

# Chapter 1

## Preface

### 1.1 What is Pharo?

Pharo is a modern, open-source, dynamically typed language supporting live coding inspired from Smalltalk. Pharo and its ecosystems is composed of the six fundamental elements:

- A dynamically-typed language with a syntax so simple it can fit on a postcard and yet is readable even for someone not familiar with it.
- A live coding environment that allows the coder to modify its code while the code executes, without any need to slow down his or her workflow.
- A powerful IDE providing all the tools to help manage complex code and promote good code design.
- A rich library that creates an environment so powerful that it can be viewed even as a virtual OS, including a very fast JITing VM and full access to OS libraries and features via its FFI.
- A culture where changes and improvements are encouraged and highly valued.
- A community that welcomes coders from any corner of the world with any skill and any programming languages.

Pharo strives to offer a lean, open platform for professional software development, as well as a robust and stable platform for research and development into dynamic languages and environments. Pharo serves as the reference implementation for the Seaside web development framework available at <http://www.seaside.st>.

Pharo core contains only code that has been contributed under the MIT license. The Pharo project started in March 2008 as fork of Squeak (a modern implementation of Smalltalk), and the first 1.0 beta version was released on July 31, 2009. The current version is Pharo 4.0, released in April 2015. Pharo 5.0 is in alpha development and planned for release in April 2016.

Pharo is highly portable. Pharo can run on MacOSX, Windows, Linux, Android, iOS and Raspberry Pi. Its virtual machine is written entirely in a subset of Smalltalk, making it easy to simulate, debug, analyze, and change from within Pharo itself. Pharo is the vehicle for a wide range of innovative projects, from multimedia applications and educational platforms to commercial web development environments.

There is an important principle behind Pharo. Pharo is not just be a copy of the past, but reinvent the essence behind Smalltalk. However we realize that Big Bang style approaches rarely succeed. Pharo instead favors evolutionary and incremental changes. Rather than leaping for the final perfect solution in one big step, a multitude of small changes keeps even the bleeding edge relatively stable while experimenting with important new features and libraries. This facilitates rapid feedback and contributions from the community, on which Pharo depends for its success. You can make impact on Pharo.

## 1.2 Who should read this book?

The previous revision of this book was based on Pharo 1.4. This revision has been liberally updated to align with Pharo 4.0. Various aspects of Pharo are presented, starting with the basics then proceeding to intermediate topics. Advanced topics are presented in "**Deep into Pharo**", a book on the internals of Pharo that is freely available at <http://books.pharo.org>. In addition for readers interested in web development, a new book **Enterprise Pharo: a Web Perspective** is freely available at <http://books.pharo.org>.

This book will not teach you how to program. The reader should have some familiarity with programming languages. Some background with object-oriented programming would also be helpful.

This book will introduce the Pharo programming environment, the language and the associated tools. You will be exposed to common idioms and practices, but the focus is on the technology, not on object-oriented design. Wherever possible, we will show you lots of examples. We have been inspired by Alec Sharp's excellent book on Smalltalk (Alec Sharp, *Smalltalk by Example*, McGraw-Hill, 1997).

There are numerous other books on Smalltalk freely available on the web but none of these focuses specifically on Pharo.

## 1.3 A word of advice

Do not be frustrated by parts of Pharo that you do not immediately understand. You do not have to know everything! Alan Knight expresses this as follows:

*Try not to care.* Beginning Smalltalk programmers often have trouble because they think they need to understand all the details of how a thing works before they can use it. This means it takes quite a while before they can master Transcript show: 'Hello World'. One of the great leaps in OO is to be able to answer the question How does this work? with "I don't care".

When you don't understand something, simple or complex, do not hesitate for a second to ask us at our mailing lists ([pharo-users@lists.pharo.org](mailto:pharo-users@lists.pharo.org) or [pharo-dev@lists.pharo.org](mailto:pharo-dev@lists.pharo.org)), irc and Slack. We love questions and we welcome people of any skill.

## 1.4 An open book

This book is an open book in the following senses:

- The content of this book is released under the Creative Commons Attribution-ShareAlike (by-sa) license. In short, you are allowed to freely share and adapt this book, as long as you respect the conditions of the license available at the following URL <http://creativecommons.org/licenses/by-sa/3.0/>.
- This book just describes the core of Pharo. We encourage others to contribute chapters on the parts of Pharo that we have not described. If you would like to participate in this effort, please contact us. We would like to see more books around Pharo!
- It also possible to contribute directly to this book via Github. Just follow the instructions there and ask any question on the mailing list. You can find the Github repo at <https://github.com/SquareBracketAssociates/UpdatedPharoByExample>

## 1.5 The Pharo community

The Pharo community is friendly and active. Here is a short list of resources that you may find useful:

- <http://www.pharo.org> is the main web site of Pharo.
- On IRC, you can find us on the freenode.net server, channel "pharo".
- SmalltalkHub (<http://www.smalltalkhub.com/>) is the equivalent of SourceForge/Github for Pharo projects. Many extra packages and projects for Pharo live there.
- We are also active on Slack (<http://pharoproject.slack.com>), just asks for an invitation at <http://slack4pharo.trentosur.com>, everybody is welcomed.

## 1.6 Examples and exercises

We have tried to provide as many examples as possible. In particular, there are many examples that show a fragment of code which can be evaluated. We use a long arrow to indicate the result you obtain when you select an expression and from its context menu choose **print it**:

Script 1.1: *Small example*

```
3 + 4
  →  7
"if you select 3+4 and 'print it', you will see 7"
```

In case you want to play with these code snippets in Pharo, you can download a plain text file with all the example code from the Resources sidebar of the book's web site: <http://www.pharoByExample.org>.

**Book Todo:** TODO: When book is finished, confirm this code snippet file is synchronised.

## 1.7 Acknowledgments

We would like to thank Alan Kay, Dan Ingalls and their team for making Squeak, an amazing Smalltalk development environment, that became the open-source project from which Pharo took roots. Pharo also would not be possible without the incredible work of the Squeak developers.

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