

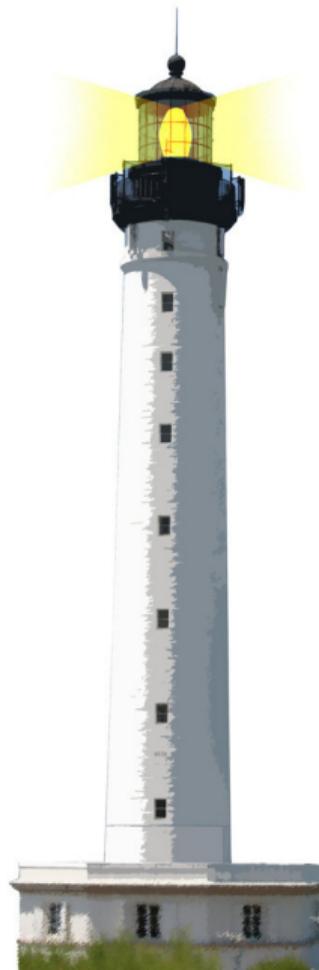


# Learning Object-Oriented Programming and Design with TDD

## Objectives of the lecture

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# Who Am I

- Expert in OOP and OOD
- Wrote several books
- One book written especially for this lecture and for you
- Love coding and nice design

# Want to Empower You

- OO Programming
- OO Design
- Test driven development

But not only

- Talking, communicating with other developers
- Learn how to find your bugs.



# Process

- You do not have to stress if you do not get it the first time!
- Repetition, repetition and repetition

But you should

- Do the exercises
- Watch the videos
- Read the book (if you want)
- Help yourself on mailing-lists or Pharo Discord channel
  - Learn to ask
  - Be friendly



# Reflexion on learning



# Reflexion on learning

*Give a man a fish and you feed him for a day; teach a man to fish and you feed him for a lifetime*

- Making mistakes is learning
- Repeating the same mistakes is idiocy



# Diving



# Diving

- You can go **inside** Pharo
- You can **break** Pharo
- You can read all the code: it is written with a syntax that fits in one postcard



# How to interact with people?

Learn how to interact with other developers

- Do not get stuck
- Be nice
- Be polite
- Be precise
- Do your homework
- Help each others



# Discord: <http://discord.gg/Sj2rhxn>

The screenshot shows a Discord server named "Pharo" with a channel "# learning-help". The channel header includes the text "For newcomer questions on DOCUMEN...". A notification bar at the top of the channel indicates "50+ new messages since 2:22 AM on August 15, 2017" and a "MARK AS READ" button.

Messages in the channel:

- omarp** (08/20/2017): "Hi, how can i set background colors in each item in MultiColumnListModel?" (edited)
- AlexM** (Last Thursday at 9:42 AM): "Hi, am new to this list. Looking for help about the Announcements framework."
- Torsten Bergmann (astares)** (Last Thursday at 10:25 AM): "@AlexM click on World menu -> "Help" -> "Help Browser". There you will find a topic on Announcements framework"

A screenshot of the "Help" menu is shown, with the "Announcements framework" section expanded to show "Introduction". The introduction text reads: "The announcement framework is an event notification framework that replaces the traditional Smalltalk event systems in this new framework rather than a symbol. An event someone might want to announce, such as a bug report or a change, is defined as a subclass of the abstract superclass Announcement. A subclass can have instance variables for additional information, such as a timestamp, or mouse coordinates at the time of the event."

Below the screenshot, there is a link: "Here is also some (maybe outdated) info on it: <http://pharo.gemtalksystems.com/book/LanguageAndLibraries/announcements>

The right sidebar shows a list of users: ADMIN-2 (BenComan, Esteban Lorenzani), CHANNEL-ADMIN-3 (Alexandre Bergel, Clement Bera, embee), and ONLINE-22 (bobn, Denis Kudriashov, dusty, eivl, Elhamer, graham@inspired.o...).

At the bottom left, there is a small icon of a lighthouse and the text "W1S00 10 / 22".

# Core Objectives

- Objects / Classes
- Messages / Methods
- self/this and its semantics
- Inheritance
- super and its semantics
- Tests are your life insurance



# Objectives

- Class responsibility collaboration
- Delegation
- Message sends are choice (what would be the equivalent to not)
- Message sends are plans for reuse
- Polymorphism
- A Testing Framework
- Blocks and Iterators
- The "Don't ask, tell" Principle
- Some design patterns



# Objectives

- Understanding OOP as a Design methodologies
- Understand key and essential concepts
- Being able to develop non trivial examples



# Why Pharo?

- Smalltalk inspired
- Pure, minimal syntax (yes one postcard still you need to think)
- Fully interactive
- Full Mooc available
- Excellent to get immersed in ObjectLand



# No Risk!

- N. Schaerli: master and PhD in Pharo: Google
- L. Renggli: bachelor, master, and PhD in Pharo: Google
- C. Bruni: bachelor, master, and PhD in Pharo: Google
- C. Bera: PhD in Pharo Vm (declined Google jobs and others)

Be good and relevant!



# Side Effect

You will also learn

- Understand some requirements, design and implement object-oriented solutions
- Understand and create some basic UML Diagrams
- Use test-driven developments
- See some coding idioms and Design Patterns



# Conceptual Schedule

- Week 1 Welcome and Introduction to Syntax
- Week 2 Syntax and Basic Libraries
- Week 3 Object Essential Concepts: Objects/Classes
- Week 4 Essence of OOP
- Week 5 Inheritance
- Week 6 Reuse
- Week 7 Advanced Techniques

# Structure

Always several levels/parts:

- Conceptual: Objects, classes....
- Pharo's application of the concepts: Syntax and libraries (tagged Pharo Mooc)
- Design heuristics (tagged From The Design Corner)
- Pharo's illustration of the design heuristics

# Books and Resources

## Books

- Learning OO Programming and Design with TDD in Pharo (<https://github.com/SquareBracketAssociates/LearningOOPWithPharo>)
- Pharo by example (<http://books.pharo.org>)
- Smalltalk by Example (<http://stephane.ducasse.free.fr>)
- Smalltalk with Style (<http://stephane.ducasse.free.fr>)
- Best Smalltalk Practices Kent Beck
- An Introduction to Object-Oriented Programming, Timothy Budd, Addison-Wesley, 2004.

## Mooc

- <http://mooc.pharo.org>
- New run of the Mooc on France Université Numérique <https://www.fun-mooc.fr/courses/course-v1:inria+41010+session02/about>



# Lecture Evaluation

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<b>Activity</b>	<b>Points (Min Max)</b>
practicals activity	5 20
semester project	5 40
semester project bonus	0 individual
practicals total	19 60
written exam	16 40
total	50 100

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# First Exercise!

- Watch the **original** Karate Kid first movie
- Be geeky
- Think about the exercises...



A course by Stéphane Ducasse  
<http://stephane.ducasse.free.fr>

Reusing some parts of the Pharo Mocc by

Damien Cassou, Stéphane Ducasse, Luc Fabresse  
<http://mocc.pharo.org>



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