help	Up to date
Athens-Balloon	Up to date
Athens-Cairo	Up to date
Athens-Cairo-Tests	Up to date
Athens-Core	Up to date
Athens-Core-Tests	Up to date
Athens-Examples	Up to date
Athens-Morphic	Up to date

2021-02-24 at 0f9c578 Uncommited changes



- Branches
- Remotes
  - esteban
  - estebanlm
  - evelyn
    - evelyn/AbstractInstanceVariables
    - evelyn/AddCommandForConvertTempToInstVarRefactori
    - evelyn/AddCommandsInSourceContext
    - evelyn/AddExecutableCommentsSequenceableCollection
    - evelyn/AddExecutableCommentsSortingShuffling
    - evelyn/AddMessageOfOccurrencesReplaced
    - evelyn/AddParameterIssue
    - evelyn/AddPreviewGenerateAccessors
    - evelyn/AddRemoveKeepingSubclassesRefactoring
    - evelyn/AddRenamePackageRefactoring
    - evelyn/CreateAccessorsWithLazyInitialization
    - evelyn/ExtractMethodAndOcurrences
    - evelyn/ExtractSetUp
    - evelyn/FixBrokenTestsExtractMethodAndOcurrences
    - evelyn/FixExtractMethodTransformation
    - evelyn/FixingIssues
    - evelyn/FixingUndoRefactory
    - evelyn/FixPushUpRefactoring
    - evelyn/FixRenameRefactoringIssue
    - evelyn/FixStringsAndSymbolsIssue
    - evelyn/FixUndoRefactoring
    - evelyn/ImproveExtractSetUp
    - evelyn/ImproveMessagesPushUpMethods
    - evelyn/ImproveWarningMessages
    - evelyn/InteractionClass
    - evelyn/NewMoveToClassSideRefactoring
    - evelyn/Pharo6.1
    - evelyn/Pharo7.0
    - evelyn/Pharo9.0
    - evelyn/RefactorRBChanges
    - evelyn/RemoveSycMessageDescription
    - evelyn/RemoveSycMessageDescriptionClass
    - evelyn/RenameManifest
    - evelyn/RenameMethodInteraction
    - evelyn/RenameMethodOnlyInSpecificPackages

Timestamp	Commit	Author	Description
2021-02-23 12:32	0f9c578	Marcus Denker	Merge pull request #8611 from MarcusDenker/cleanup-unused-ClassVar-ISO88597Tex
2021-02-23 11:43	a7cdb63	Marcus Denker	remove unsused class var from ISO88597TextConverter
2021-02-22 19:27	73fff28	Marcus Denker	Merge pull request #8607 from MarcusDenker/Fix-unused-classvars-CDClassWithFullD
2021-02-22 19:04	63003c8	Marcus Denker	Merge pull request #8605 from MarcusDenker/Cleanup-unused-ivar-RBItemsSelectio
2021-02-22 19:03	8f16186	Marcus Denker	Merge pull request #8589 from estebanlm/merge-newtools-0.5.2 Merge NewTools 0.5
2021-02-22 17:02	54c08d0	Marcus Denker	fix the problem of unused class vars in CDClassWithFullDefinitionExample by adding
2021-02-22 16:54	131b050	Marcus Denker	remove unused ivar from RBItemsSelectionPresenter
2021-02-22 16:47	27522c1	Marcus Denker	Merge pull request #8604 from MarcusDenker/Cleanup-unused-classvars-Locale Clea
2021-02-22 15:46	1efa6db	Esteban Lorenzano	new fix
2021-02-22 15:36	700f7e8	Marcus Denker	remove unused class variable from calss Locale
2021-02-22 14:39	b183b72	Esteban Lorenzano	removed dependency
2021-02-22 14:33	5d5603f	Esteban Lorenzano	add inspection to block closure
2021-02-22 12:05	8184a41	Esteban Lorenzano	fix an error happening when debugger should be raised in middle of a test
2021-02-22 11:33	588fc3f	Esteban Lorenzano	remove duplicate methods
2021-02-22 10:40	363ca4a	Pablo Tesone	Merge pull request #8598 from Lin777/ImproveWarningMessages RB - Improve some
2021-02-22 10:39	ec7b1a2	Pablo Tesone	Merge pull request #8597 from Lin777/RenameMethodOnlyInSpecificPackages RB - R
2021-02-22 10:39	91ea2d5	Pablo Tesone	Merge pull request #8596 from Lin777/ImproveExtractSetUp RB - Improve extract set
2021-02-22 10:38	c7cc1c6	Pablo Tesone	Merge pull request #8590 from MarcusDenker/Cleanup-unused-classVar-FFIStringCal
2021-02-22 09:22	2372dc3	Marcus Denker	Merge pull request #8408 from bergel/8407-Update-Pharo-9-with-Roassal-096 upgra

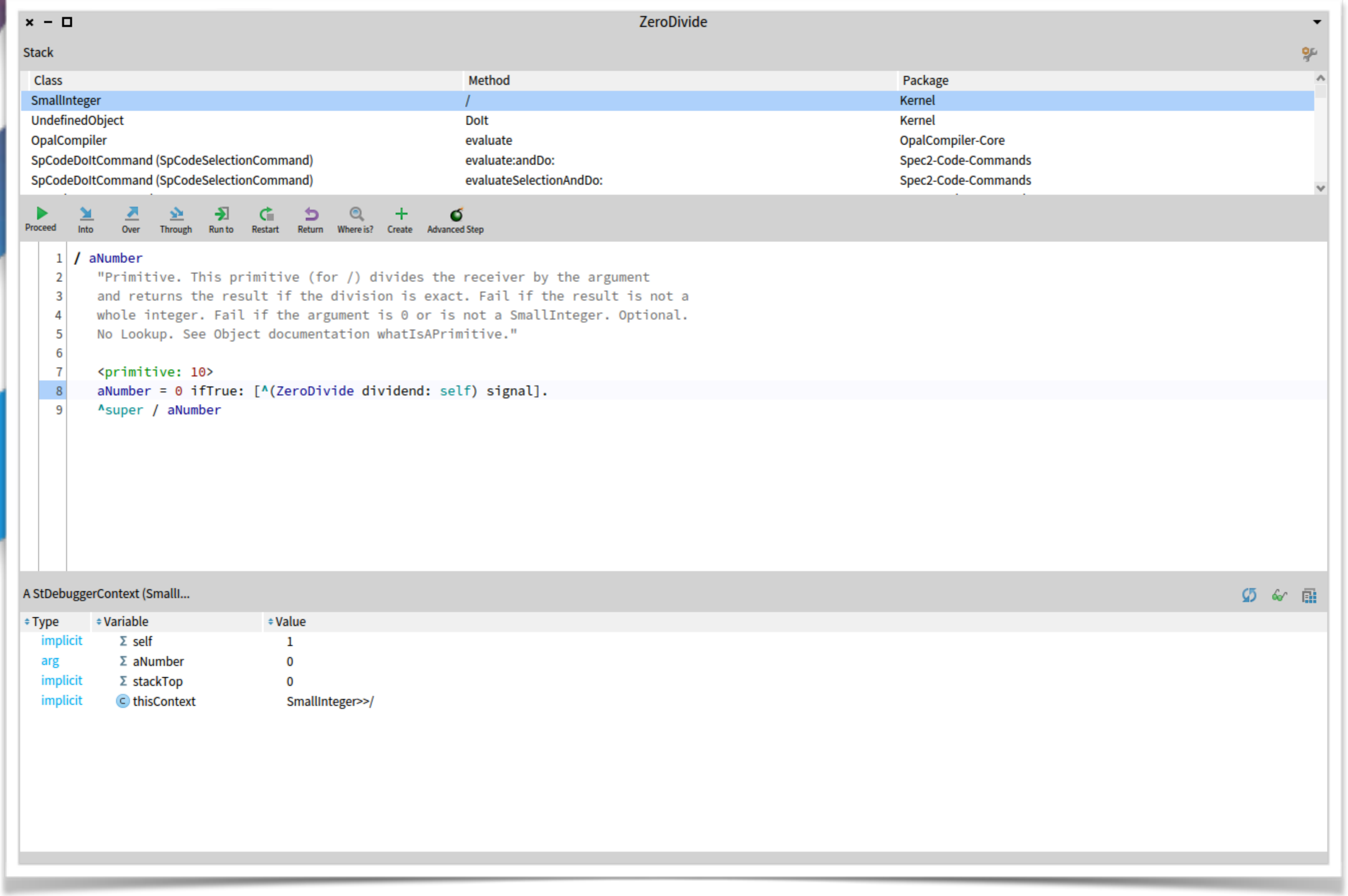
- NewTools-ChangeSorter
  - SpChangeSorterPresent
    - initialize
    - newSet
  - SpDualChangeSorterPre
    - menuCommandOn:
- NewTools-Core
  - StPharoApplication
    - defaultWindowExten
  - StPresenter class
    - currentApplication
- NewTools-Debugger
  - DebugSession
    - application
    - application:
  - StDebugger
    - buildContextMenus
    - initializeStack

```
"command support"
buildContextMenus
   | stackGroup codeCommands debuggerC
   debuggerCommandGroup := self rootCo

   "Stack"
   stackGroup := debuggerCommandGroup
         / StDebuggerStackCommandTreeBuil
   stackTable contextMenu: stackGroup

   "Toolbar"
   toolbarCommandGroup := debuggerComm
         / StDebuggerToolbarCommandTreeBu
   SpToolbarPresenterBuilder new
      toolbarPresenter: toolbar;
      visit: toolbarCommandGroup.
   self updateToolbar.
```

```
"command support"
buildContextMenus
   | stackGroup codeCommands debug

   debuggerCommandGroup := self ro
   "Stack"
   stackGroup := debuggerCommandGr
   stackTable contextMenu: stackGr

   "Toolbar"
   toolbarCommandGroup := debugger
   SpToolbarPresenterBuilder new
      toolbarPresenter: toolbar;
      visit: toolbarCommandGroup.
   self updateToolbar.

   "Code"
   codeCommands := debuggerCommanc
```

New Tools in Spec2

Debugger



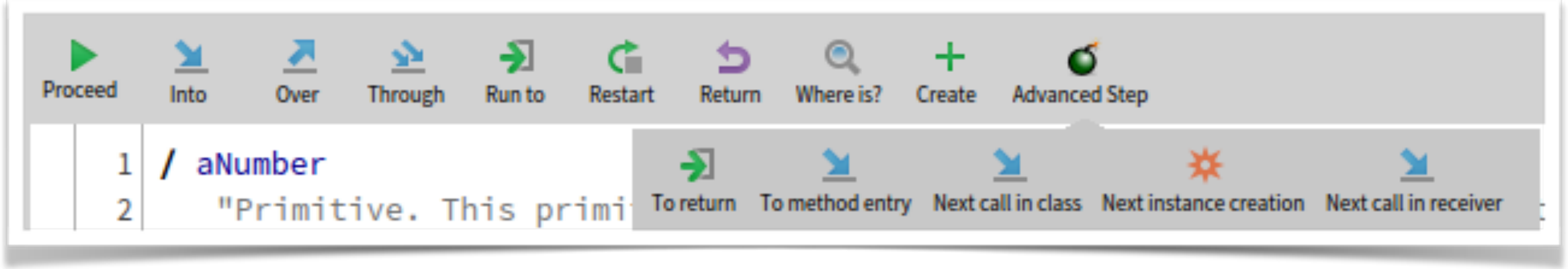
Class	Method	Package
SmallInteger	/	Kernel
UndefinedObject	DoIt	Kernel
OpalCompiler	evaluate	OpalCompiler-Core
SpCodeDoItCommand (SpCodeSelectionCommand)	evaluate:andDo:	Spec2-Code-Commands
SpCodeDoItCommand (SpCodeSelectionCommand)	evaluateSelectionAndDo:	Spec2-Code-Commands

```
/ aNumber
  "Primitive. This primitive (for /) divides the receiver by the argument
  and returns the result if the division is exact. Fail if the result is not a
  whole integer. Fail if the argument is 0 or is not a SmallInteger. Optional.
  No Lookup. See Object documentation whatIsAPrimitive."

  <primitive: 10>
  aNumber = 0 ifTrue: [^(ZeroDivide dividend: self) signal].
  ^super / aNumber
```

A StDebuggerContext (SmallI...

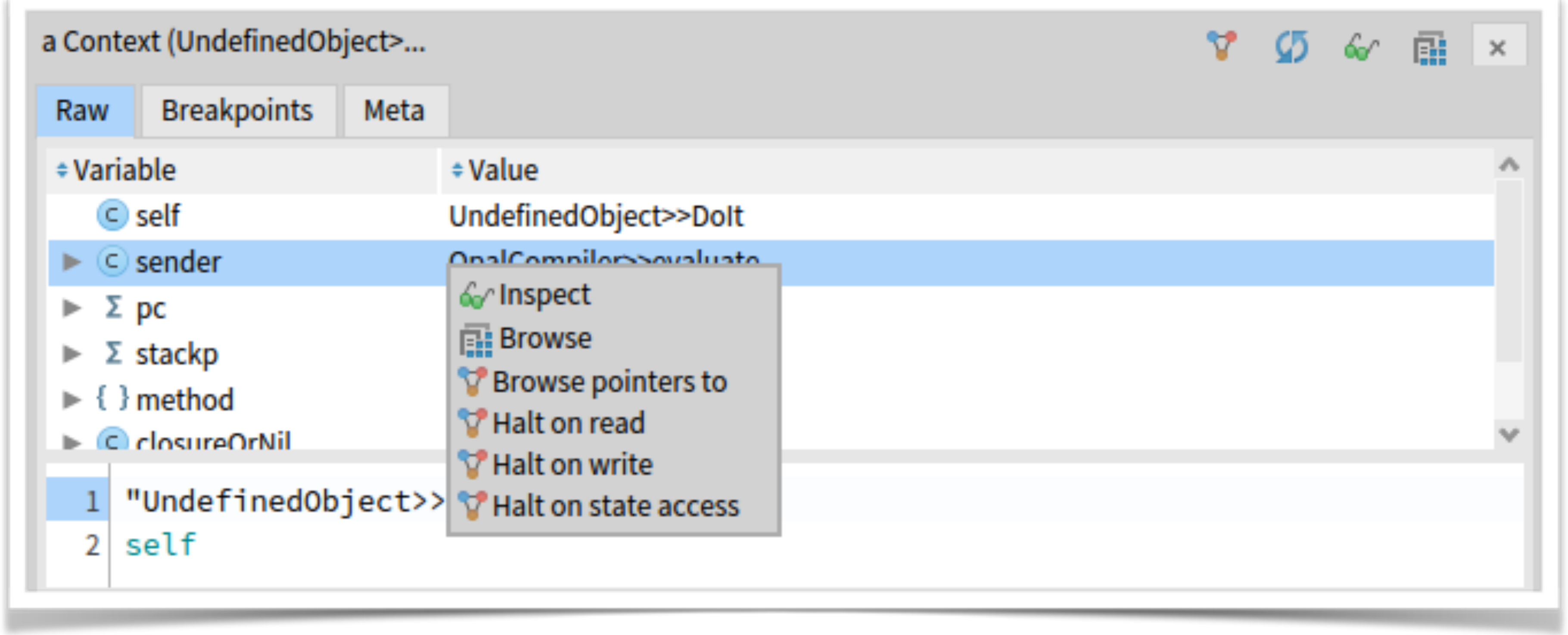
Type	Variable	Value
implicit	Σ self	1
arg	Σ aNumber	0
implicit	Σ stackTop	0
implicit	thisContext	SmallInteger>>/

Advanced Stepping Operations



```
/ aNumber
  "Primitive. This primi
```

Object-Centric Halts



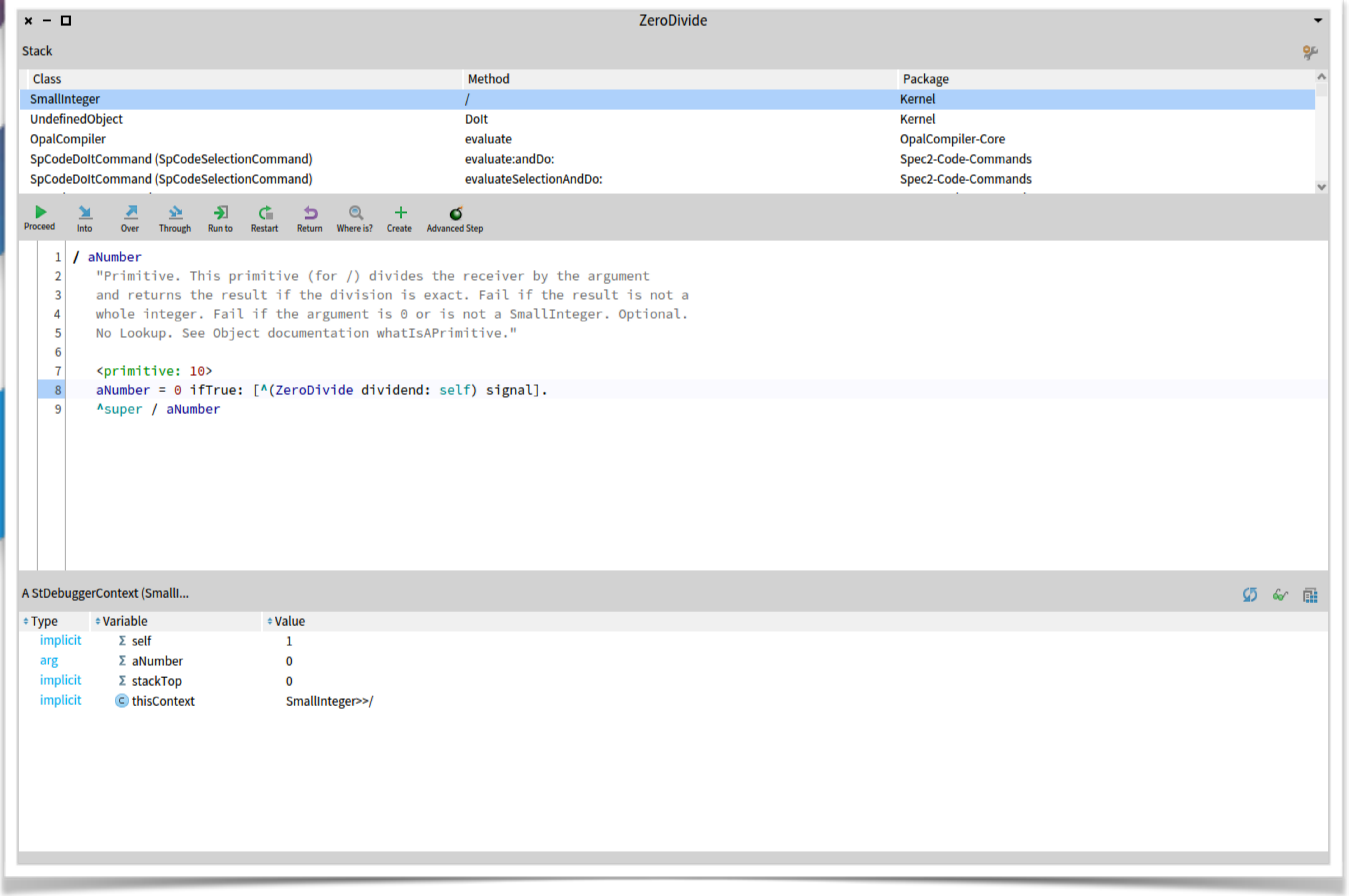
a Context (UndefinedObject>...

Variable	Value
self	UndefinedObject>>DoIt
sender	OpalCompiler>>evaluate
Σ pc	
Σ stackp	
{ } method	
closureOrNil	

```
"UndefinedObject>>
self
```

New Tools in Spec2

Debugger



Class	Method	Package
SmallInteger	/	Kernel
UndefinedObject	DoIt	Kernel
OpalCompiler	evaluate	OpalCompiler-Core
SpCodeDoItCommand (SpCodeSelectionCommand)	evaluate:andDo:	Spec2-Code-Commands
SpCodeDoItCommand (SpCodeSelectionCommand)	evaluateSelectionAndDo:	Spec2-Code-Commands

```
/ aNumber
  "Primitive. This primitive (for /) divides the receiver by the argument
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  ^super / aNumber
```

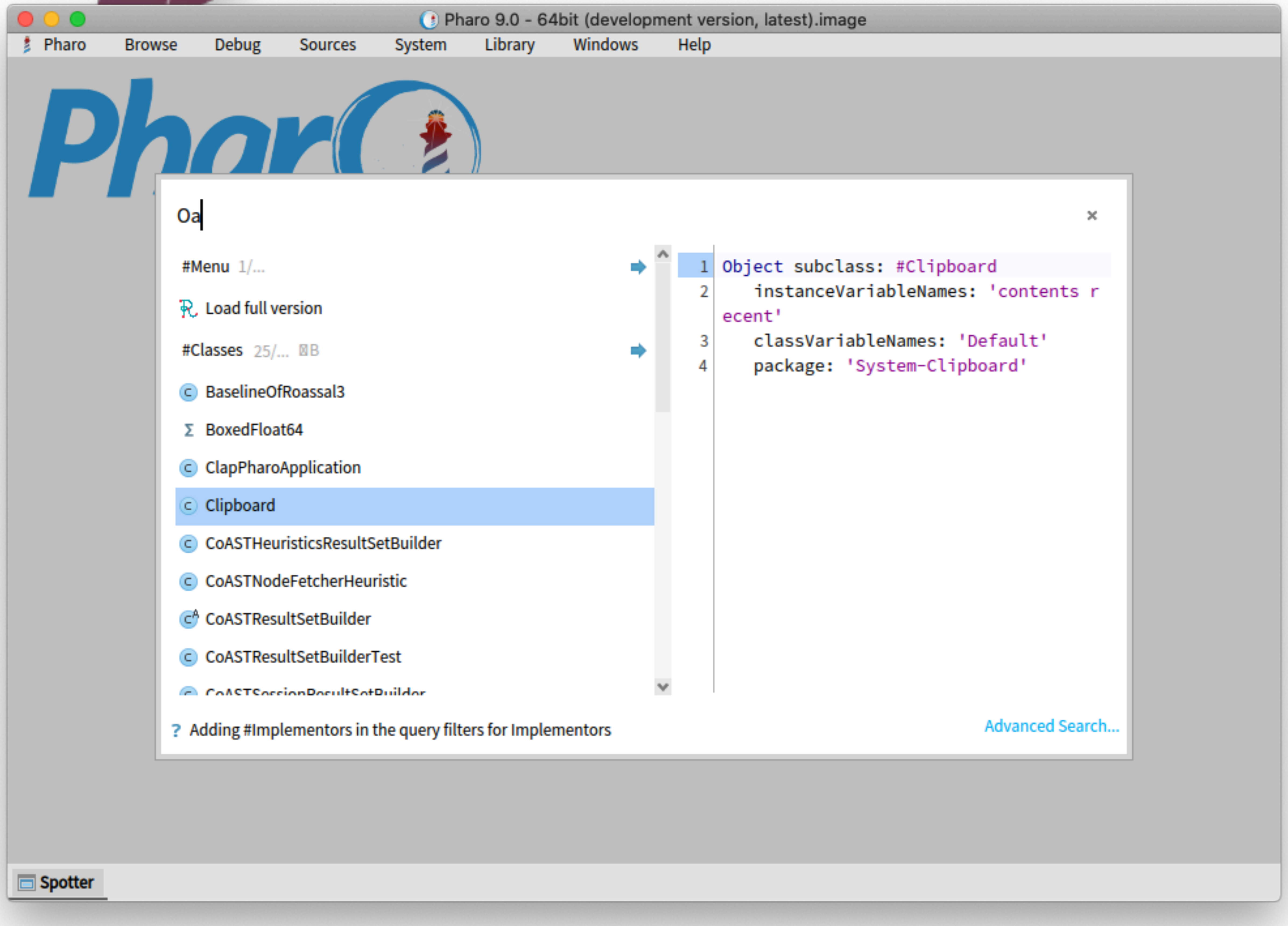
Type	Variable	Value
implicit	Σ self	1
arg	Σ aNumber	0
implicit	Σ stackTop	0
implicit	Ⓒ thisContext	SmallInteger>>/

- The New debugger supports
  - Unique object centric debugging features
  - A plugin architecture / scripting
  - A revamped emergency debugger
  - Architecture to plug different debuggers

Not only a pretty face…

New Tools in Spec2

Spotter



Oa

#Menu 1/...

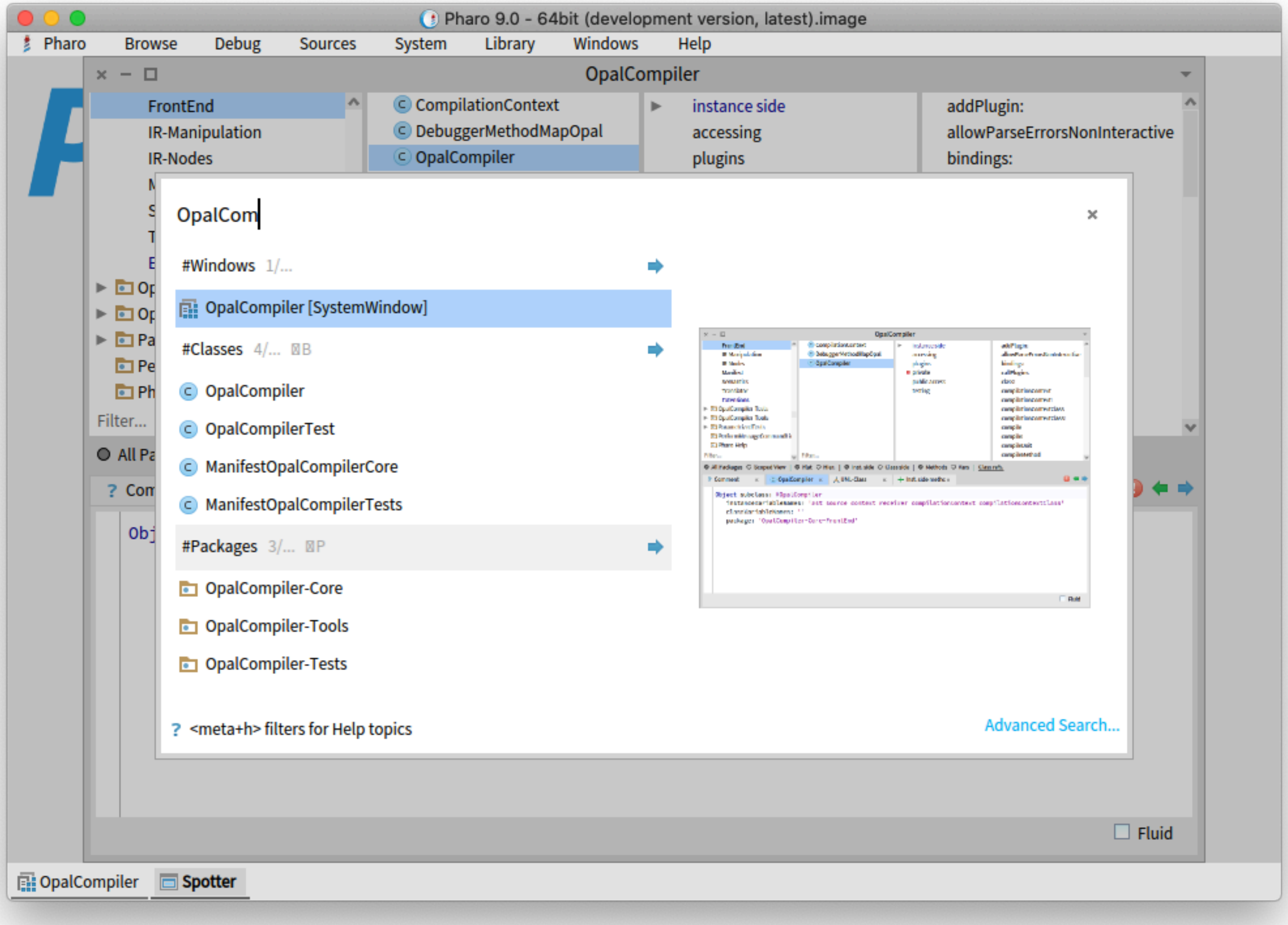
Load full version

#Classes 25/... ⌘B

- BaselineOfRoassal3
- BoxedFloat64
- ClapPharoApplication
- Clipboard
- CoASTHeuristicsResultSetBuilder
- CoASTNodeFetcherHeuristic
- CoASTResultSetBuilder
- CoASTResultSetBuilderTest

```
Object subclass: #Clipboard
	instanceVariableNames: 'contents recent'
	classVariableNames: 'Default'
	package: 'System-Clipboard'
```

? Adding #Implementors in the query filters for Implementors



OpalCom

#Windows 1/...

OpalCompiler [SystemWindow]

#Classes 4/... ⌘B

- OpalCompiler
- OpalCompilerTest
- ManifestOpalCompilerCore
- ManifestOpalCompilerTests

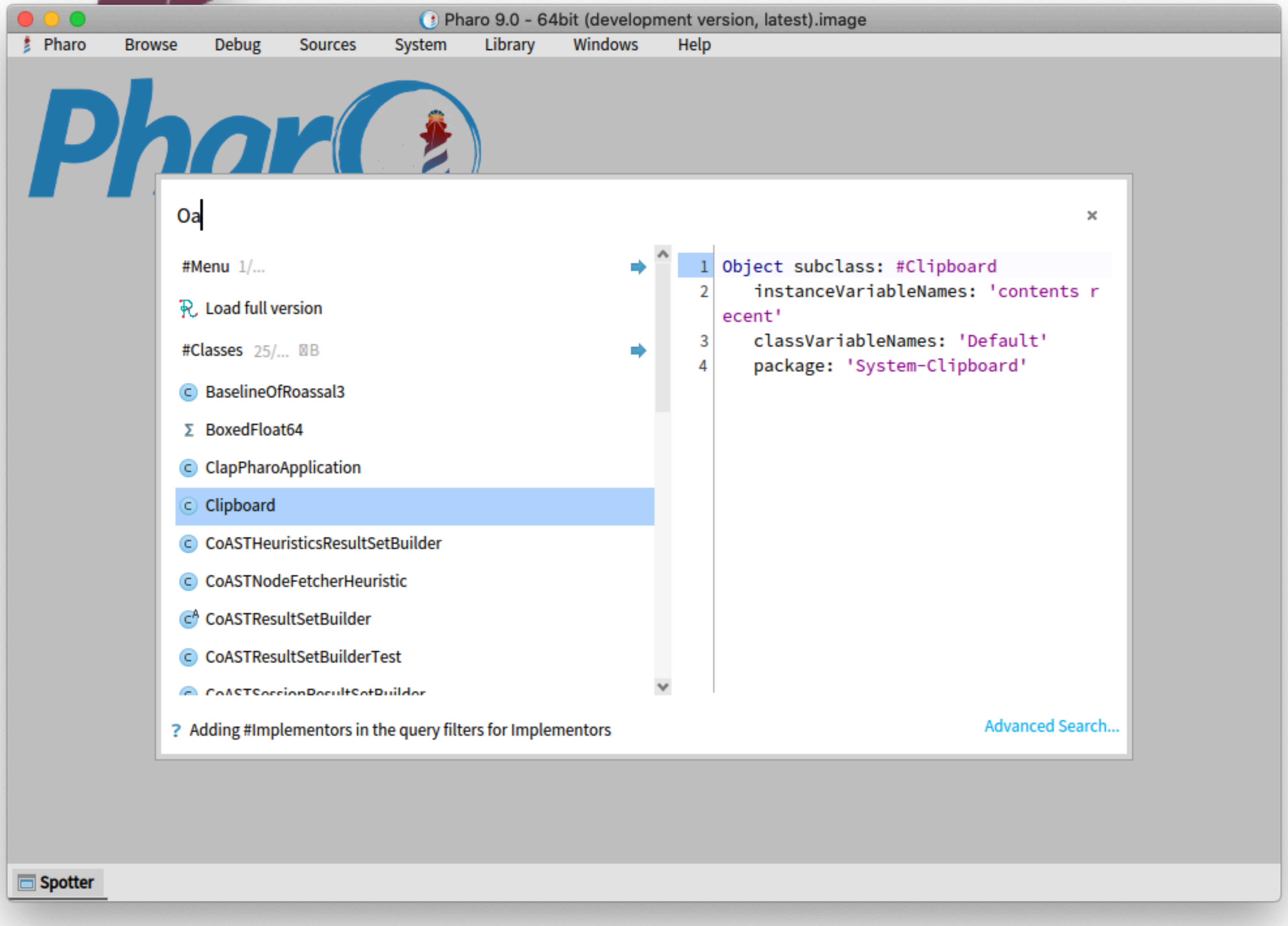
#Packages 3/... ⌘P

- OpalCompiler-Core
- OpalCompiler-Tools
- OpalCompiler-Tests

? <meta+h> filters for Help topics

New Tools in Spec2

Spotter



Oa

#Menu 1/...

Load full version

#Classes 25/... ⌘B

BaselineOfRoassal3

BoxedFloat64

ClapPharoApplication

Clipboard

CoASTHeuristicsResultSetBuilder

CoASTNodeFetcherHeuristic

CoASTResultSetBuilder

CoASTResultSetBuilderTest

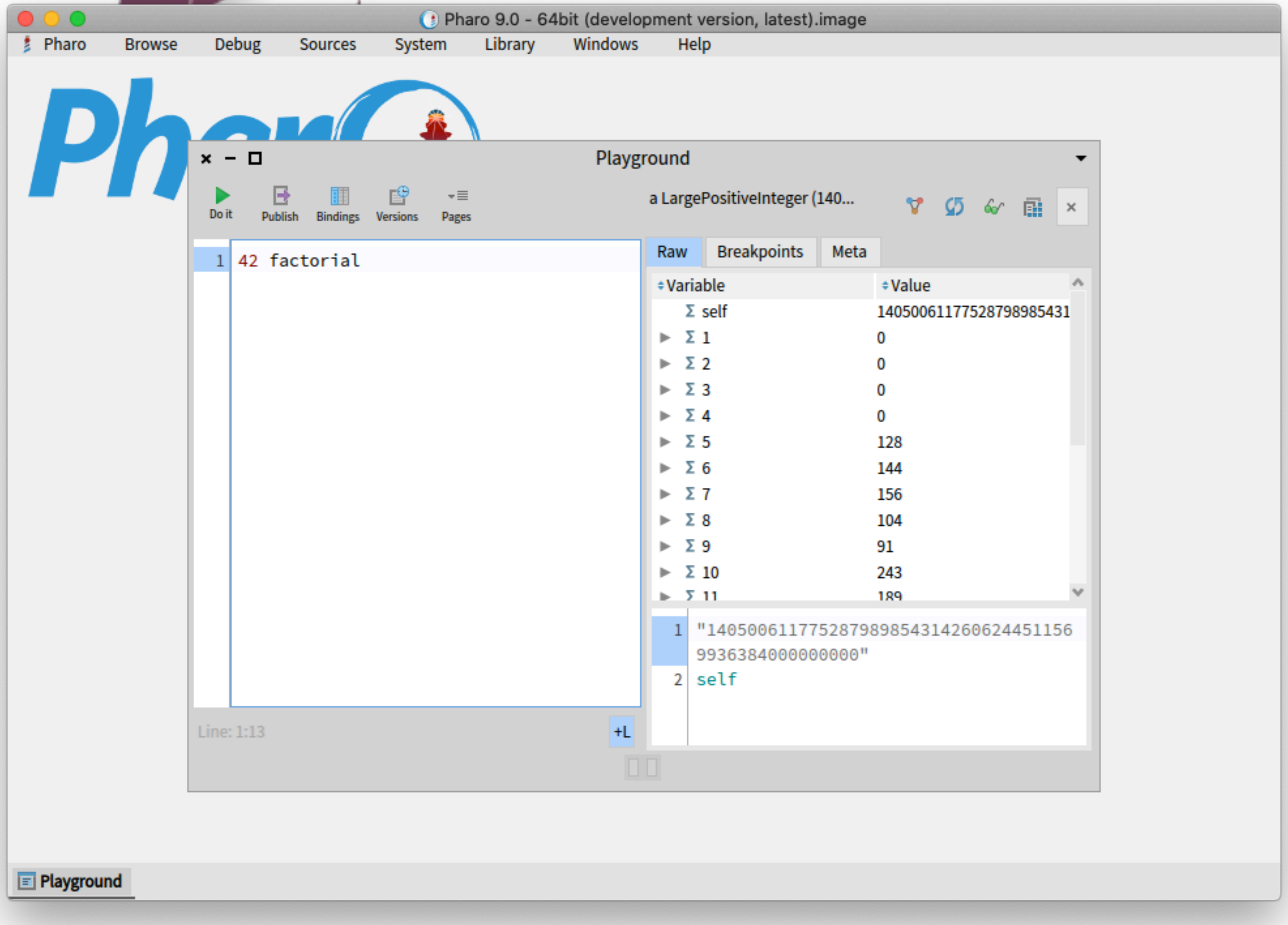
```
Object subclass: #Clipboard
    instanceVariableNames: 'contents recent'
    classVariableNames: 'Default'
    package: 'System-Clipboard'
```

? Adding #Implementors in the query filters for Implementors

- All the features of all spotter and…
  - Non blocking
  - Better integration with Large images
  - Improved Backend
  - Extensible

New Tools in Spec2

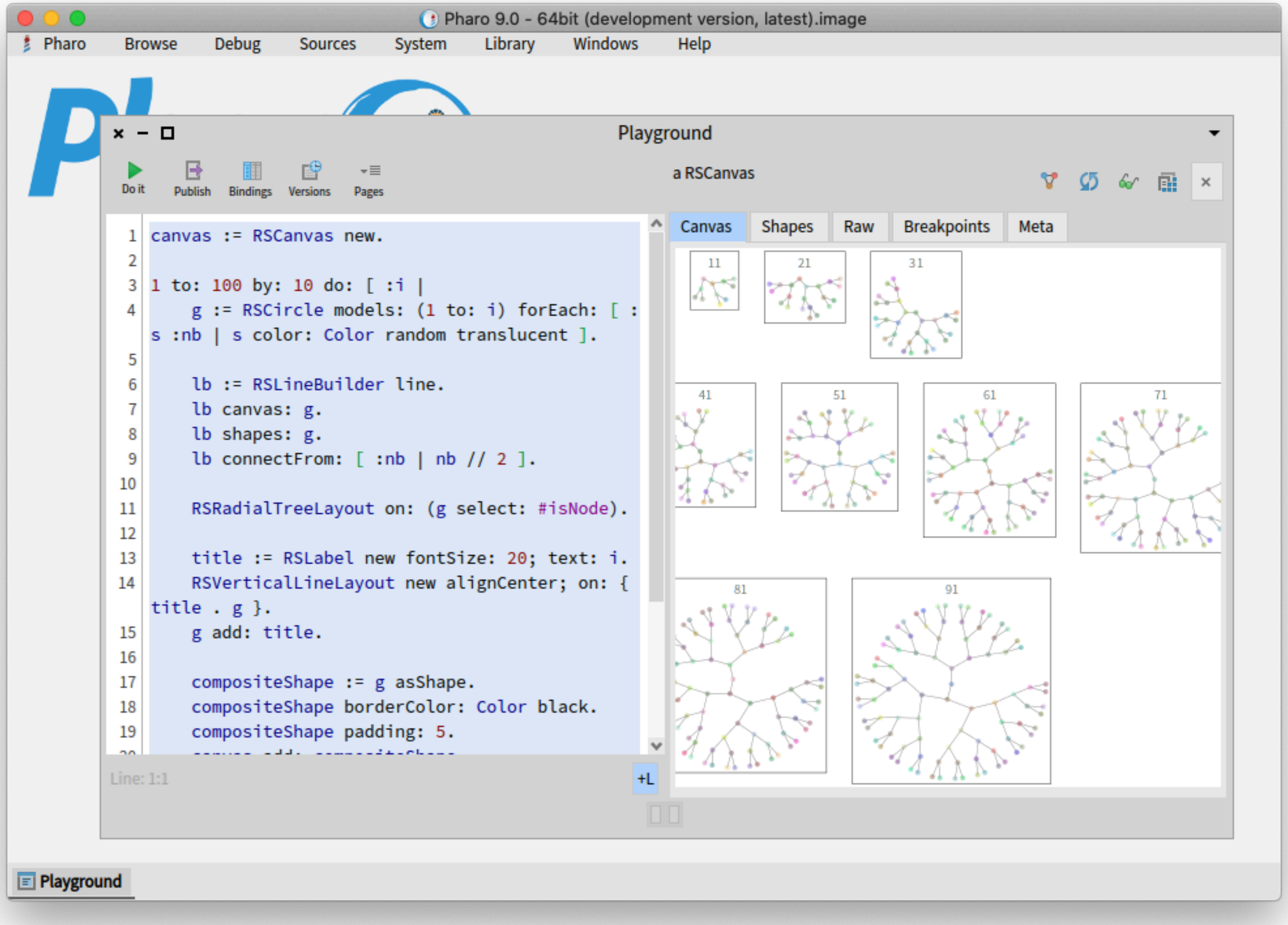
Playground


Pharo 9.0 - 64bit (development version, latest).image
Pharo Browse Debug Sources System Library Windows Help
Playground
Do it Publish Bindings Versions Pages
a LargePositiveInteger (140...
Raw Breakpoints Meta
Line: 1:13
+L
Playground

```
42 factorial
```

Variable	Value
Σ self	14050061177528798985431
Σ 1	0
Σ 2	0
Σ 3	0
Σ 4	0
Σ 5	128
Σ 6	144
Σ 7	156
Σ 8	104
Σ 9	91
Σ 10	243
Σ 11	189

```
"1405006117752879898543142606244511569936384000000000"
self
```


Pharo 9.0 - 64bit (development version, latest).image
Pharo Browse Debug Sources System Library Windows Help
Playground
Do it Publish Bindings Versions Pages
a RSCanvas
Canvas Shapes Raw Breakpoints Meta
11
21
31
41
51
61
71
81
91
Line: 1:1
+L
Playground

```
canvas := RSCanvas new.

1 to: 100 by: 10 do: [ :i |
    g := RSCircle models: (1 to: i) forEach: [ :s :nb | s color: Color random translucent ].

    lb := RSLineBuilder line.
    lb canvas: g.
    lb shapes: g.
    lb connectFrom: [ :nb | nb // 2 ].

    RSRadialTreeLayout on: (g select: #isNode).

    title := RSLabel new fontSize: 20; text: i.
    RSVerticalLineLayout new alignCenter; on: { title . g }.
    g add: title.

    compositeShape := g asShape.
    compositeShape borderColor: Color black.
    compositeShape padding: 5.
    canvas add: compositeShape
```

More Image Improvements

Refactorings

- New Refactorings
  - Extract setUp method
  - Remove senders of method refactoring
  - Copy package as refactoring
  - Rename package (rename manifest)
  - Merge instance var x in y
  - Move to class side method
  - Create accessors with lazy initialization

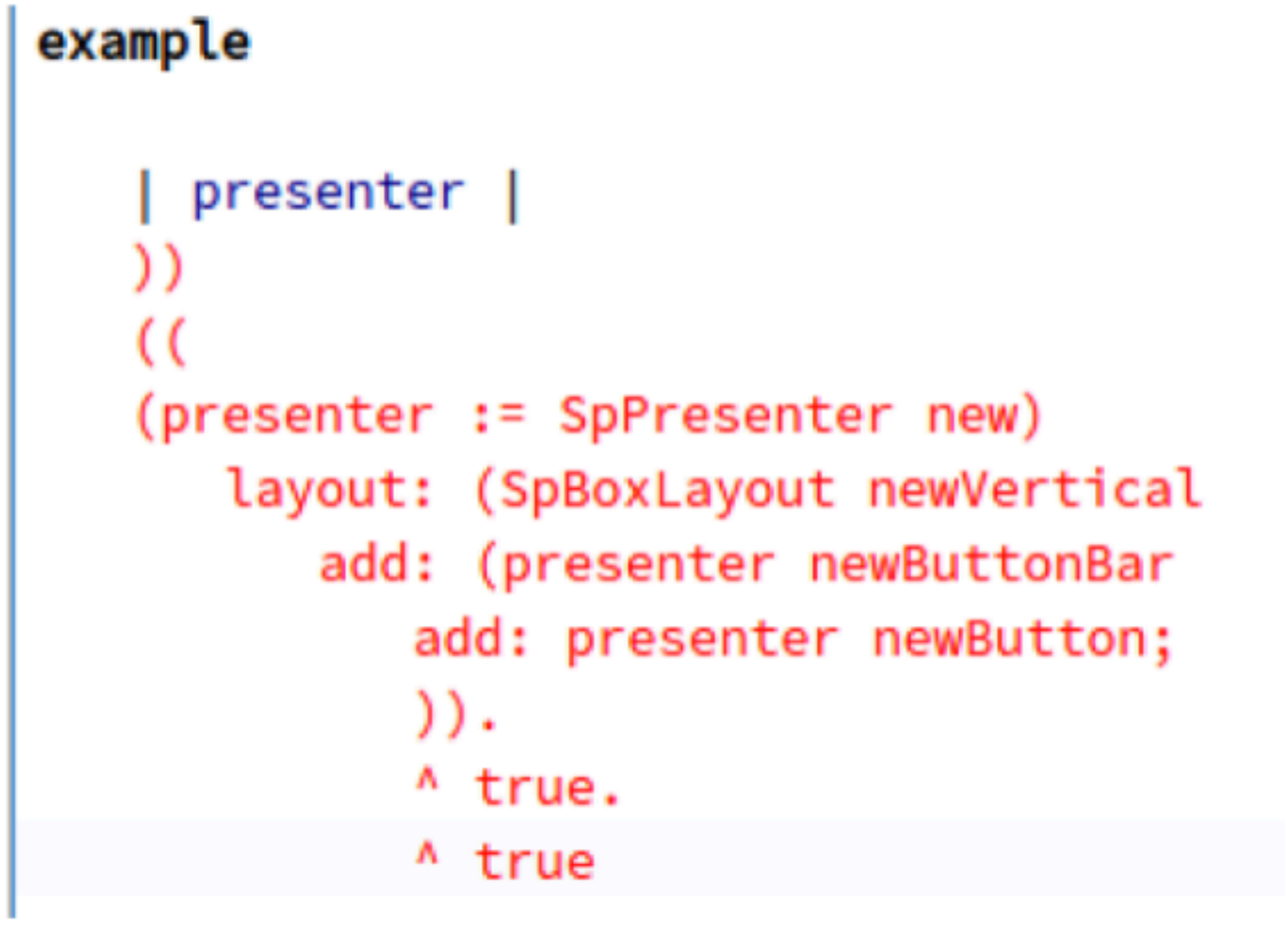
Refactorings

- Improved ones
  - Deprecate method (simple version)
  - Deprecate class
  - Extract method refactoring
  - Replace senders by another
  - Rename vars in Traits
  - Convert temporary to instance variable
  - Push up method refactoring
  - Add access to pushUp and pushDown refactorings from source code
  - Permute parameters when add an argument
  - Abstract instance variable (now applies abstract methods when there is a reference to more than one variable in a method)

Dynamic call Rewriting of Deprecated Methods

- Support Automatic Migration
- Deprecated Methods of clients rewritten to the new API
- Running the code or the tests and the API is automatically migrated!
- Systematically used in Pharo 9

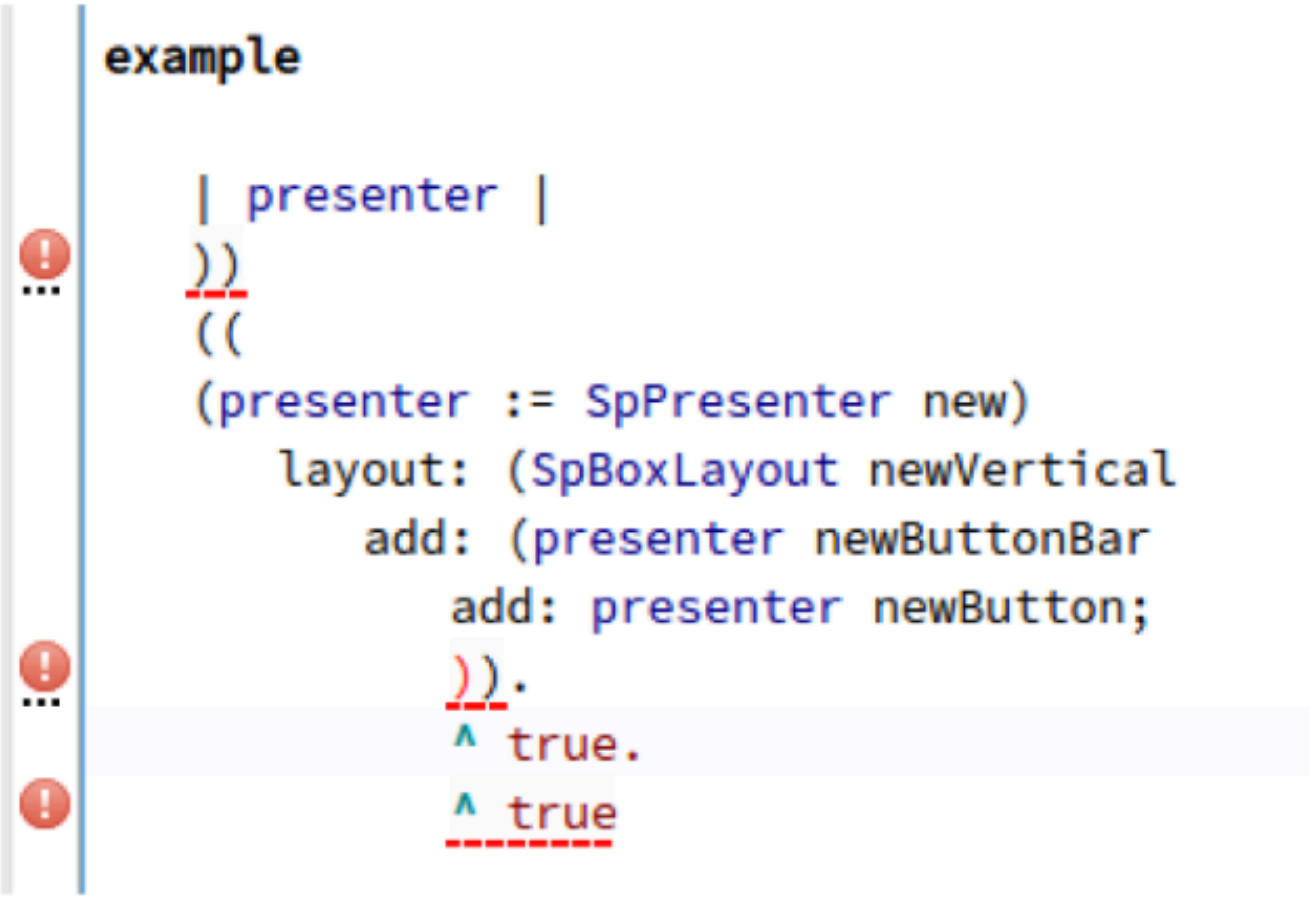
Parser Improvements



```
example

    | presenter |
    ))
    ((
    (presenter := SpPresenter new)
        layout: (SpBoxLayout newVertical
            add: (presenter newButtonBar
                add: presenter newButton;
                )).
                ^ true.
                ^ true
```

Pharo 8

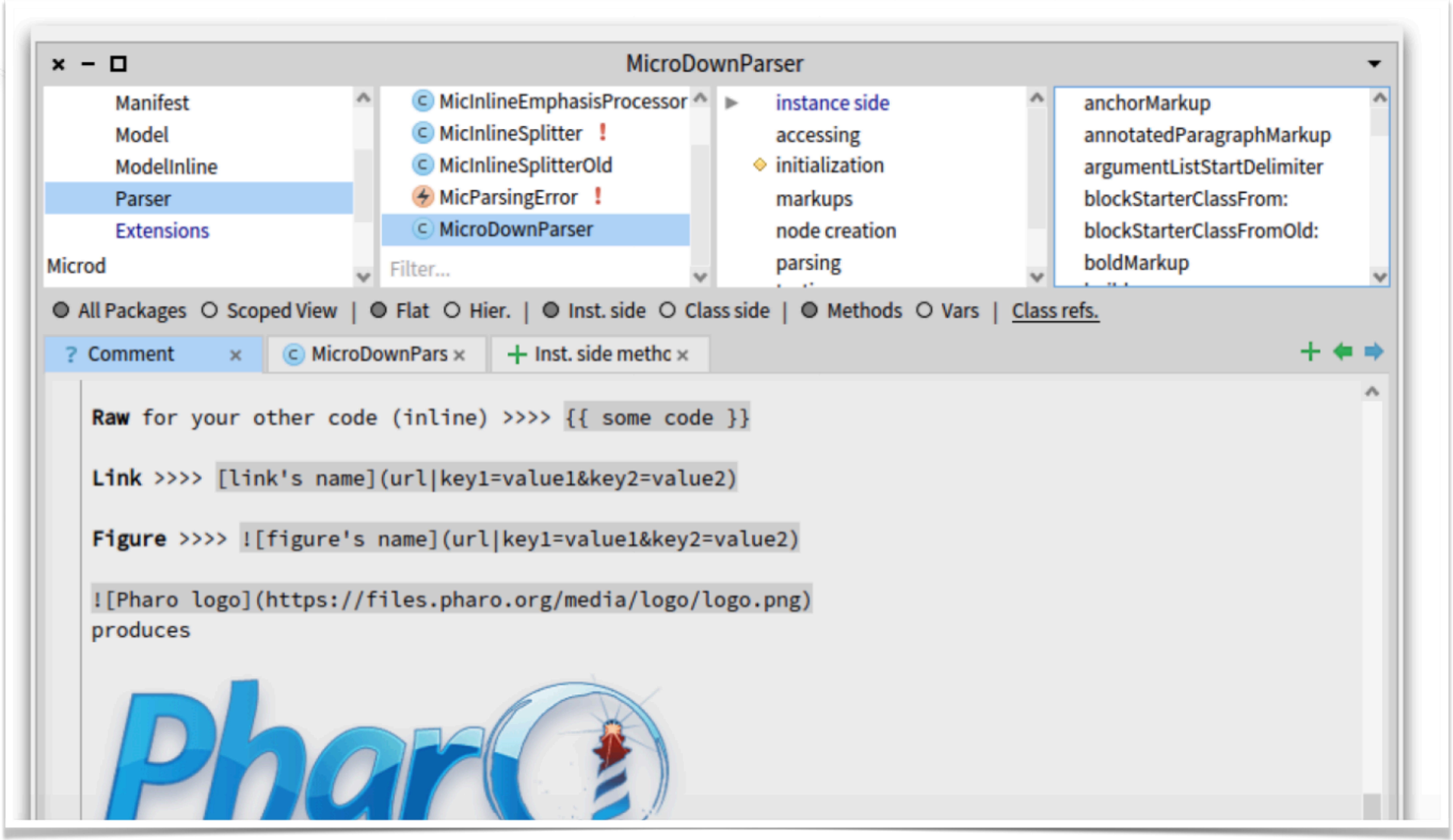


```
example

    | presenter |
    ))
    ((
    (presenter := SpPresenter new)
        layout: (SpBoxLayout newVertical
            add: (presenter newButtonBar
                add: presenter newButton;
                )).
                ^ true.
                ^ true
```

Pharo 9

Microdown Comments & Renderer



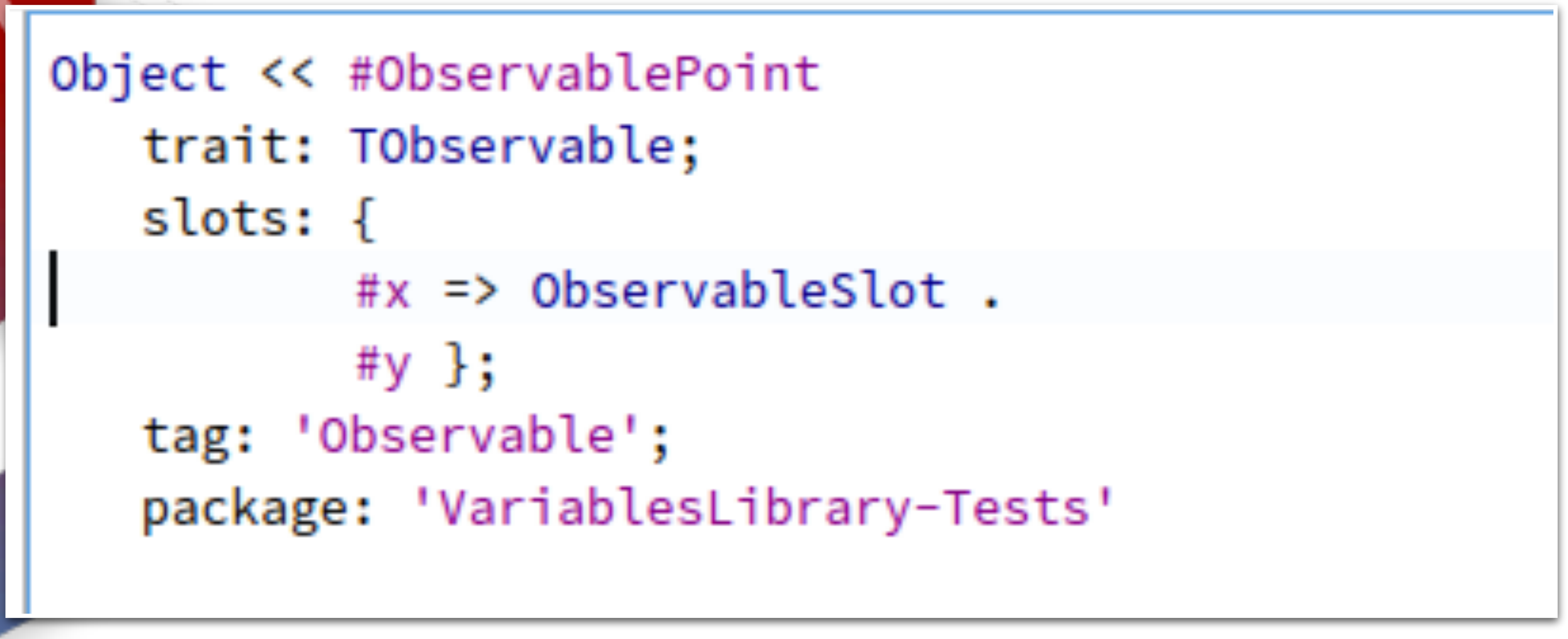
Raw for your other code (inline) >>>> `{{ some code }}`

Link >>>> `[link's name](url|key1=value1&key2=value2)`

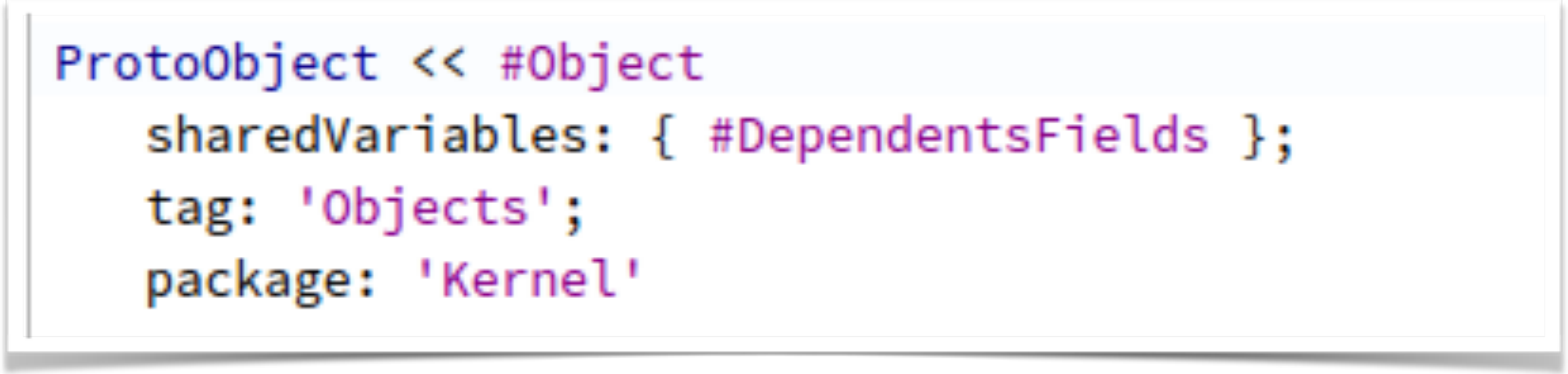
Figure >>>> `![figure's name](url|key1=value1&key2=value2)`

`![Pharo logo](https://files.pharo.org/media/logo/logo.png)`
produces

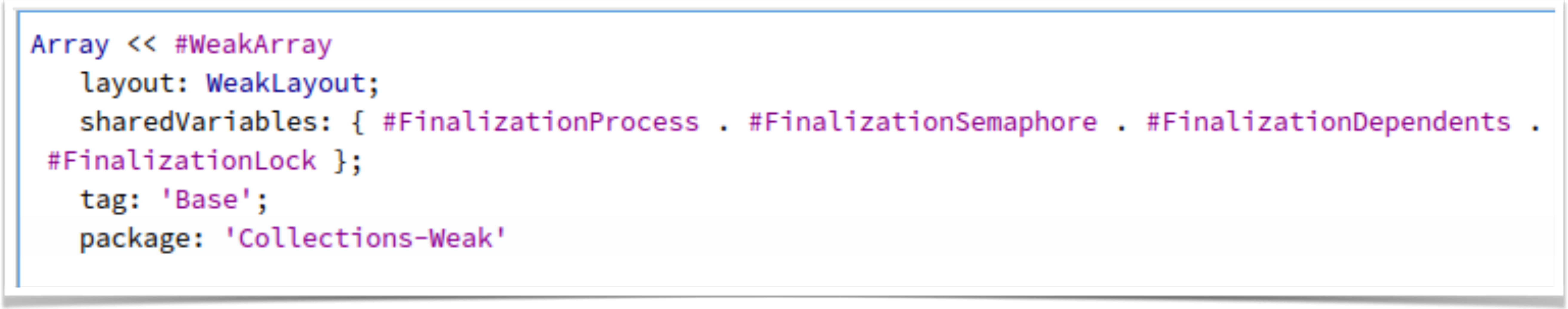
Fluid Class Syntax



```
Object << #ObservablePoint
   trait: TObservable;
   slots: {
          #x => ObservableSlot .
          #y };
   tag: 'Observable';
   package: 'VariablesLibrary-Tests'
```

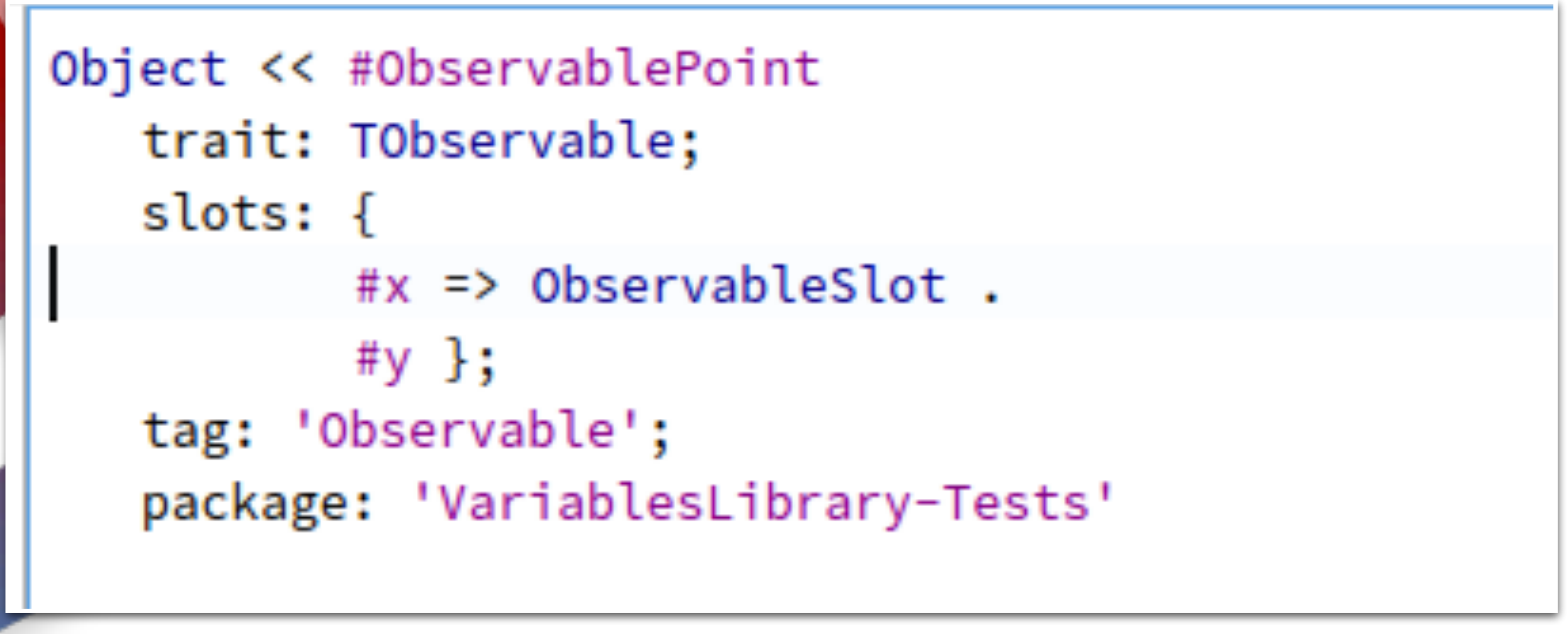


```
ProtoObject << #Object
   sharedVariables: { #DependentsFields };
   tag: 'Objects';
   package: 'Kernel'
```

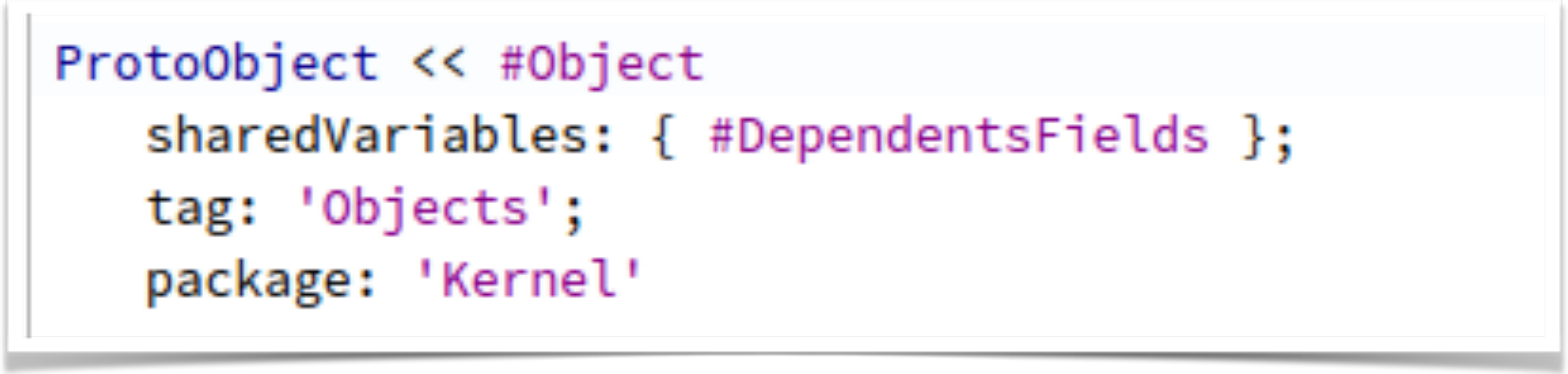


```
Array << #WeakArray
   layout: WeakLayout;
   sharedVariables: { #FinalizationProcess . #FinalizationSemaphore . #FinalizationDependents .
 #FinalizationLock };
   tag: 'Base';
   package: 'Collections-Weak'
```

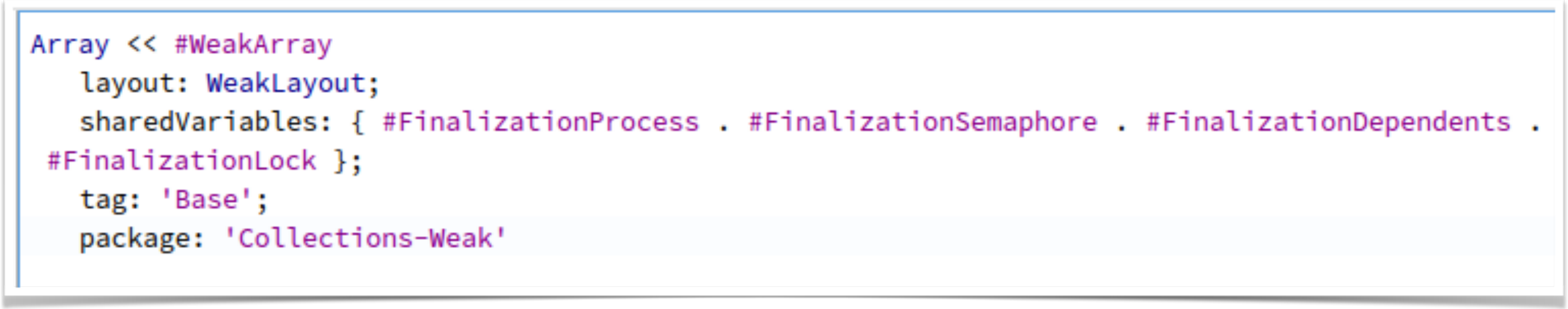
Fluid Class Syntax



```
Object << #ObservablePoint
   trait: TObservable;
   slots: {
          #x => ObservableSlot .
          #y };
   tag: 'Observable';
   package: 'VariablesLibrary-Tests'
```



```
ProtoObject << #Object
   sharedVariables: { #DependentsFields };
   tag: 'Objects';
   package: 'Kernel'
```



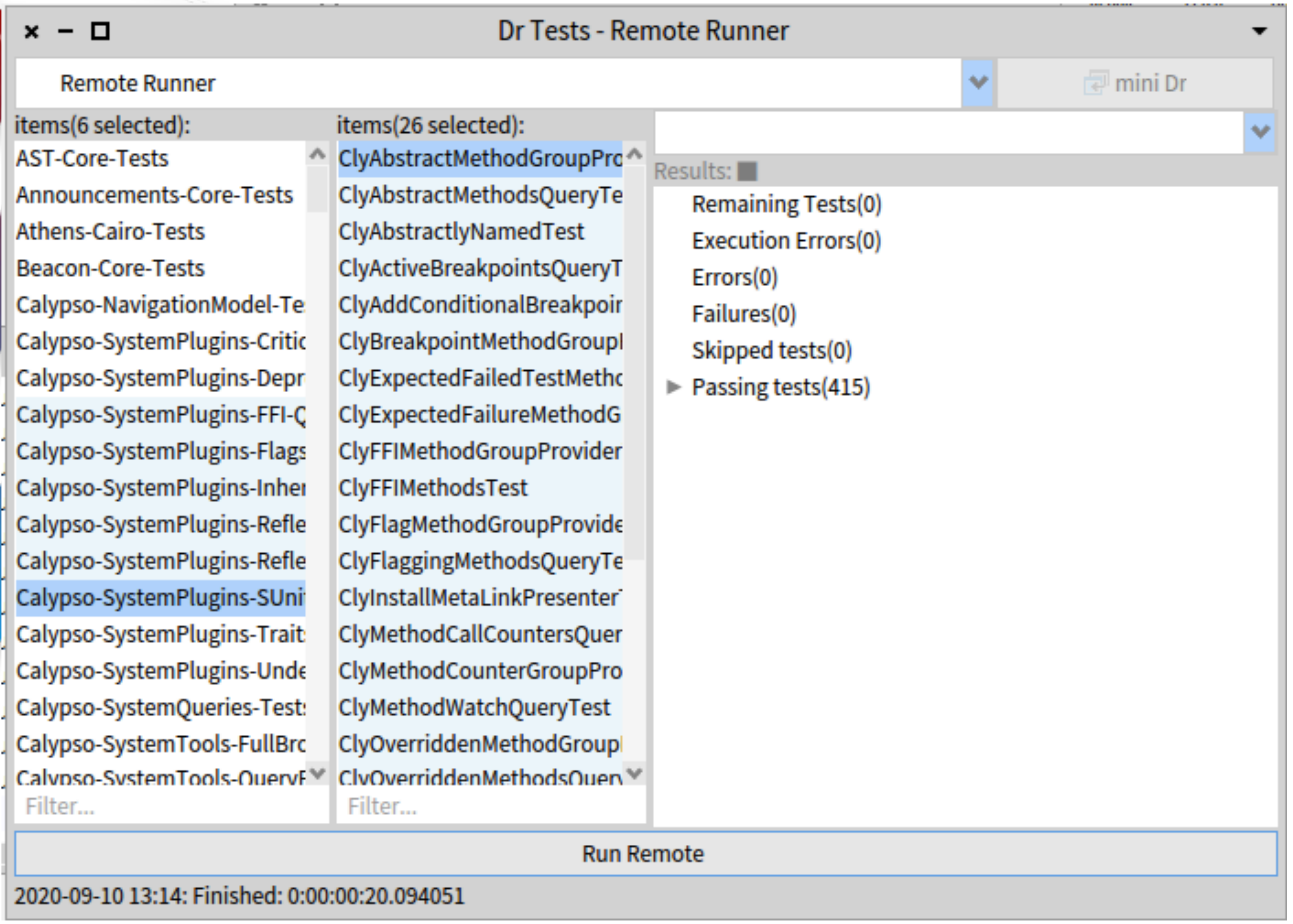
```
Array << #WeakArray
   layout: WeakLayout;
   sharedVariables: { #FinalizationProcess . #FinalizationSemaphore . #FinalizationDependents .
 #FinalizationLock };
   tag: 'Base';
   package: 'Collections-Weak'
```

Decided in ESUG'17

Preview in Pharo 9

Default in Pharo 10

Distributed Test Runner



items(6 selected):

- AST-Core-Tests
- Announcements-Core-Tests
- Athens-Cairo-Tests
- Beacon-Core-Tests
- Calypso-NavigationModel-Te
- Calypso-SystemPlugins-Critic
- Calypso-SystemPlugins-Depr
- Calypso-SystemPlugins-FFI-C
- Calypso-SystemPlugins-Flags
- Calypso-SystemPlugins-Inher
- Calypso-SystemPlugins-Refle
- Calypso-SystemPlugins-Refle
- Calypso-SystemPlugins-SUni
- Calypso-SystemPlugins-Trait
- Calypso-SystemPlugins-Unde
- Calypso-SystemQueries-Test:
- Calypso-SystemTools-FullBrc
- Calypso-SystemTools-QueryF

Filter...

items(26 selected):

- ClyAbstractMethodGroupPro
- ClyAbstractMethodsQueryTe
- ClyAbstractlyNamedTest
- ClyActiveBreakpointsQueryT
- ClyAddConditionalBreakpoir
- ClyBreakpointMethodGroupI
- ClyExpectedFailedTestMethc
- ClyExpectedFailureMethodG
- ClyFFIMethodGroupProvider
- ClyFFIMethodsTest
- ClyFlagMethodGroupProvide
- ClyFlaggingMethodsQueryTe
- ClyInstallMetaLinkPresenter
- ClyMethodCallCountersQuer
- ClyMethodCounterGroupPro
- ClyMethodWatchQueryTest
- ClyOverriddenMethodGroupI
- ClyOverriddenMethodsQuery

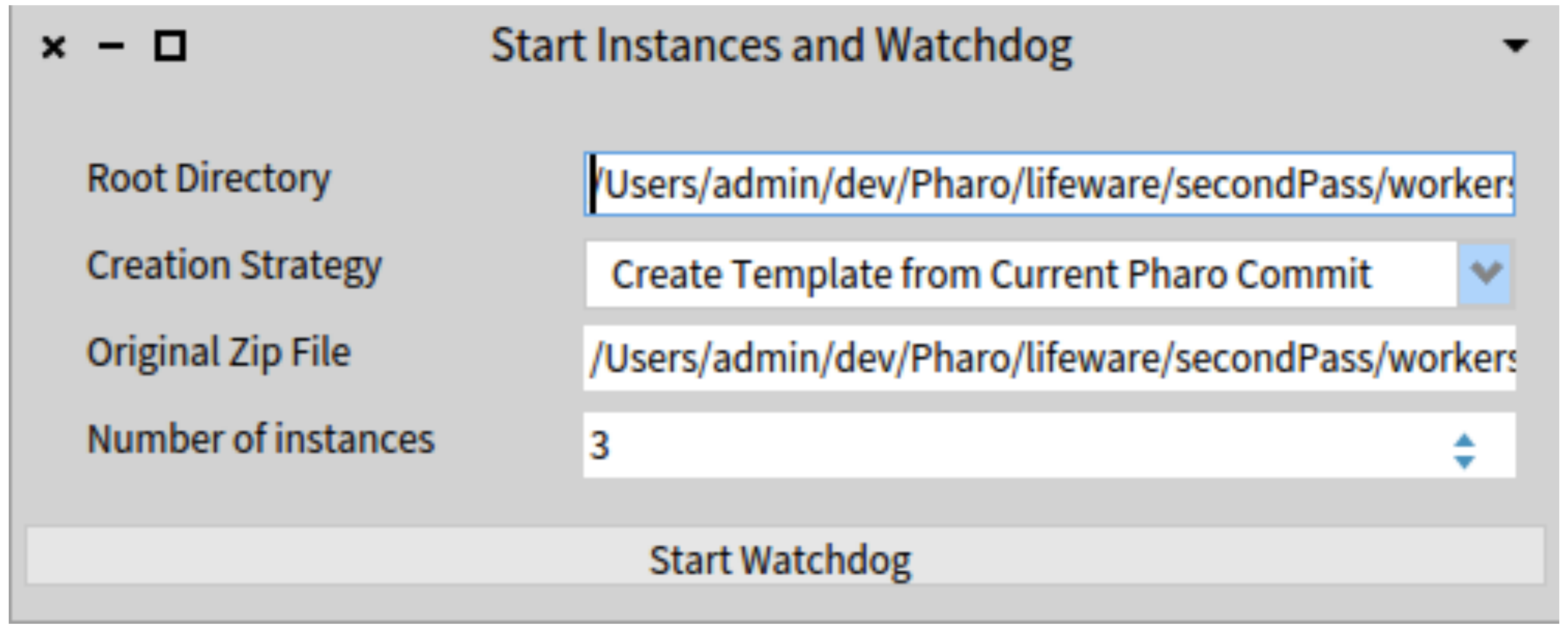
Filter...

Results:

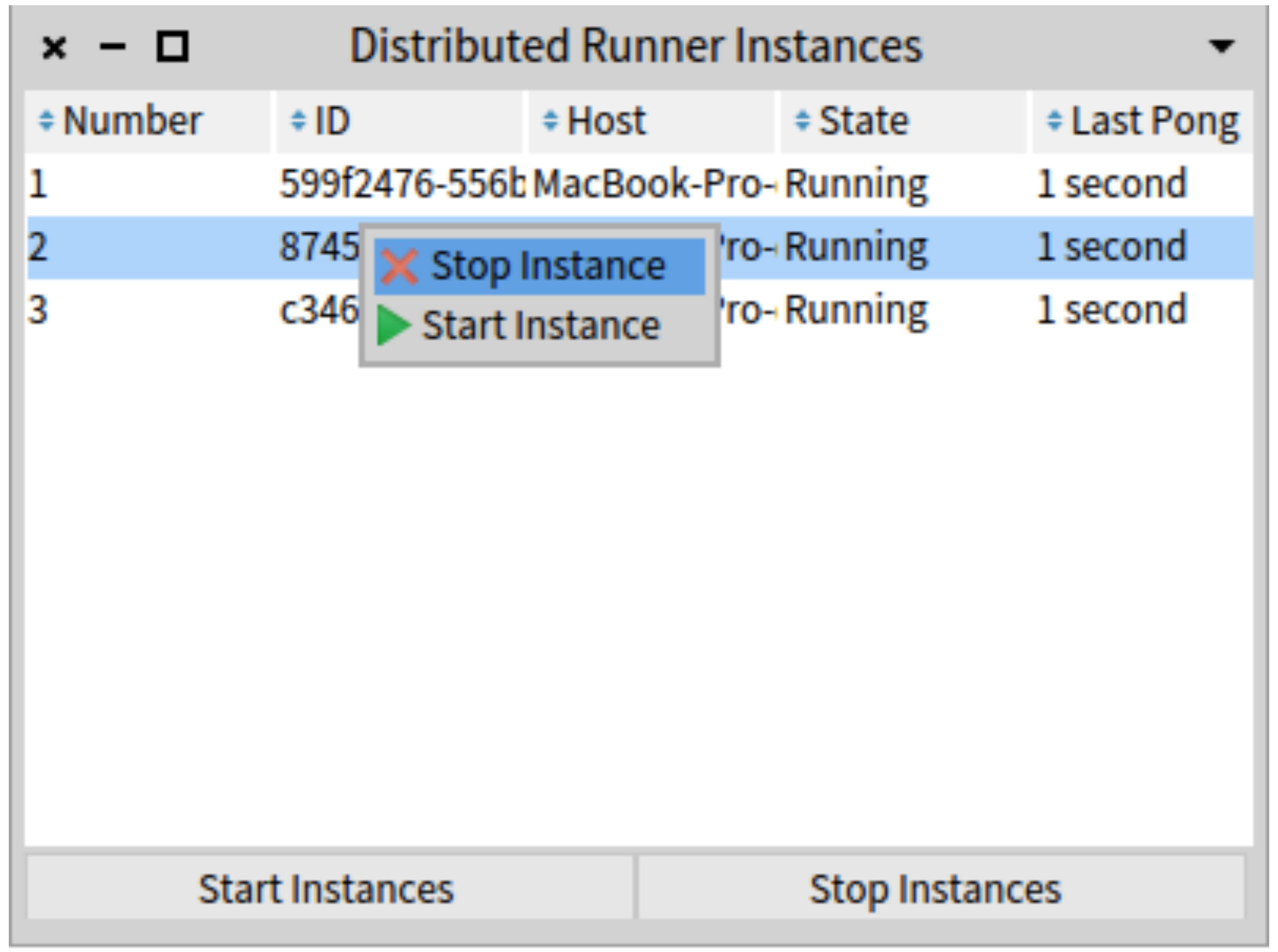
- Remaining Tests(0)
- Execution Errors(0)
- Errors(0)
- Failures(0)
- Skipped tests(0)
- ▸ Passing tests(415)

2020-09-10 13:14: Finished: 0:00:00:20.094051

Integration with Dr. Test



Root Directory	/Users/admin/dev/Pharo/lifeware/secondPass/workers
Creation Strategy	Create Template from Current Pharo Commit
Original Zip File	/Users/admin/dev/Pharo/lifeware/secondPass/workers
Number of instances	3



Number	ID	Host	State	Last Pong
1	599f2476-556b	MacBook-Pro-	Running	1 second
2	8745	'ro-	Running	1 second
3	c346	'ro-	Running	1 second

Controlling Instances

Image Status

Compiler Improvements

- Unifying objects variables into a single Hierarchy (Done)
- Improved Semantic Analysis (Done)
    - use Class and the Environment to lookup the variables
    - use Variable Hierarchy to model variables for name analysis.
    - Improved AST Visitor (Done)
- Pragma lookup speed-up (Done)
- Compiler Speed Improvements (Done)

Image Status - Other Improvements

- Sista Bytecodes w/ Full Block Closures (Done)
- Memory Management Configuration (Done)
- Integration with Windows (Done)
- Roassal3 Integrated (Done)

Image Status

Other Big Goals

- .NET: FFI / UI Embedding Experiment (First Stage done)
- Fluid Class Parser (First Stage done)
- Image Distributions - Optional Project Loader (Delayed)
- Distributed Test Runner (First Stage done)
- Debugger Backend Improvements (Done)
- High DPI support / Scalling (Ongoing)
- Implementing World renderers to use Idle VM (ToDo)

Pharo Promotion

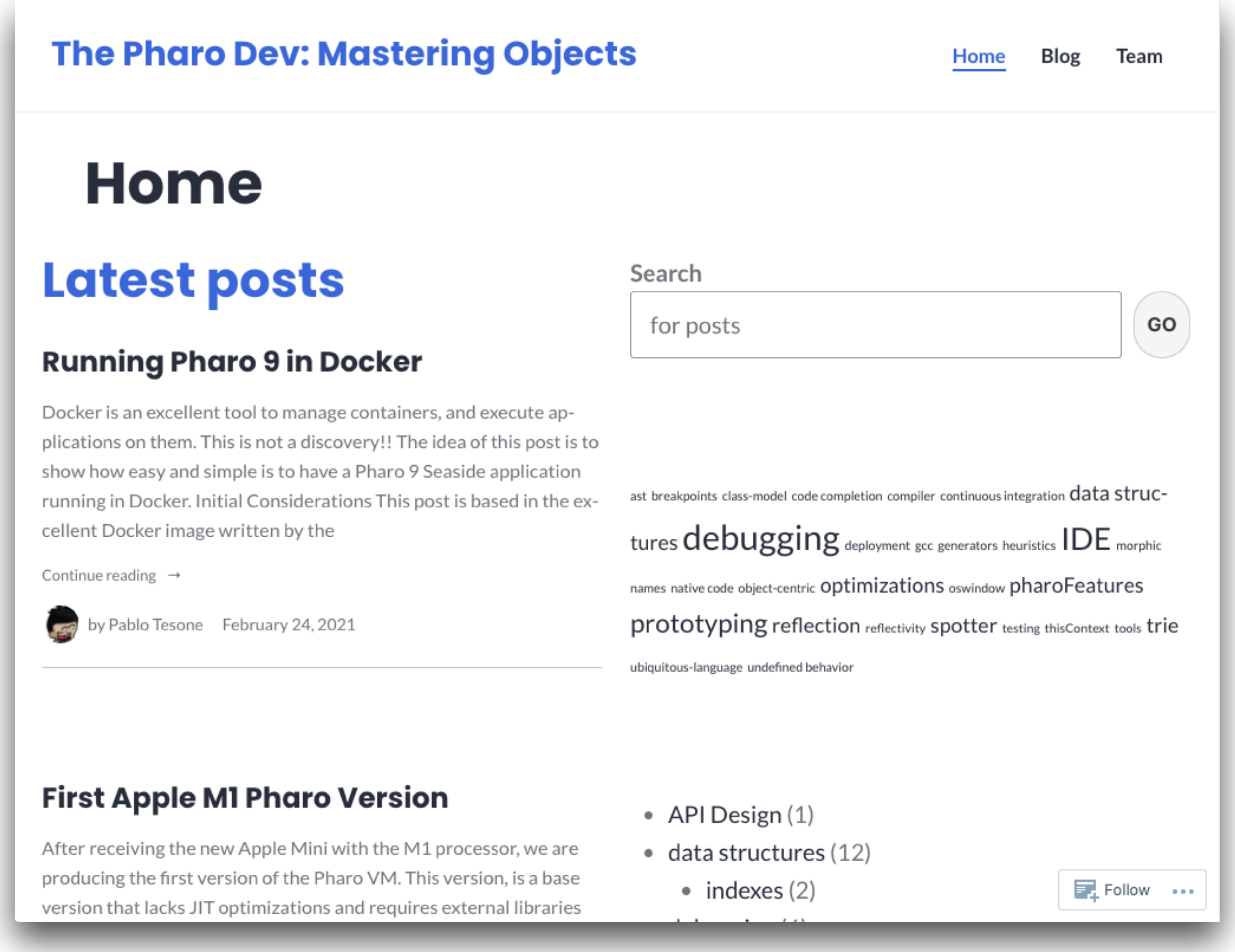
- Mooc with Pharo 8:
  - New 74 videos in French and English
  - New session in November
  - Everything in Youtube
- Pharo Master Class (INRIA Academy / INRIA Chile)
  - 100+ participants
- Pharo By Example - Updated Edition

Pharo Promotion

- Presence in Virtual FOSDEM 2021
  - https://stands.fosdem.org/stands/pharo/
  - Preparing Videos
  - Static Content
- Organising Existing presentations and talks
  - http://talks.pharo.org/

Pharo Promotion

- The PharoDev open collaboration blog - https://thepharo.dev/



Home

Latest posts

Running Pharo 9 in Docker

Docker is an excellent tool to manage containers, and execute applications on them. This is not a discovery!! The idea of this post is to show how easy and simple is to have a Pharo 9 Seaside application running in Docker. Initial Considerations This post is based in the excellent Docker image written by the

Continue reading →

by Pablo Tesone February 24, 2021

First Apple M1 Pharo Version

After receiving the new Apple Mini with the M1 processor, we are producing the first version of the Pharo VM. This version, is a base version that lacks JIT optimizations and requires external libraries

Search

for posts GO

ast breakpoints class-model code completion compiler continuous integration data structures debugging deployment gcc generators heuristics IDE morphic names native code object-centric optimizations oswindow pharoFeatures prototyping reflection reflectivity spotter testing thisContext tools trie ubiquitous-language undefined behavior

- API Design (1)
- data structures (12)
  - indexes (2)

15+ Different Authors

Different subjects & levels

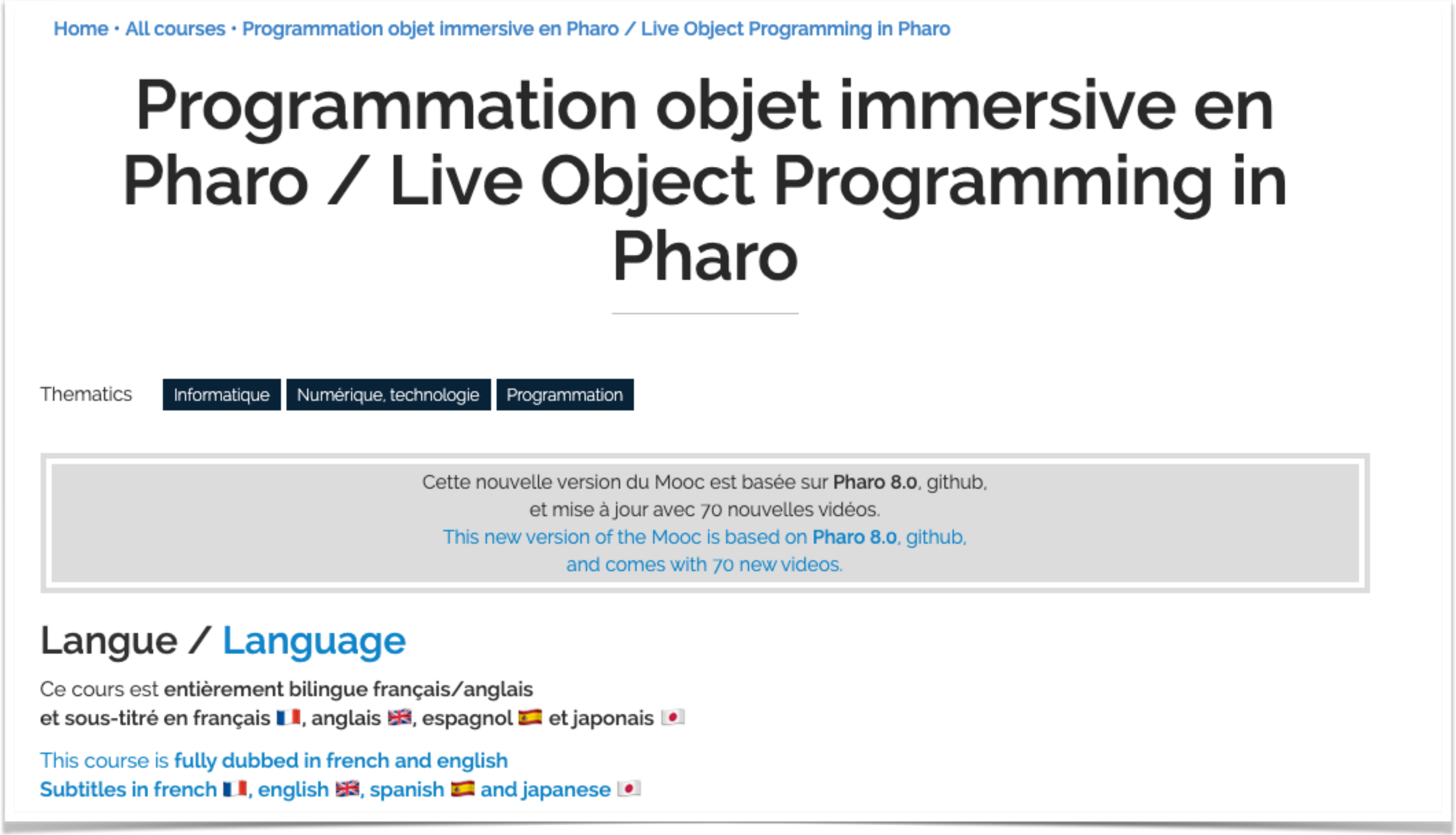
Open to all the community

Pharo Promotion

Books - books.pharo.org

- A large set of new books is arriving with Pharo 90. Documenting many hidden aspects of programming in Pharo:
  - Testing in Pharo
  - Version control in Pharo
  - Calling Foreign Functions with Pharo
  - Pharo with Style
  - Zinc
  - Concurrent Programming in Pharo
  - Commander 2.0
  - Pharo by Example 90 soon out.

Mooc



Home · All courses · Programmation objet immersive en Pharo / Live Object Programming in Pharo

Programmation objet immersive en Pharo / Live Object Programming in Pharo

Thematics Informatique Numérique, technologie Programmation

Cette nouvelle version du Mooc est basée sur **Pharo 8.0**, github,
et mise à jour avec 70 nouvelles vidéos.
This new version of the Mooc is based on **Pharo 8.0**, github,
and comes with 70 new videos.

Langue / Language

Ce cours est **entièrement bilingue français/anglais**
et sous-titré en français 🇫🇷, anglais 🇬🇧, espagnol 🇪🇸 et japonais 🇯🇵

This course is **fully dubbed in french and english**
Subtitles in french 🇫🇷, english 🇬🇧, spanish 🇪🇸 and japanese 🇯🇵

Bilateral Contracts

All results are also possible thanks to them

SCHMIDT

Ingenieurbüro für Bauwesen

One Year - Finished

Lifeware

Two Years - Ongoing

Thanks!!!

pharo.org

consortium

consortium-adm@pharo.org

pharo-project/pharo

discord.gg/QewZMZa

[DEV]

thepharo.dev

Pharo 9
Now in stabilisation!!!